Section 6: Weight and Balance Data

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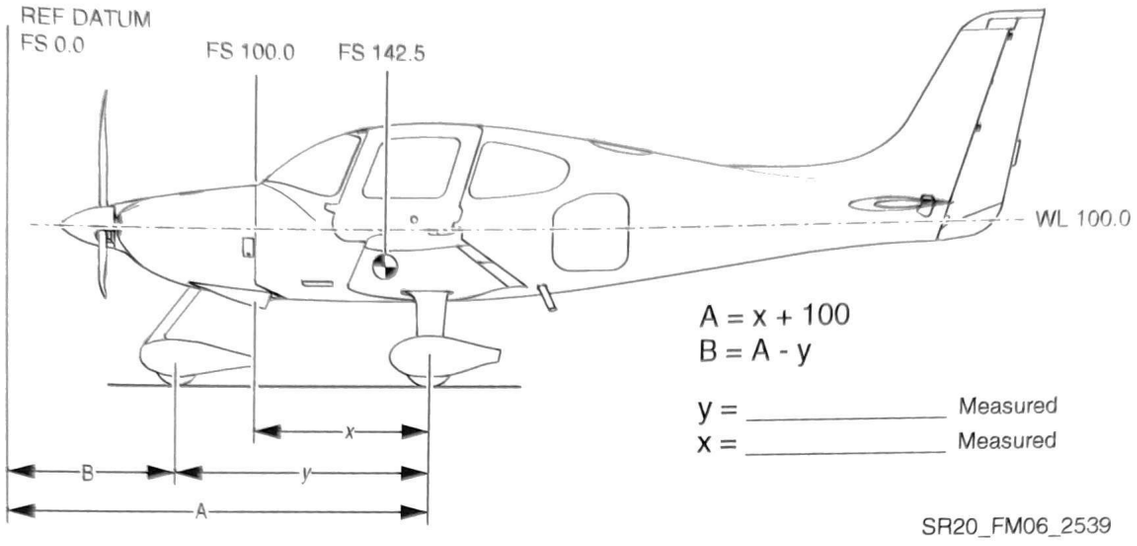
Introduction

This section describes the procedure for establishing the basic empty weight and moment of the airplane. Sample forms are provided for reference. Procedures for calculating the weight and moment for various operations are also provided. A comprehensive list of all equipment available for this airplane is included at the back of this section.

It should be noted that specific information regarding the weight, arm, moment, and installed equipment for this airplane as delivered from the factory can only be found in the plastic envelope carried in the back of this handbook.

It is the responsibility of the pilot to ensure that the airplane is loaded properly.

Airplane Weighing Form



A = x + 100
B = A - y

y = _____ Measured
x = _____ Measured

SR20_FM06_2539

Weighing Point	Scale Reading	- Tare	= Net Weight	X Arm	= Moment
L Main				A=	
R Main				A=	
Nose				B=	
Total As Weighed				CG=	

CG = Total Moment / Total Weight

Space below provided for additions or subtractions to as weighed condition

Empty Weight		CG=	
Engine Oil (if oil drained) *15 lb at FS 78.4, moment = 1176*			
Unusable Fuel	15.0	154.9	2324
Basic Empty Weight		CG=	

Figure 6-1

Flightline Group, Inc.
3256 Capital Circle SW
Tallahassee, FL 32310

Weight and Balance

Registration No.: N230WA

Make: Cirrus

Model: SR20

Serial No.: 2229

Owner: Zero Whiskey Alpha LLC

Upgraded aircraft to ADS-B In/Out compatible.

	Aircraft Empty Weight (lbs.)	Arm (inches)	Moment (in/lbs.)
Previous Empty Weight as of: 09/18/2020	2,214.110	140.730	311,591.70
Removed the Garmin GTX-33 Transponder	-4.980	234.000	-1,165.32
			0.00
Installed Garmin GTX-345R Transponder	4.000	234.000	936.00
			0.00
Totals:	2,213.13		311,362.38

New Aircraft Empty Weight: 2,213.13 lbs.

