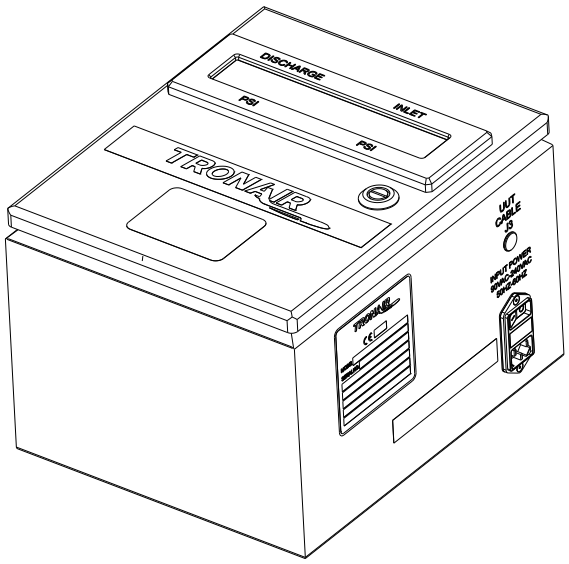
OPERATION & SERVICE MANUAL



Model: AGE18380
Ground Test Tool
Pressure Monitoring Box

CE

10/2015 – Rev. 03

Tronair, Inc.
1 Air Cargo Pkwy East
Swanton, OH 43558

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REVISION	DATE	TEXT AFFECTED
01	11/2014	Original Release
02	05/2015	Added 14.0 Appendices
03	10/2015	Added 9.2.2 Pressure Monitoring System

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This product can not be modified without the written approval of Tronair, Inc. Any modifications done without written approval voids all warranties and releases Tronair, Inc., it suppliers, distributors, employees, or financial institutions from any liability from consequences that may occur. Only Tronair OEM replacement parts shall be used.

1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

Ground Test Tool (GTT) Pressure Monitoring Box

1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit.

1.3 MANUFACTURER

TRONAIR, Inc.
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: (419) 866-6301 or 800-426-6301
Fax: (419) 867-0634
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1.4 FUNCTION

This unit displays the input and output pressures for the Ground Test Tool.

1.5 REQUIREMENTS

Adequate electrical power must be provided for proper functioning of the unit. See the unit nameplate for proper voltage and frequency.

2.0 SAFETY INFORMATION

2.1 USAGE AND SAFETY INFORMATION

To ensure safe operations, please read the following statements and understand their meaning. Also refer to your aircraft manufacturer's manual for other important safety information.

WARNING! — Warning is used to indicate the presence of a hazard that ***can cause severe personal injury, death, or substantial property damage*** if the warning notice is ignored.

CAUTION! — Caution is used to indicate the presence of a hazard that ***will or can cause minor personal injury or property damage*** if the caution notice is ignored.

2.2 EXPLANATION OF WARNING & DANGER SIGNS

Accidental Starts! Before servicing the equipment, always disconnect electrical power supply to prevent accidental starting.

Electrical Shock! Never touch electrical wires or components while the unit is attached to the power source. They can be sources of electrical shock.

2.3 COMPONENT SAFETY FEATURES

- Power Module Fuse

2.4 PERSONAL PROTECTION EQUIPMENT

- Safety glasses must be worn when operating the unit.

2.5 SAFETY GUIDELINES

- Operator must be properly trained prior to operating the unit.
- Power switch must be in "Off" position when connecting or disconnecting transducer harness to the GTT.

2.6 GENERAL COMMENT

The unit is intended to be operated by personnel trained in the proper use in conjunction with the aircraft maintenance manual.

3.0 ELECTRICAL POWER REQUIREMENTS

See serial number plate on outside of box.

4.0 PACKAGING AND STORAGE

4.1 PACKAGING REQUIREMENTS

- The box is a storage case that is suitable for shipment.

4.2 METHODS OF HANDLING

- The box can be carried by hand.
- No specific methods of handling are required.

4.3 STORAGE

- The box is suitable for indoor storage. Protect it from moist environments.

4.4 STORAGE SPACE AND HANDLING FACILITIES

- Minimum: 24 in (61 mm) length x 24 in (61 mm) width x 24 in (61 mm) height
- No specific handling facilities are required.

5.0 TRANSPORTATION

5.1 HANDLING POINTS

- A handle is provided on the top of the box for lifting.

5.2 WEIGHT

- 15 lbs (6.8 kg)

6.0 PREPARATION PRIOR TO FIRST USE

6.1 GENERAL

Prior to operating the unit, the user should become familiar with the Operation & Service Manual.

