TABLE OF CONTENTS

SECTION 9

SUPPLEMENTS

SECTION 9

SUPPLEMENTS

9.1 GENERAL

This section provides information in the form of Supplements which are necessary for efficient operation of the airplane when equipped with one or more of the various optional systems and equipment not provided with the standard airplane.

All of the Supplements provided by this section are "FAA Approved" and consecutively numbered as a permanent part of this Handbook. The information contained in each Supplement applies only when the related equipment is installed in the airplane.

THIS PAGE INTENTIONALLY LEFT BLANK

SUPPLEMENT 1

AIR CONDITIONING INSTALLATION

SECTION 1 - GENERAL

This supplement supplies information necessary for the efficient operation of the airplane when the optional air conditioning system is installed. The information contained within this supplement is to be used "as described" in conjunction with the complete handbook.

This supplement has been "FAA Approved" as a permanent part of this handbook and must remain in this handbook at all times when the optional air conditioning system is installed.

SECTION 2 - LIMITATIONS

(a) To insure maximum climb performance the air conditioner must be turned "OFF" manually prior to takeoff to disengage the compressor and retract the condenser door. Also the air conditioner must be turned "OFF" manually before the landing approach in preparation for a possible go-around.

(b) Placards
In full view of the pilot, in the area of the air conditioner controls when the air conditioner is installed:

"WARNING - AIR CONDITIONER MUST BE OFF TO INSURE NORMAL TAKEOFF CLIMB PERFORMANCE."

In full view of the pilot, to the right of the engine gauges (condenser door light):

"AIR COND DOOR
OPEN"

SECTION 3 - EMERGENCY PROCEDURES

No changes to the basic Emergency Procedures provided by Section 3 of this Pilot's Operating Handbook are necessary for this supplement.

SECTION 4 - NORMAL PROCEDURES

Prior to takeoff, the air conditioner should be checked for proper operation as follows:

(a) Check aircraft master switch "ON."

(b) Turn the air conditioner control switch to "ON" and the fan switch to one of the operating positions - the "AIR COND DOOR OPEN" warning light will turn on, thereby indicating proper air conditioner condenser door actuation.

(c) Turn the air conditioner control switch to "OFF" - the "AIR COND DOOR OPEN" warning light will go out, thereby indicating the air conditioner condenser door is in the up position.

(d) If the "AIR COND DOOR OPEN" light does not respond as specified above, an air conditioner system or indicator bulb malfunction is indicated and further investigation should be conducted prior to flight.

The above operational check may be performed during flight if an in flight failure is suspected.

The condenser door light is located to the right of the engine instrument cluster in front of the pilot. The door light illuminates when the door is open and is off when the door is closed.

SECTION 5 - PERFORMANCE

Operation of the air conditioner will cause slight decreases in cruise speed and range. Power from the engine is required to run the compressor, and the condenser door, when extended, causes a slight increase in drag. When the air conditioner is turned off there is normally no measurable difference in climb, cruise or range performance of the airplane.

NOTE

To insure maximum climb performance the air conditioner must be turned off manually before takeoff to disengage the compressor and retract the condenser door. Also the air conditioner must be turned off manually before the landing approach in preparation for a possible go-around.

Although the cruise speed and range are only slightly affected by the air conditioner operation, these changes should be considered in preflight planning. To be conservative, the following figures assume that the compressor is operating continuously while the airplane is airborne. This will be the case only in extremely hot weather.

(a) The decrease in true airspeed is approximately 6 KTS at all power settings.
(b) The decrease in range may be as much as 45 nautical miles for the 77 gallon capacity.

The climb performance is not compromised measurably with the air conditioner operating since the compressor is declutched and the condenser door is retracted, both automatically, when 38 inches Hg. or more manifold pressure is used. When less than 38 inches Hg. manifold pressure is used or in the event of a malfunction which would cause the compressor to operate and and the condenser door to be extended, a decrease in rate of climb of as much as 100 fpm can be expected at all altitudes. Should a malfunction occur which prevents condenser door retraction when the compressor is turned off, a decrease in rate of climb of as much as 50 fpm can be expected.

THIS PAGE INTENTIONALLY LEFT BLANK

SUPPLEMENT 2

AUTOFLITE II AUTOPILOT INSTALLATION

SECTION 1 - GENERAL

This supplement supplies information necessary for the operation of the airplane when the optional AutoFlite II Autopilot is installed. The information contained within this supplement is to be used in conjunction with the complete handbook.

This supplement has been "FAA Approved" as a permanent part of this handbook based on EDO-AIRE Mitchell STC SA3162SW-D and must remain in this handbook at all times when the optional AutoFlite II Autopilot is installed.