New CG: 140.69 " aft of datum

Useful Load:

Normal Catagory: 3,050.00 lbs. (max gross wt.) - 2,213.13 lbs. = 836.87 lbs.

Prepared By:

Joe Volker

CRS# 5FVR692B

September 08, 2021

It is the responsibility of the pilot in command to ensure that this aircraft is loaded in accordance with the current weight and balance data and procedures set forth in the current FAA approved flight manual.

Aircraft Weight and Balance Revision

Tail Number: **N230WA**			Date: 09-18-2020
Prepared by: FLY ADVANCED - LANCASTER 530 AIRPORT ROAD LITITZ, PA 17543			Work Order No: 7562 Type Certificate Data No: A00009CH
Aircraft Make: CIRRUS	Model: SR20	Serial No: 2229	Time: 1570.7
Registered Owner: PAPA VICTOR LLC		Address: 20919 GARDENGATE CIR ASHBURN, VA 20147-4019	
Maximum Weight **3050**	CG Range FWD **138.0**	AFT **148.0**	
As Received; Date of Previous Weight and Balance: 04-30-13	**Useful Load:** 844.0	**EW:** 2206.0	**EWCG:** 140.94 / **Moment:** 310842.0

Notes: REMOVED SKY-TEC ST3 STARTER ASSEMBLY AND INSTALLED ENERGIZER STARTER ASSEMBLY P/N: ES646275-1

	Weight	Arm	Moment
REMOVED SKY-TEC ST3 STARTER	-6.63	93.0	-616.59
INSTALLED ENERGIZER STARTER	14.74	93.0	1370.82
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00

SUPERSEDED 9/8/2021

☒ As Calculated ☐ As Weighed	Moment 311596.23 Weight 2214.11	**New Empty Weight CG** **140.73**	**New Useful Load** **835.89**

Signature JOSHUA J. FERRY

Repair Agency or License No: 5T2R901C

Airplane Weighing Procedures

A basic empty weight and center of gravity were established for this airplane when the airplane was weighed just prior to initial delivery. However, major modifications, loss of records, addition or relocation of equipment, accomplishment of service bulletins, and weight gain over time may require re-weighing to keep the basic empty weight and center of gravity current. All changes to the basic empty weight and center of gravity are the responsibility of the operator.

1. Preparation:
   a. Inflate tires to recommended operating pressures.
   b. Service brake reservoir.
   c. Drain fuel system.
   d. Service engine oil.
   e. Move crew seats to the most forward position.
   f. Raise flaps to the fully retracted position.
   g. Place all control surfaces in neutral position.
   h. Verify equipment installation and location against equipment list.
2. Leveling:
   a. Level longitudinally with a spirit level placed on the pilot door sill and laterally with of a spirit level placed across the door sills. Alternately, level airplane by sighting the forward and aft tool holes along waterline 95.9.
   b. Place scales under each wheel (minimum scale capacity, 500 pounds nose, 1000 pounds each main).
   c. Deflate the nose tire and/or shim underneath scales as required to properly center the bubble in the level.
3. Weighing:
   a. With the airplane level, doors closed, and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.
4. Measuring:
   a. Obtain measurement 'x' by measuring horizontally along the airplane center line (BL 0) from a line stretched between the main wheel centers to a plumb bob dropped from the forward

side of the firewall (FS 100). Add 100 to this measurement to obtain left and right weighing point arm (dimension 'A'). Typically, dimension 'A' will be in the neighborhood of 157.5.

b. Obtain measurement 'y' by measuring horizontally and parallel to the airplane centerline (BL 0), from center of nosewheel axle, left side, to a plumb bob dropped from the line stretched between the main wheel centers. Repeat on right side and average the measurements. Subtract this measurement from dimension 'A' to obtain the nosewheel weighing point arm (dimension 'B').