7.0 TRAINING

7.1 TRAINING REQUIREMENTS

The employer of the operator is responsible for providing a training program sufficient for the safe operation of the unit.

7.2 TRAINING PROGRAM

The employer provided operator training program should cover safety procedures concerning use of the unit in and around the intended aircraft at the intended aircraft servicing location.

7.3 OPERATOR TRAINING

The operator training should provide the required training for safe operation of the unit.

8.0 INSTALLATION

8.1 INSTALLATION REQUIREMENTS

- The inlet pressure cable shall be connected to the inlet pressure transducer on the ground test tool
- The discharge cable shall be connected to the discharge return transducer on the ground test tool
  Interfaces with GTT models:
  - AGE17077
  - AGE17077A
  - AGE17077B
  - AGE17078
  - AGE17079A
  - AGE17080A

WARNING!

The box must be kept 18 in (45.72 cm) above finished floor at all times during operation.

- The tool shall be plugged into the nearest outlet
- Turn on the power switch
- All readout lights should be illuminated and functioning
- The box should be placed in a location where the readout is clearly visible for monitoring. It is recommended that the unit be located on or adjacent to the hydraulic cart providing power to the GTT

9.0 OPERATION

9.1 OPERATING PARAMETERS

- The user shall use the unit in accordance with the aircraft manufacturer's instructions.
- The user shall operate the unit in accordance with the Operation & Service Manual.
- The employer of the operator shall provide all necessary training.

WARNING!

- **Do not exceed 100 psig on the return system. Excessive back pressure can cause premature failure of the return shaft seal.**
- **Slowly increase the pressure on the hydraulic cart per AMM making sure that he return discharge pressure never exceeds 100 psig. Monitor pressure on the box readout at all times.**

9.2 NUMERICAL VALUES

9.2.1 Physical

- Weight: 15 lbs (6.8 kg)
- Dimensions:
  - Width 9.8 in (24.9 cm)
  - Height 8.4 in (21.3 cm)
  - Depth 11.8 in (30 cm)
- Power Cord: 6.5 ft (2 m) long

9.2.2 Pressure Monitoring System

Accuracy of pressure monitoring system when combined with pressure transducers EC-1851 (Return) and EC-1852 (Pressure) form the RAT GTT back drive assembly:
Pressure System: 0-5000 psi (0-344.7 bar) ± 7.5 psi (.52 bar)
Return System: 0-1500 psi (0-103 bar) ± 2.25 psi (.16 bar)

10.0 PROVISION OF SPARES

10.1 SOURCE OF SPARE PARTS

TRONAIR, Inc.
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: (419) 866-6301 or 800-426-6301
Fax: (419) 867-0634
E-mail: sales@tronair.com
Website: www.tronair.com

10.2 RECOMMENDED SPARE PARTS LISTS

It is recommended that the following spare parts be kept on hand and available for immediate use during maintenance.

10.2.1 Spare Electrical Parts

Part Number	Description	Qty
EC-2815	Cord, Power IEC	1
EC-2816	Cord, Power	1
EC-2818	Harness, Transducer	1
EC-2821	Fuse, 2A, Time Delay	1

11.0 CALIBRATION OF INSTRUMENTATION

The unit can be returned to Tronair for calibration. Units returned to Tronair for calibration will be tested with standards traceable to N.I.S.T. (National Institute of Standards and Technology). Tronair recommends calibration of instrumentation at yearly intervals, but actual calibration dates may be based upon frequency of use and the end users quality system. For information on returning units for calibration, Reference 11.1 – Source of Calibration and APPENDIX II Calibration Verification Procedure.

11.1 SOURCE OF CALIBRATION

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12.0 IN SERVICE SUPPORT

Contact Tronair, Inc. for technical services and information. See Section ***1.3 – Manufacturer***.

13.0 GUARANTEES/LIMITATION OF LIABILITY

Tronair products are warranted to be free of manufacturing or material defects for a period of one year after shipment to the original customer. This is solely limited to the repair or replacement of defective components. This warranty does not cover the following items:

a) Parts required for normal maintenance
b) Parts covered by a component manufacturers warranty
c) Replacement parts have a 90-day warranty from date of shipment

If you have a problem that may require service, contact Tronair immediately. Do not attempt to repair or disassemble a product without first contacting Tronair, any action may affect warranty coverage. When you contact Tronair be prepared to provide the following information:

a) Product Model Number
b) Product Serial Number
c) Description of the problem

If warranty coverage is approved, either replacement parts will be sent or the product will have to be returned to Tronair for repairs. If the product is to be returned, a Return Material Authorization (RMA) number will be issued for reference purposes on any shipping documents. Failure to obtain a RMA in advance of returning an item will result in a service fee. A decision on the extent of warranty coverage on returned products is reserved pending inspection at Tronair. Any shipments to Tronair must be shipped freight prepaid. Freight costs on shipments to customers will be paid by Tronair on any warranty claims only. Any unauthorized modification of the Tronair products or use of the Tronair products in violation of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by Tronair will immediately void any warranty, express or implied.

