Cessna MODEL **310Q**

NORMAL PROCEDURES
PILOT'S CHECKLIST
GROSS WEIGHT 5300 POUNDS

A. BEFORE STARTING ENGINES:

1. Preflight Inspection - COMPLETE
2. Control Lock(s) - REMOVE
3. Landing Gear - DOWN
4. Avionics Master Switch - OFF
5. Battery and Alternators - ON
6. Throttles - OPEN ONE INCH
7. Propellers - FORWARD
8. Mixtures - FULL RICH
9. Fuel Selectors - MAIN TANKS (Feel for Detent)
10. Alternate Air Controls - IN

B. STARTING ENGINES (LEFT FIRST):

1. Magneto Switches - ON
2. Starter - PRESS
3. Prime Switch - ACTIVATE
4. Auxiliary Fuel Pump - LOW
5. Throttle - 1000 to 1200 RPM
6. Engine Oil Pressure - CHECK
7. Right Engine - REPEAT 1 THROUGH 6
8. Wing Flaps - UP
9. Rotating Beacon - ON
10. Avionics Master Switch - ON
11. Radios - SET

C. BEFORE TAKEOFF:

1. Engine Runup:
   a. Throttles - 1700 RPM
   b. Alternators - CHECK
   c. Magnetos - CHECK (150 RPM Maximum Drop With Maximum of 50 RPM Difference)
   d. Propellers - EXERCISE (to 1200 RPM)
   e. Engine Instruments - CHECK green arc
   f. Vacuum System - CHECK (4.75 to 5.25 In. Hg.)
2. Flight Controls - CHECK
3. Trim Tabs - SET
4. Alternate Air Controls - IN
5. Wing Flaps - UP
6. Door and Window - LOCKED
7. Fuel Quantity - CHECK
8. With Optional Electrical Gyro Horizon - PULL to erect
9. Flight Instruments and Radios - SET
10. Lights - AS REQUIRED
11. Auxiliary Fuel Pumps - ON

D. NORMAL TAKEOFF:

1. Engine Power - 2625 RPM and FULL THROTTLE
2. Mixtures - LEAN for field elevation
3. Elevator Control - Raise Nosewheel at 78 KIAS
4. Minimum Control Speed - 75 KIAS
5. Break Ground and Climb Out - 90 KIAS

E. AFTER TAKEOFF:

1. Landing Gear - RETRACT
2. Max. Climb Power - 2625 RPM and FULL THROTTLE
3. Best Rate of Climb Speed - 107 KIAS
4. Normal Climb Power - 2450 RPM and 24 In. Hg.
5. Normal Climb Speed - 115 to 130 KIAS
6. Auxiliary Fuel Pumps - OFF

F. CRUISE:

1. Engine Speed - 2100 to 2450 RPM
2. Throttles - 15 to 24 In. Hg.
3. Mixtures - LEAN (Recheck If Power, Altitude or OAT Changes)
4. Fuel Selectors - AS DESIRED (Feel for Detent)
   a. 40 gallon auxiliary tanks after 60 minutes of flight
   b. 63 gallon auxiliary tanks after 90 minutes of flight
   c. Usable auxiliary fuel quantity is based on level flight
   d. Transfer wing locker fuel after main tank fuel is below 180 pounds. Monitor main tank fuel quantity
   e. Crossfeed as required

G. BEFORE LANDING:

1. Fuel Selectors - MAIN TANKS (Feel for Detent)
2. Auxiliary Fuel Pumps - ON
3. Alternate Air Controls - IN
4. Mixtures - FULL RICH
5. Propellers - FORWARD
6. Wing Flaps - DOWN 15° below 160 KCAS
7. Gear - DOWN below 140 KCAS
8. Wing Flaps - DOWN 35° below 140 KCAS
9. Minimum Approach Speed - 89 KIAS
10. Minimum Control Speed - 75 KIAS

