

DRAWING LIST FOR TRUE QUANTITY GAUGE INSTALLATION

6001-DL

Rev 5

KCR, TRR

19 JANUARY 2024

TRR

Drawing list on second page

"TRUE QUANTITY" GAUGE SYSTEM

CONFIGURATIONS

The following drawing list is applicable for the following configurations for the True Quantity Gauge (TQG) System:

- Configuration 1: Basic System Installation
- Configuration 2: System Installation with Remote Display Unit
- Configuration 3: System Installation with Remote Display Unit and Loader Power Kit

DRAWING LIST

Document Number	Title	Rev	Date	Config			
				1	2	3	
Installation Data							
*	6001-II	Installation Instructions	1	22 FEB 2024	X	X	X
*	6-0-0-TAB	True Quantity Gauge Installation	10	15 JUL 2024	X	X	X
*	6-0-1-000	Unit Wiring Overview	4	27 FEB 2024	X	X	X
*	6-0-2-000	Main Display Mounting	F	21 DEC 2021	X	X	X
*	6-0-3-000	Remote Display Mounting	F	1 MAY 2020		X	X
*	6-0-4-000	Pressure Probe Mounting	C	23 SEP 2014	X	X	X
*	6-0-5-000	Quantity Probe Mounting	15	22 FEB 2024	X	X	X
*	6-0-6-000	Loader Power Mounting	C	18 JAN 2019			X
Manufacturing Data							
	6-1-0-000	Main Display Unit	7	15 JUL 2024	X	X	X
*	6-1-4-00E	Front Cover, English	2	15 JUL 2024	X	X	X
*	6-1-4-00M	Front Cover, Metric	2	15 JUL 2024	X	X	X
	6-2-0-000	Remote Display Unit	5	15 JUL 2024		X	X
	6-3-0-TAB	Quantity Probe Assembly	10	15 JUL 2024	X	X	X
	6-3-1-TAB	Quantity Probe	16	15 JUL 2024	X	X	X
	6-3-2-000	Probe Float	2	15 JUL 2011	X	X	X
	6-3-3-000	Quantity Probe Clamp	10	15 JUL 2024	X	X	X
	6-4-0-000	Pressure Probe	6	15 JUL 2024	X	X	X
	6-5-0-000	Quantity Probe Cable	8	15 JUL 2024	X	X	X
	6-6-0-000	Pressure Cable	7	15 JUL 2024	X	X	X
	6-7-0-000	Power Cable	10	15 JUL 2024	X	X	X
	6-8-0-000	Remote Cable	10	15 JUL 2024		X	X
*	6-9-0-000	Loader Power Kit	2	15 JUL 2024			X
	6-9-1-000	Loader Power Unit	2	15 JUL 2024			X
	6-9-2-000	Loader Quantity Power Switch	2	15 JUL 2024			X
	6-9-3-000	Loader Power Cable	7	15 JUL 2024			X
	6001-0001	Main Display Box	7	19 JAN 2024	X	X	X
	6001-0001-01	Main Box PCB Brain Assembly	28	4 APR 2024	X	X	X
	6001-0001-02	Aluminum Extrude Box Case	2	19 JAN 2024	X	X	X
	6001-0001-03	Cast Aluminum Back Cover	3	19 JAN 2024	X	X	X
	6001-0001-04	Front Cover	4	4 APR 2024	X	X	X
	6001-0001-05	4 Digit Display Assembly	30	27 NOV 2017	X	X	X
	6001-0001-06	#6-32 x 1 Pan Head SS Screw	2	19 JAN 2024	X	X	X
	6001-0001-07	#6-32 x ½ Pan Head Screw w/O-Ring	2	19 JAN 2024	X	X	X
	6001-0002	Remote Display Box	7	19 JAN 2024		X	X
	6001-0002-01	Remote Box PCB Brain Assembly	30	26 APR 2019		X	X
	6001-0002-03	Remote Cast Aluminum Back Cover	3	19 JAN 2024		X	X
	6001-0002-04	Remote Front Cover	3	19 JAN 2024		X	X

Document Number	Title	Rev	Date	Config		
				1	2	3
6001-0002-05	3 Digit Display PCB Assembly	30	27 NOV 2017	X	X	X
6001-0003	Loader Power Unit	3	22 FEB 2024			X
6001-0003-01	Loader Power PCB Assembly	2	19 JAN 2024			X
6001-0003-02	Loader Power Case	2	19 JAN 2024			X
6001-0003-03	Loader Power Unit Cover	2	19 JAN 2024			X
6001-0003-04	3 POS Term Block	1	4 JAN 2018			X
6001-0003-05	#6-32 ½ Flat Head Screw	2	19 JAN 2024			X
6001-0004	Button Wire Assembly	2	19 JAN 2024			X
6001-0004-01	Momentary Button	1	10 JAN 2018			X
6001-0004-02	CONN 522660211	1	10 JAN 2018			X
6001-0004-03	CONN 522130211	1	10 JAN 2018			X
Engineering Analysis						
* 6001-WEIGHT	Weight & Balance Analysis	1	10 AUG 2023	X	X	X
* 6001-ELECTRICAL	Electrical Load Analysis	2	19 MAR 2024	X	X	X
Continued Airworthiness						
* 6001-ICA	Instruction for Continued Airworthiness	1	17 AUG 2023	X	X	X
Flight Manual Supplement						
* 6001-FMS	Flight Manual Supplement	1	15 DEC 2023	X	X	X
Test Plan						
6001-GROUND TEST	Ground Test Procedure	2	21 FEB 2024	X	X	X
* 6001-INSTALL TEST	Install Test Procedure	1	16 AUG 2023	X	X	X
Process Specification						
PS 202	Identification Marking of Parts	2	15 JUL 2024	X	X	X

Note:

(*) Indicates Drawing is included in Installation Package and ICA

[illegible]

INSTALLATION INSTRUCTIONS

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All drawing list documents reflect the aircraft model number that stands for all models in the series.

For example:

AT-400 Series stands for AT-400, AT-400A

AT-401 Series stands for AT-401, AT-401A, AT-401B

AT-402 Series stands for AT-402, AT-402A, AT-402B

AT-502 Series stands for AT-502, AT-502A, AT-502B

AT-504 Series stands for AT-504

AT-602 Series stands for AT-602

AT-802 Series stands for AT-802, AT-802A

400 Thrush stands for Thrush models: S2R, S2R-G1, S2R-G5, S2R-G6, S2R-T11, S2R-T-15

510 Thrush stands for Thrush models: S2R-G10, S2R-H80, S2R-T34, S2R-T45, S2R-T65 S2R-510

550 Thrush stands for Thrush models: S2RHG-T34, S2RHG-T65

710 Thrush stands for Thrush models: S2R-T660

"TRUE QUANTITY" GAUGE SYSTEM**CONFIGURATIONS**

The following parts list is applicable for the following configurations for the True Quantity Gauge (TQG) System:

- Configuration 1: Basic System Installation
- Configuration 2: System Installation with Remote Display Unit
- Configuration 3: System Installation with Remote Display Unit and Loader Power Kit

REQUIRED DOCUMENTS

- 6001-DL
- 6001-INSTALL TEST
- AC43.13-1B

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PARTS LIST

QTY	DESCRIPTION		PART NUMBER	Config		
				1	2	3
1	Main Display Unit		PN 6-1-0-000	X	X	X
1	Pressure Probe		PN 6-4-0-000	X	X	X
1	Quantity Probe	AT-400 Series AT-401 Series AT-402 Series AT-502 Series AT-504 Series	PN 6-3-1-570 was 6-3-1-001*	X	X	X
		AT-602 Series	PN 6-3-1-690 was 6-3-1-002*			
		AT-802 Series	PN 6-3-1-770 was 6-3-1-003*			
		400 Thrush	PN 6-3-1-555			
		510 Thrush	PN 6-3-1-630			
		550 Thrush	PN 6-3-1-715			
		710 Thrush	PN 6-3-1-770			
1	Quantity Probe Clamp		PN 6-3-3-000	X	X	X
1	Probe Float		PN 6-3-2-000	X	X	X
1	Pressure Probe		PN 6-4-0-000	X	X	X
1	Quantity Probe Cable		PN 6-5-0-000	X	X	X
1	Pressure Probe Cable		PN 6-6-0-000	X	X	X
2	Grommets		MS 35 489-XX	X	X	X
1	Washer		NAS 1149C1290R	X	X	X
1	Nut		MS21083C12	X	X	X
1	Power Cable		PN 6-7-0-000	X	X	X
OPTIONAL EQUIPMENT						
1	Remote Display Unit		PN 6-2-0-000		X	X
1	Remote Cable		PN 6-8-0-000		X	X
OPTIONAL EQUIPMENT						
1	Loader Power Unit		PN 6-9-1-000			X
1	Switch		PN 6-9-2-000			X
1	Loader Power Cable		PN 6-9-3-000			X

NOTE:

*The Drawing 6-3-1-TAB was updated to have the last three digits of the part number be directly related to the length of the quantity probe.

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INSTALLER SUPPLIED PARTS LIST

QTY	DESCRIPTION	PART NUMBER	Config		
			1	2	3
1	1-amp Klixon CB	7277-2-1	X	X	X
1	CB Label	"Hopper Display"	X	X	X
1	RTV Silicone	Permatex Ultra Black	X	X	X
1	Aircraft Paint	Aircraft Maintenance Manual	X	X	X
ASREQ	Left & Right Mount Brackets	See DWG 6-0-2-000	X	X	X
ASREQ	Main Display Mount Screws	AN526-632 DWG 6-0-2-000	X	X	X
ASREQ	Main Display Mount Nuts	AN365-632 DWG 6-0-2-000	X	X	X
1	1/4" NPT to 1/8" NPT Reducer	3300 X4X2 Weatherhead	X	X	X
1	1/8" NPT to 1/4" Compression	68X4 Weatherhead	X	X	X
1	1/4" Compression Insert Support	2030X44 Weatherhead	X	X	X
ASREQ	Adel Clamp Qty Cable	MS21919-4	X	X	X
ASREQ	TYRAP	PN TY525M	X	X	X
OPTIONAL EQUIPMENT					
ASREQ	Breaker to Term 1 Wire	M-22759/16-20-9			X
ASREQ	Batt Relay to Breaker Wire	M-22759/16-18-9			X
1	Button Label	"Loader Quantity Power"			X
1	CB or Fuse Label	"Loader Quantity Switch"			X
1	1-amp CB or Fuse	CB 7277-2-1 Fuse 12066681			X

All installer supplied parts can use Equivalent Parts

ASREQ is for As Required

INSTALLATION: Airplane

1) Opening Aircraft

- a) Remove Right Cowl
- b) Disconnect the Battery
- c) Remove upper skin panels on right side above the wing and both skin panels below the cockpit door.
- d) Remove left and right skin panels just aft of cockpit.

2) Main Display Installation

- a) Reference Drawing 6-0-2-000 Main Display Mounting
- b) Main display (PN 6-1-0-000) may be mounted on top of the dash (Glare Shield) using customer fabricated mounting brackets. Or in an in-dash mount in a cutout in the upper instrument panel.
- i) If mounting using brackets, fabricate the brackets and secure brackets to top of dash as shown in Drawing 6-0-2-000. Secure brackets using AN526-832 screws and AN365-832 nuts or similar. Remove both lower Face Plate Display screws. Insert screws through fabricated

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brackets and secure screws back into the Main Display. Use 3M Dual Lock Heavy Duty to secure cable end of main display to top of dash. It is advised to paint or cover any shiny or silver exposed hardware that is above the top of the dash to reduce the chance of glare.

- ii) If mounting using in-dash mount, locate an area on the upper dash that has adequate space for the Main Display. The original hopper quantity gauge location is normally a good place. The spare faceplate can be used as a template to find and verify there is adequate space. Make a cutout as shown in Drawing 6-0-2-000. Clean and Paint exposed metal per Aircraft Maintenance Manual. Remove the four Face Plate Display Screws. Insert screws through new holes in Dash and secure screws back into the Main Display.

3) Pressure Probe Installation

- a) Reference Drawing 6-0-4-000 Pressure Probe Mounting
- b) Pressure Probe (PN 6-4-0-000) is secured to the aircraft tube frame structure. Follow the boom pressure line from the lower T-boom up into the fuselage.
- c) Trim the line approximately one foot above the belly skin.
- d) Using customer supplied fittings (example parts are shown in drawing 6-0-4-000) adapt the boom pressure line to connect to the ¼" NPT Male thread of the Pressure probe.
- e) The pressure probe should be oriented so the Electrical connection is within 45 degrees of straight up vertical, this positions the boom pressure line to have a path to drain out the bottom within 45 degrees of vertical. To accomplish this the Pressure Probe can be mounted to a vertical or diagonal tube section.
- f) The pressure probe and adapter hardware can now be secured to the aircraft frame using at least 2 sets of cable ties. Each set has one cable tie going around the frame and Pressure Probe or Adapters and a second cable tie going around the first to separate frame from Pressure Probe or Adapters.
- g) Remove old pressure gauge.

4) Quantity Probe Installation

- a) Reference Drawing 6-0-5-000 Quantity Probe Mounting drawing.
- b) Quantity Probe Assembly (PN 6-3-0-XXX See 6-0-0-TAB to find part number for specific model aircraft) is mounted on top of the hopper, piercing the hopper and going down to just above the dump gate.
- c) Drill .75" In top of hopper as indicated on Drawing 6-0-5-000.
 - i) **Note:** Fire gates can have different mount hole locations than Ag gates for the same model aircraft.
- d) Insert Hopper Probe 6-3-1-XXX through hole, install washer and ¾" nut as probe is installed.
- e) Probe connector should be oriented to the left side of the aircraft if a low-profile probe is installed.
- f) Rought probe down towards center of dump gate at the bottom of the aircraft.
 - i) **Note:** On AT-602 and AT-802 Aircraft the probe will need to be bowed/curved to reach under the spar and get to the bottom of the hopper. Bending of the probe should be kept to a minimum, no bend is permissible within 6" of the probe head. And the bend radius should never be less than 18". Kinking of the rod will destroy the Probe.
 - (1) AT-602 Bend a 23-degree bend centered on the length of the rod with a 55" radius.

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- (2) AT-802 Bend a 20-degree bend centered on the length of the rod with a 36" radius.
 - (3) These bends are approximate and might need to be adjusted for final fit.
 - g) Seal both inside and outside of $\frac{3}{4}$ " hole with RTV silicone.
 - i) **NOTE:** It is recommended to dry fit and check for float clearance before installing with RTV silicon and torquing all hardware.
 - h) Install Quantity Probe Float 6-3-2-000 on probe, the side of the float labeled "NO" should be placed towards the probe head.
 - i) The Quantity Probe Clamp 6-3-3-000 can then be secured to the Probe.
 - i) The top of the clamp is 1.5" from the end of the quantity probe.
 - ii) The tab on the clamp will need to be bent and drilled to hold the end of the probe in position. See Drawing 6-0-5-000 for model specific mounting
 - iii) Make sure float can freely move up and down the rod without hitting or interfering with parts or equipment in the hopper.
 - iv) The clamp is secured to the Gate box internal bracing. Reference Drawing 6-0-5-000 for better detail.
 - v) **Note:** Quantity Probe Clamp 6-3-3-000 May need to be drilled out to .44" Dia for Rod Clearance.
- 5) **Running the Cables General Note:** Run the cables away from high power lines such as: Air conditioner, Blower, motor, pump, or main bus lines. If a cable must pass one of these lines try and pass at a right angle. See Drawing 6-0-0-TAB for reference.

6) Quantity Probe Cable Installation

- a) To connect the Quantity Probe to the main box, use the Quantity Probe Cable (PN 6-5-0-000). You can identify this cable because it is the only one with a 90-degree connection. The end with the 90-degree connection connects to the head of the quantity probe. The other end of the cable connects to the back of the main display unit to the port labeled "QTY GAUGE".
- b) Connected the end of the Quantity Probe Cable with the 90-degree fitting to the head of the Quantity Probe
- c) Seal the Connection with RTV Silicone to prevent water from gaining access to the connectors.
- d) Secure the Cable to the Probe head with a cable tie as shown in Drawing 6-0-5-000.
- e) The cable can then be run down the right side of the hopper and brought into the fuselage by creating a notch in the edge of the hopper flange.
- f) The Cable should be secured to the hopper by use of RTV silicone or proper sized Adel Clamps.
- g) Where the Cable passes through the notch in the hopper the cable should be secured to prevent any movement in the slot using RTV silicone.
- h) The Cable can then be brought aft along the upper right longeron secured to the longeron using cable ties.
- i) To enter the cockpit an existing pass through can be used if available and cable length allows. If a new pass through is needed. Drill a 1" hole on the right-side wall of the cockpit and install cable and grommet.
 - i) **Note:** Before drilling hole check that Remote Cable (if installed), Pressure Cable and Quantity cables can all reach before drilling the hole.
- j) Connect the cable to the port on the Main Display Unit labeled "QTY GAUGE".

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k) Excess cable can be coiled and verify all cables inside are properly secured with cable ties.

7) Power Cable Installation

- a) To connect the power to the main box, use the Power Cable (PN 6-7-0-000). You can identify this cable because it has a connector only on one end.
- b) The end of the cable with the connector connects to the back of the Main Display Unit to the port labeled "POWER".
- c) The end without a connector gets terminated as follows:
 - i) Black wire: connects to aircraft Ground
 - ii) Blue wire: connects to the aircraft main bus through a 1-amp pull style breaker (Klixon 7277-2-1 or equivalent)
 - (1) The Breaker needs to be labeled (Hopper Display) and is installed in the breaker panel.
 - iii) Brown wire: connects to the Torque sense side of the Hobbs meter
 - iv) **Note:** Non terminated ends of wires need to be terminated using AMP terminal ends or other methods acceptable by AC 43.13-1B:
 - v) **Note:** When connecting cable to Ground, Breaker, and Hobbs meter the cable can be trimmed to a desired length to limit too much extra length.
- d) Excess cable can be coiled and verify all cables inside are properly secured with cable ties.

8) Pressure Probe Cable Installation

- a) To connect the Pressure Probe to the Main Display Unit, use the Pressure Probe Cable (PN 6-6-0-000). You can identify this cable it will be the larger diameter cable with 4 pins in the male end.
- b) Connect the female end of the cable to the Pressure Probe.
- c) The Pressure Cable is routed up from the Pressure Gauge and then into the cockpit.
 - i) To enter the cockpit an existing pass thought can be used if available and cable length allows. If a new pass through is needed. Use the 1" hole from when installing the Quantity Cable.
- d) The remaining Male end of the Pressure cable connects to the back of the Main Display Unit to the port labeled "PRES GAUGE".
- e) Excess cable can be coiled and verify all cables inside are properly secured with cable ties.

9) REMOTE DISPLAY & CABLE INSTALLATION (optional) If not install proceed to step 10

- a) Remote Display Installation
 - i) Reference Drawing 6-0-3-000 Remote Display Mounting drawing.
 - ii) Remote Display Unit (PN 6-2-0-000) may be mounted in the upper aft fuselage skin (turtle Deck), or in Factory Remote Gauge Mount.
 - (1) If Mounting In upper aft fuselage skin, use the 1:1 Scale cutout drawing on 6-0-3-000 to position indicated hole 24" aft of cockpit door low rear corner, and ½" above the Side skin. Transfer outline and hole locations from drawing to upper skin. Drill the (4) mounting holes, and cut out window for display. Treat and paint cutout and holes per Aircraft Maintenance Manual. Remove 4 Faceplate screws from remote display unit. Place screws through new mounting holes, and then re-install screws into Remote display unit. Seal Mounting Holes and Window with RTV Silicon.
 - (2) If mounting in Factory Remote Gauge Mount. Use the 1:1 Scale cutout drawing on 6-0-3-000 to position intended Display cutout on the mounting plate in line with window on skin panel. Transfer outline and hole locations from drawing to mounting plate. Drill the

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(4) mounting holes, and cut out window for display. Treat and paint cutout and holes per Aircraft Maintenance Manual. Remove 4 Faceplate screws from remote display unit. Place screws through new mounting holes, and then re-install screws into Remote display unit.

b) Remote Box Cable Installation

- i) Install the Remote Cable (PN 6-8-0-000) to connect the Remote Display to the Main Display
- ii) You can identify this cable it will be the smaller diameter cable with 4 pins in the male end.
- iii) The female end of the cable connects to the Remote Box.
- iv) The other end of the cable connects to the back of the main box to the port labeled "REMOTE".
- v) The Cable is routed from the remote display into the cockpit.
- vi) To enter the cockpit an existing pass through can be used if available and cable length allows. If a new pass through is needed. Use the 1" hole from when installing the Quantity Cable.
- vii) Excess cable can be coiled and verify all cables inside are properly secured with cable ties.

10) LOADER POWER KIT (optional) If not install proceed to step 11**a) Loader Power Unit**

- i) Reference Drawing 6-0-6-000 Loader Power Mounting Drawing.
- ii) Loader Power Unit (PN 6-9-1-000) is mounted behind upper dash close to the Main Display Unit. Using the tabs on the side of the Loader Power Unit, Secure the Loader Power Unit to the dash support structure using #6 Hardware. Example Hardware, AN526-632 Screws and AN365-632 Nuts.

b) Loader Quantity Power Switch

- i) Reference Drawing 6-0-6-000 Loader Power Mounting drawing.
- ii) Loader Quantity Power Switch (PN 6-9-2-000) may be mounted in the upper aft fuselage skin (turtle Deck), in horizontal stringer camlock hat channel, or in Factory Remote Gauge Mount.
 - (1) If mounting in upper aft fuselage skin, drill a $\frac{3}{4}$ " hole in upper aft fuselage skin as shown on the drawing 6-0-6-000.
 - (2) If mounting horizontal stringer cam lock hat channel, Drill $\frac{3}{4}$ " hole through center of stringer at least 1" away from any other hole, see drawing 6-0-6-000. Transfer the center of the hole to the skin and drill a 1" diameter hole to skin above new hole.
 - (3) If mounting in factory remote gauge mount, first verify that the mount does come up to be flush with the backside of the skin. Then Drill $\frac{3}{4}$ " hole through the factory remote gauge mount on surface that is flush with backside of skin. Transfer the center of the hole to the skin and drill a 1" diameter hole to skin above new hole.
- iii) All Mount locations: Treat and paint hole per Aircraft Maintenance Manual.
- iv) Install Switch from outside, secure switch with hardware included on switch.
- v) Label the button "Loader Quantity Power"
- vi) Cable can follow remote cable back to cockpit and will connect to the loader power unit.
- vii) Bring switch cable to the Loader Power Unit, it will be connected to the terminal block, Wire can be trimmed to reduce excessive length.
- viii) Strip both wires to expose approximately $\frac{3}{16}$ " of conductor.

