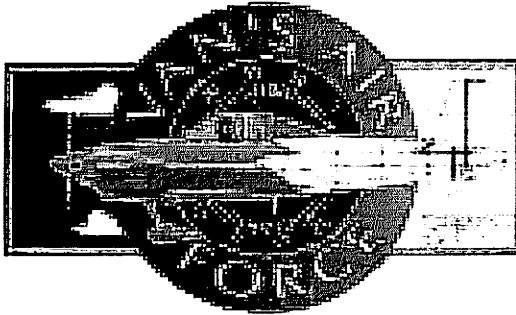


N313P



Van's Aircraft RV-7A

Pilot's Operating Handbook

N313P



PERFORMANCE – SPECIFICATIONS

SPAN: 25' 0"
 LENGTH: 20' 4"
 HEIGHT: 7' 10"

SPEED:
 Maximum at Sea Level 207 mph
 Cruise, 75% Power at 8,000 Ft 197 mph

RANGE (includes 3 gal. for taxi, takeoff & climb): To be used as reference only.
 Actual range may vary significantly.

75% @ 8000', no reserve 700 sm
 55% @ 8000' no reserve 880 sm
 75% @ 8000', one hour (10 gal) reserve 500 sm
 55% @ 8000', one hour (10 gal) reserve 680 sm

RATE OF CLIMB AT SEA LEVEL 1,600 FPM

SERVICE CEILING 19,500 FT

TAKEOFF PERFORMANCE: 575 Ft

LANDING PERFORMANCE: 500 Ft

STALL SPEED (CAS):

Flaps Up, Power Off 62 mph
 Flaps Down, Power Off 58 mph

MAXIMUM WEIGHT (Normal Category): 1800 Lbs

EMPTY WEIGHT 1094 Lbs

MAXIMUM USEFUL LOAD: 706 Lbs

BAGGAGE ALLOWANCE 100 Lbs

WING LOADING (Pounds/ Sq. Ft) 14.8 Lbs

POWER LOADING (Pounds/ HP) 10 Lbs

FUEL:

Capacity 42 Gal Total

Type 100 LL

CAPACITY 8 Qts

Useful Oil Capacity 6 Qts

ENGINE: Mattituck-Teledyne IO-360

PROPELLER: Hartzell Blended



AIRSPEED LIMITATIONS

	SPEED	IAS	REMARKS
V_{NE}	Never Exceed Speed	230 mph	Do not exceed this speed in any operations.
V_{NO}	Maximum Structural Cruising Speed	193 mph	Exceed this speed only in smooth air.
V_A	Maneuvering Speed	142 mph	Do not make full control movements above this speed. Full elevator deflection will result in a 6g load at this speed.
V_{FE}	Maximum Flap Extended Speed	110 -20deg 100 - Full	Do not exceed this speed with flaps down
V_y	Best Rate of Climb	110 mph	Factory Reference
V_x	Best Angle of Climb	80 mph	Factory Reference
V_s	Stall Speed Clean	64 mph	Factory Reference
V_{so}	Stall Speed Landing Configuration	58 mph	Factory Reference

AIRSPEED INDICATOR MARKINGS

MARKING	IAS VALUE OR RANGE	SIGNIFICANCE
White Arc	58-100 mph	Full Flap Operating Range. Lower limit is V _{so} . Upper limit is maximum speed with flaps extended
Green Arc	64-193 mph	Normal Operating Range. Lower limit is V _s . Upper limit is maximum structural cruising speed
Yellow Arc	193-230 mph	Operations must be conducted with caution and only in smooth air.
Red Line	230 mph	Maximum speed for all operations

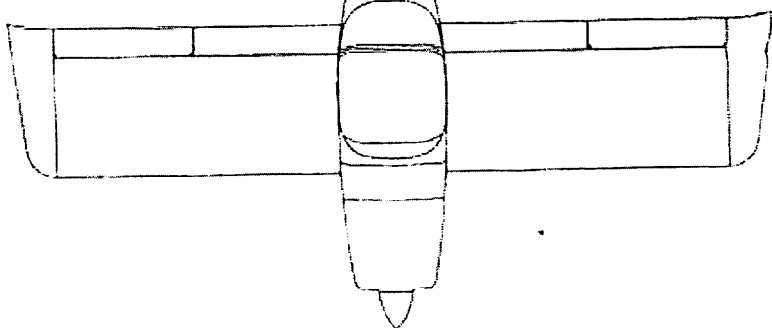
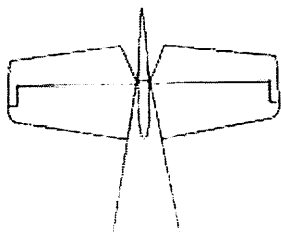
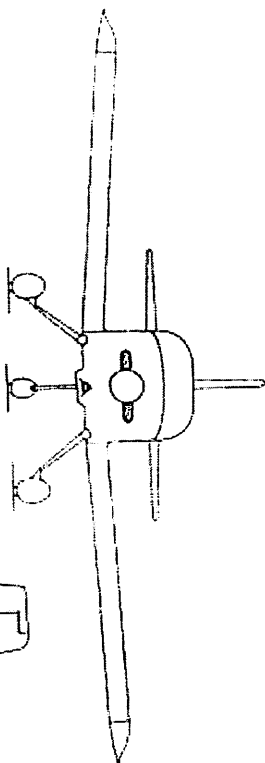
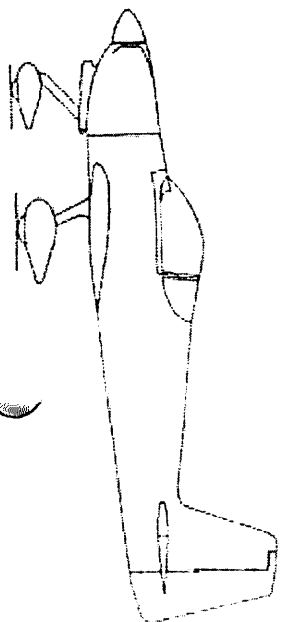
N313P



