HQ-650

Federal Aviation Agency

ADVISORY CIRCULAR

AC NO: AC 91-14
GENERAL OPERATIONS AND FLIGHT
EFFECTIVE: 2/15/67

Cancelled See 91-14A

SUBJECT: ALTIMETER SETTING SOURCES

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1. PURPOSE. This Advisory Circular provides the aviation public, industry, and FAA field personnel with guidelines for setting up reliable altimeter setting sources.

2. GUIDELINES. An altimeter setting source should either:

   a. Consist of the Standard Altimeter Setting Indicator (ASI) and be used as specified in Paragraph 221 of the FAA Aviation Weather Procedures Handbook, 7200.1, or

   b. Meet the minimum technical requirements specified in Paragraphs (1) and (2) below, and be operated in accordance with Paragraph (3) below:

      (1) Instrumentation. Two aircraft type sensitive altimeters meeting the specifications of TSO-C10-b are needed. The height (of the instruments) above mean sea level, surveyed accurately to within one foot, is marked on the instruments or posted immediately adjacent to them. The instruments are vented to an outside static head as shown in the drawing (Attachment 1).

      (2) Calibration. The instruments should be calibrated by a competent agency (such as an FAA approved repair station) (1) within 30 days prior to initial installation, (2) at least once each 12 months thereafter, and (3) any time a difference of more than 5/100 of an inch of mercury exists between the two instruments with indicator hands set to the instrument elevation. Immediately after calibration, the difference between the two instruments should not exceed 2/100 of an inch of mercury. The instruments should be calibrated to achieve maximum accuracy in the altitude range at which they will be used . (Instruments so calibrated should be marked "not for use in aircraft".) All readings should be

adjusted as required by the altimeter correction card furnished by the calibration station. The instrument should be kept in a temperature controlled environment similar to the temperature at which the instrument was calibrated.

(3) Procedures. The operator should establish procedures to ensure that responsible persons are competent to obtain accurate altimeter settings. A tested method is as follows: (1) Set both instruments to the posted height, tap or vibrate each to dislodge sticking parts, then reset if necessary. (2) Adjust the readings as required by the altimeter correction card. (3) The altimeter setting, in inches of mercury, appears in the small window. The difference between instrument readings may not exceed 5/100 of an inch. The lower of the two settings is the official altimeter setting. (4) The difference between instrument readings should be logged in a permanent record at least once a day.

Edward C. Hodson
acting Director
Flight Standards Service

INSTRUCTIONS FOR INSTALLING

THE SINGLE DISC BAROMETRIC STATIC HEAD

A barometer (or altimeter) in locations exposed to the dynamic effects of the wind is likely to exhibit "pumping", or rapid fluctuations in its readings. The static head is used to minimize or eliminate these fluctuations.

In use, it is installed out-of-doors as far from large obstructions as is practical and is connected by a tube to the instrument case which must be sealed. The static head is designed to minimize the Bernoulii effect as the wind passes the orifice of the system and it also includes an enlargement or gland in the air duct which is packed with glass wool, which acts as a damper to retard the flow of air into and out of the instrument case, thus smoothing out the pressure fluctuations due to the wind. The amount of damping is governed by the amount of packing of glass wool. The damping of the static head herein described is such as to neutralize approximately ninety (90) per cent of a pressure difference of one inch of mercury in one minute.

The accompanying diagram shows the detailed construction of the head. The tube from the instrument is attached to the one-eighth inch nipple at the top. The air passage is down through the damping compartment and out the small holes at the bottom of the gland. These holes are recessed approximately three-eighths inch from the bottom of the seven-inch disc. Their location was determined experimentally from wind tunnel tests made at the National Bureau of Standards. Their location minimized the Bernoulli effect and also prevents water or ice from obstructing the holes.

The static head is very simple to install. The following points should be observed:

1. The static head preferably should be installed several feet above any building or other large object. Some experimentation may be required to find the optimum location.

