AIRCRAFT S/N
40.823

AIRCRAFT TECHNICAL LOGS

Section 2. RECORD OF INSTALLATIONS & MODIFICATIONS TO AIRCRAFT

AIRFRAME LOG

1. Nationality and Registration N569CA

2. Manufacturer's Designation DA 40

3. Record of

   (a) Engine Installations
   (b) Propeller Installations
   (c) Airworthiness Directives (A/D)
   (d) Service Bulletins (S/B)
   (e) Special Inspections (S/I)
   (f) Modifications (MODS)

RECORD OF ENGINE &

DATE	ENGINE OR PROPELLER MAKE & MODEL	SERIAL NO.	POSITION	DATE INSTALLED	DATE REMOVED	
SEPT 17 2007	LYCOMING IO-360-M1A	L-33569-51E	CL	JUNE 2007	—	ENGINE INSTALLED
SEPT 17 2007	MT-PROPELLER ENTWICKLUNG GmbH MTV-12-B/183-59b	070199	CL	JUNE 2007	—	PROPELLER INSTALLED

PROPELLER INSTALLATION

REMARKS - REASON FOR CHANGE	SIGNATURE	LICENCE NUMBER
NEW ON DA 40 S/N 40.823 →	[signature]	DA Q 42
NEW ON DA 40 S/N 40.823 AS PER TCCA STC No. SA06-52 →	[signature]	DA Q 42

United States of America

Department of Transportation -- Federal Aviation Administration

Supplemental Type Certificate

Number SA01714WI

This certificate issued to Garmin International, Inc.
1200 East 151st Street
Olathe, KS 66062

*certifies that the change in the type design for the following product with the limitations and conditions therefore as specified hereon meets the airworthiness requirements of Part 23 * of the Federal Aviation Regulations.*

Original Product--Type Certificate

Number:
Make:
Model:

* See attached Approved Model List (AML) No. SA01714WI dated May 1, 2013 or later FAA-approved revision for list of approved aircraft models and applicable airworthiness regulations.

Description of Type Design Change:

Installation of Garmin transponders: (a) GTX 330/330D/33/33D or GTX 335/335R/335D/335DR with ADS-B Out functionality; (b) GTX 345/345R/345D/345DR with ADS-B Out and In functionality; (c) GTX 335R/335DR with ADS-B Out functionality in select airplanes installed with G950/G1000 systems; or (d) GTX 345R/345DR with ADS-B Out and In functionality in select airplanes installed with G950/G1000 systems.

Data Required:

(1) Garmin Master Drawing List (MDL) 005-00734-04, Revision 1, dated May 1, 2013 or later FAA-approved revision.

(2) Garmin Airplane Flight Manual Supplement or Supplemental Airplane Flight Manual (AFMS), 190-00734-15, Revision 1, dated May 1, 2013 or later FAA-approved revision.

Limitations and Conditions:

(1) Compatibility of this design change with previously approved modifications must be determined by the installer.

(2) Aircraft installations involving the Garmin transponder models without an internal GPS require the previous installation of an approved ADS-B position source. Refer to the design data specified in the Master Drawing List (MDL) listed above for specific hardware and software requirements.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: August 7, 2012

Date of issuance: May 1, 2013

Date reissued:

Date amended: April 29, 2014; March 8, 2016; September 9, 2019

By direction of the Administrator

JR Brownell
(*Signature*)

JR Brownell
ODA STC Unit Administrator
ODA-240087-CE
Garmin International, Inc.
(*Title*)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Approved Model List (AML) STC SA01714WI

Airplane Make (TCDS Holder) [common name or previous make]	Airplane Model Designation	Type Certificate Number	TC Certification Basis [1]	Master Drawing List Revision (005-00734-04)	AML Amendment/Date
DAHER AEROSPACE (DAHER AEROSPACE) [SOCATA]	TBM 700	A60EU	FAR 21 FAR 23	6	Amendment 2 08-Mar-2016
Diamond (Diamond Aircraft Industries Inc.) [Diamond Aircraft Industries GmbH]	DA 40, DA 40F, DA 40NG	A47CE	FAR 21 FAR 23	6	Amendment 2 08-Mar-2016
	DA 42, DA 42NG	A57CE	FAR 21 FAR 23	6	Amendment 2 08-Mar-2016
Diamond (Diamond Aircraft Industries Inc.) [Diamond Aircraft Industries GmbH]	DA 62	A57CE	FAR 21 FAR 23	10	Amendment 4 21-Dec-2017
Mooney (Mooney International Corporation) [Mooney Aviation Company, Inc.; Mooney Airplane Co; Mooney Aircraft Corporation; Aerostar Aircraft Corp]	M20M, M20R, M20TN	2A3	CAR 3 FAR 23	6	Amendment 2 08-Mar-2016
PILATUS (PILATUS Aircraft Ltd.)	PC-6/B2-H2, PC-6/B2-H4	7A15	CAR 3	10	Amendment 4 21-Dec-2017
Piper Aircraft, Inc. (Piper Aircraft, Inc.) [The New Piper Aircraft, Inc]	PA-28-181	2A13	CAR 3 FAR 23	6	Amendment 2 08-Mar-2016
	PA-32R-301T, PA-32-301FT	A3SO	CAR 3	6	Amendment 2 08-Mar-2016
	PA-34-220T	A7SO	CAR 3 FAR 23	6	Amendment 2 08-Mar-2016
	PA-44-180	A19SO	FAR 23	6	Amendment 2 08-Mar-2016
	PA-46-350P, PA-46R-350T PA-46-500TP	A25SO	FAR 23	6	Amendment 2 08-Mar-2016

US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

OMB No. 2120-0020
Exp: 01/31/2023

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft

Nationality and Registration Mark	Serial No.	
N3ZZ	40.823	
Make	**Model**	**Series**
DIAMOND AIRCRAFT IND INC	DA 40	DA 40

2. Owner

Name *(As shown on registration certificate)*	Address *(As shown on registration certificate)*
ENGINEERING INVESTIGATION LLC	Address 3925 CHAPEL LN City NEW ALBANY State INDIANA Zip 47150-9608 Country USA

3. For FAA Use Only

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
☐	☒	AIRFRAME	DIAMOND AIRCRAFT IND INC	*(As described in Item 1 above)*	40.823
☐	☐	POWERPLANT			
☐	☐	PROPELLER			
☐	☐	APPLIANCE	Type Manufacturer		

6. Conformity Statement

A. Agency's Name and Address

Name AIRCRAFT SPECIALISTS, INC.
Address 6005 PROPELLER LANE
City SELLERSBURG State INDIANA
Zip 47172 Country USA

B. Kind of Agency

	U. S. Certificated Mechanic		Manufacturer
	Foreign Certificated Mechanic	C. Certificate No.	
X	Certificated Repair Station	PZ4R458M	
	Certificated Maintenance Organization		

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B ☐

Signature/Date of Authorized Individual

Aaron J. Anderson 12-9-2021

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☐ Approved ☐ Rejected

BY								
	FAA Flt. Standards Inspector		Manufacturer		Maintenance Organization		Persons Approved by Canadian Department of Transport
	FAA Designee	X	Repair Station		Inspection Authorization		Other *(Specify)*

Certificate or Designation No. PZ4R458M

Signature/Date of Authorized Individual

Aaron J. Anderson 12-9-2021

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished
(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N3ZZ

Nationality and Registration Mark | Date

Validated previously installed Garmin GTX335R ADS-B Compliant Transponder, P/N 011-03301-00, in accordance with Garmin International STC# SA01714WI and Garmin GA35 WAAS Antenna P/N 013-00235-00, installed at Manufacturer provided location, FS192.0.(See Logbook Entry, Aircraft Specialists, Inc., dated 08/07/2017)

The GTX335R was configured and each interface was checked out in accordance with the GTX3XX Part 23 AML STC Installation Manual, P/N 190-00734-10, Rev 15, dated 06/14/2021.