H. AFTER LANDING:

1. Auxiliary Fuel Pumps - LOW (During Landing Roll)
2. Wing Flaps - UP

NORMAL PROCEDURES

CARD 2

I. SECURING AIRCRAFT:

1. Auxiliary Fuel Pumps - OFF
2. Avionics Master Switch - OFF
3. All switches except Battery, Alternator, and Magneto Switches - OFF
4. Throttles - IDLE
5. Propellers - FORWARD
6. Mixtures - IDLE CUT-OFF
7. Magneto Switches - OFF
8. Battery and Alternators - OFF
9. Parking Brake - SET
10. Control Lock(s) - INSTALL

EMERGENCY PROCEDURES
PILOT'S CHECKLIST

A. ENGINE INOPERATIVE PROCEDURES:

1. ENGINE SECURING PROCEDURE:
   a. Throttle - CLOSE
   b. Mixture - IDLE CUT-OFF
   c. Propeller - FEATHER
   d. Fuel Selector - OFF
   e. Auxiliary Fuel Pump - OFF
   f. Magneto Switches - OFF
2. ENGINE FAILURE DURING TAKEOFF - SPEED BELOW 90 KIAS
   a. Throttles - CLOSE IMMEDIATELY
   b. Brakes - AS REQUIRED
3. ENGINE FAILURE AFTER TAKEOFF - SPEED ABOVE 90 KIAS
   a. Mixtures - AS REQUIRED for altitude
   b. Propellers - FULL FORWARD
   c. Throttles - FULL FORWARD
   d. Landing Gear - UP
   e. Inoperative Engine:
      (1) Throttle - CLOSE
      (2) Mixture - IDLE CUT-OFF
      (3) Propeller - FEATHER
   f. Establish Bank - 5° TOWARD OPERATIVE ENGINE
   g. Climb to Obstacle - 90 KIAS
   h. Climb at Best Single Engine Climb Speed - 102 KIAS
   i. Wing Flaps - UP (If Extended)
   j. Trim Tabs - ADJUST (5° Bank Toward Operative Engine)
   k. Inoperative Engine - SECURE
   l. As Soon as Practical - LAND
4. ENGINE FAILURE DURING FLIGHT:
   a. Inoperative Engine - SECURE
   b. Operative Engine - ADJUST
   c. Trim Tabs - ADJUST (5° Bank Toward Operative Engine)
   d. Electrical Load - DECREASE to minimum required
   e. As Soon as Practical - LAND
5. ENGINE INOPERATIVE LANDING:
   a. Mixture - FULL RICH
   b. Propeller - FORWARD
   c. Approach at - 94 KIAS with excessive altitude
   d. Landing Gear - DOWN within glide distance of field
   e. Wing Flaps - DOWN when landing is assured
   f. Decrease Speed Below - 89 KIAS only if landing is assured

6. ENGINE INOPERATIVE GO AROUND - SPEED ABOVE 90 KIAS
   a. Throttle - FULL FORWARD
   b. Landing Gear - UP
   c. Wing Flaps - UP (If Extended)
   d. Climb at Best Single Engine Climb Speed - 102 KIAS
7. ENGINE RESTART IN FLIGHT:
   a. Magneto Switches - ON
   b. Fuel Selector - MAIN TANK (Feel for Detent)
   c. Throttle - FORWARD approximately one inch
   d. Mixture - FULL RICH
   e. With Standard Aircraft:
      (1) Propeller - FORWARD of detent
      (2) Starter - PRESS
      (3) Prime Switch - ACTIVATE
      (4) Starter and Prime Switch - RELEASE when engine fires

      With Optional Unfeathering Accumulators:
      (1) Propeller - FULL FORWARD
      (2) Propeller - RETARD to detent when propeller reaches 1000 RPM