2. The disc should be horizontal and facing down.

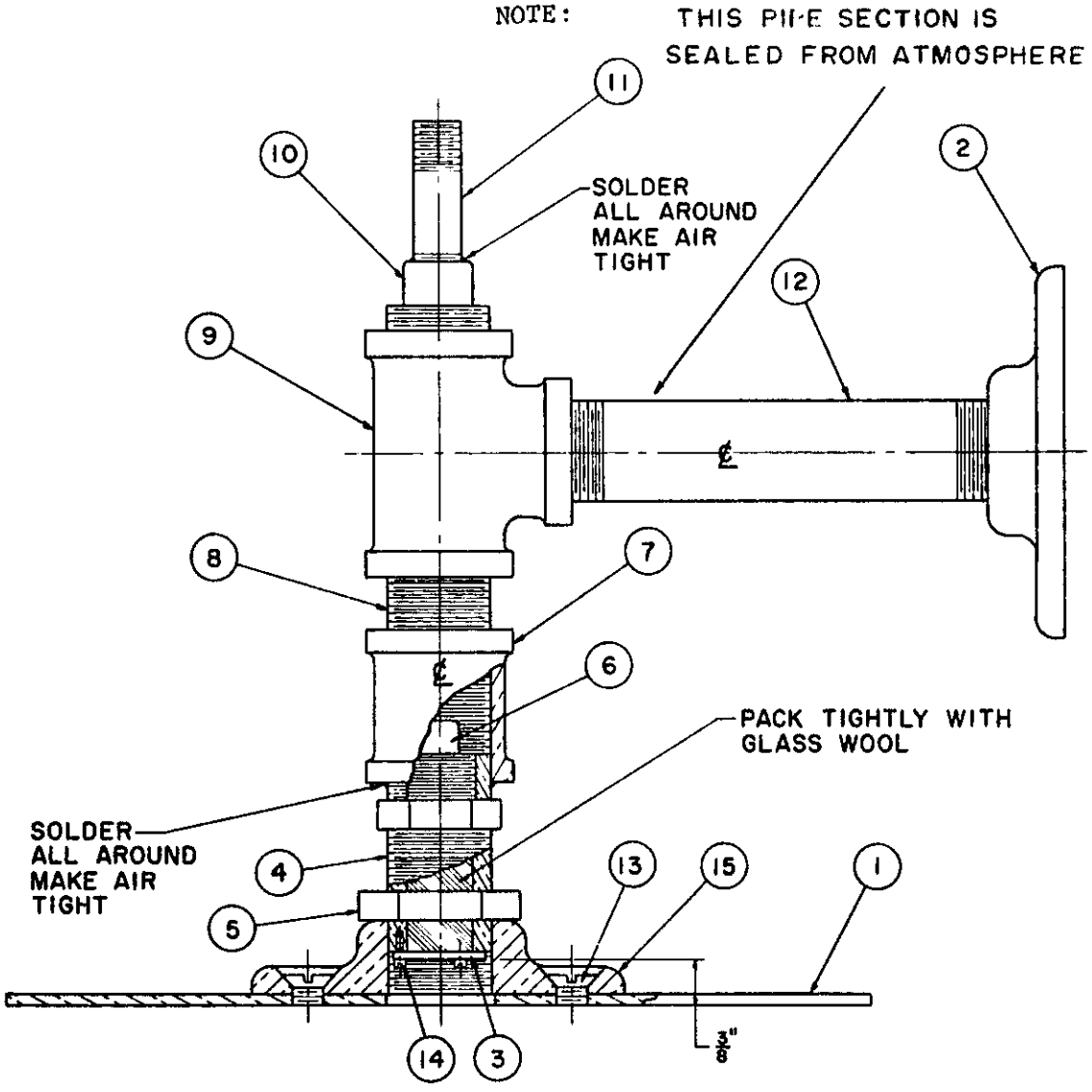
3. The static line connecting the instrument case with the static head should be not less than one-eighth inch nominal I.D. pipe. If copper or other tubing is used, one-quarter inch should be employed.