This installed ADS-B OUT system has been shown to meet the equipment requirements of 14 CFR § 91.227.

The FAA Approved Flight Manual Supplement for the GTX335R units, P/N 190-00734-15, Rev 5, dated 06/16/2021 has been placed in the Airplane Flight Manual.

Instructions for Continued Airworthiness:
GTX335R-Included Garmin Document, P/N 190-00734-11, Rev 8, dated 06/16/2021 "GTX33X and GTX3X5 ADS-B Maintenance Manual, Contains Instructions for Continued Airworthiness for STC SA01714WI" in the aircraft's permanent maintenance records.

**********END**********

☐ Additional Sheets Are Attached

RECORD OF AIRFRAME
AIRWORTHINESS DIRECTIVES (A/D), SERVICE BULLETINS (S/B),

DATE	A/D, S/B, S/I, MODS	DETAILS OF

Diamond

Date: 17 SEPT, 2007 S/N: 40.823 Reg: N569CA
TTAF: 4.4 HRS Engine S/N: L-33569-51E Prop S/N: 070199
1 of 2

The following S/B and S/I have been carried out as applicable:

DAI SI 40-005/Lycoming SB 342E/AWD 2002-26-01 Fuel Line(stainless steel tube assy.) and support clamp Inspection and Installation New – Due every 100 hours.
DAI SI 40-006 – Exhaust System Inspection of Flanges New – Due every 50 hours – N/A if MSB 40-07 C/W.
SI 40-009(FAA AD 2002-26-01) – Externally mounted fuel injection lines – C/W
DAI SI 40-010- Repair of certain injection servos – N/A due to S/N of unit.
OSB 40-010/2 - Optional Long range fuel tanks installation – C/W
OSB 40-014 - Optional aluminum gear axles –N/A by A/C S/N
OSB 40-015 - Optional winterization kit – C/W
OSB 40-021/1 - CG adjustment, tail skeg ballast – N/A
OSB 40-025/1 - Main landing gear struts, smaller main landing gear tires – N/A
OSB 40-031/1 - Installation of Winter Baffle in Wing Fresh Air Inlet-C/W
OSB 40-042/1 – Mechanical install. of Garmin GDL60/ A XM Datalink system – N/A
OSB 40-043/1 - Installation of Becker ADF3500 and/or Honeywell KN63 DME – N/A
OSB 40-050 – Install. of external static pressure source for KAP140 system – N/A
OSB 40.057 - Adjust. Of elevator travel and replacement of limitations placard – N/A
OSB 40.059 - Installation of taller main landing gear – N/A
MSB 40-07/4 -Exhaust Flange Connection Tube Riser Immediate if cracks detected – N/A by A/C S/N.

MSB 40-009 - Improvement of ground-connection to Alternator – N/A by A/C S/N.
MSB 40-012-Replacement of Mixture Control Cable N/A as already Incorp. During mfg.
MSB 40-018/2 - KAP140 Main software update – N/A by A/C S/N, A/C Config.
MSB 40-030/3 (EASA AD: 2006-0067,FAA AD 2007-11-21) Insp. of universal joints between fuel selector – Insp. C/W during Mfg.
MSB 40-033 – Exhaust system – C/W, due at Next 15 RS and every 50 HR Inspection.
MSB 40-044/1 - Muffler brace installation – N/A by A/C S/N.
MSB 40-046/1 – Inspection of the nose landing gear leg - Refer to bulletin.
MSB 40-048/2(EASA AD: 2006-0295-E, FAA AD: 2006-23-04) - Contamination In Engine Fuel System – N/A by Aircraft S/N
Honeywell SB KC-140-M1 – KAP140 main software update – N/A
Honeywell SB KS 270C-6 – Strain gage assembly for Pitch Servo – N/A
Honeywell IB-511 – KAP140 Trim Fail faults, software update – N/A
Garmin SB-0204 – GNS 430, GNS 530 Update of Software – N/A
Garmin SB-0207 – Removal of Excessive Solder from Comm Board Vias-N/A
Garmin SB-0209 – GMA 340 Mod 4 Factory Mod Only – N/A
Garmin SB-0213 – GMA 340 Mod 7 one time. Factory Mod Only – N/A
Garmin SB-0215 – Update Comm board Software – Advisory Only
Garmin SB-0219 – GTX 327 Update Software – N/A
Garmin SB-0220 – GDL 49 Upgrade Software – N/A
Garmin SB-0223 – GTX 330 Upgrade Software – N/A
Garmin SB-0224 – GNS 430/530 with GTX 330 software adds TIS capability – N/A
Garmin SB-0225 – GTX 330/330D Upgrade Software – N/A
Garmin SB-0301 – GTX 327 Upgrade Software – N/A
Garmin SB-0304 – GTX 330 Upgrade Software – N/A
Garmin SB-0308 – GNS 430/530 with GTX 330 software adds TIS capability – N/A

Garmin SB-0408 – GIA 63 Covers – C/W during Mfg.
Garmin SB-0409 – GTX 330/330D, GTX 33/33D – Software Upgrade – N/A
Garmin SB-0410 – GMA 1347 Audio Board upgrade, auto squelch circuit(Opt) – N/A
Garmin SB-0414 – GMA 1347 Mod 2,music muting,software ver. 2.04(Opt) - NCW
Garmin MSB-0415 – GTX 33/33D Upgrade Software – C/W during prod.
Garmin SB-0416 – GIA 63 Audio Panel Master Squelch(Opt) -NCW
Garmin MSB-0418 – GIA 63 Mod 2 – C/W during prod.
Garmin SB-0420 – Software upgrade for CNX80 – N/A as A/C not equipped
Garmin SB-0422 – GTX 330/330D, GTX 33/33D – Software Upgrade – Opt
Garmin SB-0426 – GTX 330/330D, GTX 33/33D – Software Upgrade – N/A
Garmin SB-0505 – reworking GIA 63 LRU, Factory Mod only – Opt
Garmin SB-0519 – G1000 System Software Ver. 0369.06 – N/A
Garmin SB-0527 – Possible Delamination of Display in GDU – N/A by Mfg date
Garmin SB-0710RevA – Hardware changes to GTX 33/33D – C/W by Garmin.
Garmin SB-0713RevD – GSM 85 servo gearboxes inspected for FOD – C/W
Garmin MSB-0522 Rev B – GIA 63 Outside Covers – C/W during prod.
Garmin MSB-0533 – New 2005 IGRF Magnetic Field Model for G1000 GRS 77 – C/W
Garmin MSB-0539 Rev B – G1000 System Software Ver. 0369.08 – C/W during Mfg.
Bi-weekly AWD check carried out to current revision 2007- 19

The maintenance described above has been performed in accordance with the applicable standards of airworthiness.