Views



RV-7A



N313P



AEROBATIC INFORMATION

Weight Limitation – 1600 Pounds



PREFLIGHT INSPECTION

1. CABIN

- a) Documentation -- Available In Airplane
- b) Aeronautical Charts -- CURRENT AND APPROPRIATE TO FLIGHT
- c) Seat Belt Securing Control Stick -- RELEASE
- d) Ignition Switch -- OFF
- e) Avionics -- OFF
- f) Master Switch -- ON
- g) Engine gages -- ON
- h) Engine tachometer -- RESET FLIGHT TIME
- i) Fuel Quantity -- CHECK QUANTITY
- j) Flaps -- DOWN
- k) Master Switch -- OFF
- l) Carb Heat -- COLD

2. EMPENNAGE

- a) Tail Tie-Down -- DISCONNECT
- b) Control Surfaces -- CHECK freedom of movement and security
- c) Static Sources (both sides of fuselage) --CHECK for blockage
- d) Tail and Strobe--CHECK condition

3. RIGHT WING

- a) Aileron -- CHECK freedom of movement and security
- b) Flap -- CHECK security
- c) Nav and Strobe--CHECK condition
- d) Right Landing Light -- CHECK condition
- e) Wing Tie-Down -- DISCONNECT
- f) Main Wheel Tire -- CHECK for proper inflation
- g) Chock -- REMOVE
- h) Right Wing Tank -- SUMP
- i) Fuel Quantity -- CHECK VISUALLY
- j) Fuel Filler Cap -- SECURE



5. NOSE

- a) Engine Oil Level -- CHECK, do not operate with less than 4 quarts
- b) Propeller and Spinner -- CHECK for nicks and security
- c) Cowl Hinge Pins -- CHECK for security
- d) Air Inlet -- CHECK for restrictions
- e) Nose Wheel Tire -- CHECK for proper inflation
- k) Master sw -- ON
- l) Fuel Boost Pump -- ON
- m) Gascolator -- SUMP
- n) Fuel Boost Pump -- OFF
- o) Master sw -- OFF
- p) Chock -- REMOVE
- q) Fuel Tank Vents -- CHECK for blockage

6. LEFT WING

- a) Wing Tie-Down -- DISCONNECT
- b) Main Wheel Tire -- CHECK for proper inflation
- c) Chock -- REMOVE
- d) Left Wing Tank -- SUMP
- e) Fuel Quantity -- CHECK VISUALLY
- f) Fuel Filler Cap -- SECURE
- g) Pitot Tube Cover -- REMOVE and check for blockage
- h) Left Landing Light -- CHECK condition
- i) Nav and Strobe--CHECK Condition
- j) Aileron -- CHECK freedom of movement and security
- k) Flap -- CHECK security



FORE STARTING ENGINE

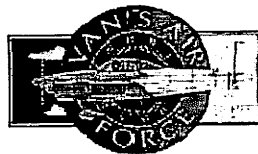
- a) Preflight Inspection -- COMPLETE
- b) Seat Belts and Shoulder Harnesses -- ADJUST and LOCK
- c) Fuel Selector Valve -- DESIRED TANK
- d) Avionics and Electrical -- OFF
- e) Brakes -- SET
- f) Circuit Breakers -- CHECK IN
- g) Canopy adjust

STARTING ENGINE (cold)

- a) Mixture – Full Rich
- b) Carb Heat Off
- c) Master Switch-Alternator – ON
- d) Fuel Boost Pump -- ON
- e) Pump Throttle 3 Times, Return Throttle to 1/8
- f) Prop -- HIGH RPM
- g) Flaps -- UP
- h) Fuel Boost Pump -- OFF
- i) Propeller Area -- CLEAR
- j) Ignition Switch -- START
- k) Avionics & Instruments – ON
- l) Oil Pressure -- CHECK 25 psi at idle
- m) Nav & Strobe – ON

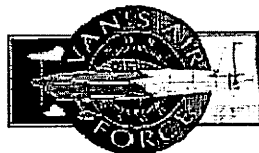
STARTING ENGINE (Warm)

- n) Mixture -- LEAN
- o) Throttle to 1/8
- p) Prop -- HIGH RPM
- q) Master Switch-Alternator – ON
- r) Flaps -- UP
- s) Propeller Area -- CLEAR
- t) Ignition Switch – START
- u) Mixture—Full Rich
- v) Avionics & Instruments -- ON
- w) Oil Pressure -- CHECK 25 psi at idle
- x) Nav & Strobe – ON



BEFORE TAKEOFF

- a) Brakes -- SET
- b) Canopy ----- Main Latch -- SECURE
- c) Flight Controls -- FREE and CORRECT
- d) Flight Instruments -- SET
 - Altimeter -- CORRECT PRESSURE
 - D/G -- CORRECT HEADING
 - A/H -- ALLIGNED
 - GPS-- ON
- e) Fuel Selector Valve -- DESIRED TANK
- f) Mixture -- RICH (below 3000')
- g) Elevator and Aileron Trim -- NEUTRAL
- h) Throttle -- 1700 RPM
 - 1) Magnetos -- CHECK (125 max drop, 50 diff. max)
 - 2) Suction -- CHECK (5" Hg)
 - 3) Prop -- cycle CHECK operation
 - 4) Engine Instruments -- CHECK
 - 5) Throttle -- IDLE
- i) Radios -- SET
- j) Fuel Boost Pump -- ON
- k) Transponder -- ALTITUDE
- l) Passenger -- READY and willing



TAKEOFF

NORMAL TAKEOFF

- a) Wing Flaps – UP
- b) Prop – HIGH RPM
- c) Throttle -- FULL OPEN
- d) Elevator Control – LIFT NOSE WHEEL (at 65 mph)
- e) Climb Speed -- 125 mph

SHORT FIELD TAKEOFF

- a) Wing Flaps – 10 Deg
- b) Prop – HIGH RPM
- c) Brakes – APPLY
- d) Throttle – FULL OPEN
- e) Mixture – RICH (above 3000' lean to obtain max RPM)
- f) Brakes – RELEASE
- g) Climb Speed – 90mph (Vy)

ENROUTE CLIMB

- a) Airspeed – 125-150 mph
- b) Throttle – 25 in Hg, or full throttle
- c) Prop – 2500 RPM
- d) Boost Pump – OFF at 1000 feet AGL
- e) Fuel Pressure – CHECK
- f) Mixture – LEAN above 5000'