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- ix) Connect one wire into Position 2 of the terminal block on the Loader Power Unit labeled "SWITCH A"
 - x) Connect the second wire into Position 3 of the terminal block on the Loader Power Unit labeled "SWITCH B"
 - xi) Excess cable can be coiled and verify all cables inside are properly secured with cable ties.
- c) Loader Power Cable Installation
- i) Use the Loader Power Cable (PN 6-9-3-000) to connect the Loader Power Unit to the Main Display.
 - ii) Disconnect the Power Cable (PN 6-7-0-000) from the Main Display, the power cable will be the one connected to the port labeled "POWER"
 - iii) Connect the Power Cable to the Loader Power unit port labeled "IN"
 - iv) Connect the Female end of the Loader Power Cable to the port labeled "OUT" on the Loader Power Unit.
 - v) Connect the male End of the Loader Power Cable to the port labeled "POWER" on the Main Display Unit.
 - vi) Excess cable can be coiled and verify all cables inside are properly secured with cable ties.
- d) Loader Power Battery Wire Installation
- i) Run a Loader Power Battery Wire to connect the Loader Power Unit to a power source for use when Aircraft Master is off and Loader Power Unit is energized.
 - ii) See drawing 6-0-6-000 Loader Power Mounting, Install a 1-amp breaker (Klixon 7277-2-1 or equivalent) or 1-amp inline fuse on Relay Mount or Relay Mount Shield.
 - iii) Label it "Loader Quantity Switch".
 - iv) Run a 20 AWG wire from Position 1 of the terminal block on the Loader Power Unit labeled "BATTERY" to the breaker or fuse just installed. To connect the wire to the Loader Power Unit strip 3/16" of wire insert and tighten screw in terminal block. To connect the wire to the breaker or fuse just installed, Use proper AMP terminal connectors or Splice wire per Acceptable AC 43.13-1B process. Wire to be M-22759/16-20-9 or equivalent.
 - v) The now un-connected side of the breaker or fuse just installed is then connected to the Positive side of the Battery Relay coil terminal using a short (approximately 4") piece of 18 AWG wire. This short wire is connected to the battery relay coil terminal using appropriately sized Amp terminal. The other end is connected to the free end of the breaker or fuse just installed, Use proper AMP terminal connectors or Splice wire per Acceptable AC 43.13-1B process. Wire to be M-22759/16-18-9 or equivalent.
- (1) **Note:** To Locate the Positive side of the Battery Relay coil terminal, Follow the positive lead from the Battery up to the relay, this large lead will connect to a large terminal on the relay. There will be a smaller wire going from the large terminal that the positive battery line is connected to. This smaller wire will connect to a smaller terminal on the Relay, this smaller terminal is the Positive side of the Battery Relay coil terminal. You can verify by checking that this smaller terminal has battery voltage independent of master battery switch position.
- 11) Close Aircraft**
- a) Verify all hardware is installed and torqued per AC 43.13-1B
 - b) Verify all cables and wires are properly secured.
 - c) Connect Battery when performing 6001-Install Test

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d) Re-install all panels and cowls

12) Update Aircraft Records**DIP SWITCH SETTINGS**

To check dip switch setting without opening the box refer to the "Main Display Info and Cal" section. The Main Box is the same for all aircraft. The way the box is set for a particular aircraft is thru the dip switch settings.

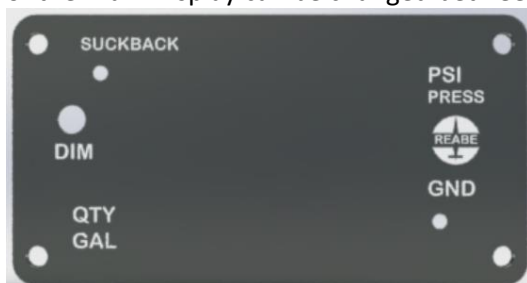
To change the dip switch setting unscrew the dim button cover and take the four screws out of the back of the main box. You will now be able to slide the main board and back out of the box. On the back of the display board, you will see a series of dip switches. The Switches are labeled and switch 1 is the highest on the display board.

Note: For older boxes Serial numbers beginning with A or B, the dip switches are on top of the main board. The switches are labeled and switch 1 should be closest to the display board.

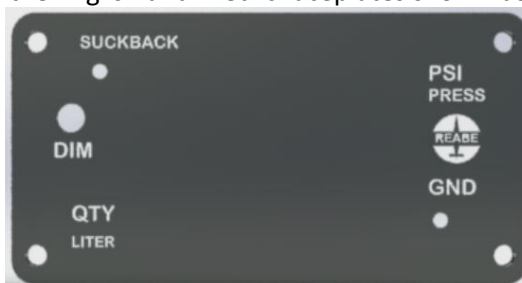
Setting the Switches: Switch 1 is used to select English or Metric units, when switch 1 is turned on then Metric units are selected.

Note: If Metric units are selected the Main Display should be relabeled to indicate "LITER" in place of "GAL", The Remote Display if installed should be relabeled to "LITERS X 10".

Relabeling can be done by using self-adhesive labels applied over top of current labels or the Face Plate of the Main Display can be changed between the English and Metric faceplates shown below.



6-1-4-00E Front Cover, English
Units are labeled "PSI" and "GAL"



6-1-4-00M Front Cover, Metric
Units are Labeled "PSI" and "LITER"

DIP Switch 8 is used to invert ground mode indication; normal setting is DIP Switch 8 off.

Note: In the off position a positive value of above 6v DC is needed on the Brown wire of the POWER CABLE to indicate Ground, and no connection or connection to aircraft ground will then indicate Flight.

"TRUE QUANTITY" GAUGE SYSTEM

The remaining DIP switches are used to select the model aircraft.

Refer to the table for the settings for your aircraft.

Plane	SW Ver Intro *	Display	Switch 2	Switch 3	Switch 4	Switch 5	Switch 6	Switch 7
502 Series	104	AT- 502	OFF	OFF	OFF	OFF	OFF	OFF
400 Series	104	AT- 400	ON	OFF	OFF	OFF	OFF	OFF
401 Series								
402 Series								
602 Series	104	AT- 602	OFF	ON	OFF	OFF	OFF	OFF
802 Series	104	AT- 802	ON	ON	ON	OFF	OFF	OFF
504 Series	108	AT- 504	ON	OFF	ON	OFF	ON	OFF
400 Thrush	111	Thru 400	ON	OFF	ON	OFF	OFF	ON
510 Thrush	107	Thru 510	OFF	OFF	ON	OFF	ON	OFF
550 Thrush	126	Thru 550	OFF	OFF	OFF	OFF	OFF	ON
710 Thrush	123	Thru 710	OFF	OFF	ON	ON	ON	OFF
802 Gen 2	170	Gen 2 802	ON	OFF	OFF	ON	OFF	OFF
802 Gen 3	170	Gen 3 802	ON	ON	OFF	OFF	OFF	OFF

* SW Ver Intro, is the software version that that model airplane was added to the software. Once a model is added it will be in all following software versions.

To check software version, refer to the "Main Display Info and Cal" section.

Any Further Questions Please Email: Troy@ReabeAir.com

Or Call (321) 247-8722 easy to remember as (321) AIR TRACTOR

"TRUE QUANTITY" GAUGE SYSTEM**OPERATION INSTRUCTIONS****Normal Operation/Screen Dimming:**

During operation the display will show the boom pressure reading on the upper line and the hopper quantity on the lower line. There are two green LEDs in the display. The LED labeled "GROUND" is located in the lower right-hand side of the display and this is used to show when the quantity is set to ground mode. The LED labeled "SUCK BACK" is located in the upper left-hand side of the display and this is used to show a negative pressure in the boom. Dim button maybe repeatedly pressed to change cockpit display brightness.

Main Display Info and Cal:

To see what the DIP Switch settings are, hold down the DIM button when the Main Display is powered on, release button once unit powers on and "8888" or "Cal" is displayed. The Main Display will then set a new zero point for the pressure gauge, display the Firmware Version, Units, and Aircraft Selected.

Gyro Attitude Initialization:

With aircraft parked on a level surface, press and hold the DIM button then turn power on. Continue to hold the DIM button through boot sequence until display shows "Press Butt." At this point press DIM 3 times and wait for "Good Cal" to be displayed. Use of the Gyro is intended for Helicopter installations.

6-0-0-570 BOM FOR AT-400, AT-402, AT-502 AT-504 WAS 6-0-0-001

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	6-1-0-000	MAIN DISPLAY UNIT	1
2	6-2-0-000	REMOTE DISPLAY UNIT	1
3	6-3-0-570	QUANTITY PROBE ASSEMBLY	1
4	6-4-0-000	PRESSURE PROBE	1
5	6-5-0-000	QUANTITY PROBE CABLE	1
6	6-6-0-000	PRESSURE CABLE	1
7	6-7-0-000	POWER CABLE	1
8	6-8-0-000	REMOTE CABLE	1
9	6-9-0-000	LOADER POWER KIT	1

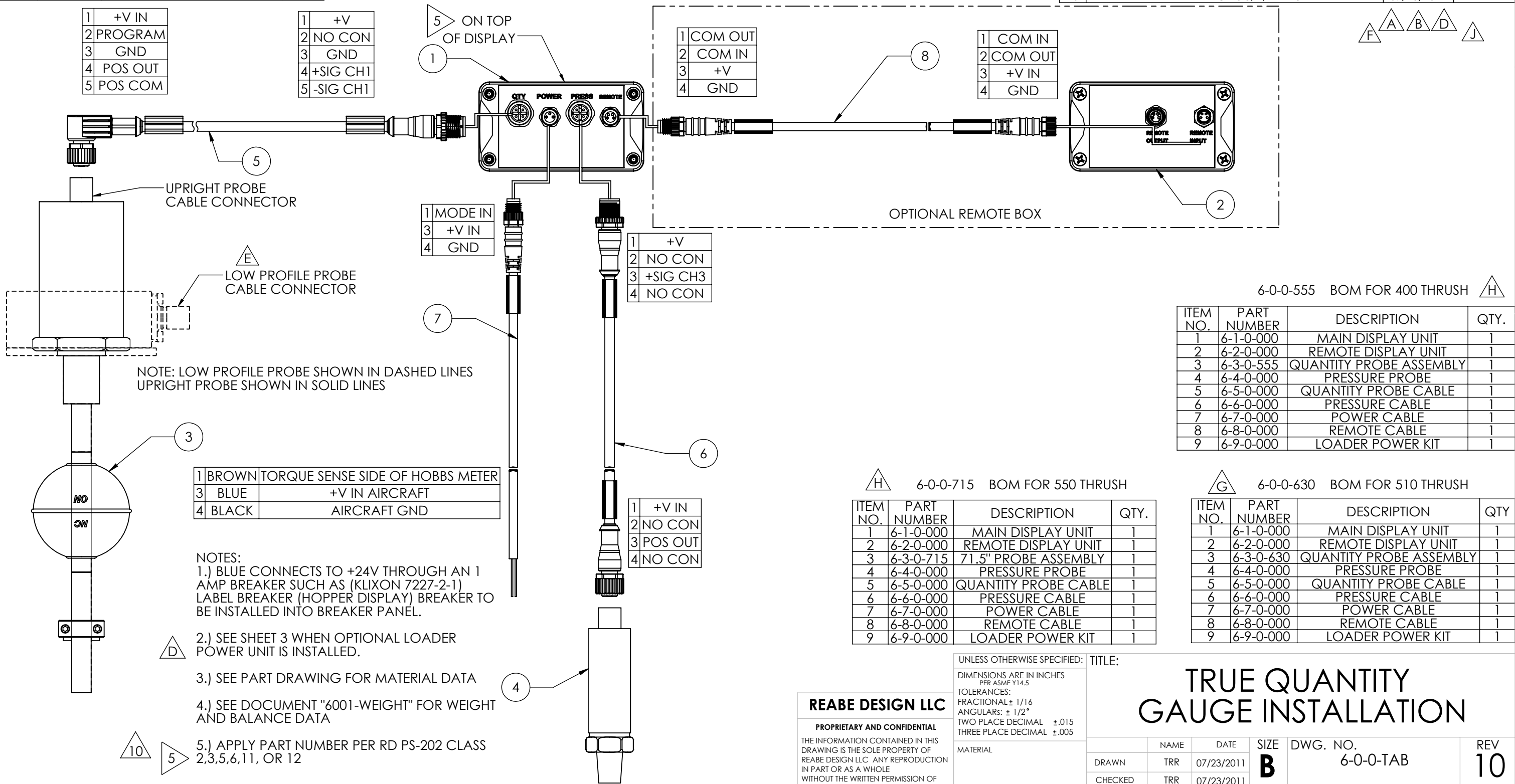
6-0-0-690 BOM FOR AT-602 WAS 6-0-0-002

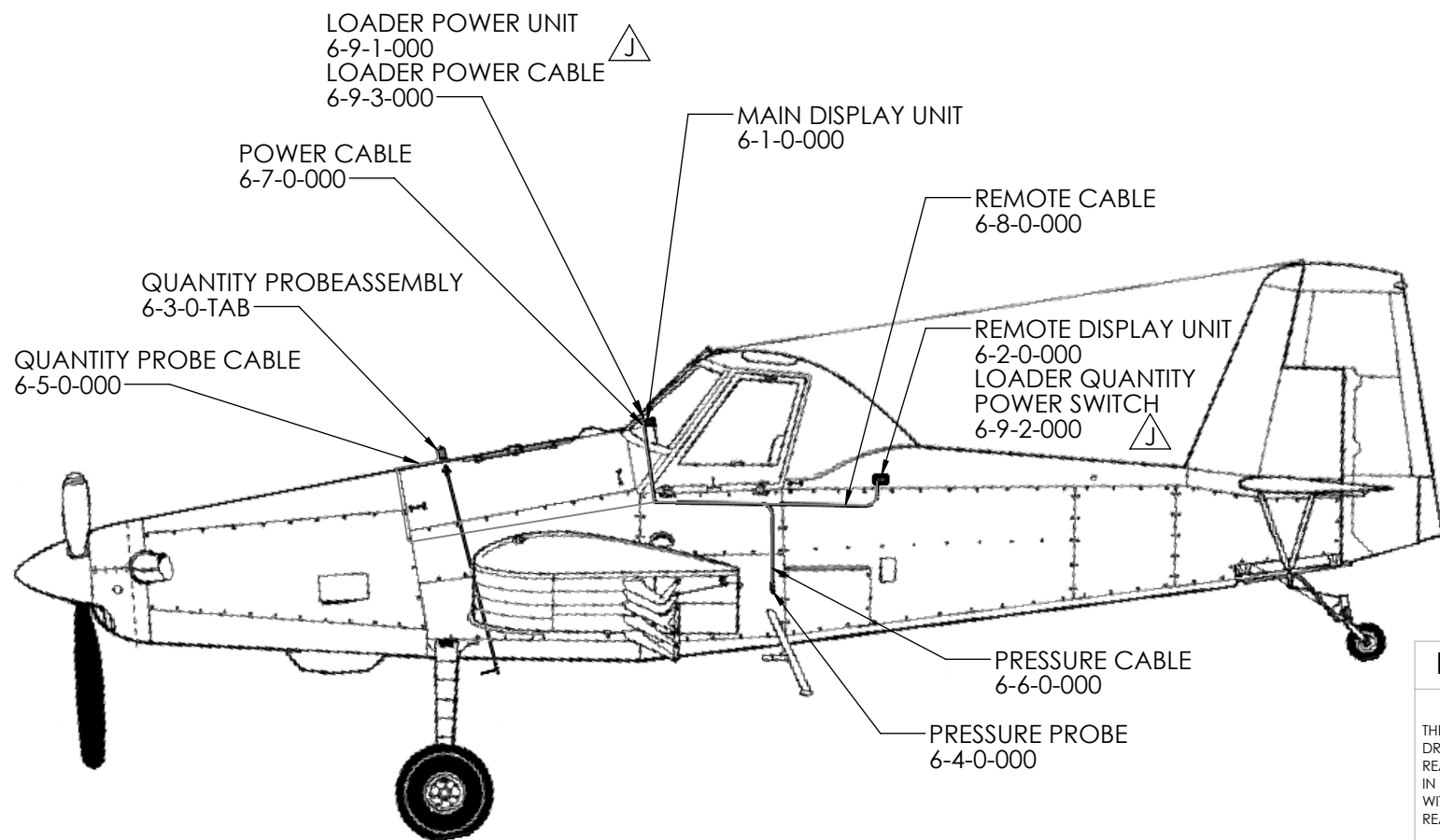
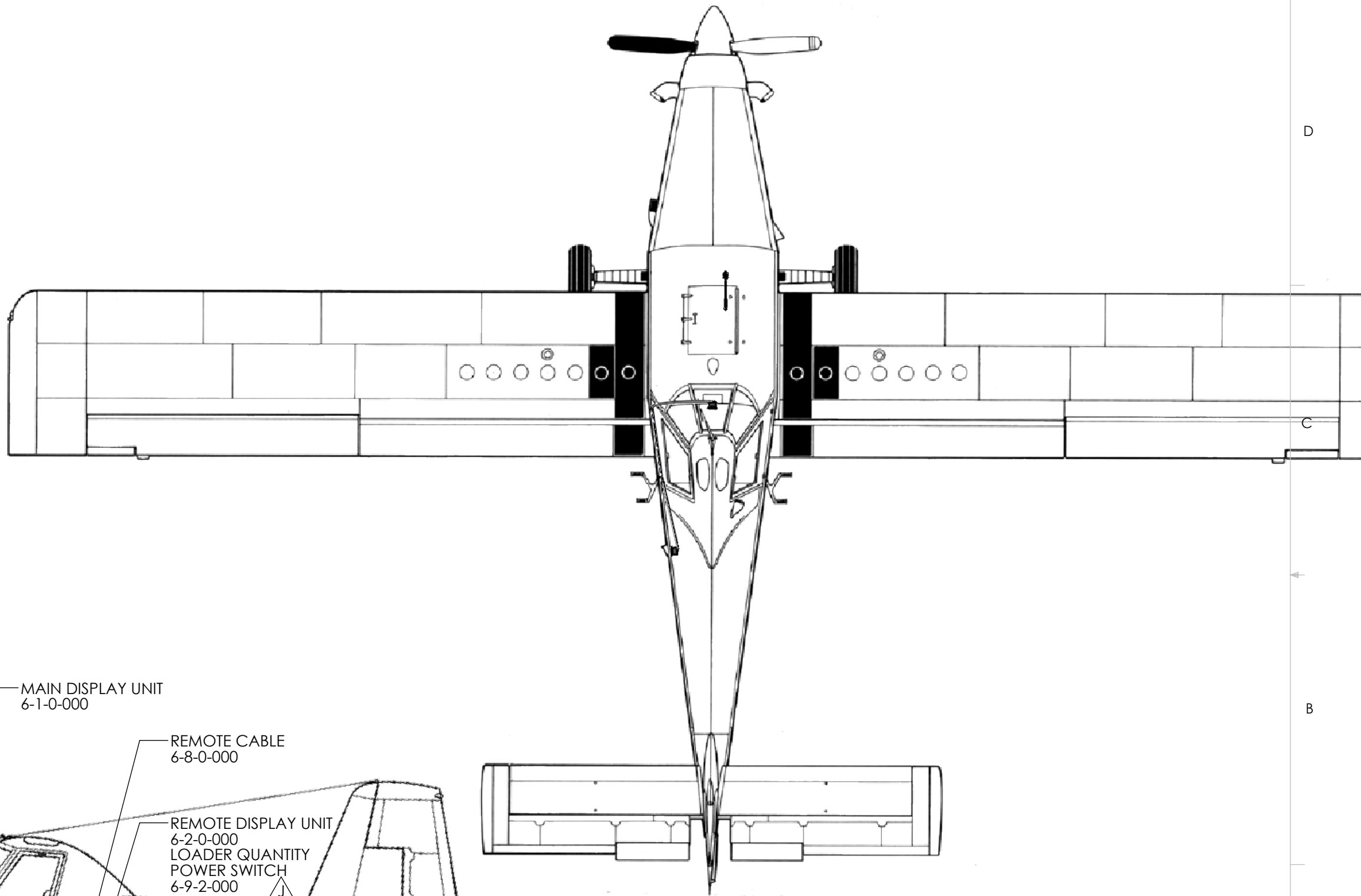
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	6-1-0-000	MAIN DISPLAY UNIT	1
2	6-2-0-000	REMOTE DISPLAY UNIT	1
3	6-3-0-690	QUANTITY PROBE ASSEMBLY	1
4	6-4-0-000	PRESSURE PROBE	1
5	6-5-0-000	QUANTITY PROBE CABLE	1
6	6-6-0-000	PRESSURE CABLE	1
7	6-7-0-000	POWER CABLE	1
8	6-8-0-000	REMOTE CABLE	1
9	6-9-0-000	LOADER POWER KIT	1

6-0-0-770 BOM FOR AT-802, 710 THRUSH WAS 6-0-0-003

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	6-1-0-000	MAIN DISPLAY UNIT	1
2	6-2-0-000	REMOTE DISPLAY UNIT	1
3	6-3-0-770	QUANTITY PROBE ASSEMBLY	1
4	6-4-0-000	PRESSURE PROBE	1
5	6-5-0-000	QUANTITY PROBE CABLE	1
6	6-6-0-000	PRESSURE CABLE	1
7	6-7-0-000	POWER CABLE	1
8	6-8-0-000	REMOTE CABLE	1
9	6-9-0-000	LOADER POWER KIT	1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	7/23/2011	TRR
B	DWG. NO. WAS 6-0-0-000	9/16/2011	TRR
C	SPLIT BOM FOR DIFFERENT CONFIGURATIONS	2/10/2012	TRR
D	ADDED AT-802DATA	10/07/2012	TRR
E	AIRCRAFT POWER SUPPLY SET AT +24V	10/8/2012	TRR
F	ADDED LOW PROFILE PROBE	9/23/2014	TRR
G	ADDED AT-504, FIXED DUPLICATE PART IN BOM	8/30/2015	TRR
H	ADDED 510 THRUSH	8/12/2016	TRR
J	ADDED 400, 550, 710 THRUSH	3/28/2018	TRR
10	ADDED 6-9-0-000 OPTION SHEET 3	07/15/2024	TRR





LOADER POWER UNIT
6-9-1-000
LOADER POWER CABLE
6-9-3-000

POWER CABLE
6-7-0-000

QUANTITY PROBE ASSEMBLY
6-3-0-TAB

QUANTITY PROBE CABLE
6-5-0-000

MAIN DISPLAY UNIT
6-1-0-000

REMOTE CABLE
6-8-0-000

REMOTE DISPLAY UNIT
6-2-0-000
LOADER QUANTITY
POWER SWITCH
6-9-2-000

PRESSURE CABLE
6-6-0-000

PRESSURE PROBE
6-4-0-000

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ANGULAR: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

SPEC

TITLE:

TRUE QUANTITY GAUGE INSTALLATION

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/23/2011	B	6-0-0-TAB	10
CHECKED	TRR	07/23/2011			
DO NOT SCALE DRAWING			SCALE: 1:2	WEIGHT:	SHEET 2 OF 3

NOTES:
VIEW SHOWING HOOKUP OF OPTIONAL LOADER POWER UNIT PART NUMBER 6-9-0-000



CONNECT THE POWER CABLE HERE
PART NUMBER 6-7-0-000

NOTE:
1.) BLUE CONNECTS TO +24V THROUGH AN 1
AMP BREAKER SUCH AS (KLIXON 7227-2-1)
LABEL BREAKER (HOPPER DISPLAY) BREAKER TO
BE INSTALLED INTO BREAKER PANEL.