DIAMOND AIRCRAFT INDUSTRIES INC. D.O.T. APPROVAL #161-93

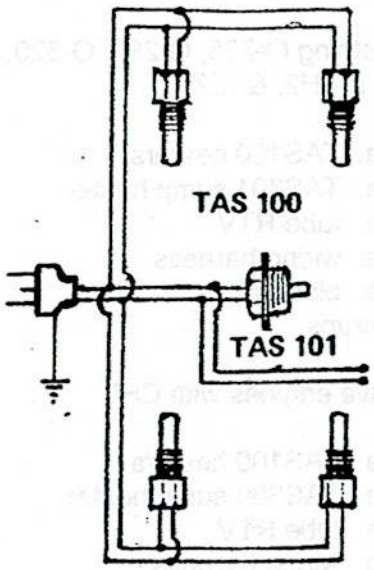
Signature _____ Lic or Stamp DA Q 42

RECORD OF AIRFRAME
AIRWORTHINESS DIRECTIVES (A/D), SERVICE BULLETINS (S/B),

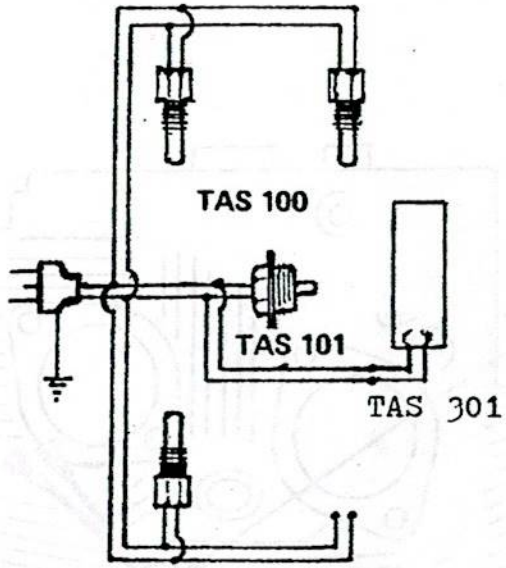
DATE	A/D, S/B, S/I, MODS	DETAILS OF
		Diamond Date: 17 SEPT, 2007 S/N: 40.823 Reg: N569CA TTAF: 4.4 HRS Engine S/N: L-33569-51E Prop S/N: 070199 2 of 2 *The following S/B and S/I have been carried out as applicable:* Garmin AWD 2005-01-19 – GTX 330/330D, GTX 33/33D – Software Upgrade –C/W Vision Microsystem PSB02043009 – Prevention of Entering "Test" mode during – N/A Precision Airmotive Fuel Servo SB PRS-105 – N/A due to S/N of unit. Textron Lycoming MSB 565 – Replacement of Diaphragm-Type Fuel Pumps P/N LW-15473 with date code of 3201 – N/A as date code does not match installed on this A/C Textron Lycoming AD 2002-12-07-Prevent Complete loss of engine oil-N/A due to M/N ACG AD A-2004-003 –Inspection carried out I.A.W. directive/see MSB 40-030/3. EASA AD 2005-0023/DAI-A SI 40-025/Lycoming SB and SI for Exhaust valve guide – Applicable by S/N. ACG AD No. A-2005-005/DAI-Austria MSB40-046 – Inspection of the nose landing gear leg – Applicable by S/N. Lycoming MSB 548A/DAI SI 40-023 – Diaphragm-Type Fuel Pump – with a date code of 0700 through 0401- N/A as date code does not match installed on A/C. Lycoming MSB 574A – Cylinder Stud Hole Cross-Threaded – N/A by Engine S/N FAA AD 2007-11-21 – Inspection C/W during manufacturing – see MSB 40-030/3 MT-Propeller SB 1AD – Time between Overhaul of Propellers, Governors and Oil-Accumulators (TBO) 1800 HRS/72 Months – See SB For Approved Time limits/schedule, information only. MT-Propeller installed as per TCCA STC No. SA06-52. Garmin Integrated Avionics System installed as per STC No. SA01254WI Amend. 1 Garmin GFC 700 Automatic Flight Control System installed as per STC No. SA01389WI. Ryan 9900BX Traffic Advisory System (TAS) installed as per STC No. SA02266NY. Power Flow Systems Inc. Tuned Exhaust System installed as per STC No. SA03281AT. AmSafe Inflatable Restraint System installed as per STC No. SA01918LA. **Bi-weekly AWD check carried out to current revision 2007- 19** The maintenance described above has been performed in accordance with the applicable standards of airworthiness. DIAMOND AIRCRAFT INDUSTRIES INC. D.O.T. APPROVAL #161-93 Signature _____ Lic or Stamp DA Q 42
SEPT 17, 2007	GARMIN MSB-0735	GRS 77 Mod. 2 One time factory mod only - N/A by S/N
~~Sept~~ 19, 2007	TAS 100-03-1045	TANIS HEATER KIT INSTALLATION C/W I.A.W.
4/16/08	SBPRS-107 R2/AD08-06-51	C/W, installed Gasket # 2577258 Stamped "G"
		12-18-2009 Tach Time 196.0 N3ZZ SN 40.823 Complied with Garmin Service Bulletin # **0919 Rev. A** by installing software version 0321.22 per G1000 Field Update Instructions (PN 190-00544-03 Rev 8). Complied with Garmin Service Bulletin # **0814 Rev A**, by unlocking G1000 Synthetic Vision & Pathways per G1000 Synthetic Vision & Pathways Option, Activation Instructions (PN 190-00545-10). Replaced datacard cards with new PN 010-00330-43 & tested in according to Garmin SB **0919 Rev A**. P. Douglas Miller P. Douglas Miller A&P 307789261

SPECIAL INSPECTIONS (S/I) AND MODIFICATIONS (MODS)

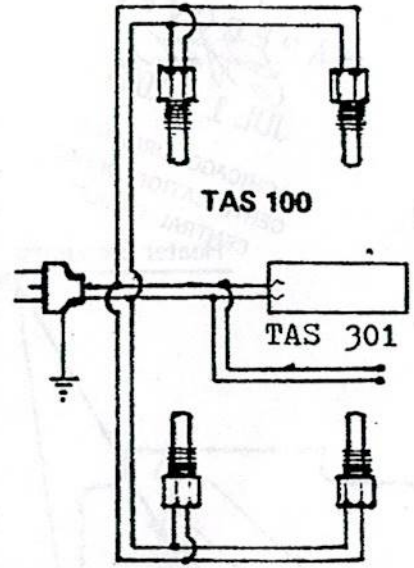
WORK OR INSPECTION PERFORMED	SIGNATURE	[L]ICENCE [NUM]BER
TAVIS AIRCRAFT Services INSTRUCTION 100 AND Dwgs. 100A and 2163	[signature]	DA RO6
on plug repetitive insp. no longer required	[signature] AP 94 66634	