5. Determine and record the moment for each of the main and nose gear weighing points using the following formula:

Moment = Net Weight x Arm

6. Calculate and record the as-weighed weight and moment by totaling the appropriate columns.

7. Determine and record the as-weighed CG in inches aft of datum using the following formula:

CG = Total Moment / Total Weight

8. Add or subtract any items not included in the as-weighed condition to determine the empty condition. Application of the above CG formula will determine the C.G for this condition.

9. Add the correction for engine oil (15 lb at FS 78.4), if the airplane was weighed with oil drained. Add the correction for unusable fuel (15.0 lb at FS 154.9) to determine the Basic Empty Weight and Moment. Calculate and record the Basic Empty Weight C.G. by applying the above C.G. formula.

10. Record the new weight and CG values on the Weight and Balance Record.

The above procedure determines the airplane Basic Empty Weight, moment, and center of gravity in inches aft of datum. CG can also be expressed in terms of its location as a percentage of the airplane Mean Aerodynamic Cord (MAC) using the following formula:

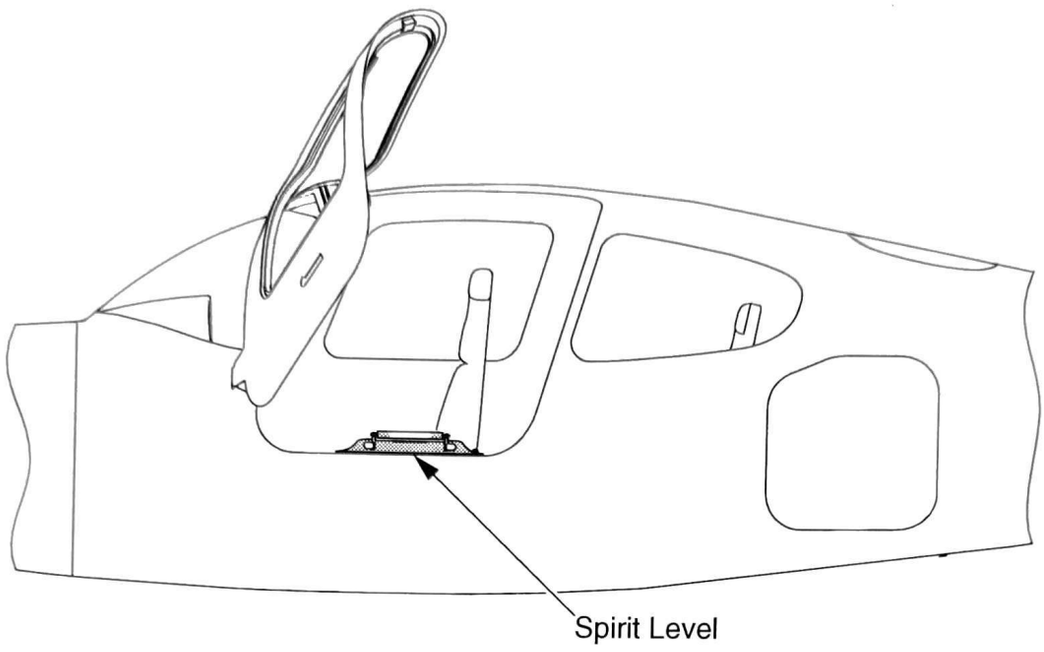
CG% MAC = 100 x (CG Inches – LEMAC) / MAC

Where:

LEMAC = 133.1

MAC = 47.7

Airplane Leveling



LONGITUDINAL LEVELING

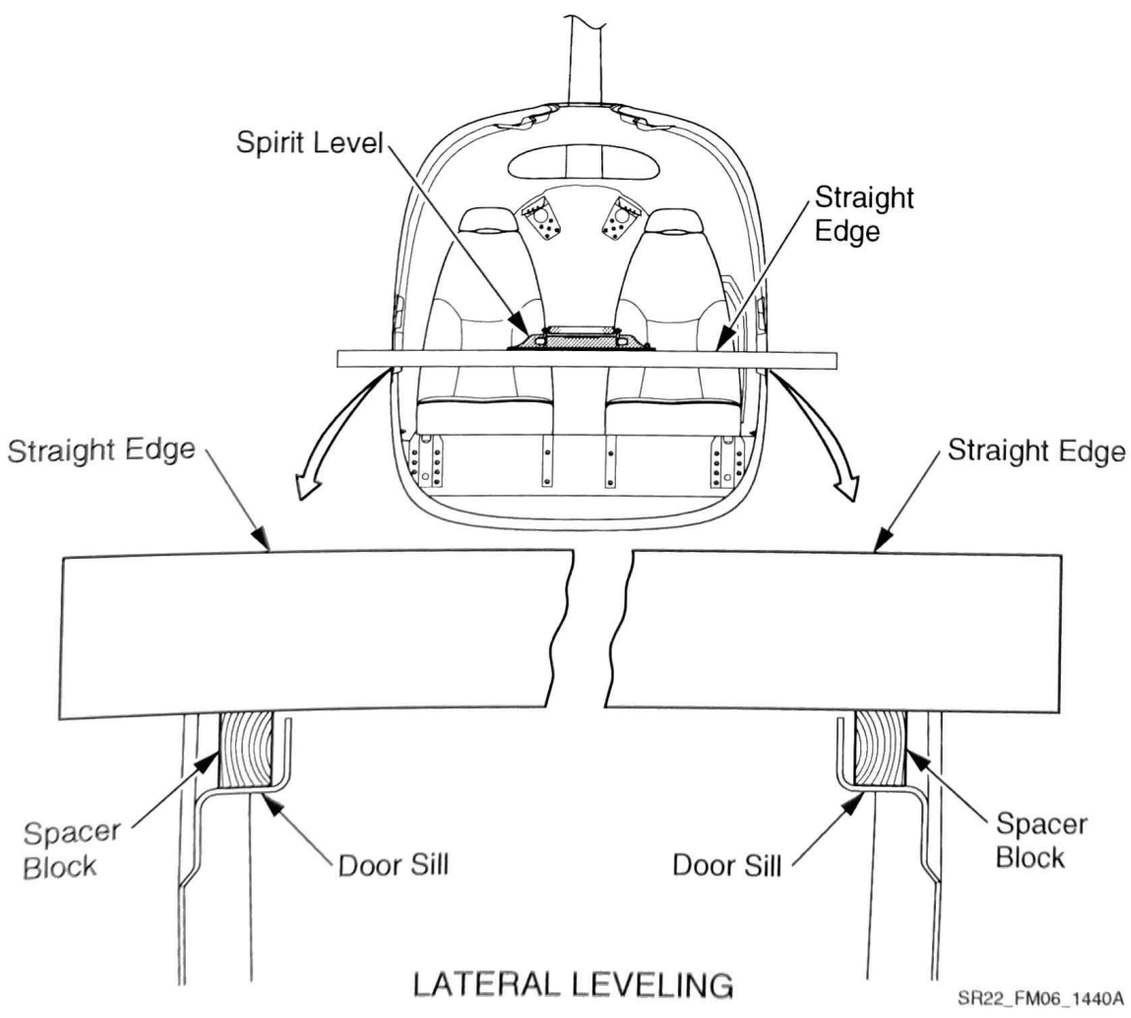


Figure 6-2

Loading Instructions

It is the responsibility of the pilot to ensure that the airplane is properly loaded and operated within the prescribed weight and center of gravity limits. The following information enables the pilot to calculate the total weight and moment for the loading. The calculated moment is then compared to the Moment Limits chart or table *(Figure 6-5)* for a determination of proper loading.

Airplane loading determinations are calculated using the Weight & Balance Loading Form *(Figure 6-3)*, the Loading Data chart and table *(Figure 6-4)*, and the Moment Limits chart and table *(Figure 6-5)*.