1	BROWN	TORQUE SENSE SIDE OF HOBBS METER
3	BLUE	+V IN AIRCRAFT
4	BLACK	AIRCRAFT GND

1	MODE IN
3	+V IN
4	GND

1	MODE OUT
3	+V OUT
4	GND

1	MODE IN
3	+V IN
4	GND

POWER CABLE
PART NUMBER 6-7-0-000

7

1	BATTERY
2	SWITCH A
3	SWITCH B

MOUNT ON TURTLE DECK OF AIRCRAFT
NEAR REMOTE DISPLAY

CONNECTS TO BATTERY THROUGH AN 1
AMP BREAKER SUCH AS (KLIXON 7227-2-1)
LABEL BREAKER(LOADER QUANTITY SWITCH)
BREAKER MOUNTED BY MASTER RELAY
USE 20-16 AWG AIRCRAFT GRADE WIRE PER AC43.13

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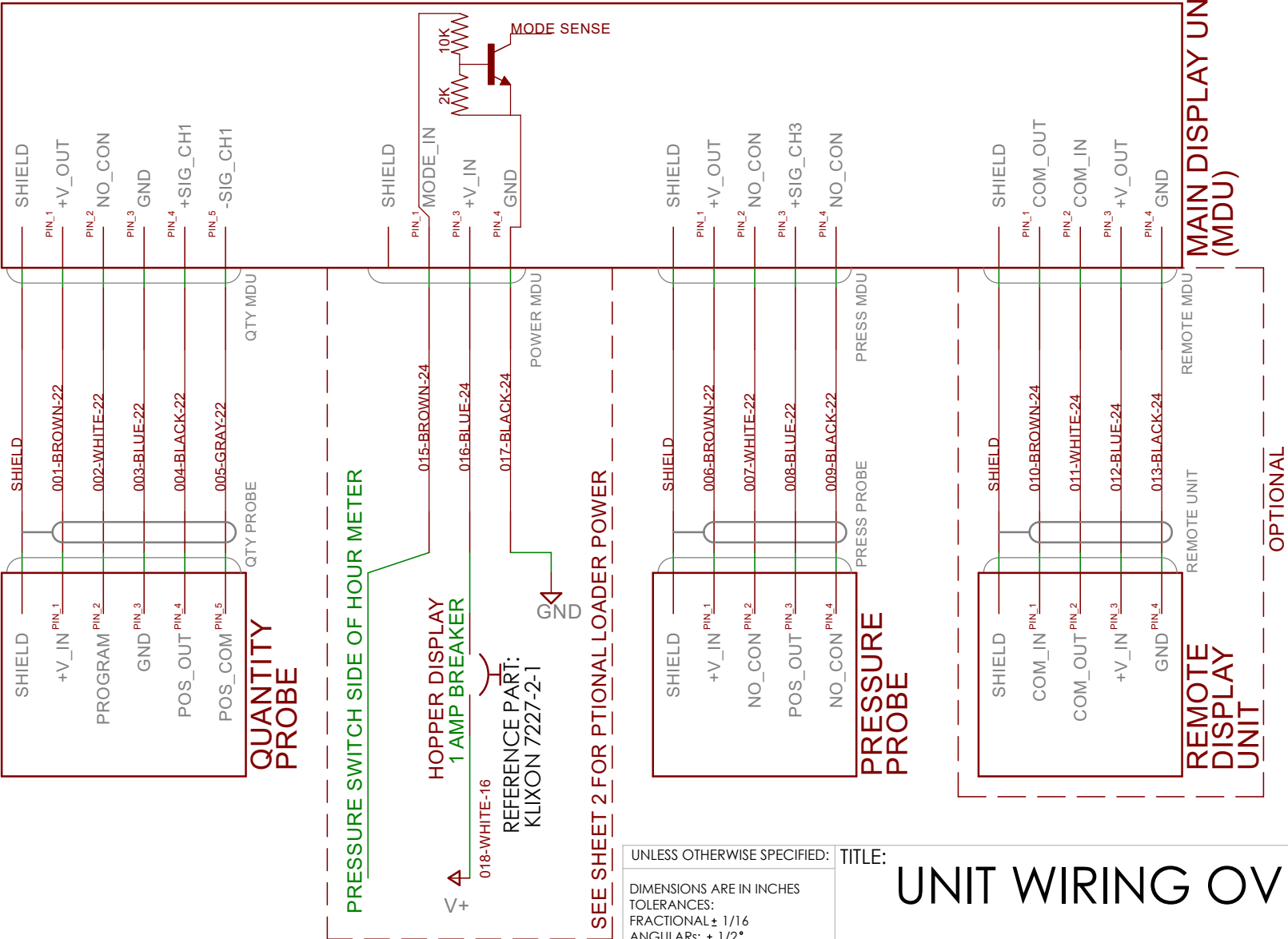
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TOLERANCES:	
FRACTIONAL	± 1/16
ANGULARS:	± 1/2°
TWO PLACE DECIMAL	±.015
THREE PLACE DECIMAL	±.005
MATERIAL	
SPEC	

TITLE:

TRUE QUANTITY GAUGE INSTALLATION

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/23/2011	B	6-0-0-TAB	10
CHECKED	TRR	07/23/2011			
DO NOT SCALE DRAWING			SCALE: 1:1.5	WEIGHT:	SHEET 3 OF 3

REV.	DESCRIPTION	REVISIONS	DATE	APPROVED
A	ORIGINAL RELEASE		8/3/2011	TRR
B	DWG. NO. WAS 6-0-0-001		10/3/2011	TRR
C	ADDED SHEET 2 LOADER POWER UNIT		3/28/2018	TRR
4	UPDATED CONNECTION NAME FROM BATT. +		02/27/2024	TRR



NOTES:
1.) INSTALL WIRING IN
ACCORDANCE WITH AC 43.13-1B

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TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

TITLE:

UNIT WIRING OVERVIEW

NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	08/03/2011	A 6-0-1-000	4
CHECKED	TRR	08/03/2011		
SCALE: 1:1		WEIGHT:		SHEET 1 OF 2

PRESSURE SWITCH SIDE OF HOUR METER

HOPPER DISPLAY
1 AMP BREAKER

V+
24V MAIN BUS

REF PART:
KLIXON 7227-2-1

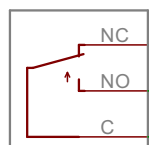
GND

LOADER QUANTITY SWITCH
1 AMP BREAKER

V+
POSITIVE SIDE OF
BATTERY RELAY COIL

REF PART:
KLIXON 7227-2-1

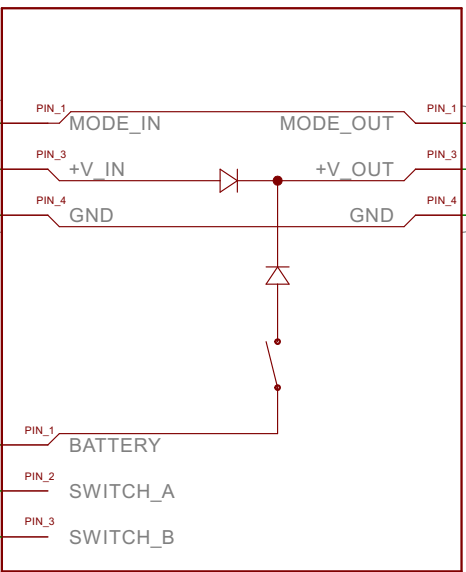
4



LOADER QUANTITY
POWER SWITCH

TERM BLOCK

023-WHITE 16-24



LOADER POWER UNIT
(LPU)

OUT

PIN_1

PIN_3

PIN_4

GND

PIN_1

PIN_3

PIN_4

GND

GND

GND

GND

GND

GND

GND

GND

GND

GND

GND

GND

GND

GND

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GND

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PIN_1

PIN_3

PIN_4

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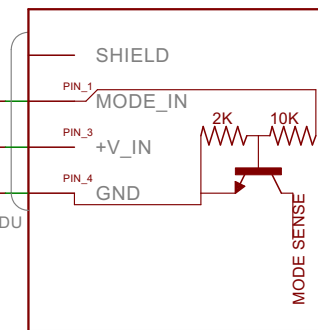
GND

GND

GND

GND

POWER MDU



MAIN DISPLAY UNIT
(MDU)

OPTIONAL LOADER POWER UNIT

NOTES:
1.) INSTALL WIRING IN
ACCORDANCE WITH AC 43.13-1B

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TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

TITLE:

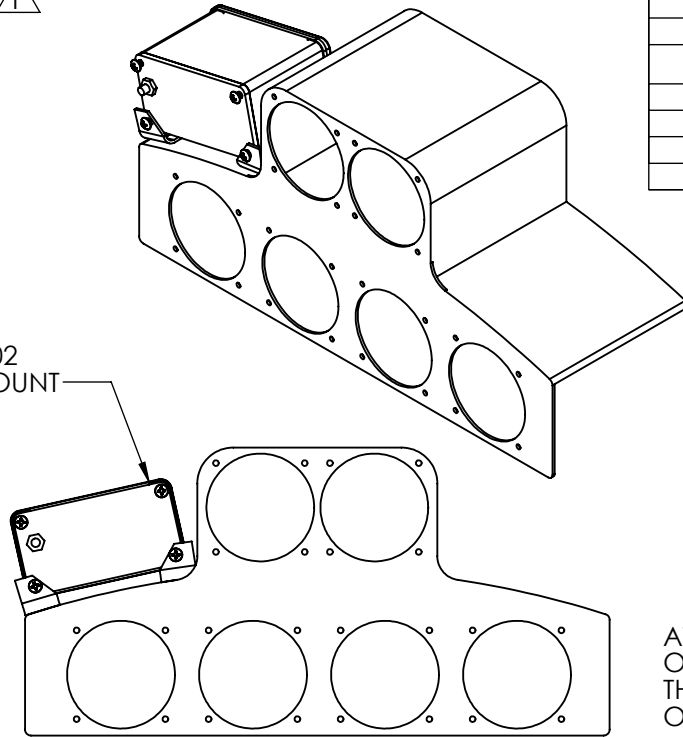
UNIT WIRING OVERVIEW

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	08/03/2011	A	6-0-1-000	4
CHECKED	TRR	08/03/2011			
SCALE: 1:1			WEIGHT:		SHEET 2 OF 2

A B C F

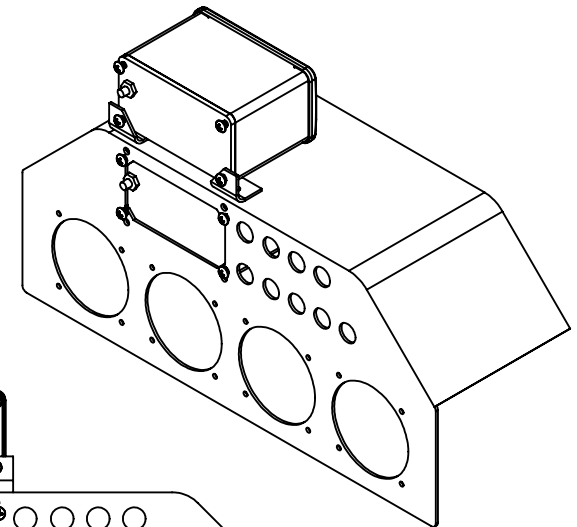
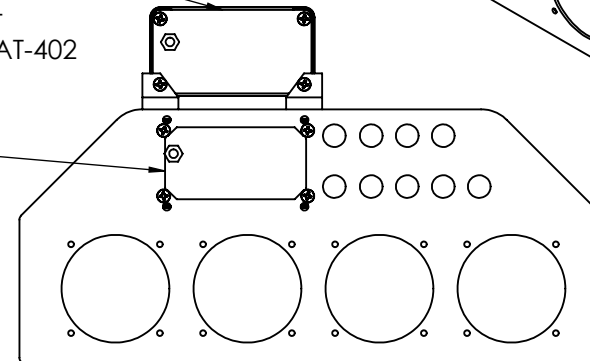
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	7/25/2011	TRR
B	DWG. NO. WAS 6-0-0-002	9/16/2011	TRR
C	ADDED BRACKET MATERIAL AND HARDWARE NOTE	9/23/2014	TRR
D	ADDED AT-504	08/31/2015	TRR
E	ADDED AT-802, THRUSH 510	3/4/2018	TRR
F	ADDED 710 THRUSH	12/21/2021	TRR

AT-400, AT-402
ON DASH MOUNT



C D E F

AT-401, AT-502, AT-504, AT-602, AT-802
ON DASH MOUNT
THRUSH 510, THRUSH 710
ON GLARE SHIELD
OR
IN DASH MOUNT
AT-400, AT-401, AT-402
AT-502, AT-504,
AT-602, AT-802
THRUSH 510
THRUSH 710



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

TITLE:

MAIN DISPLAY MOUNTING

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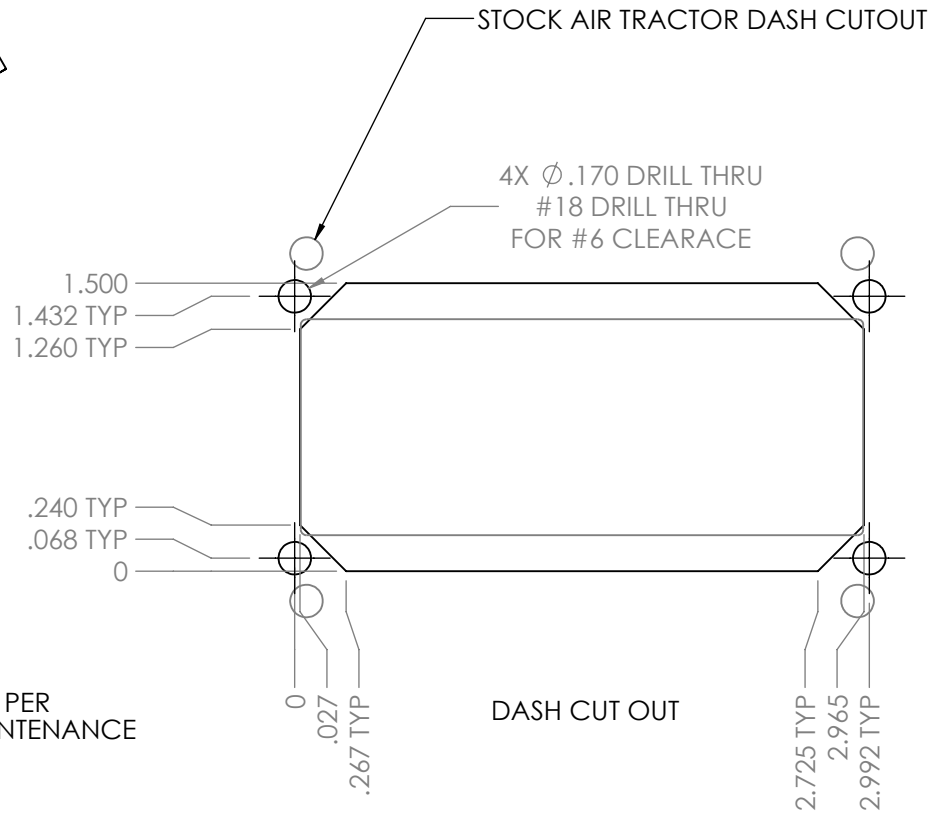
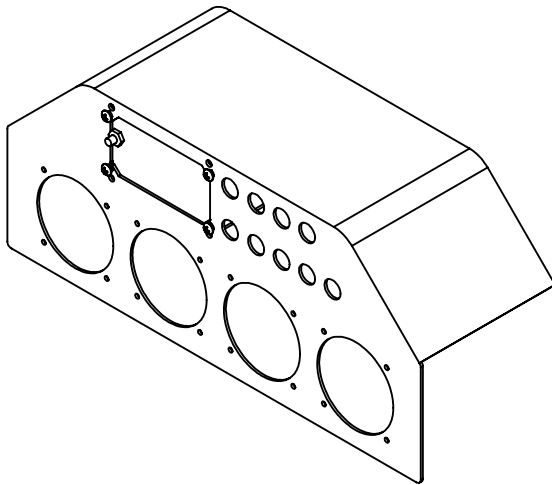
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MATERIAL

DO NOT SCALE DRAWING

	NAME	DATE	SIZE	DWG. NO.		REV
DRAWN	TRR	07/25/2011	A	6-0-2-000		F
CHECKED	TRR	07/25/2011				
			SCALE: 1:4		WEIGHT:	SHEET 1 OF 3

IN DASH MOUNT



NOTE:
PAINT CUTOUT PER
AIRCRAFT MAINTENANCE
MANUAL

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DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

TITLE:

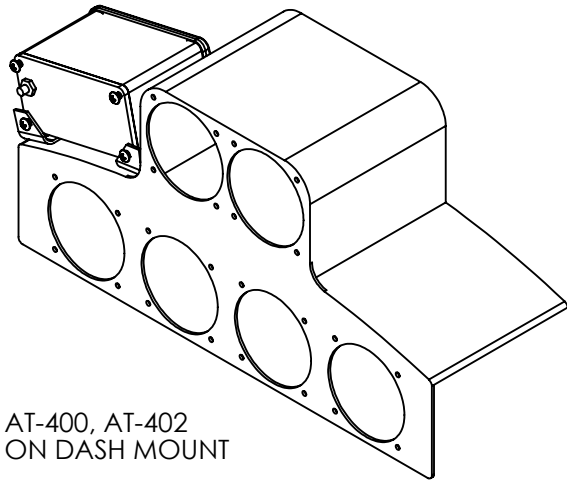
MAIN DISPLAY MOUNTING

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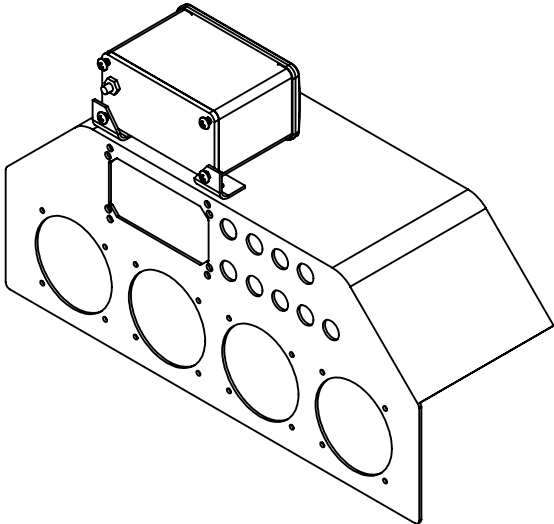
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NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A 6-0-2-000	F
CHECKED	TRR	07/25/2011		
SCALE: 1:1		WEIGHT:	SHEET 2 OF 3	



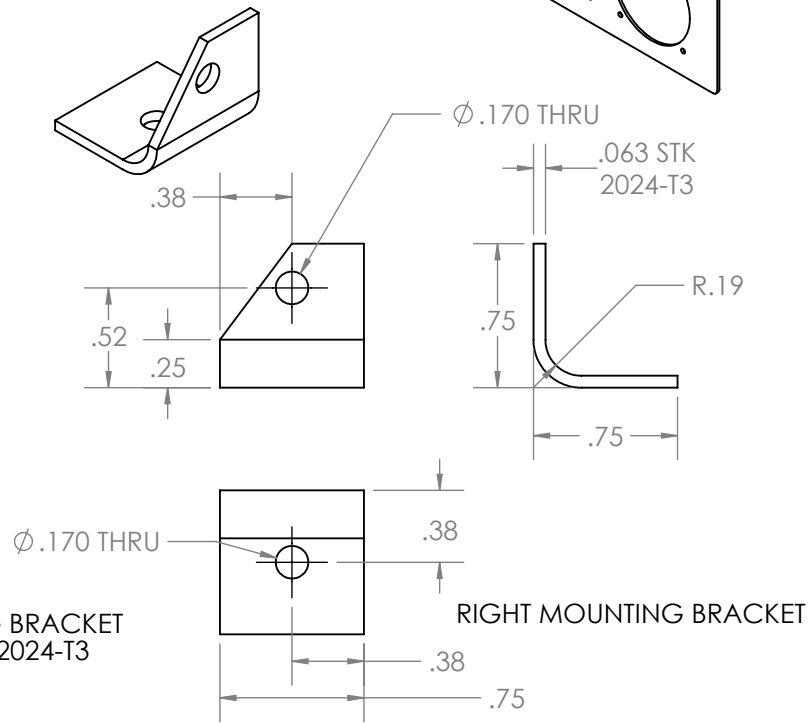
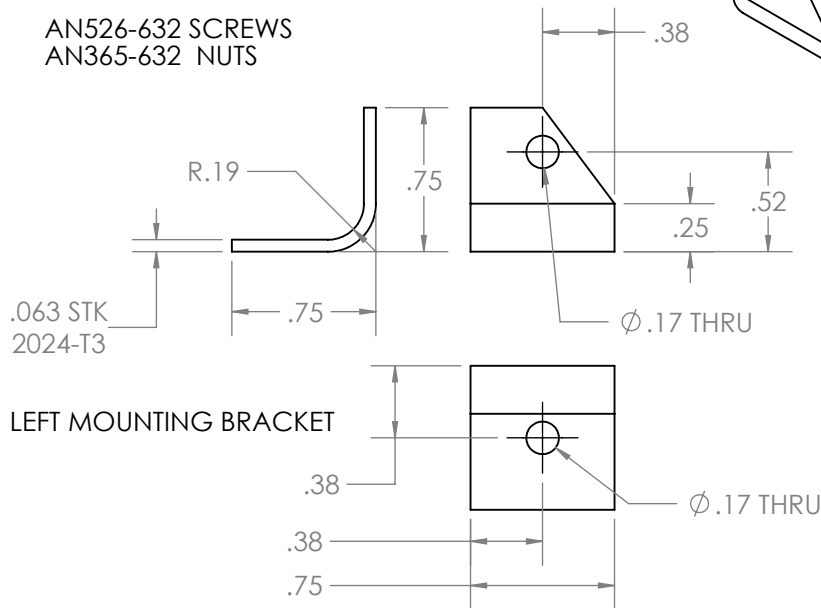
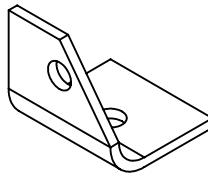
AT-400, AT-402
ON DASH MOUNT