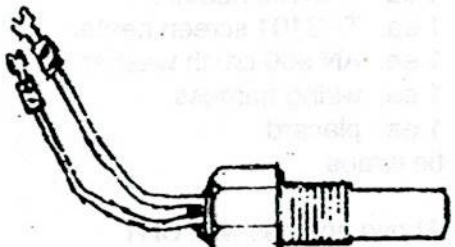
0-320-C on &
0-360 series



0-320-C on &
0-360 series
with CHT

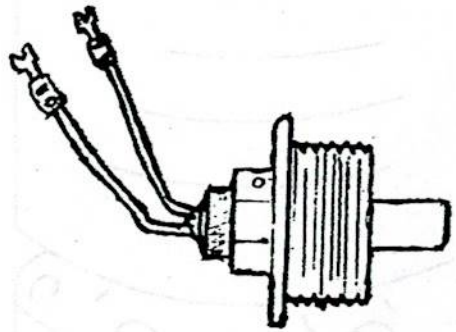


0-320, -A, -B,
-H2 & -E2G



TAS 100 Cylinder Heater

ALL MODELS



TAS 101 Screen Heater

TAS 301 Sump Heater

TAS100 HEATER SYSTEM
TAS Drawing No. 100 1-1-73
ELECTRICAL WIRING revised 12-26-97

Different
4 Cyl Ly
The O-3
and O-3
100 cyli
TAS101

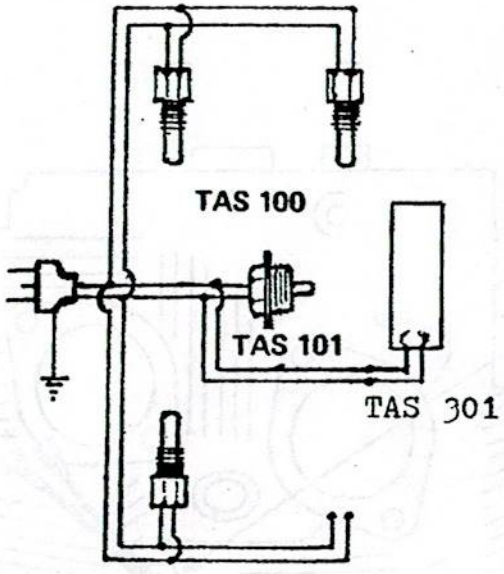
If a prob
TAS100
TAS101
TAS301

The O-2
H2, and
cylinder
TAS301

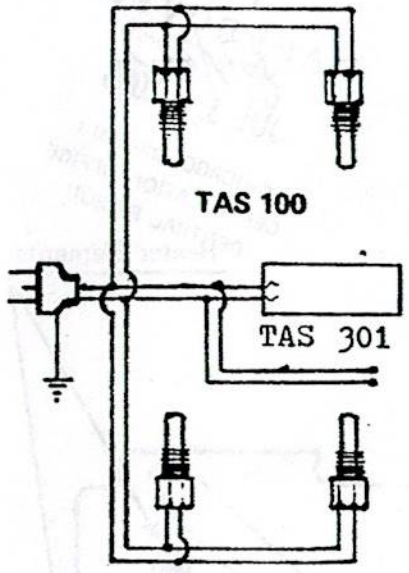
If a prob
these e
cylinder
TAS300

The har
models

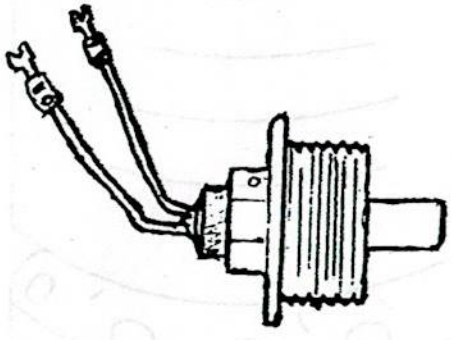
The Po
watts fo
235, O-
E2G wi
is 270 w



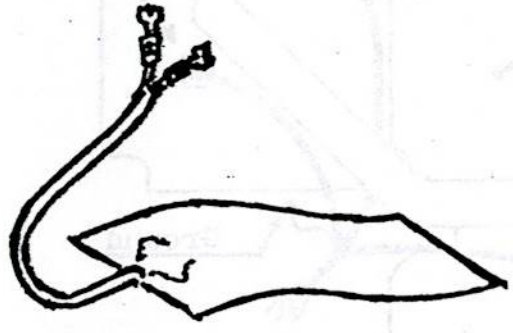
O-320-C on & O-360 series with CHT



O-320, -A, -B, -H2 & -E2G



TAS 101 Screen Heater



TAS 301 Sump Heater

TAS100 HEATER SYSTEM
TAS Drawing No. 100 1-1-73
ELECTRICAL WIRING revised 12-26-97

Differential Data:

4 Cyl Lycoming Models

The O-320-C on (execpt H2 & E2G and O-360 series use 4 each TAS 100 cylinder elements, and 1 each TAS101 screen heater.

If a probe type CHT is used, use 3 TAS100 cylinder elements, 1 each TAS101 screen heater and 1 each TAS301 sump element.

The O-235, O290, O320, -A, -B, -H2, and –E2G use 4 each TAS100 cylinder elements and 1 each TAS301 sump element.