B. FIRE PROCEDURES:

1. FIRE ON THE GROUND (Engine Start, Taxi, and Takeoff With Sufficient Distance Remaining to Stop):
   a. Throttles - CLOSE
   b. Brakes - AS REQUIRED
   c. Mixtures - IDLE CUT-OFF
   d. Battery - OFF (use gang bar)
   e. Magnetos - OFF (use gang bar)
   f. Evacuate aircraft as soon as practical
2. IN FLIGHT WING OR ENGINE FIRE:
   a. Both Auxiliary Fuel Pumps - OFF
   b. Appropriate Engine - SECURE
      (1) Mixture - IDLE CUT-OFF
      (2) Propeller - FEATHER
      (3) Fuel Selector - OFF
      (4) Alternator - OFF
      (5) Magnetos - OFF
   c. Cabin Heater - OFF
   d. Land and evacuate aircraft as soon as practical

EMERGENCY PROCEDURES

CARD 2

3. IN FLIGHT CABIN FIRE OR SMOKE:
   a. Electrical Load - REDUCE to minimum required
   b. Attempt to isolate the source of fire or smoke
   c. Wemacs - OPEN
   d. Cabin Air Controls - OPEN (all vents including windshield defrost)
      If intensity of smoke increases - CLOSE

CAUTION

Opening the foul weather window or cabin door will create a draft in the cabin and may intensify a fire.

   e. Land and evacuate aircraft as soon as practical

C. LANDING GEAR EMERGENCY PROCEDURES:

1. IF LANDING GEAR WILL NOT EXTEND ELECTRICALLY:
   a. Landing Gear Motor Circuit Breaker - PULL
   b. Landing Gear Switch - NEUTRAL (Center)
   c. Pilot's Seat - TILT full aft
   d. Hand Crank - EXTEND AND LOCK
   e. Rotate Crank - CLOCKWISE four turns past gear down lights ON (Approximately 52 Turns)
   f. Gear - CHECK down lights - ON; Unlocked Light - OFF
   g. Gear Warning Horn - CHECK
   h. Hand Crank - PUSH BUTTON AND STOW
2. IF LANDING GEAR WILL NOT RETRACT ELECTRICALLY:
   a. DO NOT TRY TO RETRACT MANUALLY
   b. As Soon as Practical - LAND

D. FLIGHT INSTRUMENTS EMERGENCY PROCEDURES:

If optional Dual Pitot System Is Installed, refer to Emergency Procedures Checklist for Copilot's Instruments.

1. VACUUM SYSTEM (Attitude and Directional Gyros):
   a. Red Indicator on Gage will Show Failure
   b. Automatic Valve will Select Operative Source
2. OBSTRUCTION OR ICING OF STATIC SOURCE:
   a. Alternate Static Source - OPEN
   b. Excess Altitude and Airspeed - MAINTAIN to compensate for change in calibration. Correct airspeed and altimeter indications per the following tables. Be sure the alternate static source is CLOSED for all normal operations.
   c. Pilot's Storm Window CLOSED. Airspeed and Altitude Correction in the following table - Correction to be added to altimeter reading.

ALTERNATE STATIC SOURCE PILOT'S STORM WINDOW CLOSED - HEATER VENTS ON OR OFF						
AIRSPEED CALIBRATION				ALTIMETER CORRECTION		
Gear	Up	Down	Down	Up	Down	Down
Flaps	0°	15°	35°	0°	15°	35°
KCAS	KIAS	KIAS	KIAS	FT	FT	FT
70	70.3	70.7	71.2	0	-7	-7
80	80.9	81.5	82.1	-7	-13	-13
100	102.2	103.1	103.5	-20	-27	-27
120	122.7	124.4	125.2	-27	-47	-54
140	143.7	145.9	146.8	-47	-74	-87
160	164.7	167.4		-67	-107	
180	185.6			-94		
200	206.7			-114		
220	227.3			-147		

d. Pilot's Storm Window OPEN. Airspeed and Altitude Correction in the following Table - Correction to be added to altimeter reading.