The obligations of Tronair expressly stated herein are in lieu of all other warranties or conditions expressed or implied. **Any unauthorized modification of the Tronair products or use of the Tronair products in violations of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by Tronair will immediately *void any warranty, express or implied* and Tronair *disclaims any and all liability for injury (WITHOUT LIMITATION and including DEATH), loss or damage arising from or relating to such misuse*.**

14.0 APPENDICIES

APPENDIX I Declaration of Conformity
APPENDIX II Calibration Verification Procedure

APPENDIX II

Declaration of Conformity

DECLARATION of CONFORMITY

The design, development and manufacture is in accordance with European Community guidelines

GROUND TEST TOOL
PRESSURE MONITORING BOX
AGE18380

Relevant directive complied with by the machinery:
2006/42/EC

Relevant standards complied with by the machinery:
EN ISO 4413:2010
APR 1247D
EN 1915-1:2013
EN 60204-1-2006

Identification of person empowered to sign on behalf of the Manufacturer:

Patrick Finch

Quality Assurance Representative

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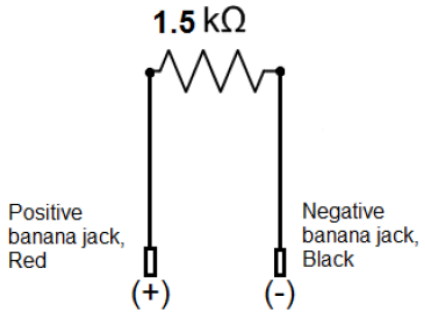
APPENDIX II

Calibration Verification Procedure

TEST EQUIPMENT REQUIRED

DESCRIPTION	DETAILS	QTY
Excitation Test Fixture (1.5 K ohm , ½ watt resistor)	See below	1
Digital Multi-meter	0-30 VDC	1
DC Power Supply	0-10 VDC	1



EXCITATION TEST FIXTURE

EXCITATION OUTPUT TEST

- ☐ Set the power switch on the pressure monitoring box to **OFF**.
- ☐ Plug Transducer Harness into the J3 cable port of the AGE18380 pressure monitoring box.
- ☐ Connect the positive red banana plug of the EXCITATION TEST FIXTURE to the positive red OUTPUT port on the AGE18380 pressure monitoring box.
- ☐ Connect the negative black banana plug of the EXCITATION TEST FIXTURE to the negative black OUTPUT port on the AGE18380 pressure monitoring box.
- ☐ Using a digital multi-meter, attach the positive lead to the positive red side of the EXCITATION TEST FIXTURE and the negative lead to the negative black side of the EXCITATION TEST FIXTURE.
- ☐ Connect the Discharge Pressure Transducer (P2) connector of the Test harness into the Cable Test port on the inside of the AGE18380 pressure monitoring box.
- ☐ Set the power switch on the pressure monitoring box to **ON**.
- ☐ Verify the excitation voltage is **24 ± 2V DC**. Record per the data sheet.
- ☐ Set the power switch on the pressure monitoring box to **OFF**.
- ☐ Disconnect the Discharge Pressure Transducer (P2) connector of the Test harness from the Cable Test port on the inside of the AGE18380 pressure monitoring box.
- ☐ Connect the Inlet Pressure Transducer (P1) connector of the Test harness into the Cable Test port on the inside of the AGE18380 pressure monitoring box.
- ☐ Set the power switch on the pressure monitoring box to **ON**.
- ☐ Verify the voltage for the inlet meter excitation is **24 ± 2V DC**. Record per the data sheet.
- ☐ Set the power switch on the pressure monitoring box to **OFF**.
- ☐ Disconnect the EXCITATION TEST FIXTURE from the AGE18380 pressure monitoring box.