AT-401, AT-502, AT-504,
AT-602, AT-802
ON DASH MOUNT
THRUSH 510, THRUSH 710
ON GLARE SHIELD



MOUNTING BRACKETS
BOLTED TO DASH USING:

AN526-632 SCREWS
AN365-632 NUTS



MOUNTING BRACKET
MATERIAL: 2024-T3

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FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

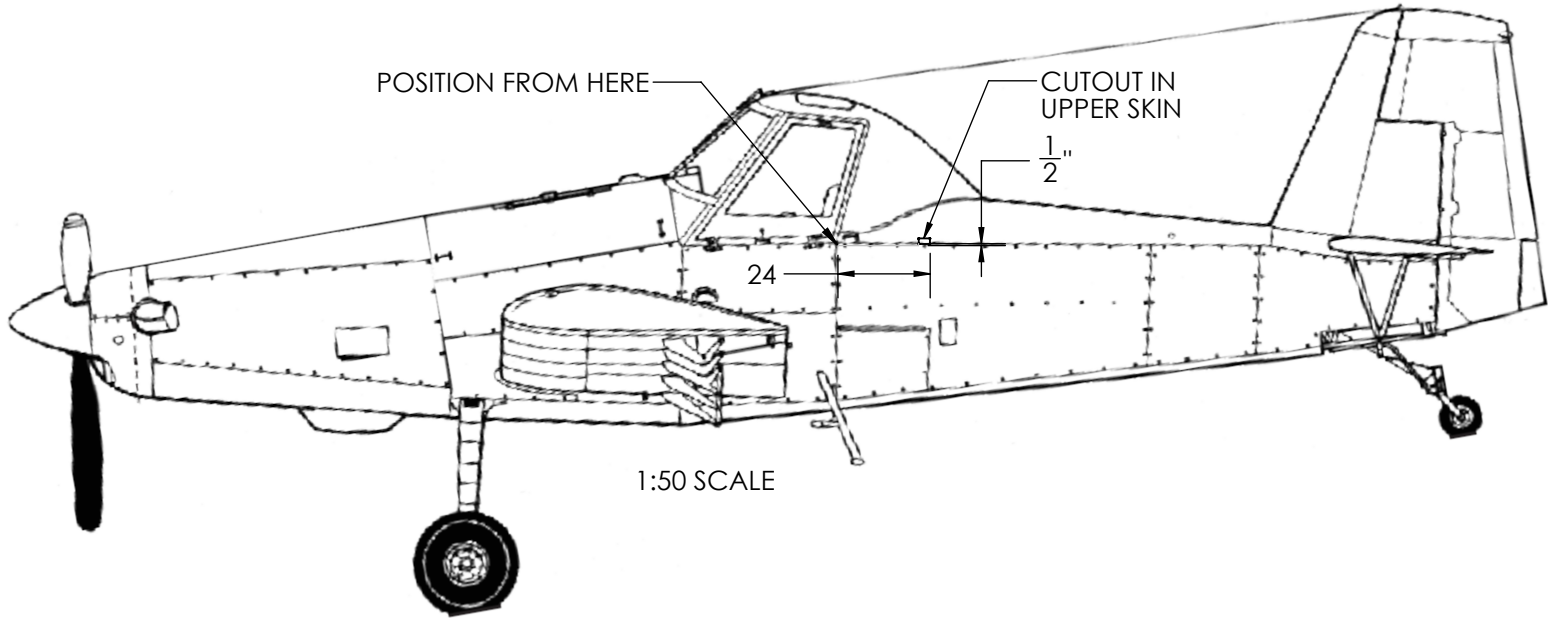
DO NOT SCALE DRAWING

MAIN DISPLAY MOUNTING

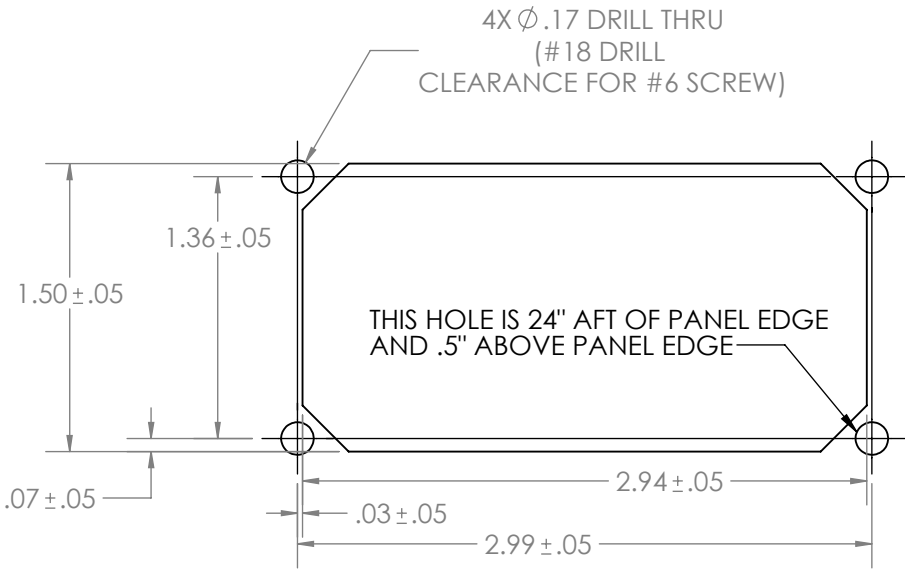
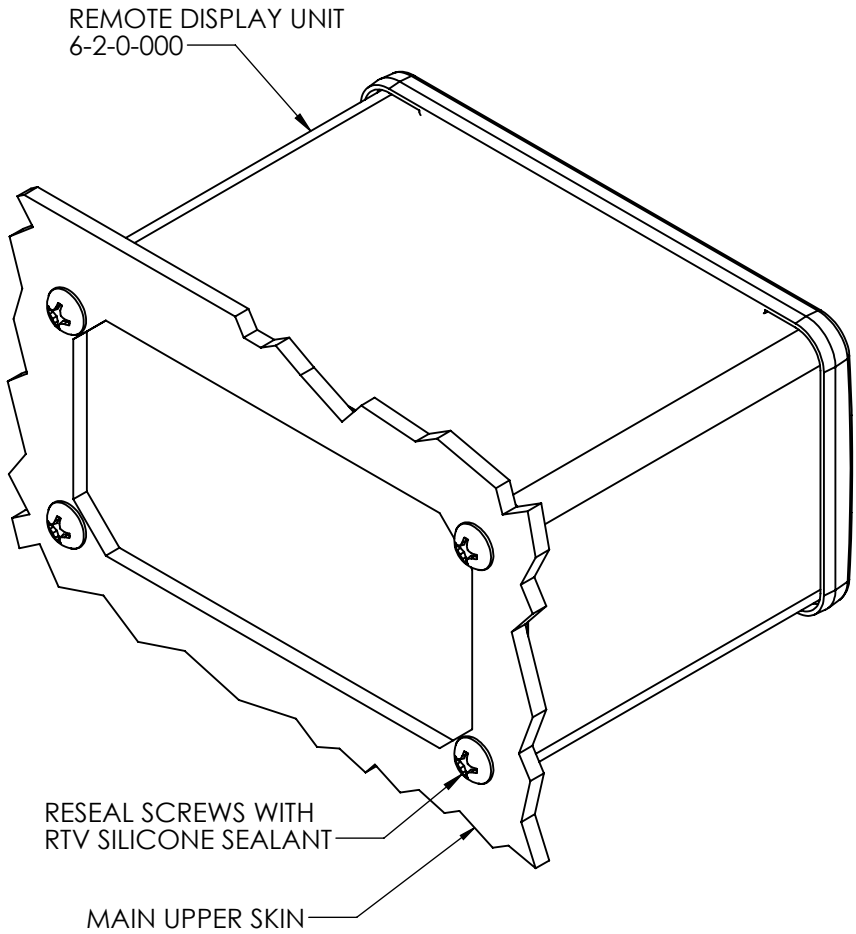
NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A 6-0-2-000	F
CHECKED	TRR	07/25/2011		
SCALE: 1:1		WEIGHT:		SHEET 3 OF 3

- NOTE:
1. STOCK AIRCRAFT REMOTE GAUGE LOCATION CAN BE USED IF AVAILABLE
 2. REMOTE DISPLAY CAN BE MOUNTED ON RIGHT OR LEFT SIDE OR BOTH
 3. IF TWO REMOTE DISPLAYS ARE MOUNTED THE SECOND DISPLAY IS DAISY CHAINED OFF THE FIRST

REVISIONS			
REV.	DESCRIPTION	APPROVED	DATE
A	ORIGINAL RELEASE	TRR	7/25/2011
B	DWG. NO. WAS 6-0-0-003 ADDED CUTOUT TO SIDE VIEW	TRR	9/14/2011
C	POSITIONING HOLE NOW AFT HOLE	TRR	11/21/2011
D	ADDED STOCK AIR TRACTOR MOUNT	TRR	12/17/2012
E	NOTE CHANGED FROM AIRTRACTOR TO AIRCRAFT	TRR	8/31/2015
F	ADDED NUMBERS TO NOTES, & ADDED NOTE 2 AND 3 TO CLARIFY REMOTE MOUNTING OPTIONS	TRR	5/1/2020



NOTE:
PAINT CUTOUT PER
AIRCRAFT MAINTENANCE
MANUAL



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TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARs: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

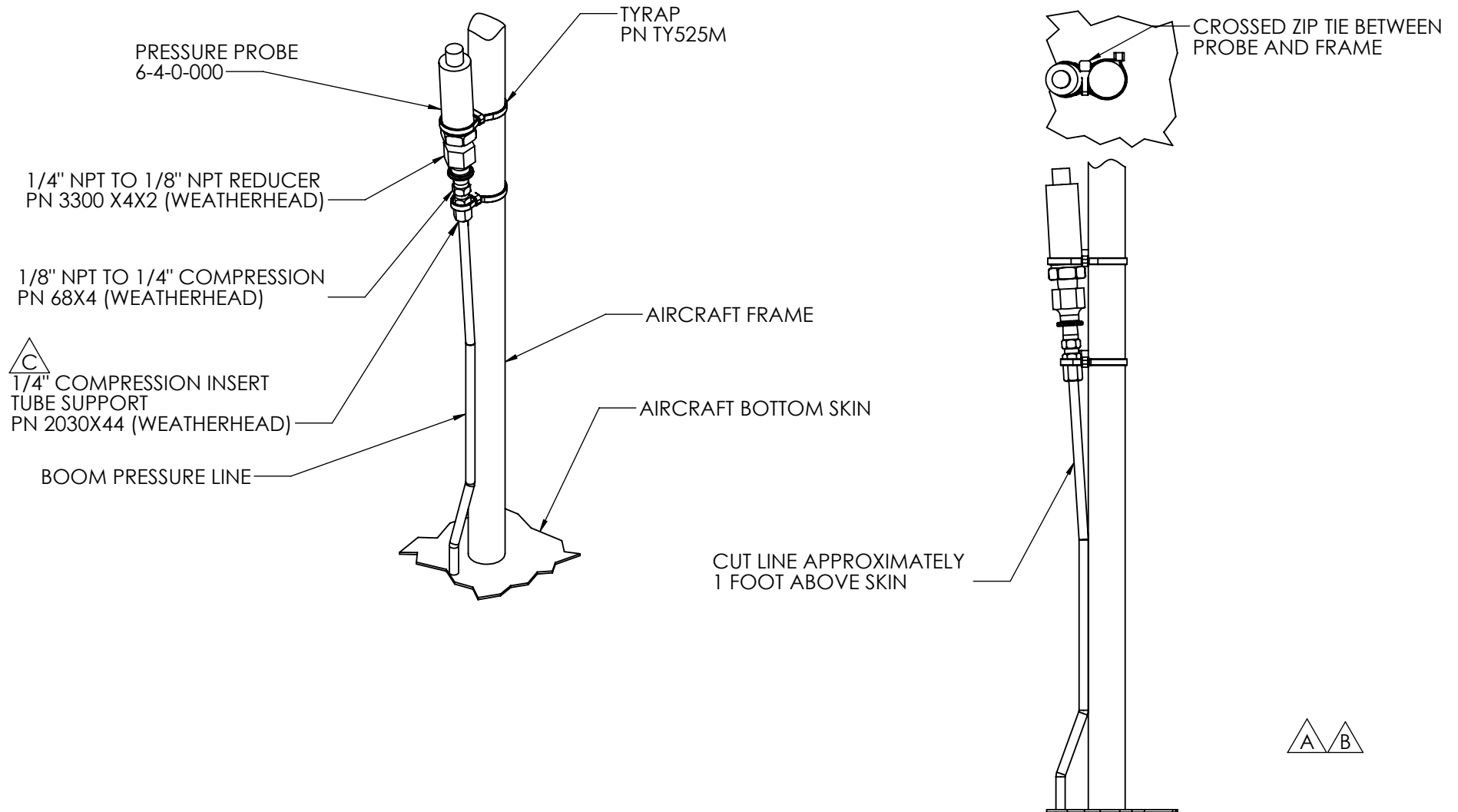
SPEC

TITLE:

REMOTE DISPLAY MOUNTING

DRAWN		NAME	DATE	SIZE	DWG. NO.	REV
CHECKED		TRR	07/25/2011	B	6-0-3-000	F
DO NOT SCALE DRAWING				SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	8/04/2011	TRR
B	DWG. NO. WAS 6-0-0-004 ADDED PART NUMBERS	9/13/2011	TRR
C	ADDED INSERT TUBE SUPPORT	9/23/2014	TRR



UNLESS OTHERWISE SPECIFIED: TITLE:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

PRESSURE PROBE MOUNTING

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MATERIAL

DO NOT SCALE DRAWING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	08/04/2011	A	6-0-4-000	C
CHECKED	TRR	08/04/2011			

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

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5

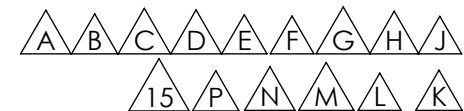
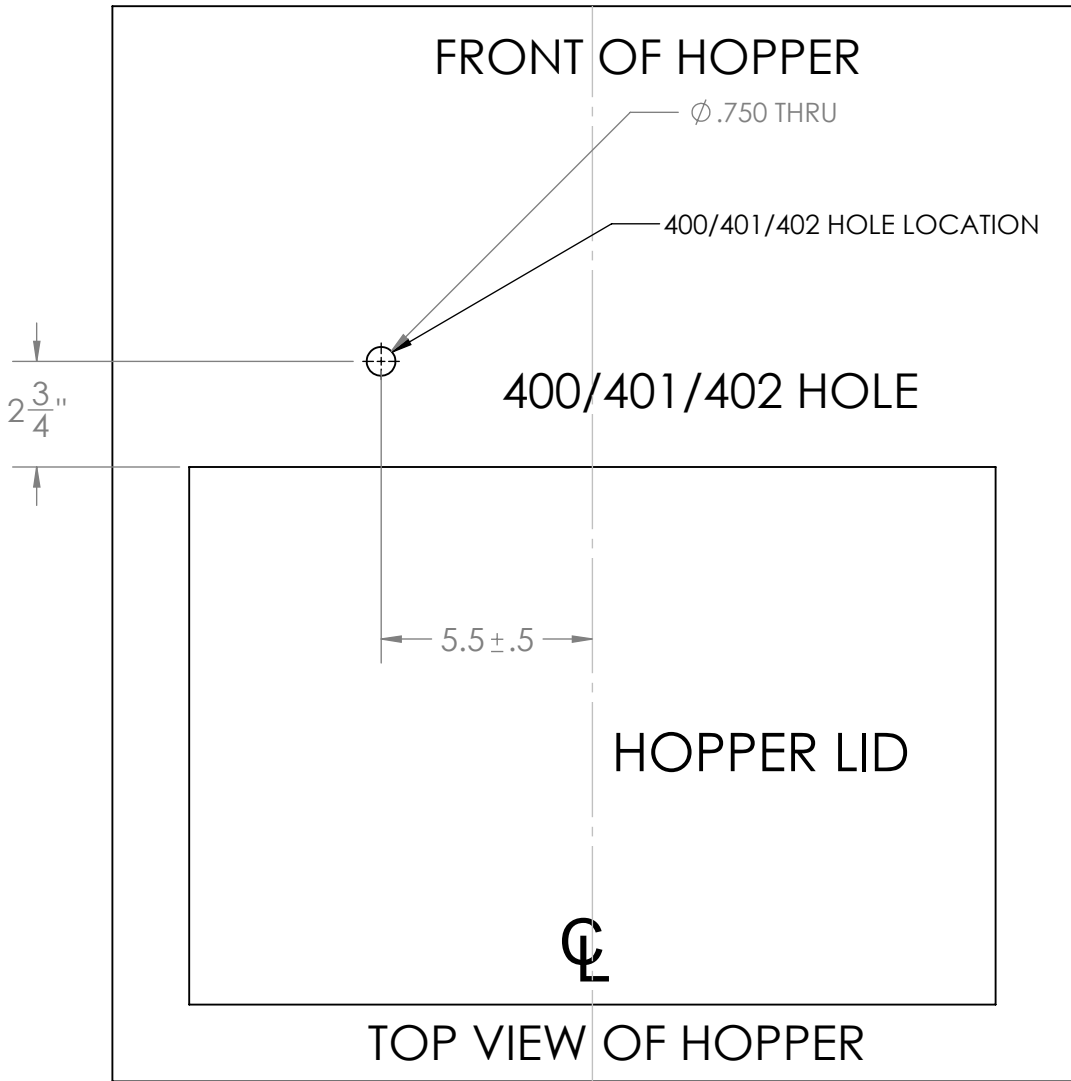
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3

2

1

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	7/25/2011	TRR
B	DWG. NO. WAS 6-0-0-005 HOLE LOCATIONS SPLIT PER SHEET	9/13/2011	TRR
C	HOLE DISTANCE FROM CL WAS 6	11/21/2011	TRR
D	ADDED AT-802 DATA	2/10/2012	TRR
E	ADDED LOW PROFILE PROBE	10/08/2012	TRR
F	ADDED TRANS LAND FIRE GATE, MOVED 502/802 TOP HOLE FROM 5.5 TO 9.5	12/17/2012	TRR
G	602 MOUNT NOW COMMON WITH 502	1/29/2013	TRR
H	ADDED AT-504	9/23/2014	TRR
J	ADDED THRUSH	8/24/2015	TRR
K	ADDED 550 710 THRUSH	8/12/2016	TRR
L	MOVED WASHER TO INSIDE TANK	3/2/2018	TRR
M	ADDED 802 FIRE INSTALL DATA	6/24/2021	TRR
N	ADDED 401 MOUNT DATA	12/21/2021	TRR
P	ADDED CABLE AND CLAMP DETAIL	08/16/2023	TRR
15	ADDED NOTE ON DRILLING CLAMP	02/22/2024	TRR



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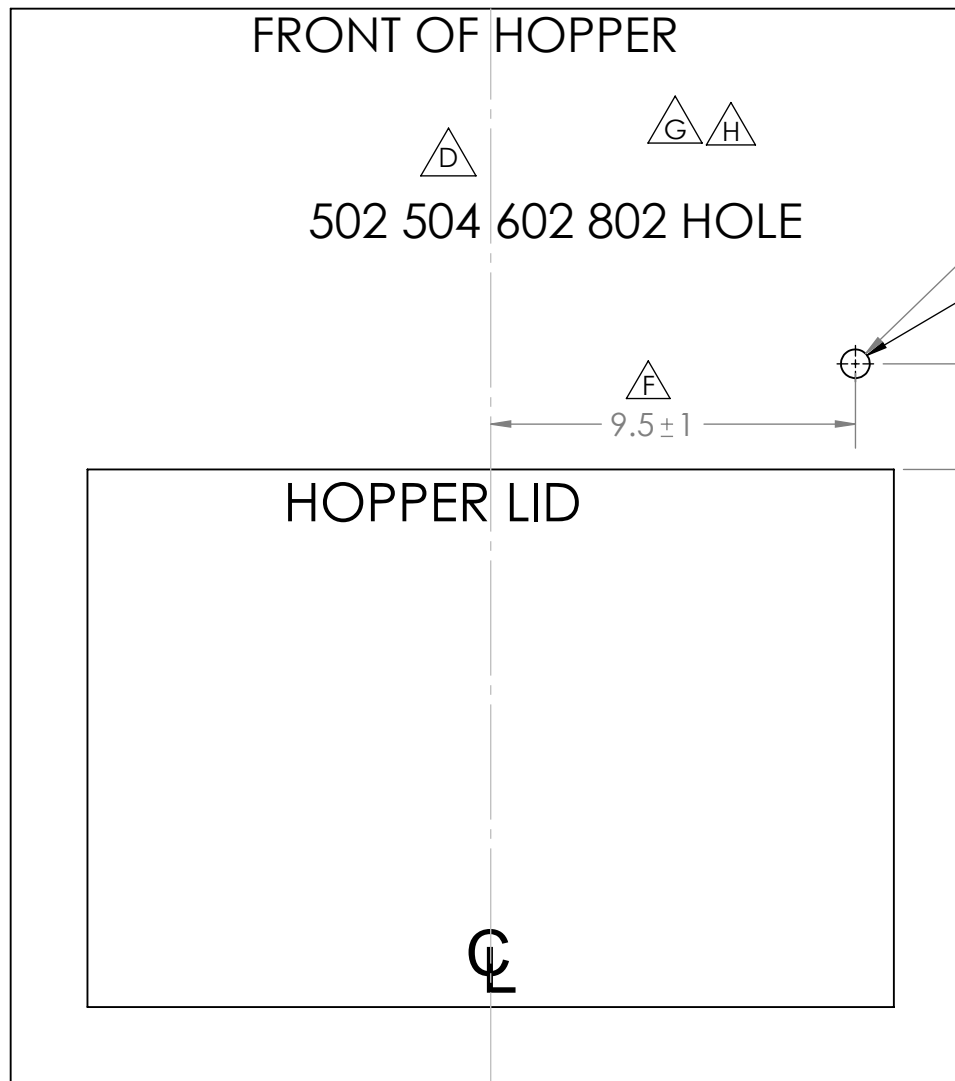
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

QUANTITY PROBE MOUNTING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:5	WEIGHT:	SHEET 1 OF 11



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TOLERANCES:
FRACTIONAL ± 1/16
ANGULARS: ± 1/2°
TWO PLACE DECIMAL ±.015
THREE PLACE DECIMAL ±.005