ALTERNATE STATIC SOURCE PILOT'S STORM WINDOW OPEN - HEATER VENTS ON						
AIRSPEED CALIBRATION				ALTIMETER CORRECTION		
Gear	Up	Down	Down	Up	Down	Down
Flaps	0°	15°	35°	0°	15°	35°
KCAS	KIAS	KIAS	KIAS	FT	FT	FT
70	85.2	85.0	85.6	-101	-101	-107
80	95.9	95.4	96.1	-121	-114	-127
100	117.4	116.6	117.2	-168	-154	-161
120	138.9	137.5	138.2	-214	-194	-208
140	160.1	158.5	159.1	-268	-241	-255
160	181.4	179.1		-328	-288	
180	202.7			-389		
200	224.0			-456		
220	245.0			-523		

EMERGENCY PROCEDURES

CARD 3

E. FUEL SYSTEM EMERGENCY PROCEDURES:

1. ENGINE DRIVEN FUEL PUMP FAILURE:
   a. Fuel Selector - MAIN TANK (Feel for Detent)
   b. Auxiliary Fuel Pump - ON
   c. Mixture - ADJUST for smooth engine operation
   d. As Soon as Practical - LAND
   e. Fuel in Auxiliary and Opposite Main Tank is Unusable

F. ELECTRICAL SYSTEM EMERGENCY PROCEDURES:

1. ALTERNATOR FAILURE (Single):
   (Indicated by illumination of failure light)
   a. Electrical Load - REDUCE
   b. If Circuit Breaker is Tripped:
      (1) Shut off affected alternator
      (2) Reset affected alternator circuit breaker
      (3) Turn on affected alternator switch
      (4) If circuit breaker reopens, turn off alternator
   c. If Circuit Breaker does not Trip:
      (1) Select affected alternator on ammeter and monitor output
      (2) If output is normal and failure light remains on, disregard fail indication and have indicator checked after landing
      (3) If output is insufficient, turn off alternator and reduce electrical load to one alternator capacity
      (4) If complete loss of alternator output occurs, check field fuse and replace if necessary
      (5) If an intermittent light indication accompanied by ammeter fluctuation is observed, shut off affected alternator and reduce load to one alternator capacity
2. ALTERNATOR FAILURE (Dual):
   (Indicated by illumination of failure lights)
   a. Electrical Load - REDUCE
   b. If Circuit Breakers are Tripped:
      (1) Shut off alternators
      (2) Reset circuit breakers
      (3) Turn on left alternator and monitor output on ammeter
      (4) If alternator is charging, leave it on (disregard failure light if still illuminated)
      (5) If still inoperative, shut off left alternator
      (6) Repeat steps (3) thru (5) for right alternator
      (7) If circuit breakers reopen prepare to terminate flight

c. If Circuit Breakers have not Tripped:
   (1) Shut off alternators
   (2) Check field fuses and replace as required
   (3) Turn on left alternator and monitor output on ammeter
   (4) If alternator is charging, leave it on (disregard failure light if still illuminated)
   (5) If still inoperative, shut off left alternator
   (6) Repeat steps (3) thru (5) for right alternator
   (7) If both still inoperative, shut off alternators and turn on emergency alternator field switch
   (8) Repeat steps (3) thru (5) for each alternator
   (9) If still inoperative shut off alternators and prepare to terminate flight

G. ELECTRICAL ELEVATOR TRIM EMERGENCY PROCEDURES:

1. ELECTRIC ELEVATOR TRIM SYSTEM FAILURE:
   a. Elevator Trim Disengage Switch - DISENGAGE
   b. Manual Trim - AS REQUIRED

H. AIR INLET OR FILTER ICING:

1. Alternate Air Controls - OUT
2. Propellers - INCREASE (2550 RPM for Normal Cruise)
3. Mixtures - LEAN as required

I. AIRCRAFT OPERATION LIMITATIONS:

1. Minimum Single Engine Control Speed - 75 KCAS
2. Maximum Maneuvering Speed - 148 KCAS
3. Maximum Altitude Loss in Stall Recovery - 500 ft
4. Maximum Pitch in Power Off Stall - 10°
5. Maximum Positive Maneuvering Load Factors