SECTION 2 - LIMITATIONS

(a) Autopilot operation prohibited above 175 KIAS. (Autopilot Vmo)
(b) Autopilot must be "OFF" for takeoff and landing.

SECTION 3 - EMERGENCY PROCEDURES

(a) In case of malfunction, depress disconnect switch on pilot's control wheel, or overpower autopilot at either control wheel.
(b) AutoFlite II master switch - OFF.
(c) In climb, cruise or descent configuration a malfunction with a 3 second delay in recovery initiation may result in 50° bank and 190 foot altitude loss. Maximum altitude loss measured at 175 KIAS in a descent.
(d) In approach configuration, coupled or uncoupled, a malfunction with a 1 second delay in recovery initiation may result in 18° bank and 20 foot altitude loss.

SECTION 4 - NORMAL PROCEDURES

AUTOFLITE II PREFLIGHT INSPECTION

(a) AutoFlite II master switch - ON.
(b) Rotate turn command knob to left and right. Aircraft control wheels should rotate in corresponding directions.
(c) With AutoFlite II on, rotate aircraft control wheel to left and right. Only light forces should be required to override roll servo clutch.
(d) AutoFlite II master switch - OFF - rotate control wheel left and right to assure disengagement.

AUTOFLITE II IN-FLIGHT PROCEDURE

(a) Engagement
  (1) Check turn command knob in center detent position.
  (2) AutoFlite II master switch - ON.

(b) Disengagement
  (1) AutoFlite II master switch - OFF.

(c) Heading Changes
  (1) Move trim knob on instrument for drift correction from a constant heading.
  (2) Move turn command knob for left or right banked turns. Rotation of knob to stop will yield an appropriate bank angle to obtain an approximate standard rate turn. Intermediate settings may be used for lesser turn rates.

(d) OMNI Tracker
  (1) Turn command knob - move to center detent position and push IN to engage tracker. Aircraft will track desired radial established on NAV 1 (or as selected, if equipped with a NAV selector switch).

NOTE

Tracker must be engaged within 10° of being "on course," i.e. VOR course needle centered and aircraft heading within 10° of VOR course.

  (2) Trim knob - push IN for high sensitivity. Use high sensitivity position for localizer tracking and as desired for OMNI tracking.

(e) Maintain directional trim during all autopilot operations.

PERFORMANCE

No changes to the basic performance provided by Section 5 of this Pilot's Operating Handbook are necessary for this supplement.

SUPPLEMENT 3

AUTOCONTROL IIIB AUTOPILOT INSTALLATION

SECTION 1 - GENERAL

This supplement supplies information necessary for the operation of the airplane when the optional Piper AutoControl IIIB Autopilot is installed. The information contained within this supplement is to be used in conjunction with the complete handbook.

This supplement has been "FAA Approved" as a permanent part of this handbook based on EDO-AIRE Mitchell STC SA3161SW-D and must remain in this handbook at all times when the optional Piper AutoControl IIIB Autopilot is installed.

SECTION 2 - LIMITATIONS

(a) Autopilot operation prohibited above 175 KIAS. (Autopilot Vmo)
(b) Autopilot must be OFF for takeoff and landing.

SECTION 3 - EMERGENCY PROCEDURES

(a) In an emergency the AutoControl IIIB can be disconnected by:
  (1) Pushing the A/P ON-OFF rocker switch - "OFF."
  (2) Pulling the autopilot circuit breaker.
(b) The autopilot can be overpowered at either control wheel.
(c) An autopilot runaway, with a 3 second delay in the initiation of recovery while operating in climb, cruise or descending flight, could result in a 58° bank and 190 foot altitude loss. Maximum altitude loss measured at 175 KIAS in a descent.
(d) An autopilot runaway, with a 1 second delay in the initiation of recovery, during an approach operation, coupled or uncoupled, could result in 18° bank and 20 foot altitude loss.
(e) Emergency operation with optional NSD 360 and NSD 360A (HSI) - Slaved and/or Non-Slaved:

NSD 360
(1) Appearance of HDG Flag:
  a. Check air supply gauge (vac or pressure) for adequate air supply (4 in. Hg. min.).
  b. Check compass circuit breaker.
  c. Observe display for proper operation.
(2) To disable heading card - pull circuit breaker and use magnetic compass for directional data.

NOTE

If heading card is not operational, autopilot should not be used.