QUANTITY PROBE MOUNTING

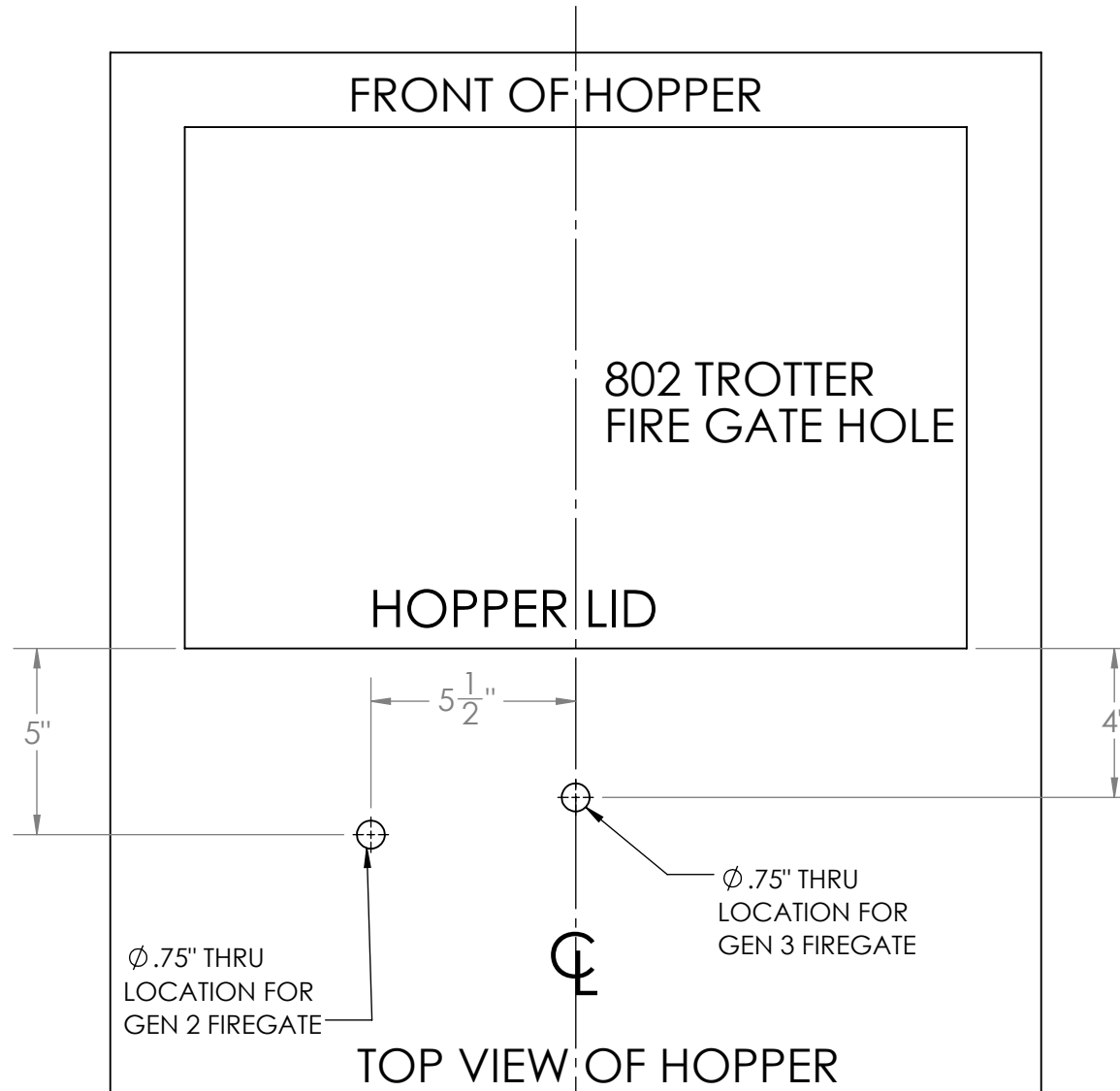
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NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A 6-0-5-000	15
CHECKED	TRR	07/25/2011		
		SCALE: 1:5	WEIGHT:	SHEET 2 OF 11

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NOTE:
BOTH GEN 2 AND GEN3
HOLE LOCATIONS ARE SHOWN
ONLY DRILL THE ONE HOLE NEEDED
FOR GATE INSTALLED ON 802

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MATERIAL

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QUANTITY PROBE MOUNTING

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DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:5	WEIGHT:	SHEET 3 OF 11

REABE DESIGN LLC

5

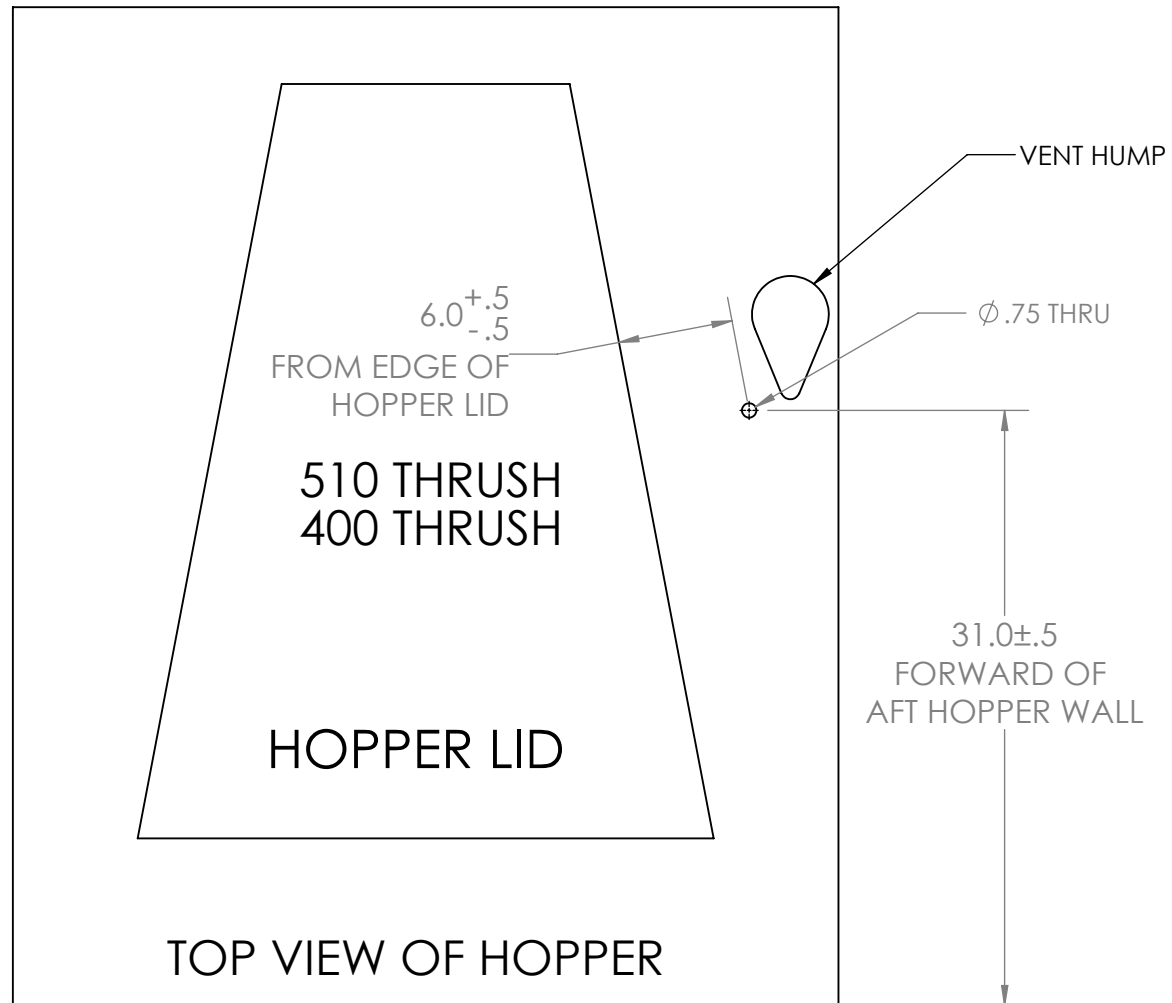
4

3

2

1

FRONT OF HOPPER



TOP VIEW OF HOPPER

UNLESS OTHERWISE SPECIFIED: TITLE:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
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QUANTITY PROBE MOUNTING

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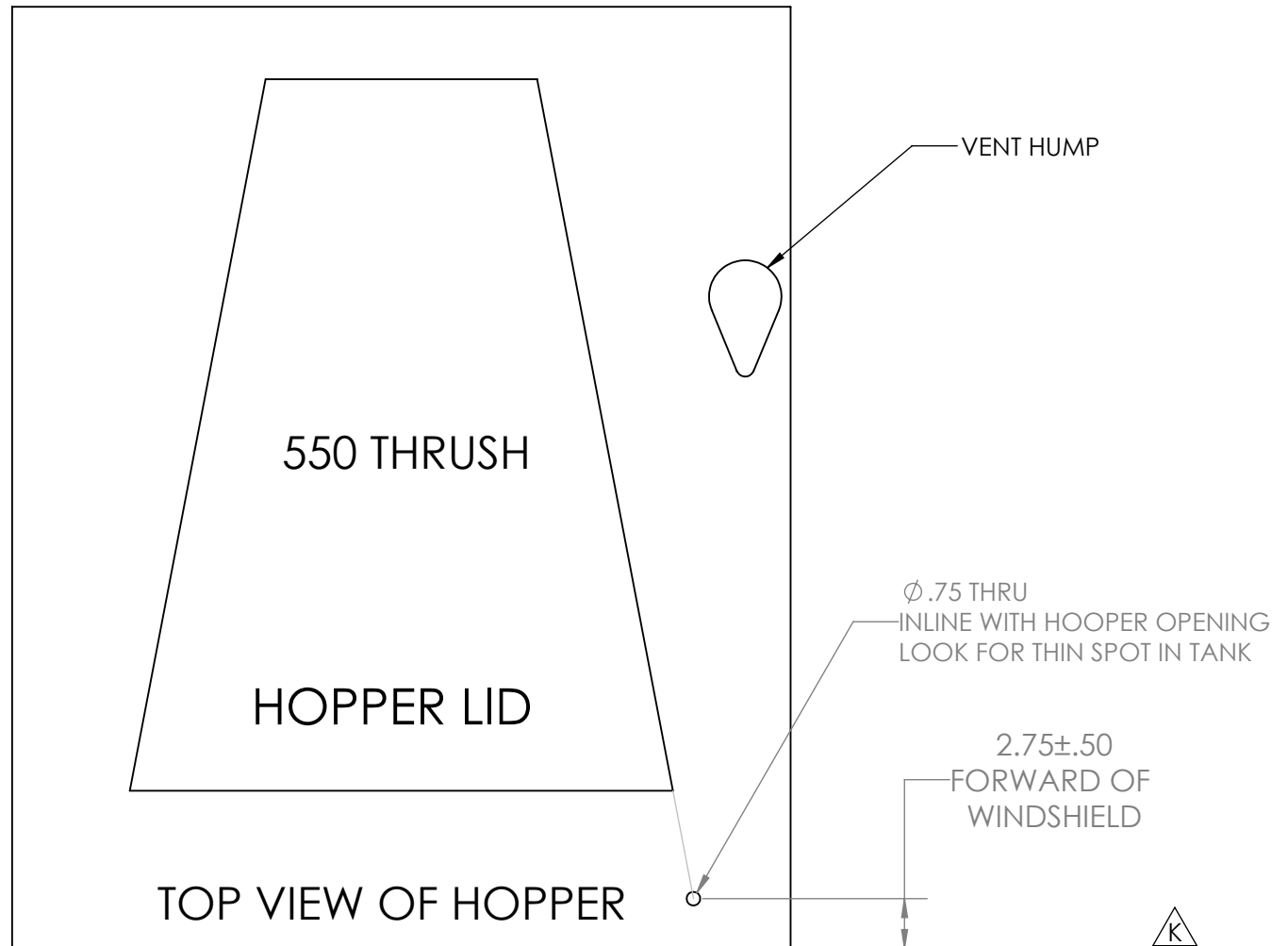
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DO NOT SCALE DRAWING

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DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:10	WEIGHT:	SHEET 4 OF 11

REABE DESIGN LLC

FRONT OF HOPPER



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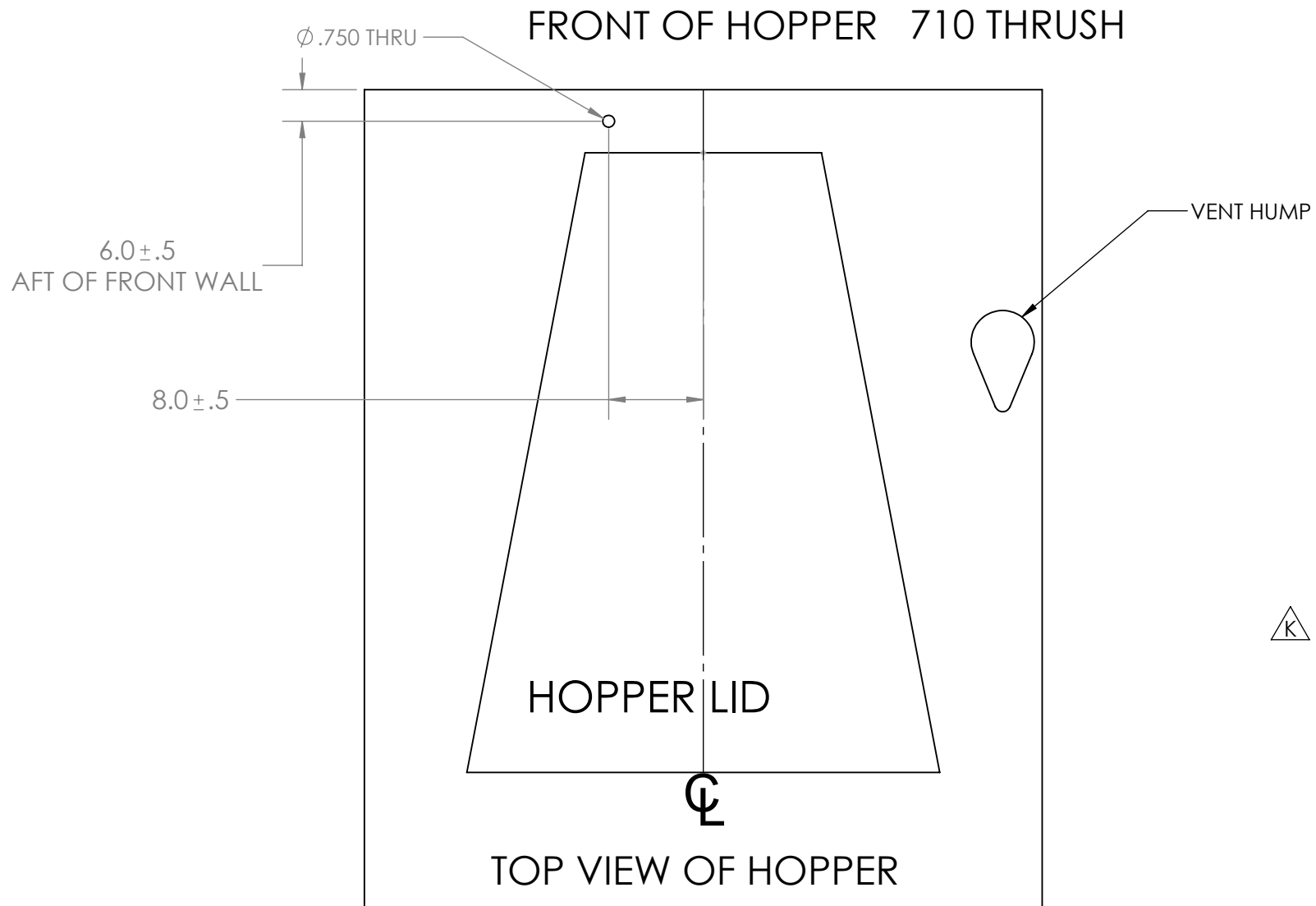
DIMENSIONS ARE IN INCHES
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ANGULARS: $\pm 1/2^\circ$
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THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

QUANTITY PROBE MOUNTING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
SCALE: 1:10			WEIGHT:		SHEET 5 OF 11



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THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

QUANTITY PROBE MOUNTING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:10	WEIGHT:	SHEET 6 OF 11

5

4

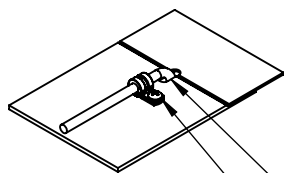
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2

1



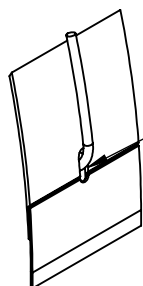
EXAMPLE QUANTITY CABLE
ENTERING FUSELAGE THRU
FORWARD HOPPER FLANGE



SECURE CABLE IN
SLOT WITH SILICONE

EXAMPLE ADEL CLAMP ON
EXTERNAL QUANTITY CABLE

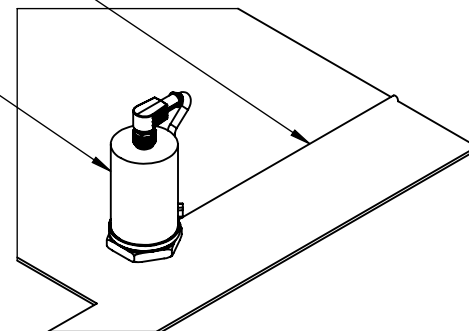
EXAMPLE QUANTITY CABLE
ENTERING FUSELAGE THRU
SIDE HOPPER FLANGE



SECURE CABLE IN
SLOT WITH SILICONE

QUANTITY PROBE CABLE
6-5-0-000

QUANTITY PROBE
6-3-1-TAB



NOTE: WIRE POINTING FORWARD
AND SECURED TO SENSOR BODY

UPRIGHT PROBE
TYPICAL INSTALLATION,
WIRE LOCATION

SEAL BOTH SIDES OF HOLE
WITH RTV SILICONE

TYRAP
PN TY525M

WASHER
NAS 1149C1290R



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TOLERANCES:
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ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

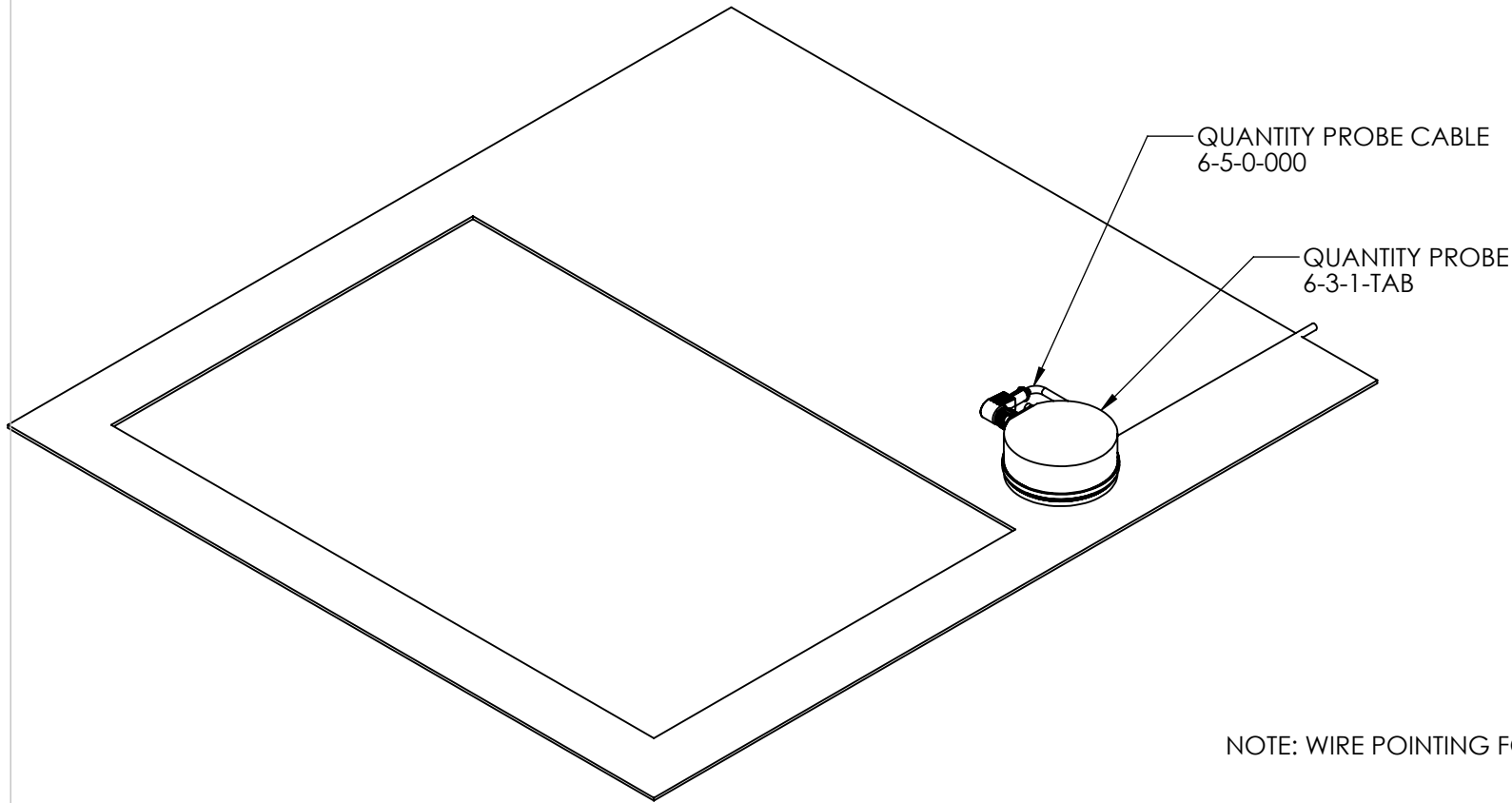
QUANTITY PROBE
MOUNTING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:5	WEIGHT:	SHEET 7 OF 11

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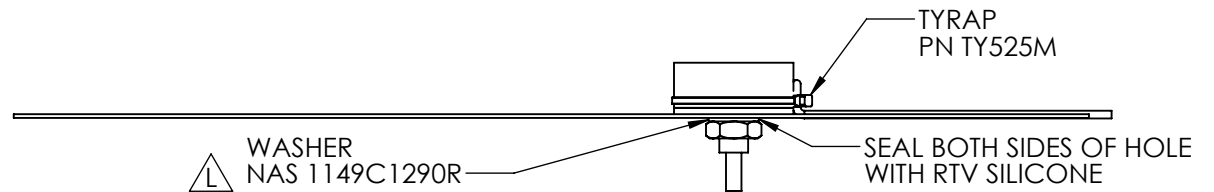
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NOTE: WIRE POINTING FORWARD