Flaps Up	+3.8G
Flaps Down	+2.0G

6. Maximum Speed for Electric Trim is 210 KCAS

EMERGENCY PROCEDURES

CARD 4

DUAL PITOT SYSTEM (Copilot's Instruments Only)

FLIGHT INSTRUMENTS EMERGENCY PROCEDURES:

1. VACUUM SYSTEM (Attitude and Directional Gyros):
   a. Red Indicator on Gage will Show Failure
   b. Automatic Valve will Select Operative Source
2. OBSTRUCTION OR ICING OF STATIC SOURCE:
   a. Alternate Static Source - OPEN
   b. Excess Altitude and Airspeed - MAINTAIN to Compensate for Change in Calibration. Correct Airspeed and Altimeter Indications Per the Following Tables. Be Sure the Alternate Static Source is CLOSED for All Normal Operations.
   c. Pilot's Storm Window CLOSED. Airspeed and Altitude Correction in the following Table - Correction to be added to Altimeter reading.

ALTERNATE STATIC SOURCE
PILOT'S STORM WINDOW CLOSED - HEATER VENTS ON OR OFF

AIRSPEED CALIBRATION				ALTIMETER CORRECTION		
Gear	Up	Down	Down	Up	Down	Down
Flaps	0°	15°	35°	0°	15°	35°
KCAS	KIAS	KIAS	KIAS	FT	FT	FT
70	63.2	60.0	65.5	0	-7	-7
80	76.3	75.8	79.3	-7	-13	-13
100	98.8	101.9	102.3	-20	-27	-27
120	121.1	125.4	124.4	-27	-47	-54
140	142.9	148.1	146.3	-47	-74	-87
160	164.1	170.4		-67	-107	
180	185.9			-94		
200	207.5			-114		
220	229.0			-147		

d. Pilot's Storm Window OPEN. Airspeed and Altitude Correction in the following Table - Correction to be added to Altimeter reading.

ALTERNATE STATIC SOURCE PILOT'S STORM WINDOW OPEN - HEATER VENTS ON						
AIRSPEED CALIBRATION				ALTIMETER CORRECTION		
Gear	Up	Down	Down	Up	Down	Down
Flaps	0°	15°	35°	0°	15°	35°
KCAS	KIAS	KIAS	KIAS	FT	FT	FT
70	75.5	72.5	78.4	-101	-101	-107
80	89.1	88.2	91.9	-121	-114	-127
100	112.7	113.0	115.0	-168	-154	-161
120	134.1	135.5	137.0	-214	-194	-208
140	155.9	157.4	159.1	-268	-241	-255
160	177.3	179.2		-328	-288	
180	198.8			-389		
200	220.5			-456		
220	242.0			-523		

Cessna MODEL **310Q**

NAV-O-MATIC 400A AUTOPILOT
PILOT'S CHECKLIST

I. BASIC AUTOPILOT
- A. Engagement
  1. Autopilot Disengage Switch - ENGAGE
  2. Pull/Turn Knob - PULL out and center roll trim
  3. Autopilot On/Off Switch - ON
- B. Disengagement
  1. Autopilot On/Off Switch - OFF (or)
  2. Autopilot Disengage Switch - DISENGAGE

II. ALTITUDE HOLD FUNCTION
- A. Engagement
  1. Altitude On/Off Switch - ON
- B. Disengagement
  1. Altitude On/Off Switch - OFF

NOTE

Altitude hold will disengage automatically when the glide-slope (optional) is captured by ILS Function.