1. ***Basic Empty Weight*** – Enter the current Basic Empty Weight and Moment from the Weight & Balance Record *(Figure 6-6)*.
2. ***Front Seat Occupants*** – Enter the total weight and moment/1000 for the front seat occupants from the Loading Data *(Figure 6-4)*.
3. ***Rear Seat Occupants*** – Enter the total weight and moment/1000 for the rear seat occupants from the Loading Data *(Figure 6-4)*.
4. ***Baggage*** – Enter weight and moment for the baggage from the Loading Data *(Figure 6-4)*.
   - If desired, subtotal the weights and moment/1000 from steps 1 through 4. This is the *Zero Fuel Condition*. It includes all useful load items excluding fuel.
5. ***Fuel Loading*** – Enter the weight and moment of usable fuel loaded on the airplane from the Loading Data *(Figure 6-4)*.
   - Subtotal the weight and moment/1000. This is the *Ramp Condition* or the weight and moment of the aircraft before taxi.
6. ***Fuel for start, taxi, and run-up*** – This value is pre-entered on the form. Normally, fuel used for start, taxi, and run-up is approximately 9 pounds at an average moment/1000 of 1.394.
7. ***Takeoff Condition*** – Subtract the weight and moment/1000 for step 8 (start, taxi, and run-up) from the Ramp Condition values (step 7) to determine the Takeoff Condition weight and moment/1000.
   - The total weight at takeoff must not exceed the maximum weight limit of 3050 pounds. The total moment/1000 must not be above the maximum or below the minimum moment/1000 for the Takeoff Condition Weight as determined from the Moment Limits chart or table *(Figure 6-5)*.

Weight and Balance Loading Form

• Note •

For Center of Gravity Envelope, refer to Section 2, Limitations.

The Takeoff Condition Weight must not exceed 3050 lb.

The Takeoff Condition Moment must be within the Minimum Moment to Maximum Moment range at the Takeoff Condition Weight. (Refer to *Moment Limits*).