CRUISE

- a) Throttle – 23 in Hg
- b) Prop – 2300 RPM
- c) Trim – ADJUST
- d) Mixture – LEAN to 100 deg F rich of peak



LANDING

- a) Approach speed 90 mph
- b) Flaps 20 deg.
- c) Prop control full rpm
- d) Engine 1800 rpm
- e) 80 mph final
- f) 40 deg. flaps

AFTER LANDING

- a) Wing Flaps – UP
- b) Boost Pump – OFF
- c) Transponder – STANDBY

ENGINE SHUTDOWN

- a) Flaps – DOWN
- b) Prop – FULL FORWARD
- c) Throttle – IDLE
- d) CHT decidedly dropped
- e) All electrical sw – OFF
- f) Avionics and Instr.-- OFF
- g) Mixture – IDLE CUT-OFF
- h) Wait for shut down
- i) Master – OFF

SECURING AIRCRAFT

- a) Wheel Chocks
- b) Wing & Tail Tie-Down
- c) Pitot Tube Cover
- d) Cockpit
- e) Ignition Key – REMOVED
- f) Master and Electrical Switches – OFF
- g) Canopy Locked

N313P



WEIGHT AND BALANCE DATA

Name: Richard E. Griff Model: RV-7A
 Serial: 70837 Registration: N313P

Maximum Weights:

Aerobatic Category 1600 Lbs
 Utility Category 1700 Lbs
 Normal Category 1800 Lbs

Weight and Balance

Wheels only	
N number	N313P
Owner	Richard Griff
Address	2354E 2900N
	Twin Falls ID 83301
	USA

Make	Van's
Model	Vans RV-7A
SN	70,837.00

Max weight		1,800.00
Fuel cap.	42.00	252.00
Oil cap. (qts)	8.00	14.96
# pax.		2.00
Baggage @	100.00	126.78

3 Lbs./Gal
 1.87/QT

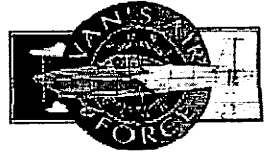
Aircraft configuration while being weighed

Fuel	252.00	Datum	70 fwd leading edge
Oil	full	leveling	normal flight

	scale reading-	Tare=	adj weight	arm	moment
R main scale	490.00	0.00	490.00	93.96	46,040.40
L main scale	485.00	0.00	485.00	93.96	45,570.60
Nose scale	371.00	0.00	371.00	39.11	14,509.81
Oil (Subtract if necessary)					-
Fuel (Subtract if necessary)			-252.00	80.00	20,160.00
total aircraft weight			1,094.00		85,960.81

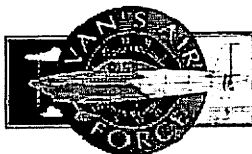
Center of gravity 78.57 (moment/weight)

For CG limit 78.70 Aft CG limit 86.82 in []
 Aerobatic Aerobatic out [X]

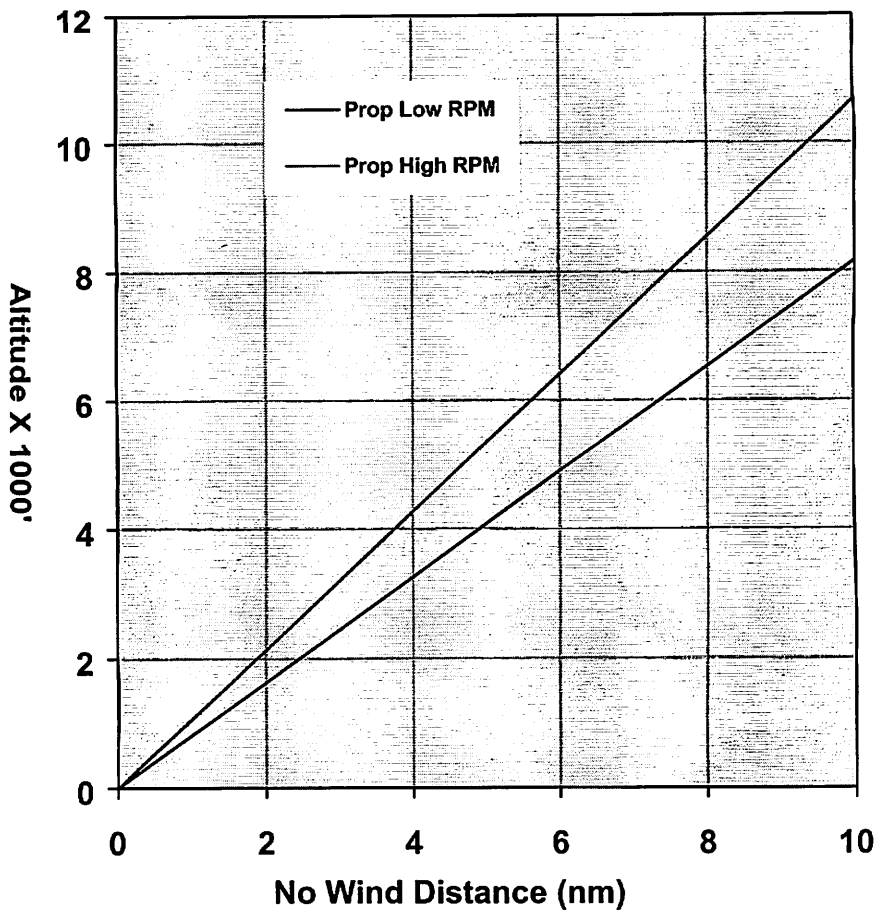


	Solo no Baggage			Dual w/ Baggage		
	weight	arm	moment	weight	arm	moment
Aircraft	1,094.00	78.57	85,960.81	1,094.00	78.57	85,960.81
pilot	230.00	97.48	22,420.40	230.00	97.48	22,420.40
Pax		97.48	0.00	124.00	97.48	12,087.52
Oil	0.00	0.00	0.00	0.00	0.00	0.00
Fuel @ 6#	252.00	80.00	20,160.00	252.00	80.00	20,160.00
Baggage	0.00	126.78	0.00	100.00	126.78	12,678.00
Totals	1,576.00		128,541.21	1,800.00		153,306.73
	CG=	81.56		CG=	85.17	

	Solo w/ Baggage			Dual no Baggage		
	weight	arm	moment	weight	arm	moment
Aircraft	1,094.00	78.57	85,960.81	1,094.00	78.57	85,960.81
pilot	230.00	97.48	22,420.40	230.00	97.48	22,420.40
Pax	0.00	97.48	0.00	224.00	97.48	21,835.52
Oil	0.00	0.00	0.00	0.00	0.00	0.00
Fuel @ 6#	252.00	80.00	20,160.00	252.00	80.00	20,160.00
Baggage	100.00	126.78	12,678.00	0.00	126.78	0.00
Totals	1,676.00		141,219.21	1,800.00		150,376.73
	CG=	84.26		CG=	83.54	



Engine Out Glide Performance Airspeed 75 Kts



Part was copied from Roberta Hegy's POH.