III. HEADING PRESELECT FUNCTION
- A. Engagement
  1. Heading Azimuth Selector - ADJUST for desired magnetic heading
  2. Pull/Turn Knob - PUSH to engage
  3. Heading Azimuth Selector - ADJUST for any subsequently desired heading
- B. Disengagement
  1. Pull/Turn Knob - PULL to disengage (or)
  2. Nav Switch - ON

IV. ILS FUNCTION
- A. Engagement
  1. Flaps - 0° to 15°
  2. Speed - 105 to 120 KIAS
  3. ILS Course Selector Switch - FRONT COURSE or BACK COURSE as applicable
  4. ILS Localizer - APPROACH at 90° or Less, preferably 45°
  5. ILS Glideslope - APPROACH BELOW GLIDESLOPE
  6. Heading Azimuth Selector - ADJUST to course of localizer outbound or inbound as appropriate
  7. Nav Switch - ON and HOLD when course deviation indicator moves off peg from full scale deflection
  8. Pull/Turn Knob - PUSH, nav switch will now stay on
  9. Landing Gear - LOWER at outer marker
- B. Disengagement
  1. Pull/Turn Knob - PULL (or)
  2. Nav Switch - OFF

V. OMNI FUNCTION

A. Engagement

1. Omni Bearing Selector - ADJUST for desired course
2. Autopilot Sel. Nav 1./Nav 2. - SELECT appropriate position
3. Heading Azimuth Selector - ADJUST to selected omni course
4. Nav Switch - ON and HOLD when aircraft is within 170° of desired heading
5. Pull/Turn Knob - PUSH, nav switch will now stay on

NOTE

Nav switch must be re-cycled to intercept new course.
(See Owner's Manual.)

B. Disengagement

1. Nav Switch - OFF (or)
2. Pull/Turn Knob - PULL to Disengage

VI. EMERGENCY OPERATION

A. Engine Failure

1. Autopilot - DISENGAGE
2. Engine Power - INCREASE as required
3. Dead Engine - SECURE
4. Trim Tabs - ADJUST
5. Autopilot - RE-ENGAGE if desired

B. Possible Altitude Loss if Autopilot Malfunctions

1. Cruise Configuration	250 Feet
2. Normal Approach Configuration	150 Feet
3. Approach Configuration Engine Out	70 Feet
4. Climb Configuration	260 Feet