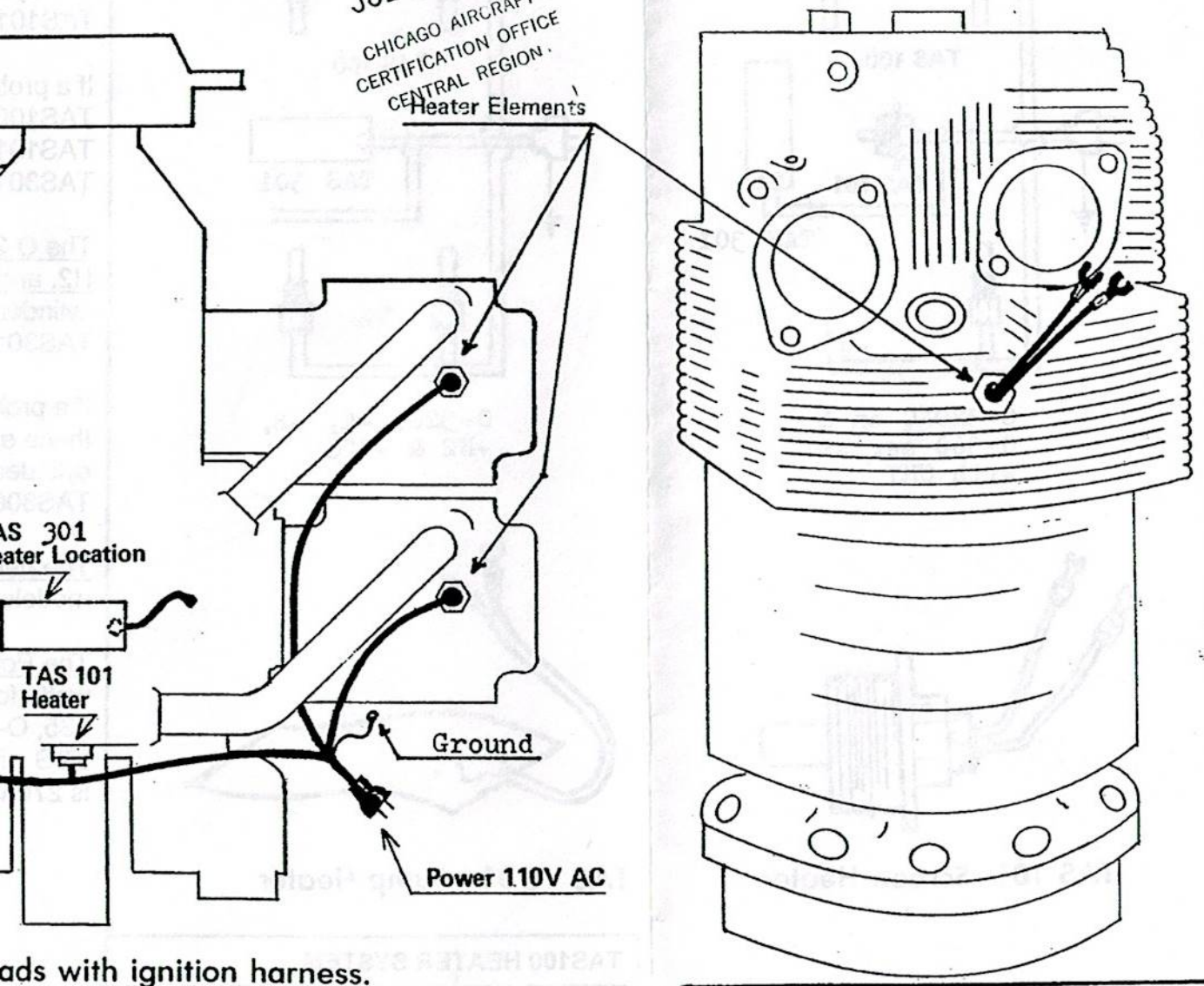
If a probe type CHT is used on these engines use 3 each TAS100 cylinder elements and 1 each TAS300 sump element.

The harness is the same for all models.

The Power consumption is 250 watts for all models except the O-235, O-290, O-320, -A, -B, -H2, & -E2G with probe type CHT, and this is 270 watts.

FAA APPROVED
JUL 15 2003
CHICAGO AIRCRAFT CERTIFICATION OFFICE CENTRAL REGION

FAA
APPROVED
JUL 15 2003
CHICAGO AIRCRAFT
CERTIFICATION OFFICE
CENTRAL REGION



ads with ignition harness.
lug to oil dip stick housing.

ded

PATENT #3953707

TAS 101 Oil Screen Heater Added 3-12-73 P. G. T.

TAS 100 HEATER SYSTEM

TAS DRAWING No. 100A 1-1-73

4 Cyl. Lycoming O-290, O-235, O-320, & O-360 series
TANIS AIRCRAFT SERVICES P. G. T.

PACKING LISTS

Lycoming O-235, O-290. O-320, O-320 -A, -B, -H2, & -E2G

4 ea. TAS100 heaters
1 ea. TAS301 sump heater
1 ea. tube RTV
1 ea. wiring harness
1 ea. placard
tie wraps

Above engines with CHT

3 ea. TAS100 heaters
1 ea. TAS300 sump heater
1 ea. tube RTV
1 ea. wiring harness
1 ea. placard
tie wraps

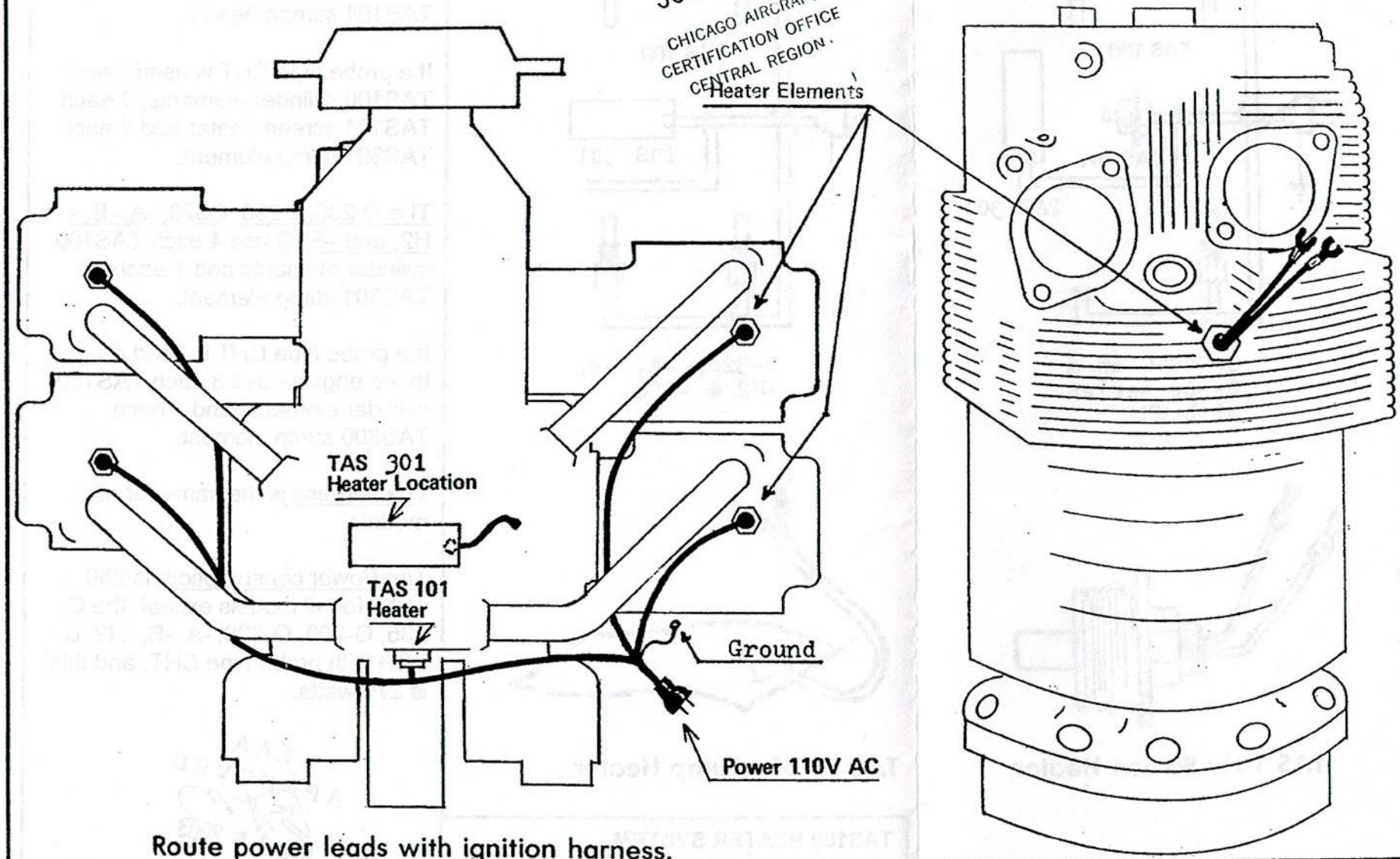
Lycoming O-320-C on and O-360 series

4 ea. TAS100 heaters
1 ea. TAS101 screen heater
1 ea. AN 900 crush washer
1 ea. wiring harness
1 ea. placard
tie wraps