Serial Num: _____ Date: _____

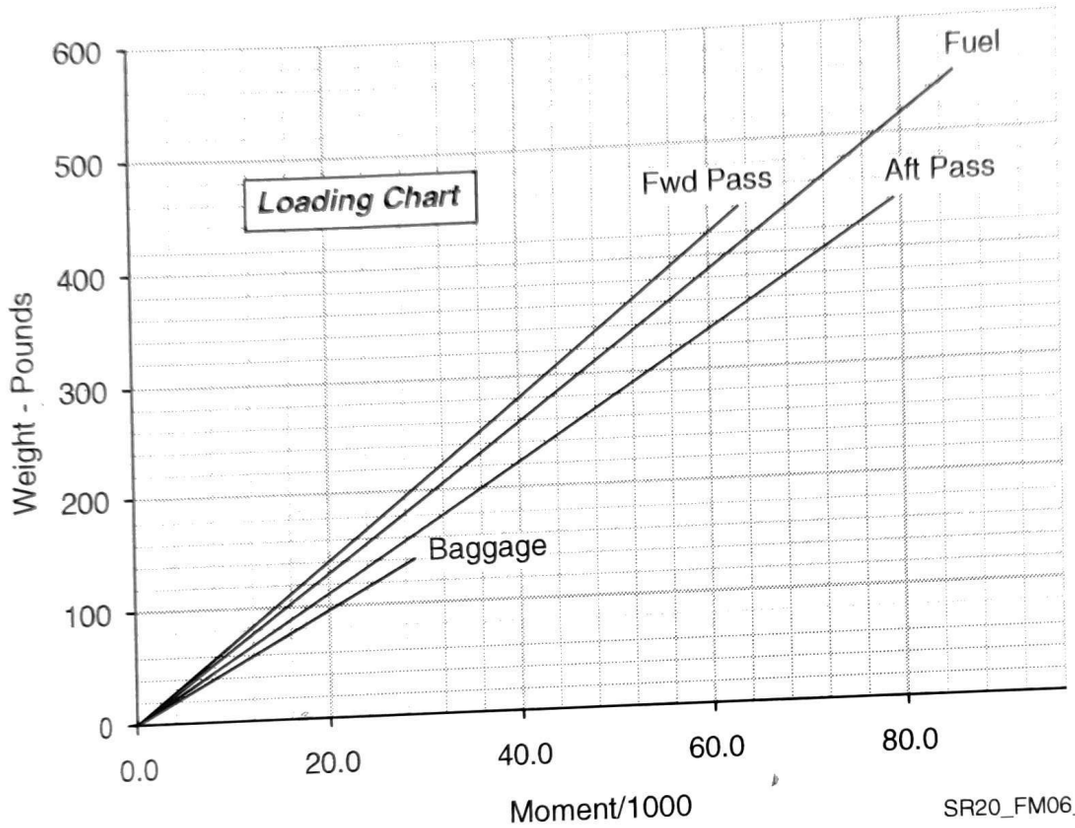
Reg. Num: _____ Initials: _____

Item	Description	Weight LB	Moment/ 1000
1.	Basic Empty Weight *Includes unusable fuel & full oil*	2214.11	311596.23
2.	Front Seat Occupants *Pilot & Passenger (total)*		
3.	Rear Seat Occupants		
4.	Baggage Area *130 lb maximum*		
5.	Zero Fuel Condition Weight *Sub total item 1 thru 4*		
6.	Fuel Loading *56 Gallon @ 6.0 lb/gal. Maximum*		
7.	Ramp Condition Weight *Sub total item 5 and 6*		
8.	Fuel for start, taxi, and run-up *Normally 9 lb at average moment of 922.8.*		
9.	Takeoff Condition Weight *Subtract item 8 from item 7*		

Figure 6-3

Loading Data

Use the following chart or table to determine the moment/1000 for fuel and payload items to complete the Loading Form.