**LOW PROFILE PROBE
TYPICAL INSTALLATION,
WIRE LOCATION**



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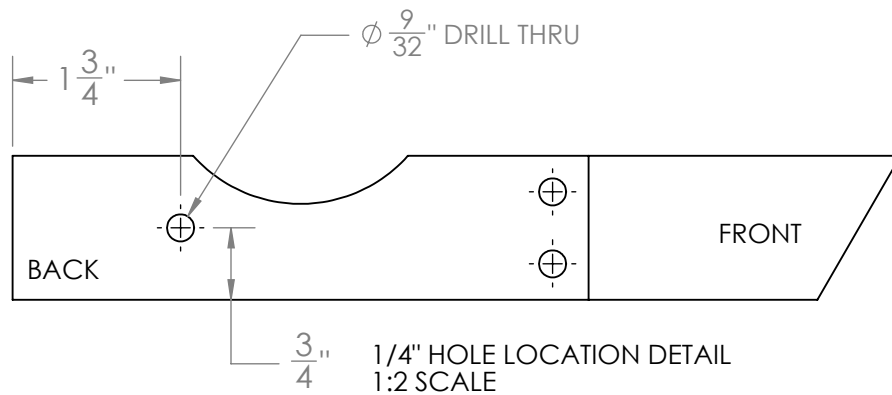
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

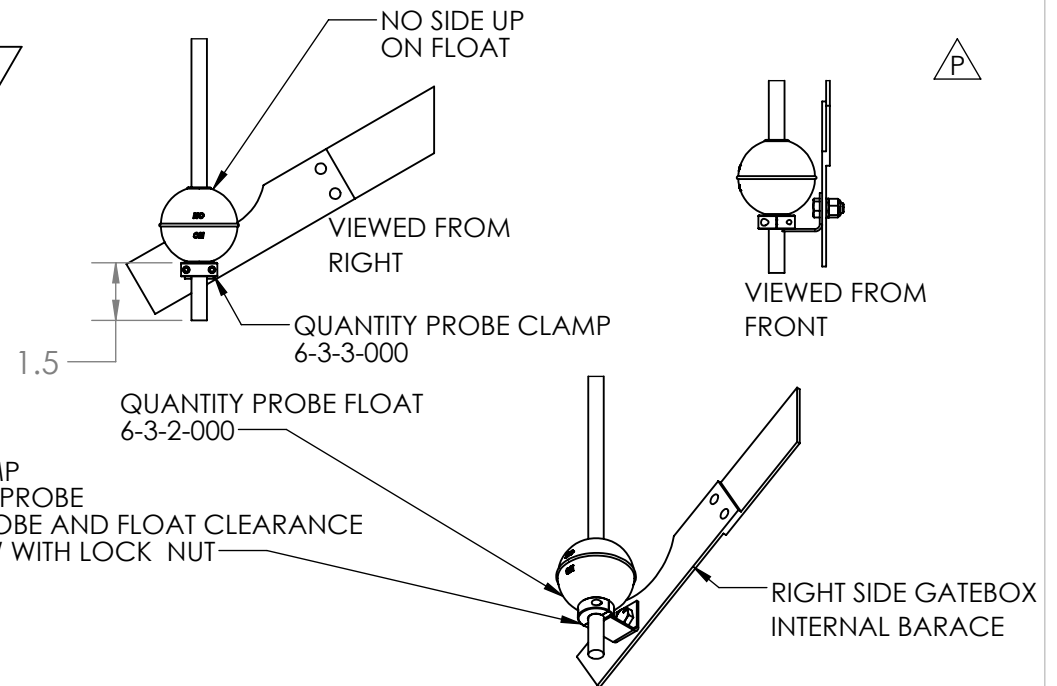
DO NOT SCALE DRAWING

QUANTITY PROBE MOUNTING

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DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:5	WEIGHT:	SHEET 8 OF 11

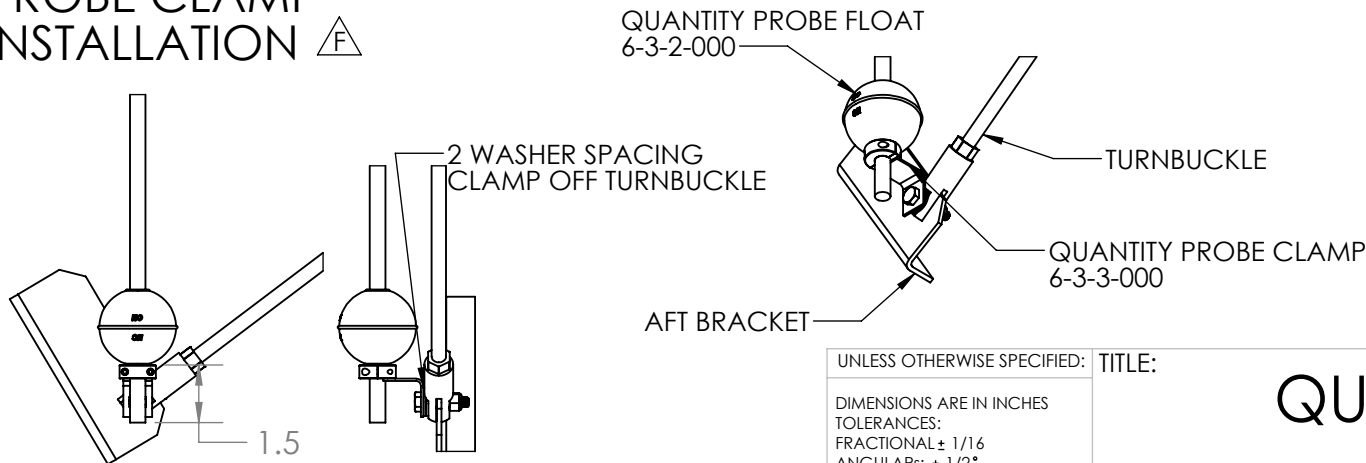


TYPICAL PROBE CLAMP INSTALLATION



CLAMP TAB IS ON BOTTOM SIDE OF CLAMP
TOP OF CLAMP IS 1.5" FROM BOTTOM OF PROBE
CLAMP TAB IS BENT AND DRILLED FOR PROBE AND FLOAT CLEARANCE
CLAMP TAB SECURED WITH SS 1/4" SCREW WITH LOCK NUT

TRANSLAND FIRE GATE PROBE CLAMP INSTALLATION



NOTE:
CLAMP PN 6-3-3-000
MAY NEED TO BE DRILLED OUT
TO $\phi .44"$ FOR ROD CLEARANCE 

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TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

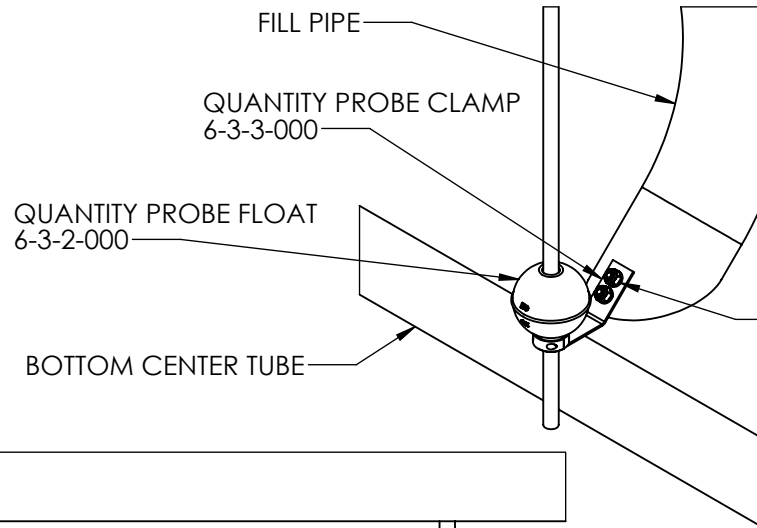
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TITLE:

QUANTITY PROBE MOUNTING

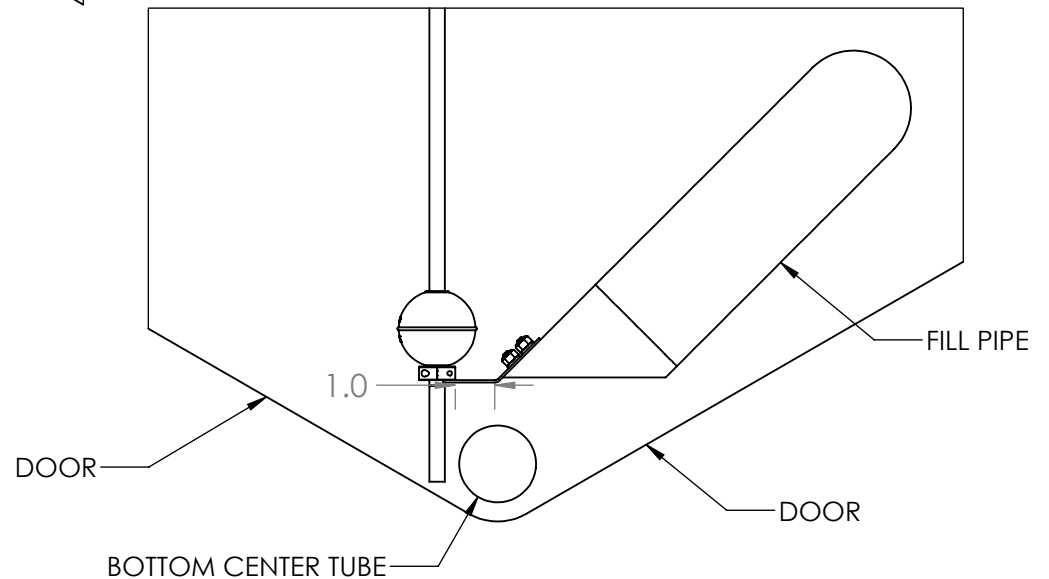
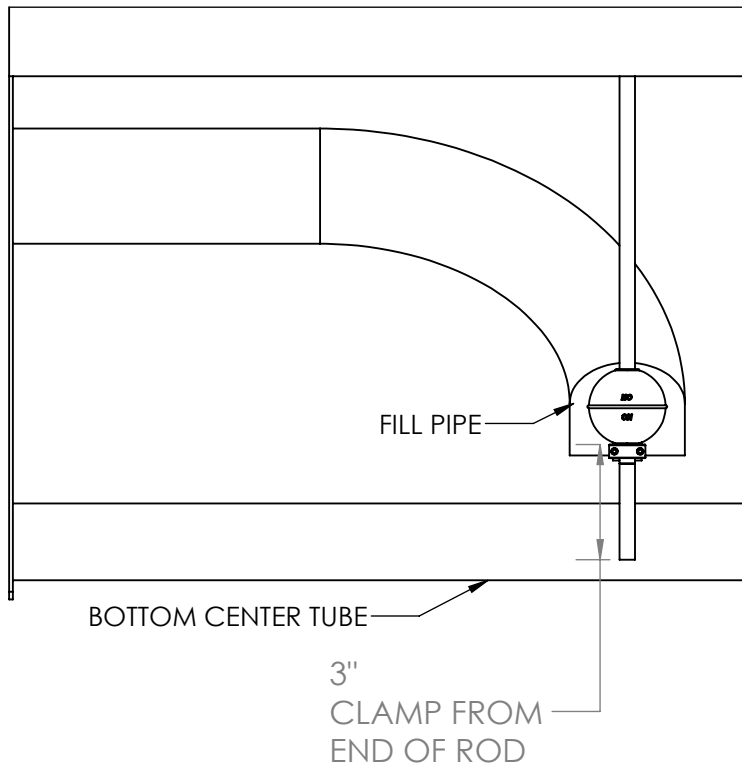
	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:5	WEIGHT:	SHEET 9 OF 11

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802 WITH GEN 2 TROTTER FIRE GATE PROBE CLAMP INSTALLATION

CLAMP SECURED WITH
(2) 3/16" SCREWS WITH LOCK NUTS
NOTE: HEAD DOWN ON SCREW
CLAMP TAB IS ON BOTTOM SIDE OF CLAMP
TOP OF CLAMP IS 3.0" FROM BOTTOM OF PROBE
CLAMP TAB IS BENT AND DRILLED FOR PROBE AND FLOAT CLEARANCE



NOTE:
CLAMP PN 6-3-3-000
MAY NEED TO BE DRILLED OUT
TO $\varnothing .44"$ FOR ROD CLEARANCE



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ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

DO NOT SCALE DRAWING

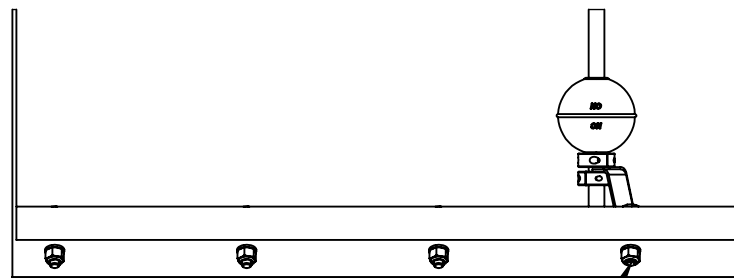
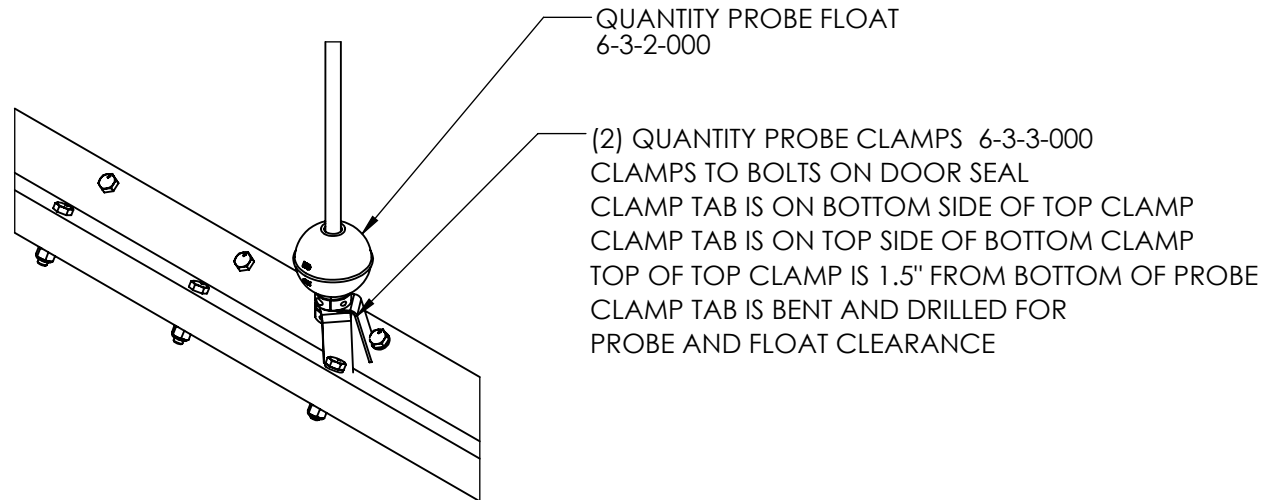
QUANTITY PROBE MOUNTING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
SCALE: 1:5			WEIGHT:		SHEET 10 OF 11

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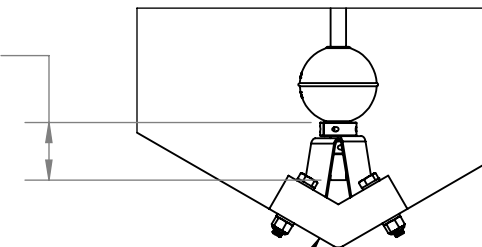


802 WITH GEN 3 TROTTER FIRE GATE PROBE CLAMP INSTALLATION



4TH BOLT FROM REAR,
APROX 16" FROM AFT EDGE OF DOOR

1 1/2" END OF ROD
TO TOP OF CLAMP



CENTER DOOR SEAL BEAM

NOTE:
CLAMP PN 6-3-3-000
MAY NEED TO BE DRILLED OUT
TO Ø.44" FOR ROD CLEARANCE



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TOLERANCES:
FRACTIONAL ± 1/16
ANGULARS: ± 1/2°
TWO PLACE DECIMAL ±.015
THREE PLACE DECIMAL ±.005

MATERIAL

DO NOT SCALE DRAWING

QUANTITY PROBE MOUNTING

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/25/2011	A	6-0-5-000	15
CHECKED	TRR	07/25/2011			
			SCALE: 1:5	WEIGHT:	SHEET 11 OF 11

NOTE:
SWITCH MONTED THROUGH .75" HOLE
PAINT HOLE PER AIRCRAFT MAINTENANCE MANUAL

1 AMP IN-LINE FUSE ASSEMBLY ALLOWED IN PLACE OF BREAKER 

CHECK THAT THE BREAKER OR INLINE FUSE HOLDER LOCATION
CAN BE REACHED WITH 4" 18 AWG WIRE FROM HOT SIDE
OF RELAY COIL

EXAMPLE IN-LINE FUSE ASSEMBLY:
DELPHI P/N 1206681 FUSE HOLDER 
DELPHI P/N 12033731 FUSE COVER 

LOADER QUANTITY POWER SWITCH
MOUNT OPTION C IN EXISTING AIR TRACTOR
REMOTE DISPLAY MOUNTING BRACKET IF SO EQUIPPED
3/4" HOLE IN BRACKET
1.0" HOLE IN SKIN 

LOADER POWER UNIT
MOUNTED BEHIND
UPPER DASH

LOADER QUANTITY POWER SWITCH
MOUNT OPTION A NEXT TO REMOTE DISPLAY
3/4" HOLE IN TURTLE DECK
20" AFT OF LEFT DOOR
1/2" ABOVE SIDE SKIN 

CIRCUIT BREAKER OR IN-LINE FUSE
MOUNTED NEXT TO MASTER RELAY

LOADER QUANTITY POWER SWITCH
MOUNT OPTION B IN HORIZONTAL STRINGER
3/4" HOLE CENTERED IN STRINGER
1" MINIMUM DISTANCE FROM OTHER HOLES
1.0" HOLE IN SKIN 

HORIZONTAL
STRINGER

REMOVABLE
SKIN PANNEL

OLD RELAY MOUNT

NEW RELAY MOUNT SHIELD

BREAKER MOUNT, 1/2" HOLE
2" FORWARD OF FIREWALL
3/4" IN FROM INBOARD EDGE

BREAKER MOUNT, 1/2" HOLE
1-1/2" FORWARD OF FIREWALL
1" IN FROM OUTBOARD EDGE

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TOLERANCES:
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ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$

MATERIAL

SPEC

TITLE:

LOADER POWER MOUNTING

DRAWN	NAME	DATE	SIZE	DWG. NO.	REV
CHECKED	TRR	03/07/2018	B	6-0-6-000	C

DO NOT SCALE DRAWING

SCALE: 1:2

WEIGHT:

SHEET 1 OF 1

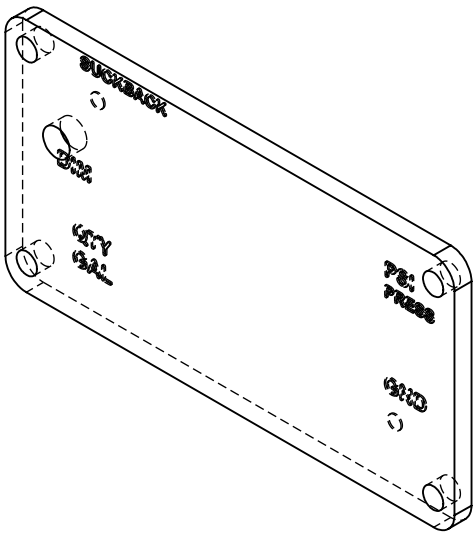
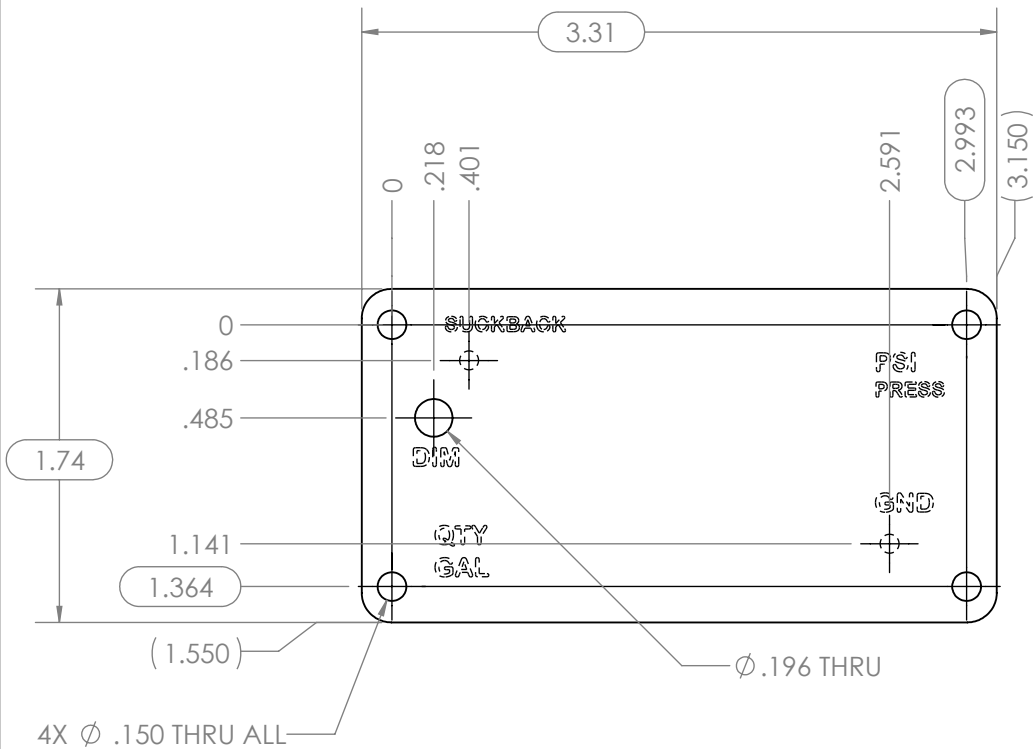
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PART NUMBER: 6-1-4-00E
MANUFACTURE: REABE DESIGN LLC
MFG PART NUMBER: 6001-0001-04-E
FRONT COVER ENGLISH

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	07/04/2013	TRR
2	ADDED NOTES 1 AND 2	07/15/2024	TRR



2
NOTES:

1. SEE PART DRAWING FOR MATERIAL DATA
2. APPLY PART NUMBER PER RD PS-202 CLASS 8

A

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THREE PLACE DECIMAL $\pm .005$

MATERIAL
ACRYLIC SHEET

DO NOT SCALE DRAWING

TITLE:

FRONT COVER ENGLISH

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/04/2013	A	6-1-4-00E	2
CHECKED	TRR	07/04/2013			
SCALE: 1:1			WEIGHT:		SHEET 1 OF 1