EMERGENCY PROCEDURES

AIRSPEEDS FOR EMERGENCY OPERATIONS

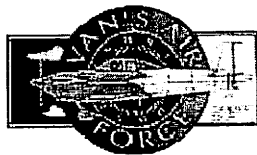
Engine Failure After Takeoff:	
Wing Flaps Up	90 mph
Wing Flaps Down	80 mph
 Maneuvering Speed (Va)	 130 mph
 Maximum Glide	 90 mph

ELECTRICAL / ALTERNATOR FAILURE

1. Avionics –OFF
2. Master Switch – OFF
3. Alt Field -- OFF
4. Master Switch – ON

IF ALTERNATOR IS STILL OFF-LINE:

5. Master Switch – ON
6. Electrical Switches – OFF
7. Alternator Field – OFF
8. Avionics – ON as required
9. Electrical Equipment – ON, as required
10. Flight – TERMINATE as soon as practical, aircraft is on battery reserves only.



EMERGENCY PROCEDURES

ENGINE FAILURES

ENGINE FAILURE DURING TAKEOFF RUN

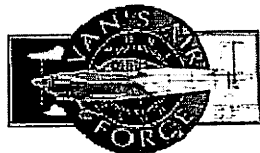
1. Throttle – IDLE
2. Brakes – APPLY
3. Wing Flaps – RETRACT
4. Mixture – IDLE CUT-OFF
5. Ignition Switch – OFF
6. Master Switch – OFF

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. Airspeed – 80 mph
2. Mixture – IDLE CUT-OFF
3. Fuel Selector Valve – OFF
4. Ignition Switch – OFF
5. Wing Flaps – AS REQUIRED
6. Master Switch – OFF

ENGINE FAILURE DURING FLIGHT

1. Airspeed – 90 mph
2. Boost Pump – ON
3. Fuel Selector – SWITCH TANKS
4. Mixture – RICH
5. Ignition Switch – BOTH, LEFT, RIGHT
6. Transponder – 7700



EMERGENCY PROCEDURES

FIRES

DURING START ON GROUND

1. Cranking – CONTINUE, to get a start which would suck the flames and accumulated fuel through the carb and into the engine.

If engine starts:

2. Power – 1700 RPM for a few minutes
3. Engine – SHUTDOWN and inspect for damage

If engine fails to start:

4. Throttle – FULL OPEN
5. Mixture – IDLE CUT-OFF
6. Cranking – CONTINUE
7. Fire Extinguisher – OBTAIN
8. Engine – SECURE

ENGINE FIRE IN FLIGHT

1. Mixture – IDLE CUT-OFF
2. Fuel Selector Valve – OFF
3. Master Switch – OFF
4. Cabin Heat and Air – OFF

ELECTRICAL FIRE IN FLIGHT

1. Master Switch – OFF
2. Avionics – OFF
3. All Other Switches (except ignition) – OFF
4. Vents/ Cabin Air/ Heat – CLOSED
5. Fire Extinguisher – ACTIVATE (if available)

CABIN FIRE

1. Master Switch – OFF
2. Vents/ Cabin Heat – CLOSED
3. Fire Extinguisher – ACTIVATE (if available)

WING FIRE

1. Nav & Strobe Lights – OFF
2. Landing Light – OFF



FAR 91.125 - ATC light signals.

ATC light signals have the meaning shown in the following table:

Color and type of signal	Meaning with respect to aircraft on the surface	Meaning with respect to aircraft in flight
Steady green	Cleared for takeoff	Cleared to land
Flashing green	Cleared to taxi	Return for landing
Steady red	Stop	Give way to other aircraft and continue circling.
Flashing red	Taxi clear of runway in use	Airport unsafe—do not use
Flashing white	Return to starting point on airport	N/A
Alternating red and green	Exercise extreme caution	Exercise extreme caution

Compass Headings, VFR under 18,000ft

Course	Altitude
0 – 179 degrees	Odd thousand +500
180 – 360 degrees	Even thousand + 500

This is an experimental aircraft. I am not a professional aircraft builder and have therefore relied on various sources for the information contained in this POH. At the time of printing this POH the owner of this aircraft believed this information to be accurate. By flying this aircraft the new owner assumes all responsibility and liability to verify that the above information is correct in his or her climate, altitude, fuel source, leaning practices and air temperatures. I am not a professional builder and have therefore built this aircraft in accordance with Vans blue prints and instructions to the best of my ability. By fly in or piloting this aircraft the pilot and passenger assumes any and all responsibility and liability for this aircraft. Richard E. Griff

Frequency Selection	Press SL to activate cursor in window. Rotate LL; Rotate SL; press flip-flop.
NAV Group	Default NAV; Map; NAVCOM; Position; Satellite Status; VNAV.
WPT Group	Airport location; Airport runway; Airport frequency; Airport approach; Airport arrival; Airport departure; Intersection, NDB; VOR; User waypoint.
AUX Group	Flight Planning; Utility; Setup 1; Setup 2;
NRST Group	Nearest airport; Nearest Intersection; Nearest NDB; Nearest VOR; Nearest user waypoint; Nearest center; Nearest flight service; Nearest Airspace.
FPL	Active flight plan; Flight plan catalog

