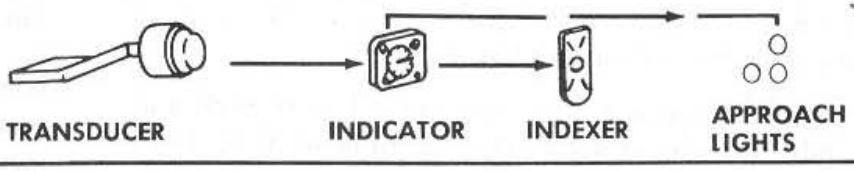
ANGLE-OF-ATTACK INDICATIONS



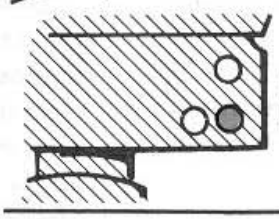
SLOW

UPPER CHEVRON lighted

14.25 Units

Pointer at or above upper edge of approach index marker

Approach speed more than 5 knots SLOW
Angle of attack more than 1.5° high
NOSE-DOWN correction needed



GREEN approach light on

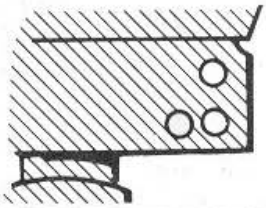
MODERATELY SLOW

UPPER CHEVRON and CIRCLE lighted

13.75

Pointer just above center of approach index marker

Approach speed 3 to 5 knots SLOW
Angle of attack 0.5° to 1.5° high
Slight NOSE-DOWN correction needed



AMBER approach light on

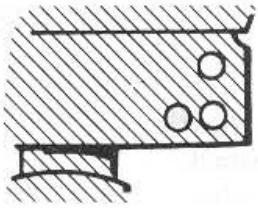
OPTIMUM

CIRCLE lighted

13.25 Units

Pointer near center of approach index marker

Angle of attack and approach speed at OPTIMUM
No correction needed



AMBER approach light on

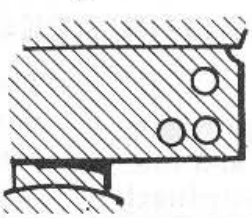
MODERATELY FAST

LOWER CHEVRON and CIRCLE lighted

12.75 Units

Pointer just below center of approach index marker

Approach speed 3 to 5 knots FAST
Angle of attack 0.5° to 1.5° low
Slight NOSE-UP correction needed



AMBER approach light on

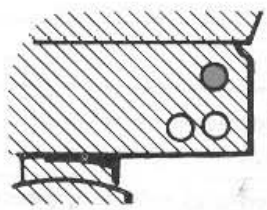
FAST

LOWER CHEVRON lighted

12.25 Units

Pointer at or below lower edge of approach index marker

Approach speed more than 5 knots FAST
Angle of attack more than 1.5° low
NOSE-UP correction needed



RED approach light on

DESCRIPTION

The angle-of-attack indicating system and the approach lights provide the pilot and the landing signal officer with visual indications of aircraft angle of attack. Indications are presented on the angle-of-attack indicator (9, figure 1–3) under all flight conditions and may be used for such purposes as stall warning and for establishing maximum endurance flight attitudes. For convenience in controlling airspeed in landing approaches, indicator readings are supplemented by lights on the angle-of-attack approach indexer which is mounted on the windshield frame. The approach lights, mounted on the nose gear flipper door, provide the LSO with a similar indication of angle of attack as illustrated in figure 1–13. (Refer to EXTERIOR LIGHTS this section, for additional information concerning approach light operation.) Electrical power for the angle-of-attack indicating system is supplied by the emergency dc bus.

The angle-of-attack transducer, located on the right-hand side of the fuselage, transmits to the indicator a signal representing the relative angle of the fuselage to the airstream. This information is presented to the pilot as the position of the indicator pointer over a scale reading from 0 to 30. Each unit on the indicator dial is equal to 1.5° of indicated angle of attack or approximately 5 knots indicated airspeed in the region of the optimum approach angle of attack. On aircraft equipped with the approach power compensator system, the transducer also supplies information to the system computer. (Refer to APPROACH POWER COMPENSATOR SYSTEM this section.)

The angle-of-attack indicator controls operation of the approach indexer and the approach lights to provide indications of high, optimum, and low angle of attack in the landing condition. The indexer and approach lights are operated relative to pointer movement about the reference index marker at the 3 o'clock position on the indicator (figure 1–13).

The angle-of-attack system is ground boresighted and the indicator dial is set so that an indication of 13.25 units, corresponding to the optimum approach angle of attack, coincides with the center of the approach index marker at the 3 o'clock position. If the aircraft is flown so that the indicator pointer is held at an indication of 13.25 units (centered on the approach index marker) the optimum approach speed for any aircraft gross weight within the allowable limits will result. A preflight check should be made as prescribed in figure 3–1 to assure that the angle-of-attack vane or arm is not bent.

NORMAL OPERATION

An inflight check of the angle-of-attack system may be made as follows:

1. Descend below 5,000 feet and maintain straight and level flight.
2. Raise wing and lower landing gear.
3. Stabilize airspeed at recommended value for aircraft gross weight corresponding to 13.25 units (figure 3–12).
4. Angle-of-attack indicator pointer should indicate 13.25 units.

CAUTION

The cockpit emergency ventilation port must be closed when using the angle-of-attack system as a flight reference. The port, when open, disturbs air flow, resulting in erroneous angle-of-attack indications and faulty operation of the approach power compensator system.

The approach indexer lights function only when the landing gear handle is in WHLS DOWN and the approach indexer dimming knob is rotated out of the OFF position. Indexer light brightness is controlled by positioning the approach indexer dimming knob (3, figure 1–28) as desired between OFF and BRT.

Since the indexer will be used as the principal reference for controlling airspeed in landing approaches, it is advisable to check operation at the beginning of the landing approach by making a slight porpoising maneuver and observing that all of the indexer lights operate in the proper sequence. Also observe the airspeed indicator to verify that the recommended angle of attack corresponds to the correct approach airspeed.

The approach is flown by coordinating throttle and stick movements to establish the desired glide path at optimum angle of attack. The stick is used to bring angle of attack to the optimum value, as indicated by illumination of the indexer circle (donut). As angle of attack goes high or low, with resulting decrease or increase in airspeed, the indexer upper or lower chevron will be illuminated to point the direction in which the nose should be moved to return to the optimum angle of attack. The throttle is manipulated to control rate of descent so as to establish the desired glide path. The relationships of the various indications to angle of attack and airspeed are shown in figure 1–13.

If the indexer lights fail, the approach may be flown with reference to angle-of-attack indicator readings. In this case, attitude is corrected to keep the indicator pointer as close as possible to the center of the 3 o'clock reference index. Indications above and below the index indicate that the approach is being made more than 5 knots slow or fast.