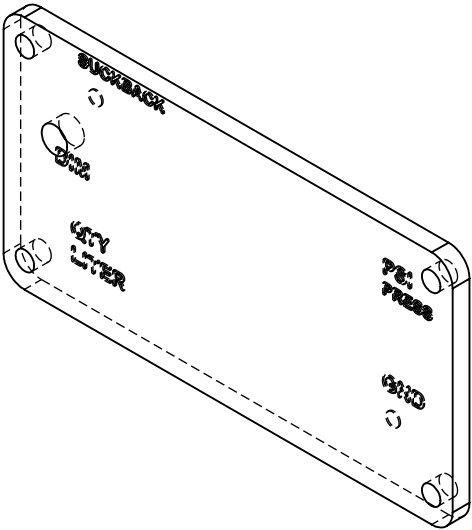
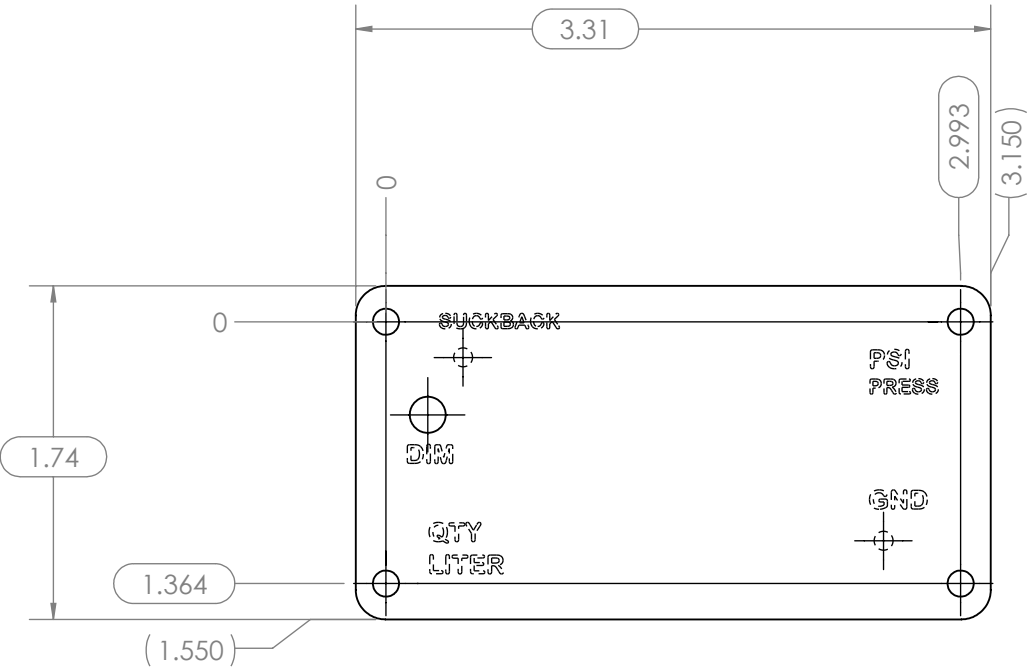
PART NUMBER: 6-1-4-00M

MANUFACTURE: REABE DESIGN LLC

MFG PART NUMBER: 6001-0001-04-M

FRONT COVER METRIC

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	07/4/2013	TRR
2	ADDED NOTES 1 AND 2	07/15/2024	TRR



- 2
- NOTES:
1. SEE PART DRAWING FOR MATERIAL DATA
 2. APPLY PART NUMBER PER RD PS-202 CLASS 8

2

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THREE PLACE DECIMAL $\pm .005$

MATERIAL
ACRYLIC SHEET

DO NOT SCALE DRAWING

FRONT COVER METRIC

	NAME	DATE	SIZE	DWG. NO.	REV
DRAWN	TRR	07/04/2013	A	6-1-4-00M	2
CHECKED	TRR	07/04/2013			
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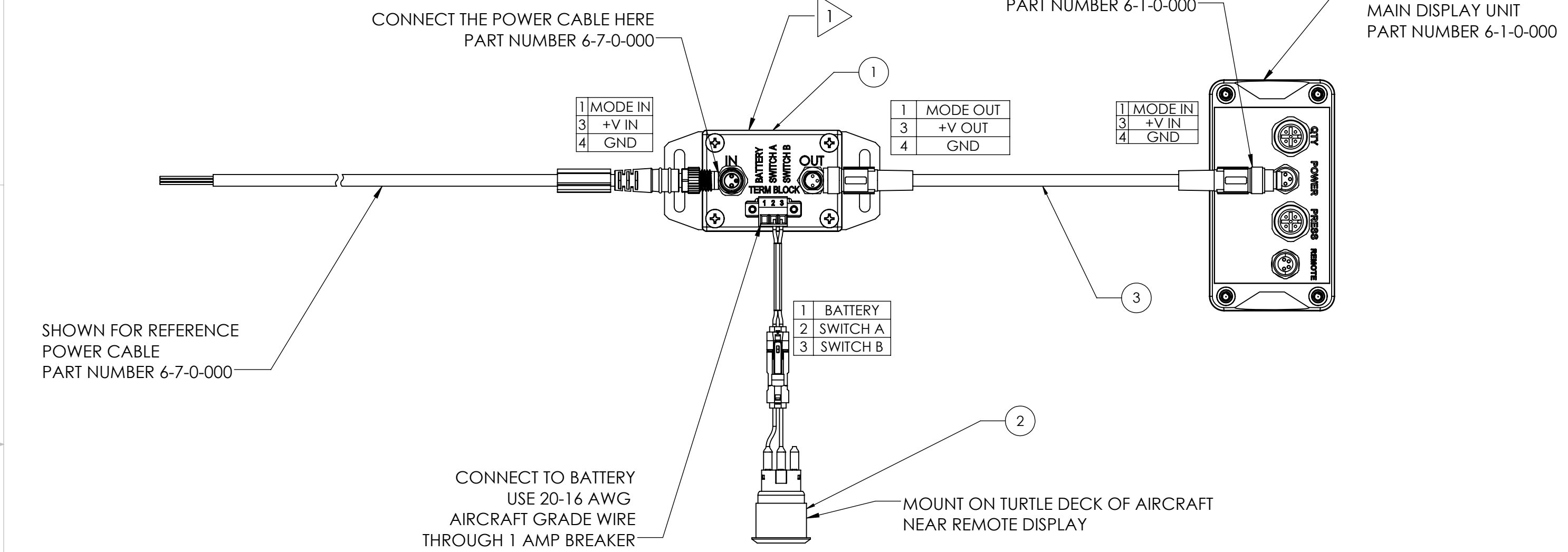
NOTES: 2
1. APPLY PART NUMBER PER RD PS-202
CLASS 2,3,5,6 OR 12

D

C

B

A



D

C

B

A

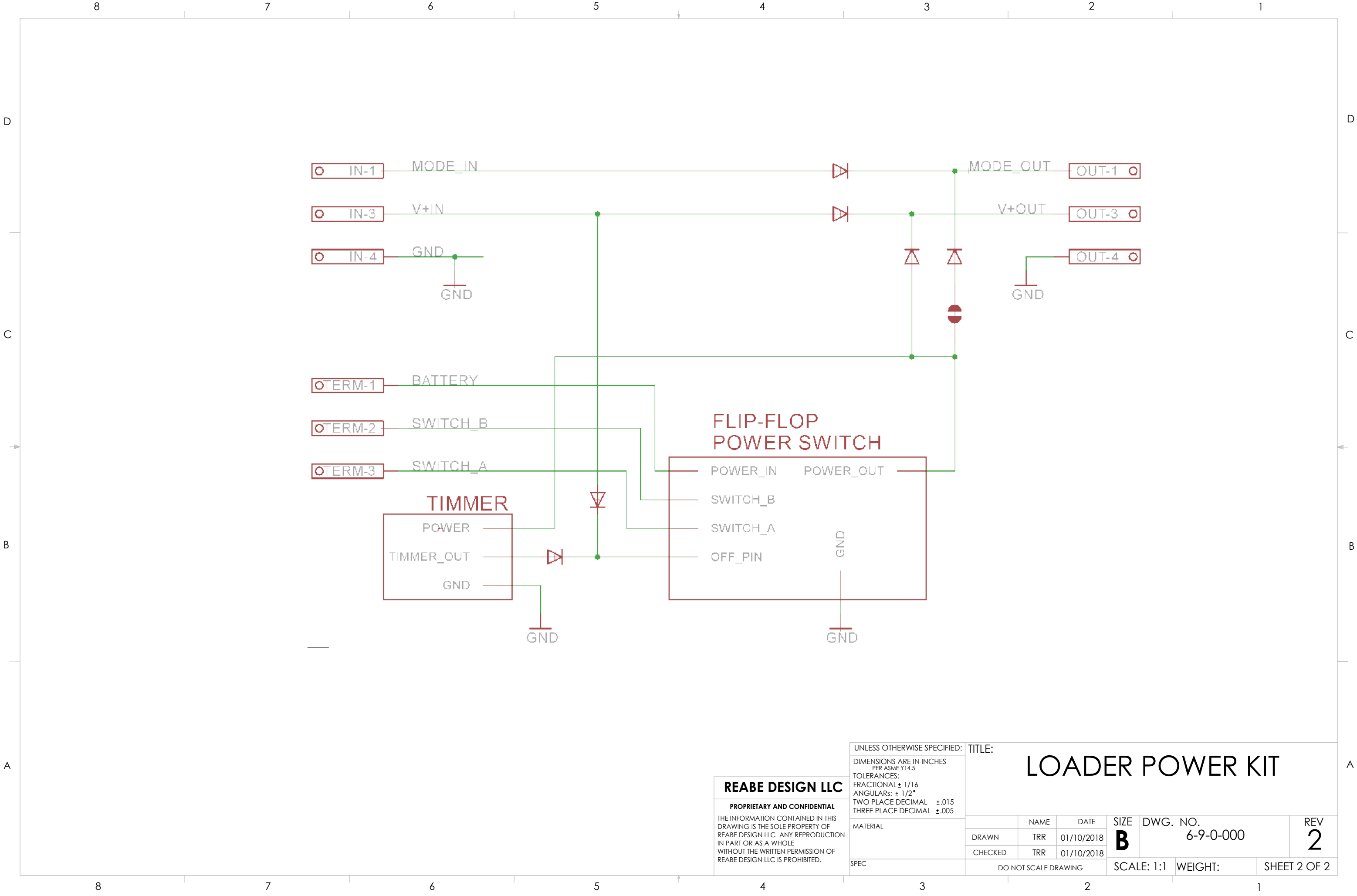
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	6-9-1-000	LOADER POWER UNIT	1
2	6-9-2-000	LOADER QUANTITY POWER SWITCH	1
3	6-9-3-000	LOADER POWER CABLE	1

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TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULARS: $\pm 1/2^\circ$
TWO PLACE DECIMAL $\pm .015$
THREE PLACE DECIMAL $\pm .005$
MATERIAL
SPEC

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	ORIGINAL RELEASE	3/28/2018	TRR
2	ADDED NOTE 1	07/15/2024	TRR

TITLE:				LOADER POWER KIT			
DRAWN		NAME	DATE	SIZE	DWG. NO.	REV	
CHECKED		TRR	01/10/2018	B	6-9-0-000	2	
DO NOT SCALE DRAWING				SCALE: 1:1.5		SHEET 1 OF 2	



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ANGULARs:	± 1/2°
TWO PLACE DECIMAL	±.015
THREE PLACE DECIMAL	±.005
MATERIAL	
SPEC	

TITLE:				LOADER POWER KIT			
		NAME	DATE	SIZE	DWG. NO.	REV	
DRAWN		TRR	01/10/2018	B	6-9-0-000	2	
CHECKED		TRR	01/10/2018	SCALE: 1:1		WEIGHT:	SHEET 2 OF 2
DO NOT SCALE DRAWING							

TITLE WEIGHT & BALANCE ANALYSIS				Document Number 6001-WEIGHT	REVISION LEVEL Rev 1
ORIGINATOR TRR			ISSUE DATE 10 AUGUST 2023	APPROVED BY TRR	
REVISION HISTORY 1	REVISION DATE 10 AUG 23	REVISED BY KCR	APPROVED BY TRR	DESCRIPTION OF REVISION DOCUMENT CREATED	

WEIGHT & BALANCE ANALYSIS

Weight and balance computation is required after installation for compliance with 14 CFR 23.29 (b) amdt. 23-21. Follow the guidelines as established in AC 43.13-1B, Chapter 10, Section 2. All items added, removed, or relocated must be documented as entries in the equipment list. The date, name, and certificate number must be included in these aircraft records. The table below reports the weight of each item included in the following configurations for the True Quantity Gauge (TQG) System:

- Configuration 1: Basic System Installation
- Configuration 2: System Installation with Remote Display Unit
- Configuration 3: System Installation with Remote Display Unit and Loader Power Kit

		Config 1	Config 2	Config 3
Items Added		Weight (Lbs.)	Weight (Lbs.)	Weight (Lbs.)
TQG System				
Main Display Unit	P/N 6-1-0-000	0.5	0.5	0.5
Remote Display Unit	P/N 6-2-0-000	--	0.5	0.5
Pressure Probe	P/N 6-4-0-000	0.1	0.1	0.1
Quantity Probe Assembly	P/N 6-3-0-***	3.3	3.3	3.3
Cables		0.7	1.0	1.0
Loader Power Kit	P/N 6-9-0-000	--	--	0.6
Total System		4.6	5.4	6.0

ELECTRICAL LOAD ANALYSIS				Document Number	REVISION LEVEL
ORIGINATOR				6001-ELECTRICAL	Rev 2
TRR			ISSUE DATE	APPROVED BY	
			10 AUGUST 2023	TRR	
REVISION HISTORY	REVISION DATE	REVISED BY	APPROVED BY	DESCRIPTION OF REVISION	
1	10 AUG 23	KCR	TRR	DOCUMENT CREATED	
2	19 MAR 24	TRR	TRR	ADDED TYPICAL AIRCRAFT & IN-FLIGHT POWER	

ELECTRICAL LOAD ANALYSIS

An electrical load analysis should be completed on each aircraft prior to installation in accordance with AC 43.13-1B, Chapter 11. Use the following for reference.

The table below reports the current draw of each of the following configurations for the True Quantity Gauge (TQG) System:

- Configuration 1: Basic System Installation
- Configuration 2: System Installation with Remote Display Unit
- Configuration 3: System Installation with Remote Display Unit and Loader Power Kit

24VDC

	Config 1	Config 2	Config 3
	Current Draw	Current Draw	Current Draw
TRUE QUANTITY SYSTEM USAGE	1/8 Amp	¼ Amp	¼ Amp

Reference 6001-II Installation Instructions for a list of all aircraft models in each series

TYPICAL AIRCRAFT AS MANUFACTURED:

250 Amp Starter/Generator

150 Amp Main Buss on AT-400, AT-402, AT-502, AT-504, AT-602

120 Amp Main Buss on AT-802, 400, 510, 550 and 710 Thrush

100 Amp Air Conditioner Buss on 400, 510, 550 and 710 Thrush

IN-FLIGHT POWER CONSUMPTION:

9.0 Amp Generator Control Unit (field current)

1.1 Amp Instruments

18.0 Amp Landing lights

7.0 Amp Nav/Strobe lights

2.0 Amp Instrument lights

3.5 Amp Spray pump brake

22.0 Amp Air Conditioning Blowers

.3 Amp TQG (Max Draw Config)

13.4 Amp Flaps

4.0 Amp Smoker

18.3 Amp Rinse Pump

6.5 Amp Windshield Washer/Wiper

62.9 Amp Continuous

42.2 Amp Momentary

105.1 Amp Full Draw

212.5 Amps 85% of 250 Amp

107.4 Amp still available

"TRUE QUANTITY" HOPPER QUANTITY & BOOM PRESSURE GAUGE

AT-401 TYPICAL AS MANUFACTURED

60 Amp Alternator

IN-FLIGHT POWER CONSUMPTION

1.1 AMP Instruments

18.0 Landing Lights

7.0 Nav/Strobe Lights

2.0 Instrument Lights

0.3 TQG (Max Draw Config)

13.4 Flaps

6.3 Rinse Pump

2.1 Windshield Washer

50.2 Amp Full Draw

51.0 Amps 85% of 60 Amp

0.8 Amp still available

Note: Most AT-401s have had Alternator updated to larger aftermarket.

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS				Document Number 6004-ICA	REVISION LEVEL Rev 1
ORIGINATOR TRR		ISSUE DATE 17 AUG 2023		APPROVED BY TRR	
REVISION HISTORY 1	REVISION DATE 17 AUG 23	REVISED BY TRR	APPROVED BY TRR	DESCRIPTION OF REVISION DOCUMENT CREATED	

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

For STC # _____ to install the "TRUE QUANTITY" GAUGE SYSTEM on the following aircraft models:

AIR TRACTOR AT-400, AT-400A, AT-401, AT-401A, AT-401B, AT-402, AT-402A, AT-402B, AT-502, AT-502A, AT-502B, AT-504, AT-602, AT-802, AT-802A

THRUSH S2R, S2R-G1, S2R-G5, S2R-G6, S2R-G10, S2R-H80, S2R-T15, S2R-T11, S2R-T34, S2R-T45, S2R-T65, S2RHG-T34, S2RHG-T65, S2R-510, S2R-T660

Notice: Verify that this document is the latest approved revision before use. Current Versions can be found at:
www.ReabeAir.com/Support

1) INTRODUCTION

The patented Reabe Design "TRUE QUANTITY" GAUGE SYSTEM:

- A. Provides digit hopper quantity indication using the Quantity Probe Assembly, a magnetostrictive linear displacement transducer (MLDT).
- B. Provides boom pressure indication using the Pressure Probe, a pressure transducer.

This ICA was developed in accordance with FAA Order 8110.54A to apprise operators who have modified their aircraft to install this Supplemental Type Certificate (STC) the information essential to the continued airworthiness of the airplane, addressing maintenance inspection and replacement. This ICA does not supersede any OEM maintenance document.

Modification of an aircraft by this STC obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

2) DESCRIPTION

The patented True Quantity Gauge of Reabe Design LLC has been used as the superior solution to hopper quantity detection and boom pressure in Air Tractors and Thrush aircraft since 2010.

The system consists of a Quantity Probe Assembly, Pressure Probe, Main Display Unit, and cabling to connect components. Optional components include a Remote Display Unit with enlarged digits

to provide hopper quantity for the ground crew. Also, an optional Loader Power Kit is also available to turn on the system externally without the loader needing to enter the cockpit to power the aircraft master. The True Quantity Gauge of Reabe Design LLC is a highly reliable and accurate system that measures the amount of liquid in the aircraft payload hopper (gallon or liters) and hopper boom pressure (PSI), at any given time whether on ground or in flight. The Main Display reading can be used by the pilot to determine the weight of the aircraft prior to take-off and to regulate the product application rate, as the pilot dictates the rate of product dispensed from the payload hopper.

The True Quantity Gauge system uses the Quantity Probe and Float, at the surface of the liquid, to determine the liquid volume in the payload hopper. A single physical wear point, the Float, is the only moving part. Having this mechanically simple solution works to increase the reliability of the system in the physically rugged environment of agricultural aircraft. In addition, the resolution capabilities of the Quantity Probe (being an MLDT) has a resolution of .001" resulting in gallon accuracy. Since each aircraft model's hopper varies in size and shape, different lengths of the Quantity Probes are required for each model. Calibration data has been gathered from all aircraft models and each model's data can easily be selected with the correct DIP switch inside the Main Display Unit.

In use, the Quantity Probe Assembly transmits the position reading to the Main Display Unit mounted in the cockpit. The Main Display filters the signal, thereby removing the sloshing in the signal (when the aircraft is in flight) and converts the filtered height to an accurate volume that appears on a Main Display. To calculate the hopper quantity accurately on ground verses in flight an attitude determination is required. Two separate look-up tables (per Model aircraft) are used in the Main Display to adjust quantity based on attitude which is automatically determined from the aircrafts torque pressure switch, this switch is already installed in the plane and is used to turn the Hobbs meter on and off to track actual flight hours and not ground idle time.

The True Quantity Gauge also provides a boom pressure indication that reports the pressure within the spray boom, both positive and negative. The boom pressure signal is shown on the Main Display. If negative pressure is detected in the boom, a SUCKBACK indicator light on the Main Display will be seen.

The optional Remote Display is connected to the Main Display via a power/data cable (The Remote Cable), this single cable provides power and a RS-232 signal is used to send mode and quantity data to the Remote Display. When in Ground mode the Remote Display indicates the quantity in the hopper, in flight mode the Remote Display shows FLY or FLT to prevent over improper filling if the mode did not change.

The optional Loader Power Kit is used for the loader to power up and load the hopper without needing to turn the aircraft master power on. Keeping the loader out of the cockpit has proved to be a beneficial safety move. The single push button (Loader Quantity Power Switch) on the side of the aircraft can power up the hopper gauge when pressed and powers off when pressed again. There is also a built-in timer so if the loader fails to power the gauge off the unit will shut itself off in approximately 15 to 20 minutes, preventing the accidental incident of draining the batteries dead. The Loader Power Kit also uses solid state diodes that prevent the power fed in from the battery line or main bus from going out the input and cross feeding. There is also a solid-state switch that powers off the battery side of the system if power is applied to the main bus side.

3) CONTROL

For powering on and off of the True Quantity Gauge there is a 1-amp breaker mounted in the breaker panel that is labeled "Hopper Display". Pulling this breaker will disconnect power and turn the unit off if the aircraft master power was on.

While the master power is off the True Quantity Gauge can be powered on by use of the Loader Power Kit (if installed). The Loader Power Kit has an externally mounted push button, labeled "Loader Quantity Power", that when depressed will turn on the True Quantity Gauge system for ground loading operations. If depressed again the Loader Power Kit will turn off the True Quantity Gauge system. If the "Loader Quantity Power" button is never depressed a second time the Loader Power Kit will time out at approximately 15 to 20 minutes and turn off the True Quantity Gauge system.

The Main Display Unit has a single button "DIM" on the face of the display. This Dim button is used to cycle through the screen brightness. The Dim button can also be used to have the unit display current setting by keeping the Dim button depressed while powering the Main Display on.

4) SERVICING

The following outlines the maintenance schedule for the True Quantity Gauge system:

There is no routine maintenance schedule for the True Quantity Gauge system. Service is needed only by condition.

5) MAINTENANCE

It is the responsibility of the Owner/Operators to make certain the intended function of the system is not negatively affected by any maintenance performed.

Clean the displays with a soft cotton or microfiber cloth. Don't use harsh cleaner to prevent damage of the acrylic faceplates.

Parts in hopper may be pressure washed, avoid exposing electrical connections and cables to pressure washer blasts.