C. Control Forces Required to Overpower Autopilot

1. Elevator	25 Lbs
2. Aileron	20 Lbs

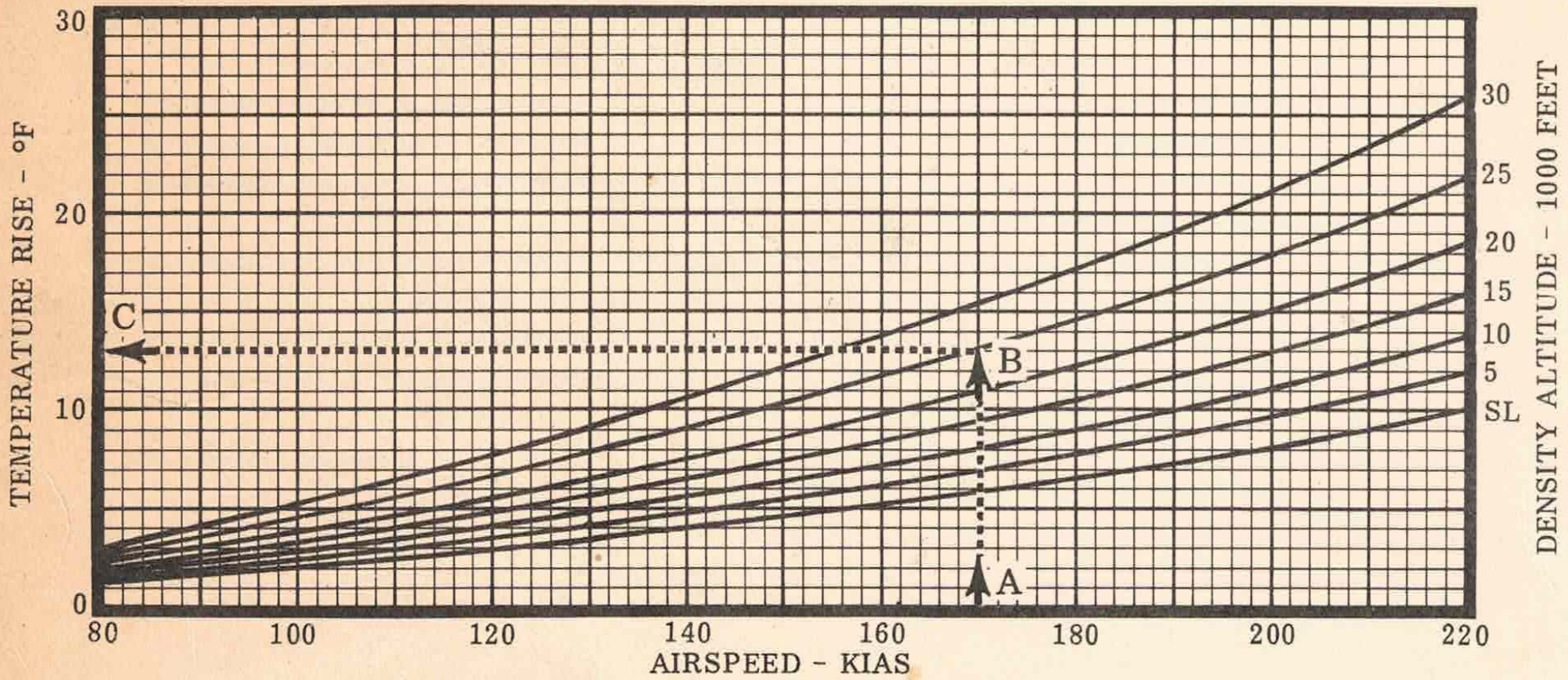
VII. LIMITATIONS

A. Maximum Airspeed for Autopilot Operation - 205 KCAS
B. Autopilot Off for Takeoff and Landing
C. Disengage Autopilot if Malfunction Occurs

VIII. OPERATING AND SERVICING INSTRUCTIONS

A. For Operating Instructions, see Nav-O-Matic 400A Autopilot Owner's Manual.
B. For Servicing Instructions, see Nav-O-Matic 400A Autopilot Service/Parts Manual.

TEMPERATURE RISE DUE TO RAM EFFECT



EXAMPLE

A. Airspeed - 170 KIAS

B. Density Altitude - 25,000 Feet

C. Temperature Rise - 13°F

NOTE:

The Cessna Power Computer and Aircraft Performance Data are based on true outside air temperatures. To obtain true outside air temperature, subtract temperature rise due to ram effect from indicated outside air temperature.

CRUISE PERFORMANCE WITH RECOMMENDED LEAN MIXTURE AT 15,000 FT

RPM	MP	%BHP	KTAS	Total Lbs./Hr	Endurance 600 Lbs.	Range 600 lbs. (Naut. Mi.)	Endurance 978 Lbs.	Range 978 lbs. (Naut. Mi.)	Endurance 1218 Lbs.	Range 1218 lbs. (Naut. Mi.)
2450	16	53	170	121	4.96	841	8.08	1370	10.07	1707
	15	48	156	112	5.36	836	8.73	1362	10.88	1698
	14	44	140	104	5.77	809	9.40	1318	11.71	1641
2300	16	48	156	112	5.36	836	8.73	1362	10.88	1698
	15	44	140	104	5.77	809	9.40	1318	11.71	1641
2200	16	44	140	104	5.77	809	9.40	1318	11.71	1641

CRUISE PERFORMANCE IS BASED ON STANDARD CONDITIONS, ZERO WIND, (5.5°F) RECOMMENDED LEAN MIXTURE, 600, 978 AND 1218 LBS. OF FUEL (NO RESERVE), AND 5300 POUNDS GROSS WEIGHT.

NOTE: See Range Profile, Figure 6-12, for range including climb.

Figure 6-11 (Sheet 3 of 3)

	FF	% BHP	MAP	RPM
4000	138	60	22	2300
5000	139	62	22	2300
6000	138	60	21.5	2300
7000	136	60	21	2300
8000	136	60	21	2300
9000	133	60	20.5	2300
10000	133	59	20	2300
11000	125	54	19	2300
12000	117	51	18	2300