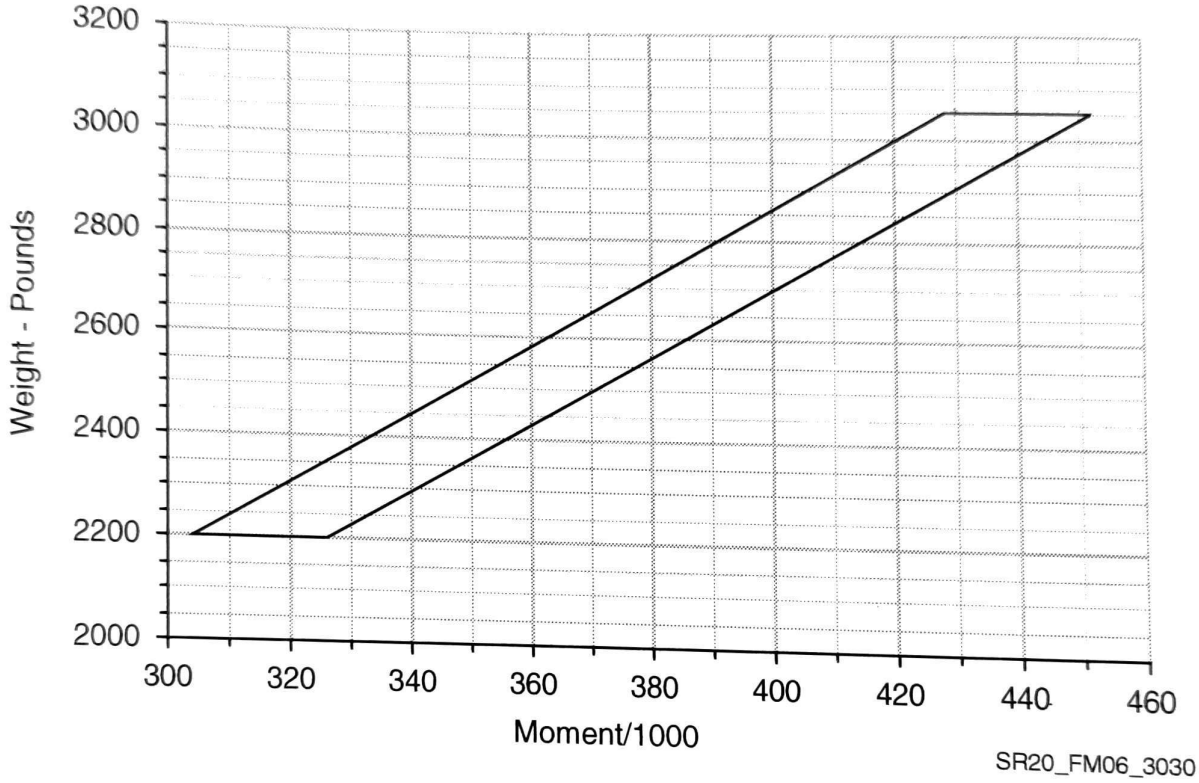


Weight LB	Fwd Pass FS 143.5	Aft Pass FS 180.0	Baggage FS 208.0	Fuel FS 153.8	Weight LB	Fwd Pass FS 143.5	Aft Pass FS 180.0	Fuel FS 153.8
20	2.87	3.60	4.16	3.10	220	31.57	39.60	34.08
40	5.74	7.20	8.32	6.20	240	34.44	43.20	37.18
60	8.61	10.80	12.48	9.29	260	37.31	46.80	40.27
80	11.48	14.40	16.64	12.39	280	40.18	50.40	43.37
100	14.35	18.00	20.80	15.49	300	43.05	54.00	46.47
120	17.22	21.60	24.96	18.59	320	45.92	57.60	49.57
140	20.09	25.20	(27.04)*	21.69	336**	48.79	61.20	52.05
160	22.96	28.80		24.78	360	51.66	64.80	
180	25.83	32.40		27.88	380	54.53	68.40	
200	28.70	36.00		30.98	400	57.40	72.00	

Figure 6-4

Moment Limits

Use the following chart or table to determine if the weight and moment from the completed Weight and Balance Loading Form *(Figure 6-3)* are within limits.



SR20_FM06_3030

Weight	Moment/1000		Weight	Moment/1000	
LB	Minimum	Maximum	LB	Minimum	Maximum
2200	304	326	2700	375	398
2250	311	333	2750	383	406
2300	318	341	2800	390	414
2350	326	348	2850	398	421
2400	333	354	2900	406	429
2450	340	362	2950	414	437
2500	347	369	3000	421	444
2550	354	375	3050	429	452
2600	362	383	2700	375	398
2650	369	390			

Figure 6-5

Weight & Balance Record

Use this form to maintain a continuous history of changes and modifications to airplane structure or equipment affecting weight and balance:

Serial Num:			Reg. Num:					Page of	
Date	Item No.		Description of Article or Modification	Weight Change Added (+) or Removed (-)			Running Basic Empty Weight		
	In	Out		WT LB	ARM IN.	MOM/ 1000	WT LB	MOM/ 1000
			As Delivered					

Figure 6-6

Equipment List

This list will be determined after the final equipment has been installed in the aircraft.

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Superseded 09-18-2020

Delivered Weight Data & Equipment List

Model SR20	
Serial Number:	**2229**
Registration Number:	**N230WA**
Basic Empty Weight:	**2206 lb**
Total Moment/1000:	**310.842**
Center of Gravity:	**140.94**

The following pages list required, standard, and optional equipment, as well as gives the weight and arm of each listed item. This listing represents the airplane and all options available at the time of delivery and does not include any equipment installed after delivery.

Note:
Not all optional equipment in this listing was installed in the above serial number airplane. Equipment listed as optional but not installed in the airplane is indicated by a hyphen (-) in the quantity column for that piece of equipment.