4. All joints must be air tight.

5. If the air or static line is long, it should be provided with a means of draining at its lowest point(s). Moisture often condenses and collects in the tube.

6. As is shown in the diagram, the horizontal pipe nipple attached to the mounting flange is sealed tight on the inner end. This nipple should
* not be removed; if a longer pipe is required, a suitable coupling should be employed.

*See Note on Drawing 450.7227/A (Assembly)

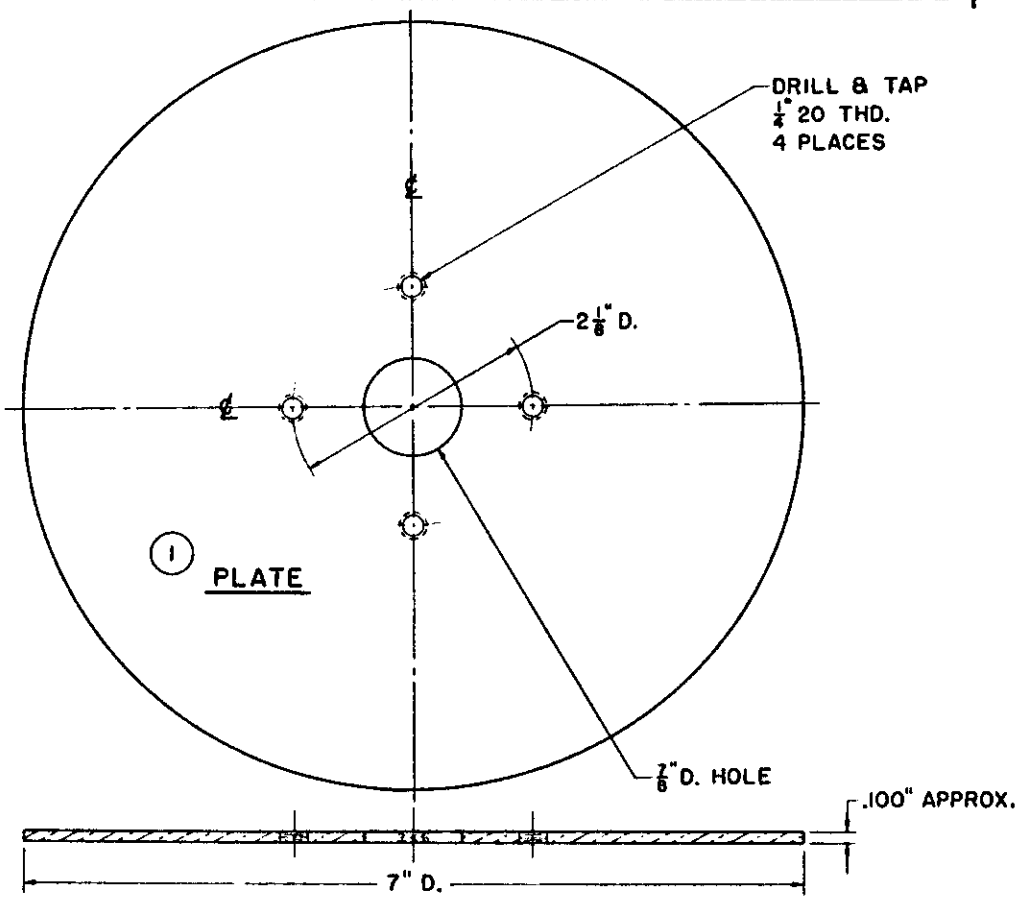


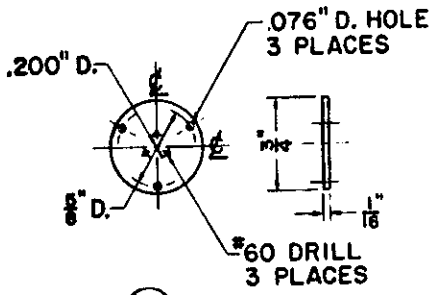
·ASSEMBLY·

450.7227/A
U.S. Weather Bureau

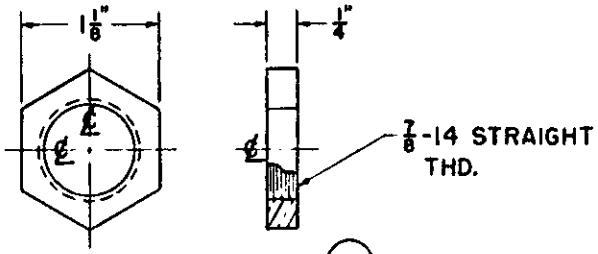
BILL OF MATERIAL

Pt. No.	Qty	Description	Material	Spec.	Remarks
1	1	PLATE	BRASS		
2	1	FLANGE, 1" ST'D.	STEEL		
3	1	DISK	BRASS		
4	1	ADAPTER	BRASS		
5	1	LOCKING NUT	BRASS		
6	1	PLUG, 1"-18 ST'D	BRASS		
7	1	COUPLING, 1"-14 ST'D	BRASS		
8	1	NIPPLE, 1"-14-1 1/8" Lg.	BRASS		
9	1	TEE, 1"-14 ST'D	BRASS		
10	1	PLUG, 1"-14 ST'D	BRASS		
11	1	NIPPLE, 1"-27-1 1/2" Lg.	BRASS		
12	1	NIPPLE, 1"-14-4" Lg.	BRASS		
13	4	1/4-20 F.H.M.S. 1/4" Lg.	BRASS		
14	3	NO. 1-64-FIL-H.M.S.	BRASS		1/4" Lg.
15	1	FLANGE	BRASS		