(3) With card disabled:
   a. VOR and Glide Slope displays are still functional; use card set to rotate card to aircraft heading for correct picture.
   b. Localizer - left-right information still usable. Flag information is disabled - compare needle with No. 2 indicator for valid left-right needle operation.

(4) Slaving Failure - (i.e. failure to self correct for gyro drift):
   a. Check gyro slaving switch is set to No. 1 position.
   b. Check for HDG Flag.
   c. Check compass circuit breaker.
   d. Reset heading card while observing slaving meter.
   e. Select slaving amplifier No. 2 (gyro slaving switch is set to No. 2 position).
   f. Reset heading card while checking slaving meter.
   g. Switch to free gyro and periodically set card as unslaved gyro.

NSD 360A (Instrument with red-white striped NAV-HDG Flags)

(1) The emergency procedures for the NDS 306A remain identical to those listed for the NSD 360 (above), except that the presence of the NAV Flag on a localizer frequency invalidates the NAV left-right information. Usable navigation data will be indicated in both VOR and Localizer modes by the absence of the NAV Flag, whether the card is disabled or not.

(2) In the localizer mode the "TO-FROM" arrows may remain out of view, depending upon the design of the NAV converter used in the installation.

SECTION 4 - NORMAL PROCEDURES

PREFLIGHT INSPECTION

(a) AUTOPILOT
   (1) Place Radio Coupler in "HDG" Mode (if installed) and place the AP "ON-OFF" switch to the "ON" position to engage roll section. Rotate roll command knob left and right and observe that control wheel describes a corresponding left and right turn, then center knob.
   (2) Set proper D.G. heading on D.G. and turn HDG bug to aircraft heading. Engage "HDG" mode rocker switch and rotate HDG bug right and left. Aircraft control wheel should turn same direction as bug. Grasp control wheel and manually override servo, both directions.

(b) RADIO COUPLER - (OPTIONAL)
   (1) Tune and identify VOR or VOT station. Position Radio Coupler to OMNI Mode. Engage Autopilot "ON" and HDG switches. Set HDG bug to aircraft heading and rotate O.B.S. to cause OMNI indicator needle to swing left and right slowly. Observe that control wheel rotates in direction of needle movement.
   (2) Disengage AP "ON-OFF" switch. Reset Radio Coupler control to HDG.

IN-FLIGHT

(a) Trim airplane (ball centered).

(b) Check air pressure or vacuum to ascertain that the directional gyro and attitude gyro are receiving sufficient air.

(c) Roll Section:
(1) To engage, center Roll knob, push AP "ON-OFF" switch to "ON" position. To turn, rotate console ROLL knob in desired direction. (Maximum angle of bank should not exceed 30°.)
(2) For heading mode, set directional gyro with magnetic compass. Push directional gyro HDG knob in, rotate bug to aircraft heading. Push console heading rocker (HDG) switch to "ON" position. To select a new aircraft heading, push D.G. heading knob "IN" and rotate, in desired direction of turn, to the desired heading.

(d) Radio Coupling VOR-ILS with (Horizontal Situation Indicator) H.S.I. Type Instrument Display. (Optional)
(1) VOR Navigation
a. Tune and identify VOR Station. Select desired course by rotating CRS knob of H.S.I.
b. Select OMNI mode on Radio Coupler.
c. Select HDG mode on autopilot console to engage coupler. Aircraft will turn to a 45° intercept angle to intercept the selected VOR course. Intercept angle magnitude depends on radio needle off course magnitude, 100% needle deflection will result in 45° intercept with the intercept angle diminishing as the needle off set diminishes.
d. NAV mode - NAV mode provides reduced VOR sensitivity for tracking weak, or noisy VOR signals. NAV mode should be selected after the aircraft is established on course.

(2) ILS-LOC Front Course
a. Set inbound, front, localizer course on H.S.I.
b. Select LOC-Normal non-Radio Coupler to intercept and track inbound on the localizer. Select LOC-REV to intercept and track outbound to the procedure turn area.
c. Select HDG Mode on autopilot console to engage coupler.

(3) ILS - Back Course
a. Set inbound, front localizer course on H.S.I.
b. Select LOC-REV on radio coupler to intercept and track inbound on the back localizer course. Select LOC-NORM to intercept and track outbound on the back course to the procedure turn area.
c. Select HDG mode on autopilot console to engage coupler.