METER INPUT TEST

- ☐ Set the power switch on the pressure monitoring box to **OFF**.
- ☐ Connect the Inlet Pressure Transducer (P1) connector of the Test harness into the Cable Test port on the inside of the AGE18380 pressure monitoring box.
- ☐ Short the positive INPUT port to the negative INPUT port of the AGE18380 pressure monitoring box.
- ☐ Set the power switch on the pressure monitoring box to **ON**.
- ☐ Verify the INLET meter displays **0 ± 5**. Record per the data sheet.
- ☐ Set the power switch on the pressure monitoring box to **OFF**.
- ☐ Remove the short.
- ☐ Connect a DC power supply to the INPUT port on the AGE18380 pressure monitoring box.
- ☐ Attach the positive lead of a digital multi-meter to the positive lead of the DC power supply.
- ☐ Attach the negative lead of the same multi-meter to the negative lead of the DC power supply.
- ☐ Set the power switch on the pressure monitoring box to **ON**.
- ☐ Set the power switch on the DC power supply and digital multi-meter to **ON**.
- ☐ Adjust the DC power supply to **2.5V ±0.2V DC**.
- ☐ Verify the INLET meter displays **2500 ± 200**. Record per the data sheet.
- ☐ Adjust the DC power supply to **5.0V ±0.2V DC**.
- ☐ Verify the INLET meter displays **5000 ± 200**. Record per the data sheet.
- ☐ Adjust the DC power supply to **0.0V ±0.2V DC**.
- ☐ Set the power switch on the DC power supply and digital multi-meter to **OFF**.
- ☐ Set the power switch on the pressure monitoring box to **OFF**.
- ☐ Disconnect the DC power supply and digital multi-meter from the INPUT port on the AGE18380 pressure monitoring box.
- ☐ Disconnect the Inlet Pressure Transducer (P1) connector of the Test harness from the Cable Test port on the inside of the AGE18380 pressure monitoring box.
- ☐ Connect the Discharge Pressure Transducer (P2) connector of the Test harness into the Cable Test port on the inside of the AGE18380 pressure monitoring box.
- ☐ Short the positive INPUT port to the negative INPUT port of the AGE18380 pressure monitoring box.
- ☐ Set the power switch on the pressure monitoring box to **ON**.
- ☐ Verify the DISCHARGE meter displays **0 ± 5**. Record per the data sheet.
- ☐ Set the power switch on the pressure monitoring box to **OFF**. Remove the short.
- ☐ Attach the positive lead of a digital multi-meter to the positive lead of the DC power supply.
- ☐ Attach the negative lead of the same multi-meter to the negative lead of the DC power supply.
- ☐ Connect the positive lead of the DC power supply to the positive orange INPUT port on the AGE18380 pressure monitoring box.
- ☐ Connect the negative lead of the DC power supply to the negative brown INPUT port on the AGE18380 pressure monitoring box.
- ☐ Set the power switch on the pressure monitoring box to **ON**.
- ☐ Set the power switch on the DC power supply to **ON**.
- ☐ Adjust the DC power supply to **2.5V ±0.2V DC**.
- ☐ Verify the DISCHARGE meter displays **750 ± 100**. Record per the data sheet.
- ☐ Adjust the DC power supply to **5.0V ±0.2V DC**.
- ☐ Verify the DISCHARGE meter displays **1500 ± 100**. Record per the data sheet.
- ☐ Adjust the DC power supply to **0.0V ±0.2V DC**.
- ☐ Set the power switch on the DC power supply to **OFF**.
- ☐ Set the power switch on the pressure monitoring box to **OFF**.

- Disconnect the positive lead of the DC power supply from the positive orange INPUT port on the AGE18380 pressure monitoring box.
- Disconnect the negative lead of the DC power supply from the negative brown INPUT port on the AGE18380 pressure monitoring box.
- Disconnect the Discharge Pressure Transducer (P2) connector of the Test harness from the Cable Test port on the inside of the AGE18380 pressure monitoring box.

DATA SHEET				
Model Number		**Serial Number**		
Test Meter Model Number		**Test Meter S/N**		
Test Meter Calibration Date				
Checked By		**Inspected By**		
Procedure Description	**Minimum**	**Maximum**	**Units**	**Reading**
Visual inspection	-	-	☑	
Discharge excitation	22	26	VDC	
Inlet excitation	22	26	VDC	
Inlet meter shorted	-5	5	PSI	
Inlet meter 2.5VDC	2300	2700	PSI	
Inlet meter 5.0 VDC	4800	5200	PSI	
Discharge meter shorted	-5	5	PSI	
Discharge meter 2.5 VDC	650	850	PSI	
Discharge meter 5.0 VDC	1400	1600	PSI	