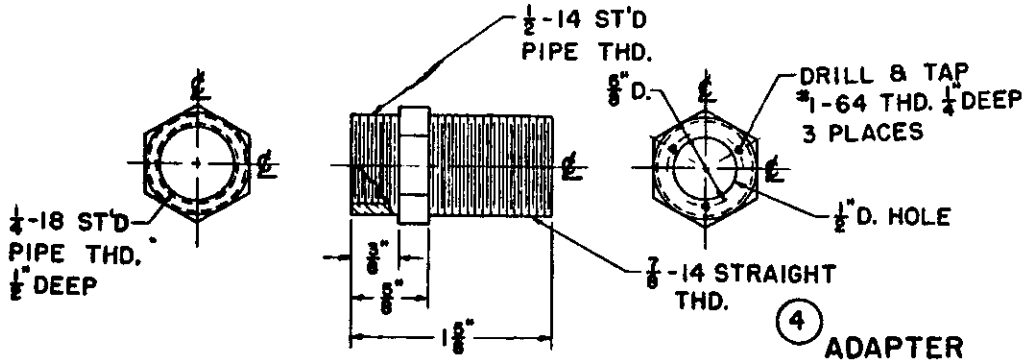




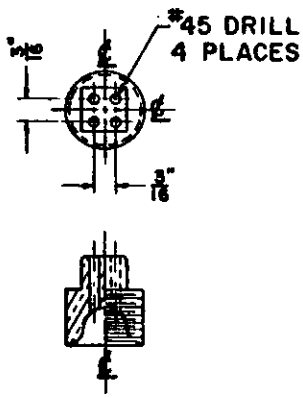
(3) DISK



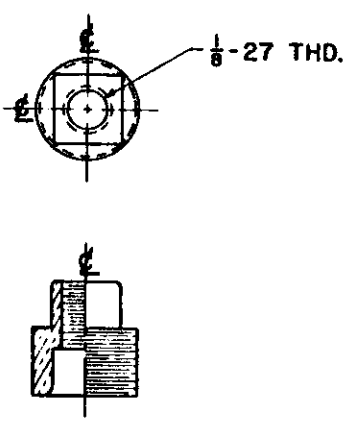
(5) LOCKING NUT