Above engines with CHT

3 ea. TAS100 heaters
1 ea. TAS101 screen heater
1 ea. TAS301 sump heater
1 ea. AN 900 crush washer
1 ea. tube RTV
1 ea. wiring harness
1 ea. placard
tie wraps

FAA
APPROVED
JUL 15 2003
CHICAGO AIRCRAFT
CERTIFICATION OFFICE
CENTRAL REGION



Route power leads with ignition harness.
Secure power plug to oil dip stick housing.

TAS 100 HEATER SYSTEM

TAS DRAWING No. 100A 1-1-73

4 Cyl. Lycoming O-290, O-235, O-320, & O-360 series
TANIS AIRCRAFT SERVICES P. G. T.

PATENT #3953707

TAS 101 Oil Screen Heater Added 3-12-73 P. G. T.

TAS-301 Sump Heater added
12-24-79 P.G.T.

Lycom
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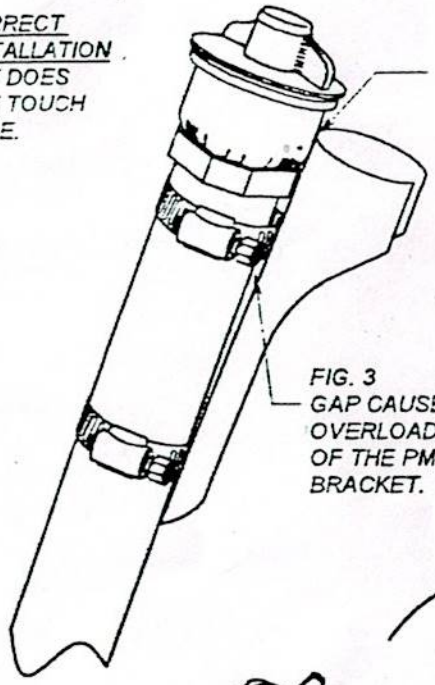
CORRECT INSTALLATION PMT DOES NOT TOUCH HERE.

SUPPORTED
BBER HOSE.



IMPROPER INSTALLATION OF PMT. BRACKET IS HITTING FILLER TUBE.

FIG. 3
GAP CAUSES OVERLOADING OF THE PMT BRACKET.

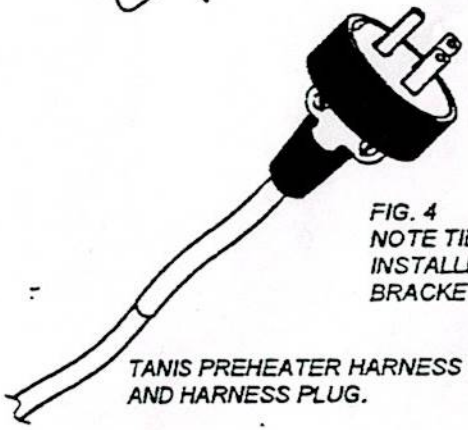
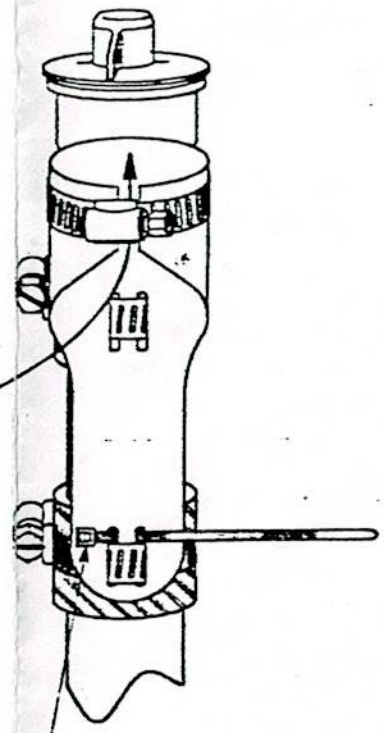


FIG. 4
NOTE TIEWRAP INSTALLED IN PMT BRACKET

TANIS PREHEATER HARNESS CORD AND HARNESS PLUG.

ER MADE FROM
STALLED USING 4



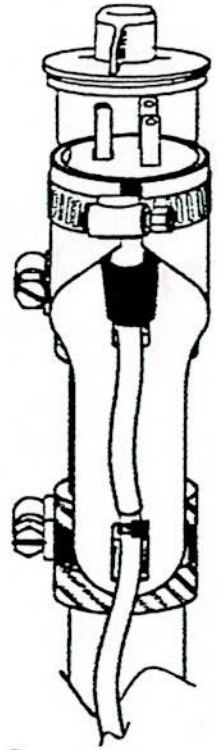


FIG. 5
HARNESS PLUG INSTALLED IN PMT SECURED WITH WORM CLAMP AND TIEWRAP. BE SURE PLUG IS ACCESSIBLE THROUGH OIL DOOR.

PREVIOUS DRAWING #1062
NEXT DRAWING #1027,1028,& 1029

P/N: PMT

INSTALLATION AND REPAIR DRAWING NOT TO SCALE.

FOR MATERIAL AND COMPONENT SUBSTITUTION SEE DRAWING #1093

THIS PMT BRACKET IS TO MOUNT ON THE OIL FILLER TUBE OF 4 CYLINDER LYCOMINGS AND IS USEFUL ON AIRCRAFT SUCH AS THE CHEROKEE, CESSNA 172, AND MOONEY. ALLOWING FOR EASY CONNECTION OF THE DROP CORD THROUGH THE OIL FILLER DOOR TO THE TANIS PREHEAT SYSTEM. THIS METHOD OF SECURING THE HARNESS PLUG WILL ALSO REDUCE MAINTNACE PROBLEMS ASSOCIATED WITH IMPROPER SECURING OF THE HARNESS PLUG.

INSTALL THE PMT USING 2 PIECES OF MIL H 6000 ABOUT 1" - 2" LONG CUT AS SHOWN IN FIG. 1.

INSTALL THE RUBBER TUBING ON THE OIL FILLER TUBE AND SECURE THE PMT BRACKET IN PLACE USING THE 2 SMALLER WORM CLAMPS AS SHOWN IN FIG. 2. POSTION THE PMT SO THAT IT IS ACCESSIBLE THROUGH THE OIL FILLER DOOR. THE BRACKET SHOULD NOT CONTACT THE FILLER TUBE AT THE TOP END. DO NOT OVER TIGHTEN THE WORM CLAMPS.