NAV GROUP

NAV	CDI course deviation. To/From flag is small arrow point top of screen indicated whether the waypoint is ahead or behind aircraft.
Nav Map	Depress SR to activate map cursor to reveal map info; LR to left or right; SR to up or down; Cursor inside of airspace information; ENT; review airspace; ENT; ENT to exit; <u>or</u> Rotate SR cursor to highlight facility name; Depress SR; Rotate SR to select WPT airport freq page; Depress SR to highlight cursor, LR to move cursor to freq; ENT to move freq to com standby; ENT or press SR to exit; <u>or</u> press SR to turn off cursor while on frequencies? And rotate SR to view other NAV pages.
Declutter	With NAV Map page displayed CLR to declutter.
Data Fields	NAV Map page displayed MENU, Rotate LR to highlight "Data Fields Off?", ENT

NAV Com Freq	Depress SR to cursor; LR to scroll; ENT to move freq to com standby; or Rotate SR while on airport identifier to view other airports; Continue rotating SR to select different airport; Press ENT to change airports;
Position	ALT; Time; Position;
Satellites	Satellite status
VNAV	Vertical Navigation; Press SR cursor to highlight; Rotate SR & LR move cursor; ENT

NRST GROUP

Direct-To	Press Direct to Arrow, LR & SR, ENT to confirm, ENT to activate. Choose by airport identifier or city name. Or Rotate LR to NRST field; Continue rotating SR to select another airport; ENT; ENT
Nearest Airport	Arrow, Rotate LR to NRST or FPL (flight plan). Rotate SR to display window list, Continue Rotating SR to scroll, ENT & ENT to activate
Viewing Airport Information	Press CLR, Rotate LR to select WPT group, Rotate SR to desire information, Press SR to cursor, SR& LR to enter identifier, Press ENT.
Viewing Airport by Name	Press CLR, Rotate LR to select WPT group, Rotate SR to desire information, Press SR to cursor, SR & LR to enter identifier, Press ENT
Auto Tuning	Press CLR, Rotate LR to select WPT group, Rotate SR to airport frequencies, Press SR to cursor, SR & LR to enter identifier, Press ENT, Rotate LR to desire frequency, press ENT to place frequency in standby COM or VLOC, flip-flop.

AUX GROUP

Flight Planning; Utility; Setup 1 Setup 2	Rotate SR to select 1 of 4 pages; Depress SR turn on cursor; Rotate LR to select line; Press ENT to open selection page; SR & LR to change fields, Depress SR cursor to exit. Depress SR cursor to turn off blinking cursor.
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Direct-To Navigation

Selecting Direct-To	Press Direct-To; LR & SR to select identifier or airport name; ENT; ENT. <u>or</u> , rotate LR to cursor to NRST window; rotate SR to select airport, ENT; ENT.
Canceling Direct-To	Press Direct-To; press MENU; cancel direct-to, ENT.
Map Panning Navigation	Go to NAV Map; depress SR to cursor; SR & LR to desired destination location; Press Direct-To; ENT; ENT. If panning arrow in not on an existing waypoint it will create a "MAP" waypoint and navigate to it.
Course To Waypoint	Press Direct-To; LR & SR to select identifier or airport name; ENT; LR to highlight the course (CRS); LR & SR to select desire course; ENT.
Reselect	Press Direct-To; ENT; ENT.

Flight Planning

Flight Plan Catalog	Press FLP, rotate SR to display FLP catalog, press MENU, rotate LR to "Create new flight plan?", ENT, a blank FLP will appear, SR and LR to enter identifier, ENT, repeat procedure, press SR to return to catalog.
To Activate FP	Press FLP, SR to display catalog, press SR to activate cursor, rotate LR to highlight desire plan, press MENU, rotate LR to highlight "Activate Flight Plan?", press ENT.
To Stop Navigating	Press FLP, press MENU, rotate LR to highlight "Delete Flight Plan?", press ENT,

	press ENT.
Flight Plan Editing	Press FLP, rotate SR to display the catalog; press SR to activate cursor; rotate LR to highlight desired FP; press ENT, rotate LR to select the point where you wish to add the new way point;
Adding a Line	If an existing point is highlighted a new identifier will be placed directly front of this waypoint, SR and LR to enter new identifier, press ENT; press SR to return to catalog.
Deleting a Line	To Delete a line; rotate LR to select waypoint you wish to delete; press CLR; with YES highlighted press ENT; Press SR to return to catalog.
Inverting Flight Plans	From flight plan catalog; press SR to cursor; rotate LR to highlight flight plan; press MENU; rotate LR to "Invert & Activate FLP"; ENT. The original flight plan will remain intact in its storage location.
Copying Flight Plan	From flight plan catalog; press MENU; press SR to cursor; rotate LR to highlight flight plan to copy; ENT; it will default to next empty location; rotate LR to select different plan location number; SR & LR to enter different number; with "Yes?" highlighted press ENT.
Deleting Flight Plan	From flight plan catalog; press MENU; press SR to cursor; rotate LR to highlight plan to copy; press MENU; rotate LR to highlight "Delete Flight Pan?"; ENT; with "Yes?" highlighted press ENT.

Approaches	Press PROC, rotate LR to highlight "Select Approach", press ENT, a window will appear, rotate LR to highlight, ENT, a second window will appear, rotate LR to highlight, ENT, Rotate LR to highlight "Load?", or "Activate?", press ENT. A GPS (in a descending print) designation to
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	the right of the procedure name indicates the procedure can be flown using the GPS receiver.
Activating Approach	Press PROC, rotate LR to highlight "Activate Approach?", press ENT.
Activating Vector Final	Press PROC, rotate LR to highlight "Activate Vector-To-Final?", press ENT.
Flying An Approach	Arrow to select destination airport if not already flying a FLP.
	ILS press the flip-flop,
	VLOC switch from external CDI to VLOC by pressing CDI.

RNG	Map scale
MENU	Context sensitive options list
CLR	Hold to default page , erase, cancel
ENT	Approve operation or complete date entry
L Knob	Page groups, NAV, WPT, AUX or NRST
S Knob Cursor	Press to display cursor ; select pages in groups; with cursor displayed L moves cursor about.
CDI	Toggles GPS or VLOC and connects the internal CDI; NAV-CDI show position relative to desired course; Steer towards needle; TO/FROM arrow (up or dn) in center of 430 CDI scale indicates whether you are heading towards or from a waypoint.
OBS	The manual or automatic sequencing of waypoints; Activating OBS retains current "active to" waypoint as navigation reference even after passing point and prevents the GPS from sequencing to next waypoint. Turning off OBS will return automatic waypoint sequencing normal operation and GPS will sequence next waypoint once aircraft has crossed waypoint. OBS key is used to suspend "SUSP"
MSG	View system messages or alerts.
FPL	Create, edit, activate and invert flight plans, approaches, departures and arrivals. A closest

	point to flight plan feature is also available.
PROC	Select approaches, departures and arrivals from active flight plan. When using a flight plan, available approach and departure procedures will be offered. Otherwise you may select.