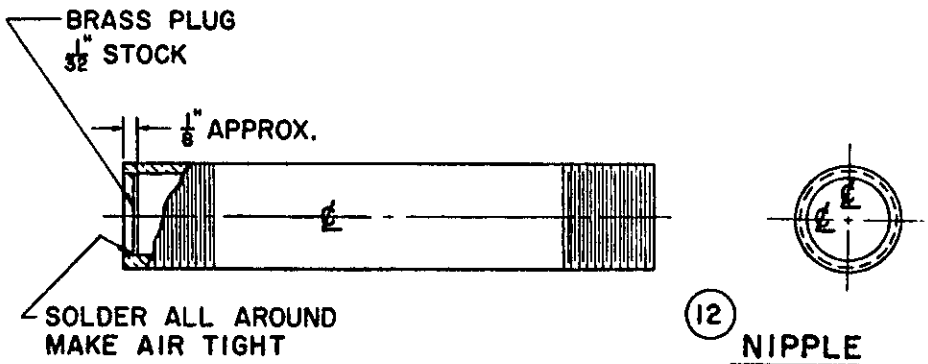
(4) ADAPTER



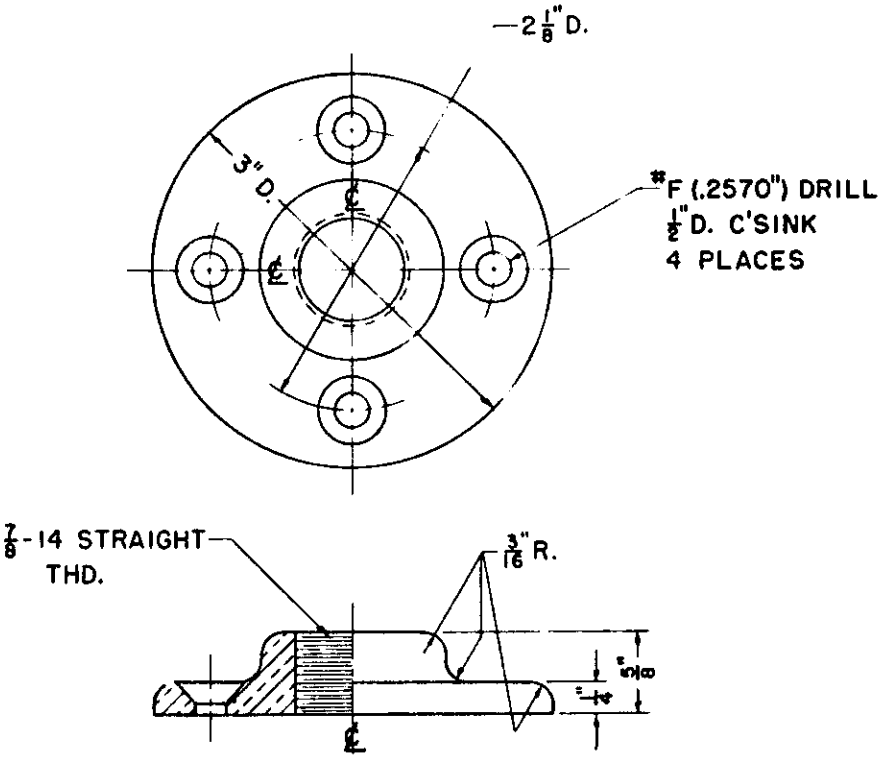
(6) PLUG
MODIFY AS SHOWN



(10) PLUG
MODIFY AS SHOWN



(12) NIPPLE



(15) FLANGE