FIG. 3 IS AN EXAMPLE OF IMPROPER INSTALLATION OF THE PMT BRACKET. THIS WILL CAUSE OVERLOADING OF THE THE BRACKET.

INSTALL THE HARNESS PLUG IN THE PMT AS SHOWN IN FIG. 4.

SECURE THE PLUG IN THE PMT BRACKET USING THE LARGE WORM CLAMP, SECURE THE CORD USING A TIEWRAP AS SHOWN IN FIG. 5.

THE PMT BRACKET CAN BE REPAIRED BY INSTALLING A DOUBLER MADE OF .050 2024-T3 ON THE INSIDE (CONCAVED SURFACE) USING 4 AN470-3 RIVETS. SEE FIG. 6

LET	REVISION	DATE	BY

DWG# 2163

TANIS AIRCRAFT SERVICE INC.
MUNICIPAL AIRPORT
GLENWOOD, MN 56334

DIRK N. ELLIS	
09/04/97	9-12-97
DRAFTMAN	CHECKER

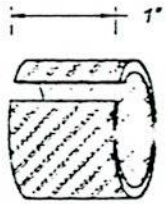


FIG. 1
MIL H 6000 TYPICAL W/ 1/8" WALL OR THICKER.

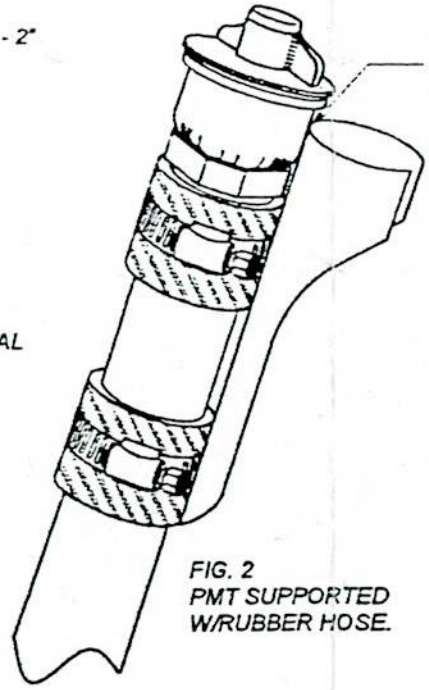


FIG. 2
PMT SUPPORTED W/RUBBER HOSE.

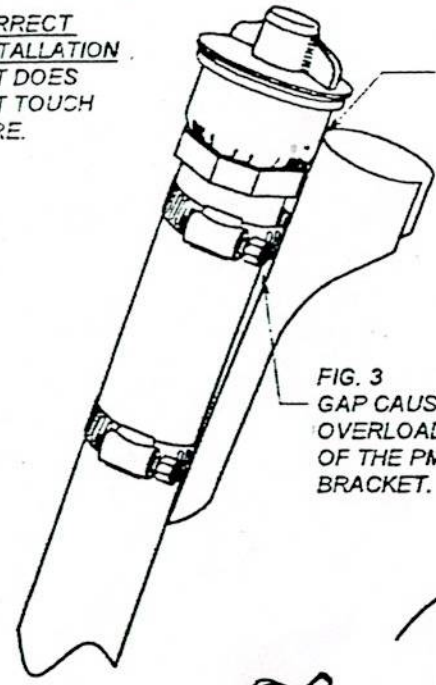


FIG. 3
GAP CAUSES OVERLOADING OF THE PMT BRACKET.

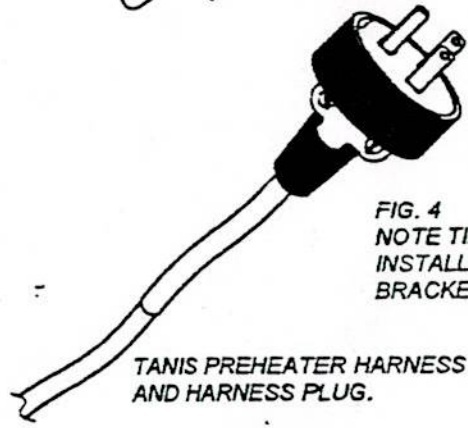
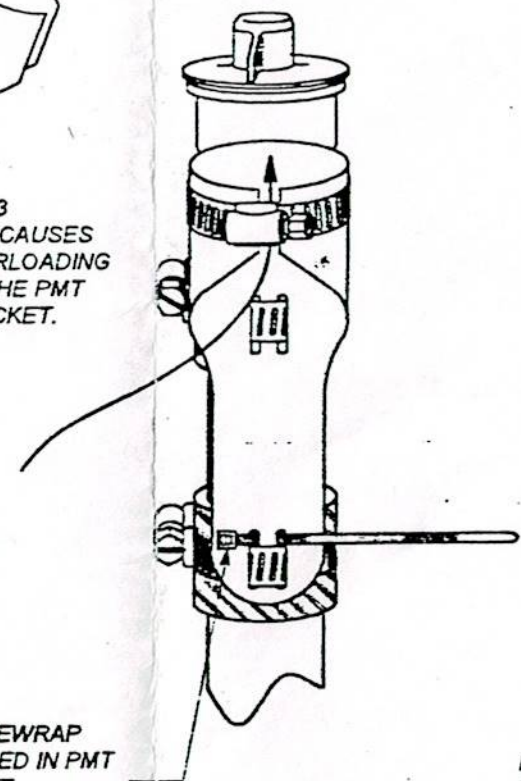


FIG. 4
NOTE TIEWRAP INSTALLED IN PMT BRACKET

TANIS PREHEATER HARNESS CORD AND HARNESS PLUG.



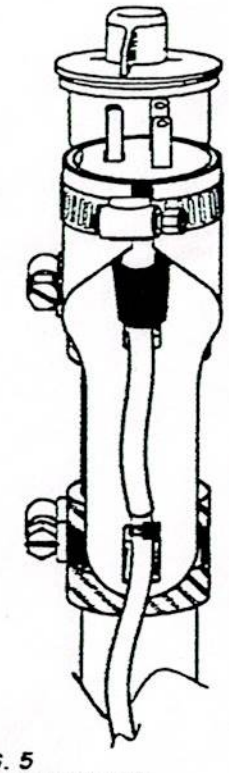


FIG. 5
HARNESS PLUG INSTALLED IN PMT SECURED WITH WORM CLAMP AND TIEWRAP. BE SURE PLUG IS ACCESSIBLE THROUGH OIL DOOR.

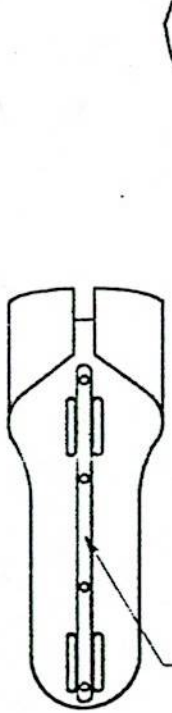


FIG. 6
REPAIR DOUBLER MADE FROM .050 2024-T3 INSTALLED USING 4 AN470-3 RIVETS.