Emergency	Depress Com flip-flop 2 sec. 121.500
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APR	Approach
APT	Airport
ARSPC	Airspace
ARTCC	Air route traffic control center
CAP	Capacity
CAS	Calibrated airspeed
CTAF	Common traffic advisory freq
CTR	Center
CTS	Course to steer
DEN	Density
DME	Distance measuring equipment
DTK	Desired track
ESA	Enroute safe altitude
FF	Fuel flow
FOB	Fuel on board
GS	Ground speed
INT	Intersection
NDB	Non-Directional Radio Beacon
USR	User
UTC	Zulu or GMT time, coordinated universal time
VS	Vertical speed
VLOC	VOR/Localizer Frequency
VOR	VHF Omnidirectional radio range
VSR	Vertical speed required

Power	Depress volume knob
XMT Transmitter	<p>Press lower button to select desired com; Automatic selector mode when switching from Com1 XMT to Com 2 XMT, Com 2 RCV receiver should turn green.</p> <p>Remembers—when switch from 1 to 2 and 2 was previously selected, 1 will continue to be heard.</p> <p>Remembers—when switch from 1 to 2 and 2 was “not” previously selected, 1 will be switched off. Pilot has priority xmtng.</p>
Split Mode	Press Com 1 and Com 2 at the same time. This places pilot on Com 1 and Co-pilot on Com 2.
Audio Selector	Will always hear the NAV audio from the selected transceiver when Nav 1 or 2 & MKR green LEDs are lit.
MKR	When pressed, the mode is active and LED will illuminate. Press again and it will be off.
TEL	<p>In TEL mode the pilot’s mic and headset are connected to cell and pilot’s PTT will switch his mic to selected Com and RCV. TEL does not interfere with Com. TEL is a full duplex interface.</p> <p>ALL—all will be heard when they speak.</p> <p>Crew—Only pilot and co-pilot are heard.</p> <p>ISO—only pilot will be heard.</p>
PA	Not used.
Intercom Volume Control	Adjusts intercom loudness only, no effect on radio or music, passenger levels.
Mono Headsets	All head sets must be either stereo capable or set to mono. Failure to do so will supply mono to both head sets.

Marker Beacon	<p><u>O</u> blue—Outer, 2 tones and flashes p/sec.</p> <p><u>M</u> amber—Middle, short dot—long dash.</p> <p><u>I</u> white—Inner, six times p/sec.</p> <p><u>HI</u> Hears outer beacon 1 mile out.</p> <p><u>Lo</u> more accurate sensitivity.</p> <p><u>T/M</u> holding MKR button for 1 sec activates marker test lamps internal and external for working order. All these lamps will illuminate simultaneously and will cause the audio to mute for that beacon. Then will automatically re-activate on next beacon signal.</p>
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Mode	Pilot Hears	Copilot Hears	Telephone	Comments
Isolate	Radios, Entertain 1 is muted.	Intercom, Entertain 1	Pilot only	TEL, Com, and PTT talk & receive Pilot only.
All	Copilot, Radio, Entertain 1	Pilot, Radio, Entertain 1	All	
Crew	Copilot, Radio, Entertain 1	Pilot, Radio, Entertain 1	All	

GTX 327 TRANSPONDER N313P

7/11/2005

POWER	STBY, ON, ALT powers on transponder
STBY	Standby mode will not respond to interrogations.
ON	selects mode A, replies to interrogations ® replies do not include altitude information.
ALT	selects mode A & mode C, replies to identification and altitude interrogations. ®
CLR	moves cursor back space; hold key up to 5 sec after code entry is complete to return cursor to the fourth digit.
CRSR	removes cursor and cancels data entry
CLR	hold 5 sec to return to fourth digit

IDENT	Activates the special position identification
VFR	Sets transponder to 1200
FUNC	Changes page on right side of display
Start Stop	Count up, count down, flight timer
CRSR	Starts time entry, cancels transponder code entry
CLR	Resets timer, cancels previous key entry
8	Reduces contrast in configure mode
9	Increase contrast in configure mode

1200	VFR code for any altitude
7000	VFR code in Europe
7500	Hijack code
7600	Loss of Communications
7700	Emergency
Avoid	7500, 7600-7777 codes trigger special indicators

Configuration Mode:

FUNC	Hold key while powering ON
FUNC	Sequence forward through configuration pages
Start Stop	Sequence in reverse
CRSR	To highlight selectable fields on each page

8 or 9	Changeable fields, 0-9 enter numeric data
CRSR	To confirm list selections

Timer Operations:

FUNC	Press until <u>Flight Time</u> , accumulative timer
<u>Start</u> <u>Stop</u>	To start or pause
CLR	Reset timer
FUNC	Press until <u>Count Up Timer</u>
<u>Start</u> <u>Stop</u>	To start or pause
CLR	Reset timer
FUNC	Press until <u>Count Down Timer</u>
CRSR	0-9 to set time
<u>Start</u> <u>Stop</u>	To start or pause, expires—begins counting up
Clr	Reset timer

Automatic ALT/STBY Mode Switching: ALT mode selection occurs when liftoff is sensed. STBY mode selection occurs when grounding is sensed. When a delay time is set GTX waits this additional time after landing to STBY.

Master off for Startup; PWR UP—AP Off

Engage-Disengage Autopilot: depress encoder knob

1. 1 sec for ON—3 sec for OFF.
2. Upon being engaged aircraft will fly the direction & Vertical speed being flown at the time.