AT ANNUAL INSPECTION:

- A. Hold DIM button while powering on Main Display Unit. Verify all digit segments light up during test, Check Units, and Aircraft Selected.
- B. Verify that pressure gauge is able to be zeroed by holding DIM when powering on, and not indicating an Error (Erro).
- C. Check quantity reading with float at the bottom of quantity probe, and check quantity reading with float at the top of the quantity probe. See document 6001-Install Test for model specific readings.
- D. Check that unit labels on Main and Remote Displays are present and agree with Main Display settings. Either GAL for Gallons or LITER for liters.
- E. Inspect labels as follows:
 - System 1-amp breaker in breaker panel "Hopper Display",
 - Loader Power Kit 1-amp breaker or fuse up by master relay "Loader Quantity Switch",

Loader Quantity Power Switch on side of fuselage "Loader Quantity Power"

All labels and placards identified to be installed, are customer supplied and must be in bold 1/8" font indelible material and permanently marked.

6) TROUBLESHOOTING

If the unit is not powering on, check the power supply for the box.

- Check Power and ground Connections, and any splices in power lines
- Check circuit breaker
- Make sure you have the black wire to ground and the blue wire to power in the POWER CABLE
- Check the POWER CABLE connection to back of Main Display Unit
- Unplug and plug back in Cables from Main Display Unit

If you get an Error (Erro) on either line of the display it is saying that the sensor is out of range.

- If the Error is on the pressure line the error is with the Pressure Probe, or connection.
- If the Error is on the quantity line the error is with the Quantity Probe, or connection.
- If the quantity line is displaying "P Er" that indicates the Quantity Probe is connected to the Main Display unit but the Quantity Probe does not have an indication for the position of the Float.

An error is normally caused by a bad connection or sometimes the cable. Check your connections and make sure you did not kink the cable when running it. You can check the continuity of the cable with a multi meter to verify if it is the cable.

For Error (Erro) or incorrect readings on the Quantity line please preform the following:

- Check the Quantity Cable and its connections, disconnect the cable, ring the lines checking for continuity and verifying there are no shorts between lines, reconnect the Quantity Cable
- Verify the Float is Floating... (sounds dumb but we have seen it)
- Verify the Float can move freely up and down the rod without interfering with other parts in hopper
- Verify the Rod is clear of chemical buildup, if needed clean the rod that is inside the hopper with a pressure washer
- Check that there is no magnetized hardware used on or close to the Quantity Probe

For Error (Erro) or incorrect reading on the Pressure Line please perform the following:

- Verify there is no buildup or blockage in the boom pressure line, sometimes snubbers or even the line its self can become clogged or blocked
- With no pressure in the boom (spray pump off) Cyle power off and on to the Gauge while holding the DIM button down. This will cause the Pressure gauge to attempt to find the current zero pressure reading.

If problem cannot be remedied by any of the above Contact Reabe Design LLC, Contact info in Section 15

7) REMOVAL REPLACEMENT:

(Weight and balance changes to be recorded in Airplane Flight Manual using Reabe Design Weight and Balance Analysis Document # 6001-Weight).

1. Main Display Unit PN 6-1-0-000 removal
 - a. Pull "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - b. Disconnect all cables from the back of the display.
 - c. Remove Faceplate screws to free main display from mount.
2. Main Display Unit Replacement (See Drawing 6-0-2-000 Main Display Mounting)
 - a. Secure Main Display Unit to mount using faceplate screws.
 - b. Re connect all cables to the back of the display.
 - c. Energize "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - d. Test Per Section 9) Test
3. Remote Display Unit PN 6-2-0-000 removal
 - a. Pull "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - b. Disconnect all cables from the back of the display.
 - c. Remove Faceplate screws to free main display from mount.
4. Remote Display Unit Replacement (See Drawing 6-0-3-000 Remote Display Mounting)
 - a. Secure Main Display Unit to mount using faceplate screws.
 - b. Re-connect all cables to the back of the display.
 - c. Energize "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - d. Test Per Section 9) Test
5. Quantity Probe PN 6-3-1-TAB removal
 - a. Pull "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - b. Disconnect Quantity Probe Cable from the head of the Quantity Probe.
 - c. Loosen Quantity Probe Clamp at bottom of Quantity Probe.
 - d. Remove Probe Float.
 - e. Loosen nut just inside hopper by Quantity Probe head.
 - f. Remove Quantity Probe out the top of the hopper.
6. Quantity Probe Assembly Replacement (See Drawing 6-0-5-000 Quantity Probe Mounting)
 - a. Install Quantity Probe in from the top of the hopper.
 - b. Install washer and nut to secure Quantity Probe to top of hopper, seal penetration with RTV silicone.
 - c. Install Probe Float on Quantity Probe "NO" Side up.
 - d. Secure bottom of Quantity Probe in place using Quantity Probe Clamp.

- e. Re-connect Quantity Probe Cable to the Head of Quantity Probe, seal connection with RTV silicone.
 - f. Energize "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - g. Test Per Section 9) Test.
7. Pressure Probe PN 6-4-0-000 removal
- a. Pull "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - b. Disconnect Pressure Cable from the Pressure Probe.
 - c. Remove cable ties to free Pressure Probe from Frame.
 - d. Unscrew Pressure Probe from line adapters.
8. Pressure Probe Replacement (See Drawing 6-0-4-000 Pressure Probe Mounting)
- a. Screw Pressure Probe to line adapters.
 - b. Secure Pressure Probe to Frame using cable ties.
 - c. Re-connect Pressure cable to the Quantity Probe.
 - d. Energize "Hopper Display" breaker and "Loader Quantity Switch" breaker (if installed).
 - e. Test Per Section 9) Test.
9. Loader Power Unit PN 6-9-1-000 removal (if installed)
- a. Pull "Hopper Display" and "Loader Quantity Switch" breakers.
 - b. Disconnect both cables and terminal block from the top of the Loader Power Unit.
 - c. Remove Mounting screws and nuts to free Loader Power Unit from mount.
10. Loader Power Unit Replacement (if installed; see Drawing 6-0-6-000 Loader Power Mounting)
- a. Secure Loader Power Unit to mount using screws and nuts.
 - b. Re connect both cables and terminal block to the top of the Loader Power Unit.
 - c. Energize "Hopper Display" and "Loader Quantity Switch" breakers.
 - d. Test Per Section 9) Test.

8) DIAGRAM

See Reabe Design Drawing 6-0-1-000 Unit Wiring Overview

9) TEST

See Reabe Design Document "6001-Install Test" and perform test per document.

10) PROTECTIVE TREATMENT

Electrical connections on the system are treated with dielectric grease. (Dow Corning DC4 or similar is recommended) Apply dielectric grease per manufacturer's instructions.

11) DATA:

See Reabe Design Document "6001-DL Drawing List" for full list of required documents for the ICA.

12) SPECIAL TOOLS: None

13) Reserved

14) Time Between Overhauls (TBO): None

15) REVISIONS & ASSISTANCE:

ICA revisions shall be made available on the website www.ReabeAir.com/Support

For questions or assistance regarding these Instructions for Continued Airworthiness (ICA), contact;

Reabe Design LLC
2552 Coreland Ct
DePere, WI 54115

Phone: (321) 247-8722

Email: Troy@ReabeAir.com

Or Visit: www.ReabeAir.com/Support

16) AIRWORTHINESS LIMITATIONS:

Log of Revisions: Section 16 Airworthiness Limitations			
Revision	Description	FAA Approved By	FAA Approval Date
1	Initial Release		

There are no new or additional Airworthiness Limitations associated with this equipment and/or installation.

The Airworthiness Limitations section is FAA approved and specifies maintenance required under Sections 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

FAA APPROVED

Signature

Date

For: Paul Nguyen

Manager – Central Certification Branch (AIR-760)

Compliance and Airworthiness Division

Federal Aviation Administration

FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT

INSTALLATION OF THE REABE TRUE QUANTITY GAUGE SYSTEM
ON

AIR TRACTOR

AT-400, AT-400A, AT-402, AT-402A, AT-402B, AT-502, AT-
502A, AT-502B, AT-504, AT-602, AT-802, AT-802A

AND

THRUSH AIRCRAFT

S2R-G10, S2R-G5, S2R-T34, S2R-T65, S2R-G1, S2R-T15, S2RHG-T65,
S2RHG-T34, S2R-T45, S2R-T660, S2R-T11, S2R-G6, S2R-H80, S2R-510

Aircraft Model: _____

Serial Number: _____

Registration Number: _____

This supplement must be included in the FAA approved Airplane Flight Manual when the aircraft is modified by the installation of the Reabe True Quantity Gauge System in accordance with STC _____.

Information contained herein supplements or supersedes the basic Airplane Flight Manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement, consult the approved Airplane Flight Manual.

APPROVED BY: _____ *for*

Manager, Southwest Flight Test Section, AIR-710
Federal Aviation Administration
Ft. Worth, TX

DATE: _____

LOG OF REVISIONS

Revision	Revised Pages	Description of Changes	FAA Approval
1	1 - 5	Initial Release	Michael Ward, FTE, AIR-712 June 29, 2023

SECTION 1: LIMITATIONS

No Change

SECTION 2: NORMAL PROCEDURES

Dimming the Display

- a) Press the “DIM” button, to cycle through display brightness levels.
- b) Press and hold the “DIM” to have display cycle down to the lowest brightness level.

Display Units

- a) When the unit is powered up the display will indicate units for that line, examples; GAL, LET, PSI.
- b) Verify label next to line is marked correctly.

(Optional) Loader Power Kit

- a) When the aircraft master is off.
- b) Pressing the Loader Quantity Power Switch will power up the TQG System.
- c) The Loader Power Kit will remain active until any of the following occur.
 - i) Loader Quantity Power Switch is pressed again to power system down.
 - ii) Internal timer expires and the Loader Power Kit will power down.
 - iii) Aircraft Master is turned on, Loader Power Kit will power down, however MDU will now be receiving power from the aircraft main bus.

Suckback Light

The “Suckback” light automatically illuminates when the boom pressure reading is below zero, indicating negative pressure in the spray boom.

GND Light

The “GND” light automatically illuminates when the MDU is in ground mode. Ground mode is controlled by connection to the Torque Pressure switch, when the engine torque is low the GND light is on and unit is in Ground Mode, when the engine torque is high the GND light is off and unit is in Flight Mode.

SECTION 3: EMERGENCY PROCEDURES

No Change

SECTION 4: PERFORMANCE

No Change

SECTION 5: WEIGHT & BALANCE

See weight & balance documents for this aircraft.

SECTION 6: DESCRIPTION OF AIRPLANE AND ITS SYSTEMS (NOT FAA APPROVED)

The True Quantity Gauge (TQG) System uses a magnetostrictive linear displacement transducer (MLDT) to measure the amount of liquid held within the aircraft payload hopper. The TQG System will be used by the pilot to determine the weight of the aircraft prior to take-off and to regulate the hopper product application rate, as the pilot dictates the rate of product dispensed from the payload hopper.

SYSTEM CONSISTS OF

- Main Display Unit (MDU) mounted in the cockpit digitally displays the hopper quantity volume in gallons or liters. In addition, the MDU displays the spray boom pressure in Pounds-per-square-inch (PSI) units. If negative pressure is detected in the spray boom, a SUCKBACK indicator light on the MDU will illuminate.

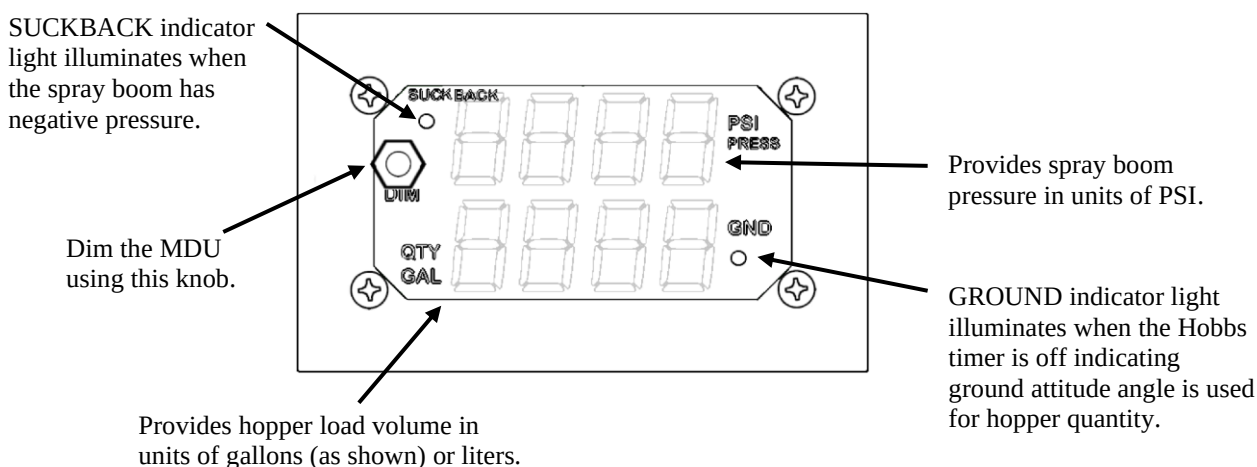


Figure 1: Main Display Unit (MDU) Layout

- b) (optional) Remote Display Unit (RDU) mounted externally to the cockpit to digitally display the hopper quantity volume in gallons or liters.

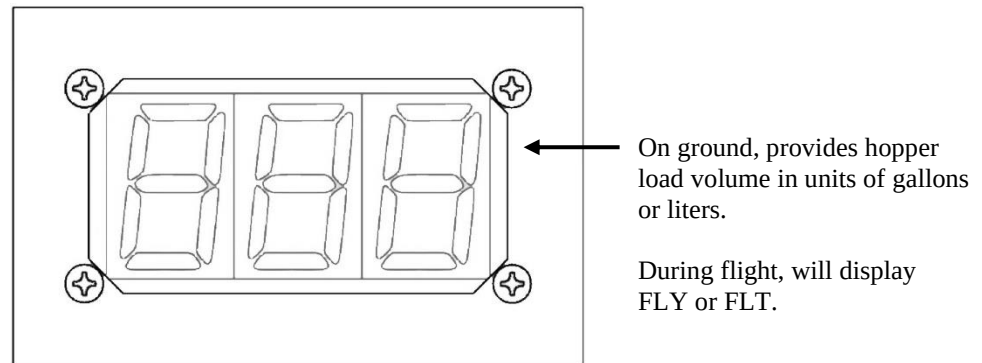


Figure 2: Remote Display Unit (RDU Layout)

- c) Quantity Probe Assembly mounted in the hopper, sends position of the float to the MDU to calculate quantity on board.
- d) Pressure Probe connected to the spray boom, sends pressure signal of the boom to the MDU to calculate boom pressure.
- e) (optional) Loader Power Kit, allows ground crew to power unit on and load aircraft when aircraft master is off.
- f) Cables for connecting components.

The system operates in ground mode when the aircraft is on ground and in flight mode when the aircraft is in flight. The MDU will display quantities in both ground and flight mode. However, the RDU displays the hopper quantity when the system is in ground mode and will display FLY or FLT when the system is in flight mode to prevent improper filling or over-filling if the system mode did not change.

Adjacent to the optional RDU, the system also provides an optional Loader Quantity Power Switch (LQPS) to allow the loader to turn on the TQG system externally without needing to turn on the aircraft master power.

[illegible]

GROUND TEST

1. Purpose and Introduction

The purpose of this Ground Test Procedure is to verify all components of the True Quantity Gauge (TQG) System installed are functioning properly and not interfering with other systems or equipment on the aircraft.

2. Brief System Description

The TQG System uses a magnetosphere linear displacement transducer (MLDT) to measure the amount of liquid held within the aircraft payload hopper. The TQG System will be used by the pilot to determine the weight of the aircraft prior to take-off and to regulate the hopper product application rate, as the pilot dictates the rate of product dispensed from the payload hopper.

The system uses the Main Display Unit (MDU) mounted in the cockpit and an optional Remote Display Unit (RDU) mounted externally to the cockpit to digitally display the hopper quantity volume in gallons or liters. In addition, the MDU displays the spray boom pressure in Pounds-per-square-inch (PSI) units. If negative pressure is detected in the spray boom, a SUCKBACK indicator light on the MDU will illuminate.

The system operates in ground mode when the aircraft is on ground and in flight mode when the aircraft is in flight. The MDU will display quantities in both ground and flight mode. However, the RDU displays the hopper quantity when the system is in ground mode and will display FLY or FLT when the system is in flight mode to prevent improper filling or over-filling if the system mode did not change.

Adjacent to the optional RDU, the system also provides an optional Loader Quantity Power Switch (LQPS) to allow the loader to turn ON the TQG system externally without needing to turn ON the aircraft master power.

3. Install Testing Requirements

All following PASS FAIL tests are needed to be passed for unit to pass the Install Test.

4. Connection to Battery

- a. Verify battery is disconnected.

"TRUE QUANTITY" GAUGE SYSTEM

- b. Check that the breaker labeled "Hopper Display" in the dash is pulled and if the Loader Power Kit is installed verify the breaker or fuse labeled "Loader Quantity Switch" is pulled (located by master relays).
- c. Connect the battery and turn the master on.
- d. Energize the breaker labeled "Hopper Display" in the dash, Verify the breaker did not trip and Main Display Unit is illuminated.

PASS _____ FAIL _____

- e. If the Loader Power Kit is installed energize the breaker or install the fuse labeled "Loader Quantity Switch" (located by master relays). Verify the breaker did not trip and Main Display Unit is illuminated.

PASS _____ FAIL _____

- f. Turn off aircraft master switch and verify the Main Display Unit turns off.

PASS _____ FAIL _____

5. Functional Ground Test

NOTE: For the initial certification testing and for initial installation testing, all the test steps must be completed. This procedure is also referenced in the ICA to be used after maintenance is accomplished; for testing to support maintenance activities, the steps with the "*" may be omitted.

- a. While holding down the DIM button on the Main Display Unit, turn the aircraft master on. Release the Dim Button once Main Display Unit lights up.

The Main Display Unit will perform a lights test, illuminating all lights and segments on both Main Display Unit and Remote Display Unit (if installed). Verify all segments did light.

The Main Display Unit will then display Software Version, Units, and Aircraft Model selected. Verify Aircraft Model matches aircraft unit is installed in.

PASS _____ FAIL _____

- b. After unit has completed displaying settings data use the DIM button to cycle through the brightness levels, verify that pressing the DIM button adjust brightness. Select an appropriate level of brightness.

PASS _____ FAIL _____

- c. With Hopper empty and the Float positioned at the bottom of Quantity Probe, verify that the Pressure line reads Zero and the GND indicator is illuminated in the Main Display Unit.

Verify the Quantity line in the Main Display Unit and Remote Display Unit (if installed) read the corresponding data for Aircraft Model as shown below:

Aircraft Models	Quantity (Gallons)
AT-400, 401, 402	1
AT-502, 504	3
AT-602	0
AT-802	1
Thrush 400	3
Thrush 510	1
Thrush 550	0
Thrush 710	0

PASS _____ FAIL _____

- d. Bring the Float up to the top of the top end of the Quantity Probe (this can be done by hand or by filling with water).

Verify the Quantity line in the Main Display Unit and Remote Display Unit reads corresponding data for Aircraft Model + or – 3% as shown below.

Note: if the Quantity line reads "FULL" the float needs to be lowered off the stop approx. 1/8". The remote display will not display "FULL".

Aircraft Models	Quantity (Gallons)
AT-400,401,402	400 ± 12.0
AT-502	500 ± 15.0
AT-504	485 ± 14.6
AT-602	620 ± 18.6
AT-802	800 ± 24.0
Thrush 400	400 ± 12.0
Thrush 510	505 ± 15.2
Thrush 550	525 ± 15.8
Thrush 710	680 ± 20.4

PASS _____ FAIL _____

- e. To verify hopper quantity when the system is in flight mode, start the aircraft and increase engine torque to just above 1000 Ft/Lbs.

To verify the TQG system has changed from ground mode to flight mode, verify the GND light in the Main Display Unit extinguishes and if installed, the Remote Display Unit displays FLY or FLT.

With the float raised to the same position as the last test, verify the Quantity line in the Main Display Unit reads corresponding data for Aircraft Model + or – 3% as shown below.

Note: if the Quantity line reads "FULL" the float needs to be lowered off the stop approx. 1/8".

Aircraft Models	Quantity (Gallons)
AT-400,401,402	375 ± 11.3
AT-502	475 ± 14.3
AT-504	460 ± 14.6
AT-602	580 ± 25.5
AT-802	750 ± 22.5
Thrush 400	400 ± 12.0
Thrush 510	494 ± 14.8
Thrush 550	525 ± 15.8
Thrush 710	640 ± 19.2

PASS _____ FAIL _____

- f. To check the Pressure display indications in the Main Display Unit, water is needed in the hopper for the pump to operate.

Verify the boom valve is closed and spray pump is on and spinning at an appropriate speed for flushing the booms. The Pressure line should be indicating a negative pressure and the Suckback light should be illuminated in the Main Display Unit.

PASS _____ FAIL _____

- g. Open the boom valve to pressurize the spray boom, verify the Main Display Unit indicates positive Pressure and the Suckback light is not illuminated.

PASS _____ FAIL _____

- h. Close the Boom Valve, Shutdown the engine, turn off the aircraft. Master should be off. Verify Main Display Unit is off.

PASS _____ FAIL _____

NOTE: Steps "4.i" through "4.l" are only applicable if the Loader Power Kit is installed. If Loader Power Kit is not installed, proceed to step "4.m".

- i. Press the Loader Quantity Power Switch and verify the Main Display Unit turns on.

PASS _____ FAIL _____

- j. After energizing the Main Display Unit, verify the Loader Power Kit shuts off the main display within 15 to 20 minutes.

PASS_____ FAIL_____

- k. Press the Loader Quantity Power Switch and verify the Main Display Unit turns on. Before the Loader Power Kit times out and shuts off the Main Display Unit, turn on the aircraft master.

Then turn the master off and verify the Main Display Unit turns off.

PASS_____ FAIL_____

- l. Press the Loader Quantity Power Switch and verify the Main Display Unit turns on. Before the Loader Power Kit times out and shuts off, press the Loader Quantity Power Switch again and verify the Main Display Unit turns off.

PASS_____ FAIL_____

- m. * With power on the aircraft and all systems operating normally: operate each aircraft system and equipment through a representative range of its functional envelope while qualitatively assessing EMI/RFI. Note any effects below.

- VHF Comm _____
- VOR/ILS _____
- DME _____
- GPS _____
- _____
- _____

Verify the adjacent aircraft systems do not show signs of EMI/RFI interference, including:

- Unwanted illumination of Caution/ Warning lights;
- CAS messages indicating faults, errors, or failures;
- Unwanted noise or signals on communication receivers or heard on the headsets.
- Visual interference on any electronic display (if installed).

PASS _____ FAIL _____

Ground Test Date: _____

Performed By: _____