PREVIOUS DRAWING #1052
NEXT DRAWING #1027,1028,& 1029

P/N: PMT

INSTALLATION AND REPAIR DRAWING NOT TO SCALE.

FOR MATERIAL AND COMPONENT SUBSTITUTION SEE DRAWING #1093

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TANIS AIRCRAFT SERVICES
TAS 100 HEATER SYSTEM

OPERATION
Standard system
- 30° F

The TANIS AIRCRAFT SERVICES heating system is designed to aid you in starting your engine in cold weather, and to reduce the problems of wear associated with cold starts. The TAS100 system places a small amount of heat where it is most needed. This four cylinder model consumes only 250 watts. This system is designed to be operated for five or six hours before the engine is started. It is not intended to rapidly preheat the engine. Some type of engine cover should be used. A fitted insulated engine cover is recommended.

To use the system simply connect to a 115V power source at the plug located in the oil filler door of your cowl and cover the engine.

To start, remove the cover, unplug, and start the engine. Your engine will start like it does in summer down to about 10 degrees. From 10 degrees to –10 degrees a small amount of prime may be necessary. From –10 down an increasing amount of prime may be necessary due to the extremely cold air taken in the intake. After starting, carb heat application may help on some engines.

Be sure to use the proper grade of oil as recommended by your engine manufacturer. When starting using the heater system, grade 65W (SAE 20W30) or 15W50 ashless oil is recommended after break in.

Cold starts are difficult for a number of reasons. To list a few:

1. Spark plugs frost over if you don't start on the initial try.
2. Cranking is hard due to heavy oil located on the cylinder walls and under piston rings.
3. Fuel vaporization is poor due to the low temperature.

The TAS100 system helps correct the above problems and lessens the chance of ring breakage, cylinder scoring, and loss of lubrication by over priming. The oil heating system assures a supply of warm oil to the engine on initial start and reduces the condensation which occurs during other preheating methods.

FAA
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JUL 15 2003
CHICAGO AIRCRAFT
CERTIFICATION OFFICE
CENTRAL REGION

TANIS AIRCRAFT SERVICES TAS100
HEATER SYSTEM INSTALLED

Below 10° F Use Grade 65W Oil
Use Engine Cover

Oil door placard

To use the system simply connect to a 115V power source at the plug located in the oil filler door of your cowl and cover the engine.

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JUL 15 2003
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CERTIFICATION OFFICE
CENTRAL REGION

TANIS AIRCRAFT SERVICES TAS100
HEATER SYSTEM INSTALLED

Below 10° F Use Grade 65W Oil
Use Engine Cover

Oil door placard

TANIS AIRCRAFT SERVICES
TAS100 Heater System

Patent No. 3953707

Installation
Lycoming 4 cylinder

INSTRUCTION #100

Install one TAS100 heating element in each cylinder in the threaded hole provided for a bayonet type cylinder head thermocouple. Use caution not to flex the power leads more than is necessary as they may break away from the heating element. It may be necessary to clean the threads to remove paint, etc, with a 3/8-24 tap. However, do not tap the hole deeper than it was originally. When installing this element, spark plug anti-seize compound should be used.

On engines using the bayonet type cylinder temp gauge, omit the heater from the cylinder with the thermocouple. Install the wiring harness supplied with the lower ignition harness (see drawing No. 100A). This harness may also be routed below the rocker covers and secured with Adel clamps.

On the O-320-C or later and the O-360 series **(except O-320-H2 & E2G),** drain the oil from the engine and remove the plug which covers the oil pump suction screen located on the oil sump. Install a TAS101 oil screen heater using the AN-900 crush washer supplied and safety wire in place. The suction screen is reinstalled with the TAS101. Refill the engine with oil. Use a winter grade to match the temperature which you will be operating in (see Lycoming Service Instruction No. 1014). Our recommendation is to use Grade 65 (20W 30 SAE) or 15W50 oil when using the heater after the engine is broken in. Be sure to check the oil plug for leaks after the initial engine run.

On engines with a bayonet type cylinder temp gauge, and on **O320-A,-B,-H2, & -E2G,** as well as the **O-290 and O-235,** you will have to install a bond-on sump element (TAS301).

To install the bond-on sump element, clean the area on the sump (see DWG No. 100A) with MEK or butyrate thinner. Remove any loose paint and all oil. Determine that the sump heater will reach the power lead when installed. Apply the sealant supplied with the kit to the TAS301 element in a thin even layer and press in place. Work out all air bubbles to assure good heater contact. To hold the heater in place in some installations it may be necessary to tape it to the sump while the sealant cures. (In some installations folded up cardboard can be wedged in to apply pressure while the sealant cures.) The sump heater should be left overnight to cure and then the edges of the element should be resealed if necessary. **Note: Do Not** apply heat to bond-on elements to hasten bonding. This may damage the sealant.

Route the harness power lead along the oil filler tube and secure in place with tie wraps. Determine that the power plug will be accessible through the oil filler door in the cowl. Connect the heaters to the harness and then secure the harness with tie wraps. The wiring harness should be routed and clamped to comply with AC 43:13-1. The ground terminal should be connected to a bolt by the base of the oil filler tube or other convenient ground. Most of these installations will have one unused element lead; this should be capped and secured. Capping can be done by filling the end of the connector with RTV supplied with the kit, or by tying a sleeve over the end of the connector.

Each heater should be checked with a continuity light or ohmmeter after installation. There should be no continuity between the engine and the leads, and there should be continuity between the leads. An alternate method to check would be to check continuity between the engine and both power leads, (none should exist) and then plug the unit in. The cylinder heads should start to feel warm in about 30 minutes. The area of the sump next to the heater plug should feel warm also. **Do Not** touch any of the elements as they may burn you. **(Do not apply heat to units with TAS301 sump heater until it is cured.)**

Install oil placard supplied with kit.

Make a log entry to comply with FAR Part 43:9. A gummed label is included for this purpose.

Installed weight:

O-360 & O-320-C and later (except H2 & E2G)	1.06#
Above engines with CHT	1.06#
O-320, -A, -B, -H, -E2G; O-235 & O-290	1.00#
Above engines with CHT	0.93#

On the O-320-C or later and the O-360 series **(except O-320-H2 & E2G),** drain the oil from the engine and remove the plug which covers the oil pump suction screen located on the oil sump. Install a TAS101 oil screen heater using the AN-900 crush washer supplied and safety wire in place. The suction screen is reinstalled with the TAS101. Refill the engine with oil. Use a winter grade to match the temperature which you will be operating in (see Lycoming Service Instruction No. 1014). Our recommendation is to use Grade 65 (20W 30 SAE) or 15W50 oil when using the heater after the engine is broken in. Be sure to check the oil plug for leaks after the initial engine run.

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Above engines with CHT	1.06#
O-320, -A, -B, -H, -E2G; O-235 & O-290	1.00#
Above engines with CHT	0.93#

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