Engage Flight Plan

1. Depress MODE button to engage GPS NAV and a flash plus sign will show.

Lateral Modes—Directions Change:

1. When SEL (selected direction) number is underlined.
2. Rotate encoder knob for 1° steps
3. Depress rotate encoder knob for 5° steps

To Engage Preprogrammed Flight Plan:

1. Press MODE and a flashing + will show.

Vertical Modes Engaged: SVS (selected vertical speed)

1. To enter press & release ALT button 2x.
2. If altitude change is desired depress ALT and cursor moves to SVS number—rotate encoder knob.
3. When cursor under SVS number a single click of ALT button set VS to zero.
4. Once VS is selected momentarily depress MODE button or wait 7 sec to move back to SEL.

Setting Pitch Trim:

1. 3-moving bars will move according to the direction in which trim is required. Bars should disappear, if bars reappear after once trimming they can be ignored.

Gyro Set:

1. Aircraft stationary on runway.
2. Autopilot disengaged.

3. Depress encoder knob for 7 sec. until GYRO SET
4. Power Interruption During Flight:
 - a. Fly straight and steady.
 - b. Depress encoder knob for 10 sec. GYRO SET.

Lateral Setup Procedures:

1. Depress MODE 3 sec. ALT to advance screens
2. Aileron servo Activity—0-24 (2)
3. Lat Torque—7-12 (lower)
4. Baud “see Garmin”
5. Bank Angle—Lo
6. Microactivity—0 unless slow wing rocking in still air.
7. Mag Cal—in order to skip, press & quickly release the knob while N is selected.
8. Mag Cal—done while flying in still air, level trim, rotate encoder—Y—depress & release encoder. Aircraft will turn full circle, Each step approx. 10 sec. N—E—S—thru W—back to W. When done press and release encoder knob to confirm calibration and enter data into permanent memory. Disengage and reengage the autopilot to return to normal track mode.
9. EXIT: Turn encoder & press and release ALT.

Pitch Setup Procedures:

1. Depress ALT 3 sec.
2. Pitch servo activity 2-24 (2); press ALT to advance
3. VTR Torque—7-12 (lower); press ALT
4. Min Airsp—65; ALT
5. Max Airsp—225, ALT
6. Static Lag—0 unless oscillation due to static system; ALT
7. Microactivity—0 unless slow oscillation in very still air due small amounts of lost motion in control system; ALT

8. Half-Step—N press and release knob. Nose moves up and down very slightly while in altitude hold in very still air; ALT
9. **EXIT:** Turn encoder & press and release ALT.

Contrast Adjustment: On ground only, powered off, depress encoder knob, power up, after 1 sec release knob, lower numbers will fade, higher numbers will be dark.

MODE	Toggles between the TRK and GPS modes. Moves the cursor back to the SEL numerals.
ALT	Engages altitude hold. Moves the cursor to the SVS numerals.
TRK	Electronic DG (directional gyro) slaved to GPS
HDG	Autopilot now uses and internal source of magnetic information for direction.
SEL	Shows the selected direction of flight
Bars	Aircraft needs trimmed in direction of bars
Period Flashing	Period beneath HDG when GPS is working but there is no fixed position.
Asterisk Flashing	GPS position is valid and when 10 knots is detected by GPS HDG will be replaced with TRK.
Plus	Flashing plus sign indicates the presence of a useable steering GPS signal.
SEL	An underline beneath selectable numbers.
Cursor	Press ALT

Grand Rapids EIS N313P

7/11/2005

Normal Operation

#1	#2	#3
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#1 Advances the display page.

#2 Previous display page.

#3 Double-click jumps to favorite page. Press and hold to display labels in place of numeric data.

#1	#2	#3
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Configuration Set: 2 & 3 hold several sec. to configure instruments for airplane and engine.

Up	Down	Next
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Set Limits: 1 & 2 for engine limits and other selections are made. Bottom display row indicates function buttons. Hold in for rapid change. Next, next until finished.

Limits not used set to zero.

Contrast, 2 or 3	Back_Light max accept	Altimeter, 0
Fuel (42) next+display to display page, 1&2 set	Max Time, in minutes, 30-45 less total total	Interval, periodic tasks 30-60 min
Max Flow, 120% norm	Max OilP, 98 or less	Min OilP, 20 psi
Min Crz OP, crz oil	Max OilT,	Min OilT,
Max RPM, 2720	Min RPM,	Min Fuel, 8 gal
Min Aux (1-6) fuel limits, manifold no limit	Max H2O, 0	Min H2O, 0
Max Aux (1-6)		
Max Volt, 15.6	Min Volt, 12.4	Max Carb, 0
Min Carb, 0	Max EGT,	Min EGT, 800
Lim-RPM, 1600 rpm	Max EgtSpan, high low EGT	Max EGT-Inc, increase EGT from lean point
Max EGT-Dec, decrease from lean pt.	Max Crate, cooling degrees per minute	Max CHT,
Min CHT,	Display, favorite page: selects page at power up	

Main Power	Left most button On; Left button 2 sec Off.
BARO	BARO; DEC decrease, INC increase.
TIMER	TIMER; UP/DN toggles between UP TIMER and DOWN TIMER. Resetting: switching to an UP timer resets it, UP/DN twice to reset current timer. Staring: press start , press stop Setting: HOUR, MIN, SEC.
PITCH	SETUP, PITCH, INC or DEC
BUGS	BUGS; HDG, SPD, or ALT; TOGGLE; SEL to select which digit to change; DEC or INC; press SYNC to synchronize.
CHKLST	RS232 DON'T USE
DISPLAY UNITS	SETUP; UNITS; SPD: ALT; SETUP; UNITS; MORE; TEMP or BARO.
CLOCK SETTING	SETUP; CLOCK; LOCAL; SEL to highlight (Local hours or Zulu hours); INC or DEC select digit one at a time.
CLOCK FORMAT	SETUP; CLOCK; FORMAT; toggle between button 1 or 2 for LC/ZU Local or Zulu time to be displayed in lower left corner; Toggle between button 3 or 4 for standard or military format. The text following the colon ":" is the current status.
SHOW HIDE ITEMS	SETUP; CLUTTR; First four options to turn on or off by pressing button directly below item; MORE; four options; MORE. two options: ALTBAR—altitude moving bar; ALTDIG—airspeed digital tape; SPDBAR—airspeed moving bar; SPDDIG—airspeed digital readout; HDG—moving heading tape; LARBAL—lateral acceleration ball; TURNRT—turn rate indicator; AOABAR—angle of attack tape; CLOCK—clock and time zone information; BARO—current barometer; ROLL—roll angle indicator