(e) Radio Coupling – VOR/ILS with Standard directional gyro. (Optional)
Radio Coupler operation in conjunction with a standard directional gyro and VOR/LOC display differs from operation with an integrated display (H.S.I.) only in one respect. The HDG bug is used as the radio course datum and therefore must be set to match the desired VOR course as selected on the O.B.S.
(1) For VOR Intercepts and Tracking:
Select the desired VOR course and set the HDG bug to the same heading. Select OMNI mode on the coupler and HDG Mode on the autopilot console.
(2) For ILS Front Course Intercepts and Tracking:
Tune the localizer frequency and place the HDG bug on the inbound, front course heading. Select LOC-NORM mode on the coupler and HDG mode on the autopilot console.
(3) For LOC Back Course Intercepts and Tracking:
Tune the localizer frequency and place the HDG bug on the inbound course heading to the airport. Select LOC-REV mode with coupler and HDG mode on the autopilot console.

SECTION 5 - PERFORMANCE

No changes to the basic performance provided by Section 5 of the Pilot's Operating Handbook are necessary for this supplement.

SUPPLEMENT 4

PIPER ELECTRIC PITCH TRIM

SECTION 1 - GENERAL

This supplement supplies information necessary for the operation of the airplane when the optional Piper Electric Pitch Trim is installed. The information contained within this supplement is to be used in conjunction with the complete handbook.

This supplement has been "FAA Approved" as a permanent part of this handbook and must remain in this handbook at all times when the optional Piper Electric Pitch Trim is installed.

SECTION 2 - LIMITATIONS

No changes of the basic limitations provided by Section 2 of this Pilot's Operating Handbook are necessary for this supplement.

SECTION 3 - EMERGENCY PROCEDURES

The following information applies in case of electric trim malfunction:

(a) In case of malfunction, disengage electric pitch trim by pushing pitch trim switch on instrument panel to off position.
(b) In an emergency, electric pitch trim may be overpowered using manual pitch trim, and or control wheel pressure.
(c) In cruise configuration, a malfunction can result in a 15° pitch change and 500 ft. altitude variation.
(d) In approach configuration, a malfunction can result in a 20° pitch change and 500 ft. altitude loss.

SECTION 4 - NORMAL PROCEDURES

The electric trim system may be turned ON or OFF by a switch located above the ignition switch. The pitch trim may be changed when the electric trim system is turned on either by moving the manual pitch trim control wheel or by operating the trim control switch on the pilot's control yoke.

SECTION 5 - PERFORMANCE

No changes to the basic performance provided by Section 5 of this Pilot's Operating Handbook are necessary for this supplement.

THIS PAGE INTENTIONALLY LEFT BLANK

SUPPLEMENT 5

OXYGEN INSTALLATION - SCOTT AVIATION PRODUCTS EXECUTIVE MARK III PART NUMBER 802180-02

SECTION 1 - GENERAL

This supplement supplies information necessary for the operation of the airplane when the optional oxygen system is installed. The information contained within this supplement is to be used in conjunction with the complete handbook.

This supplement has been "FAA Approved" as a permanent part of this handbook and must remain in this handbook at all times when the optional oxygen system is installed.

SECTION 2 - LIMITATIONS

(a) No smoking allowed.
(b) The aircraft is restricted to four occupants with one (1) oxygen unit installed.
(c) Oxygen duration:

DURATION IN HOURS AT ALTITUDE

PERSONS USING EACH UNIT	5,000	10,000	15,000	20,000
1	10.6	6.3	4.7	3.8
2	5.3	3.2	2.4	1.9
3	3.5	2.1	1.6	1.3
4	2.7	1.6	1.2	.95

SECTION 3 - EMERGENCY PROCEDURES

(a) Time of useful consciousness at 20,000 ft. is approximately 10 minutes.
(b) If oxygen flow is interrupted as evidenced by the flow indicators or hypoxic indications:
  (1) Install another mask unit.
  (2) Install mask connection in an unused outlet if available.
  (3) If flow is not restored, immediately descend to below 12,500 feet.

SECTION 4 - NORMAL PROCEDURES

PREFLIGHT

(a) Check oxygen quantity.
(b) Installation
  (1) Install mounting base between center seats utilizing slotted receptacles for front and rear attachment points.
  (2) Slide oxygen bottle into position on top of mounting base ensuring that all mounting lugs engage in the slotted receptacle and that the locking pin is in the raised position.
(c) Turn on oxygen system and check flow indicators on all masks. All masks are stowed in the oxygen system containers.

IN-FLIGHT

(a) Adjust oxygen mask.
(b) Turn on system.
(c) Monitor flow indicators and quantity.

CAUTION

Use of oxygen unit is prohibited when gauge approaches red area.

SECTION 5 - PERFORMANCE

Installation of the oxygen system does not affect the basic performance information presented in Section 5 of this Pilot's Operating Handbook.