SOFTWARE VERSION	SETUP; VRSION
VOLTMETER	INFO; LEFT; VMETER; M—master switch, E—external battery backup, I—EFIS internal backup.
G-METER	To Reset: INFO; LEFT; RSET G. INFO; LEFT; GMETER; MX—Max, CR—current, MN—Max negative.
VSI	INFO; LEFT; VSI
OAT	SETUP; MORE; OAT; INSTALLED button to toggle; N—no OAT, 1—100240, 2—100409 black band near OAT sensor. To Display: INFO; LEFT or RIGHT; OAT.
DIM	DIM, BRITR or DARKR
MAGNETIC SETTING	Setting (Dip) angle; SETUP; MORE; MORE; MAGINC; INC or DEC; Enter inclination number of (67.084 degrees) BACK.
Airspeed Color	SETUP; MORE; IASCLR; Vso-58, Vs1-64, Vfe-100, Vno-193, Vne-230; SEL to select digit; DEC or INC; BACK to return to previous menu.
MAGNETIC ALIGNMENT CARRIAGE	<p>SETUP; MAGCAL; EFIS;</p> <p>On ground, engine running, instruments and avionics on, align plane to point magnetic north, press GNDNRT, hold plane still for 10 sec, maneuver plane smoothly to <u>right</u> thru 540° of heading change at a rate of 20 to 30 sec per 90°, at end of maneuver plane is pointing magnetic south, press DONE. If at anytime you make a mistake press DONE and repeat process from magnetic north.</p> <p>Proceed to take off , at safe altitude</p> <p>Turn to magnetic north and hold, press AIRRGT, continue north 10 sec, make a smooth as possible 30° bank turn to <u>right</u> for 540° ending at magnetic south,</p>

press DONE.

Turn to magnetic north again and hold, press AIRLFT, continue north 10 sec, make a smooth as possible 30° bank turn to left for 540° ending at magnetic south, press DONE.

At any point you may redo the calibration. The order in which you do the 3 maneuvers is not critical as long as the unit's power is not cycled off.

Press END when the 3 maneuvers are successfully completed. Redo calibration when airplanes electronic are installed or electronic altered in any way.

Apollo SL-40 N313P

7/11/2005

LST	Auto Stack List—keeps last eight frequencies
RCL	Large knob to view stack lists Small knob to view stored frequencies
MEM	Stores standby frequency
ABORT	Press MEM 2x to abort to and retain current
Small	Knob to remove, replace, then MEM
REMOVE	Removing freq from MEM; press RCL; turn L knob to user freq; press MEM; turn L knob to show remove; turn S knob to choose freq; press MEM to remove or turn L knob to abort and press MEM to cancel and leave as it was.
REPLACE	Replacing a freq from user memory; select desired new freq with L & S knobs; press RCL; turn L knob to user freq; press MEM; turn L knob to show replace; turn S knob to freq to replace; press MEM to replace the displayed freq with current standby freq; or turn L knob to abort and press MEM to cancel and leave memory as it was.

POWER	Turn volume clockwise past the off detent to power on with avionics panel.
Squelch	Pull left knob
EC	Emergency Channel 121.500 MHz
MON	Monitor standby freq
RCL	Press RCL and turn L knob to reach User freq; turn S knob to view User freq in numeric order
MEM	Press to store displayed standby frequency.
ABORT	Aborting a freq recall; press RCL, press MEM
TX	Transmit
S	Standby Frequency
M	Monitor Mode
I	Intercom

Definitions N313P

7/11/2005

AD	Airworthiness Directive
ADF	Automatic direction finder
AGL	Above ground level
ALS	Approach light system
APP	Approach frequency
ARR	Arrival frequency
ARSA	Airport radar service area
ARSPC	Airspace
ARSR	Air routs surveillance radar
ARTCC	Air route traffic control center
ARS	Airport surveillance radar
ATC	Air traffic control
ATIS	Auto terminal information service
ATF	Air traffic frequency
AWOS	Automated weather observing system
AWS	Automated weather station
CAS	Calibrated air speed
CLR	Clearance/Delivery
CTAF	Common traffic advisory freq
CTR	Center
CTS	Course to steer
DEN	Density
DEP	Departure frequency
DME	Distance measuring equipment
DTK	Desired track
ELT	Emergency locator transmitter
FBO	Fixed base operator
GRN	Ground frequency
HIWAS	Hazardous in-flight weather advisory service
FOB	Fuel on board
FSS	Flight service station
HSI	Horizontal situation indicator
IAS	Indicated airspeed
IFR	Instrument flight rules
ILS	Instrument landing system

Definitions N313P

7/11/2005

IM	Inner marker
INT	Intersection
LDA	Localizer directional aid
LOC	ILS localizer
MF	Mandatory frequency
MOA	Military operation area
MOCA	Minimum obstruction clearance altitude
MSL	Mean sea level
MTR	Military training route
NDB	Non directional beacon (ADF)
NOTAM	Notice to airmen affection airport
PAR	Precision approach radar
RFS	Remote flight service station
TAC	Terminal area chart
TCAS	Traffic collision avoidance system
TWR	Tower frequency
UNI	Unicom frequency
UNICOM	Aeronautical advisory communication
V1	Takeoff decision speed
V2	Takeoff safety speed
Va	Designed maneuvering speed
Vfe	Maximum flap extended speed
VFR	Visual flight rules
Vne	Velocity never exceed
Vno	Maximum structural cruising speed
VOR	VHF omnirange station
Vr	Rotational speed
Vs	Stalling speed or the minimum steady flight speed at which the airplane is controllable.
Vso	Stalling speed or the minimum steady flight speed in the landing configuration.
Vs1	Stalling speed or the minimum steady flight speed obtained in a specific configuration.
Vx	Speed for best angle of climb
Vy	Speed for best rate of climb

Definitions N313P

7/11/2005

1200	VFR code for any altitude
7000	VFR code in Europe
7500	Hijack code
7600	Loss of Communications
7700	Emergency
Avoid	7500, 7600-7777 codes trigger special indicators