ATA - Item:
Each item in the listing is provided a unique number. The first two digits of the number represent the ATA or GAMA Chapter reference number. These numbers are used industry wide and in the Cirrus Design SR20 Maintenance Documentation to locate items in the Maintenance Manuals and or Parts Catalogs. The two digits following the hyphen are sequence numbers for each item in that chapter.

Description:
This is the component, assembly, or installation name.

Sym:
Items in this listing are coded by a symbol indicating the status of the item. These codes are:
C Required item for FAA Certification.
S Standard equipment. Most standard equipment is applicable to all airplanes. Some equipment may be replaced by optional equipment.
O Optional equipment. Optional equipment may be installed in addition to or to replace standard equipment.

Qty:
The quantity of the listed item in the airplane. A hyphen (-) in this column indicates that the equipment was not installed

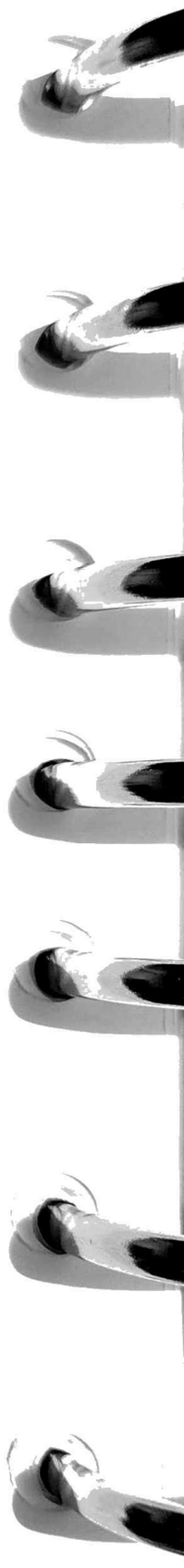
Part Number
This is the Cirrus Design Part Number for the component, assembly, or installation

Unit Wt
The weight, in pounds, of one each of the listed item.

Arm
The arm, in inches, of the listed item.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
21	Air Conditioning					
21-01	Blower Fan	O	-	20970-003	7.3	133.0
21-02	Compressor Assembly	O	1	29124-001	15.0	93.1
21-03	Condenser Assembly	O	1	21209-002	17.0	132.8
21-04	Evaporator Assembly	O	1	21114-006	17.5	199.5
22	AutoFlight					
22-01	System 55X Autopilot Installation	O	-	13560-004	3.0	123.3

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
22-02	System 55SR Autopilot Installation	S	-	15861-002	3.0	123.3
22-03	Garmin Autopilot controller	O	1	24645-001	0.8	126.5
23	**Communications**					
23-01	Radios, See 34 – Navigation	-	-	-	-	-
24	**Electrical Power**					
24-01	Alternator 1	C	1	50933-001	12.3	61.8
24-02	Alternator 2	C	1	50846-070	5.7	91.0
24-03	Battery 1	C	1	53030-001	28.0	96.0
24-04	Battery 2	C	1	24947-001	11.5	230.0
24-05	MCU	C	1	19800-001	9.8	98.0
25	**Equipment & Furnishings**					
25-01	ELT and Batteries	C	1	17190-101	3.6	228.8
25-02	Fwd Seat & Restraint Inst. (Leather: add 0.4 lb each)	C	2	29491-0xx	27.0	149.3
25-03	Rear Seat Installation (Leather: add 0.4 lb each)	C	-	29492-0xx	21.8	180.0
25-04	Rear Seat Restraint	C	-	12491-001	2.3	180.0
25-05	Rear bench seat Installation (Leather: add 0.8 lb)	C	1	29429, 29428, & 29427	26.9	183.0
25-06	Rear Seat Restraint 3 point - 2 seat belt	C	-	29405-001	3.3	200.0
25-07	Rear Seat Restraint 3 point - 3 seat belt	C	1	29405-002	5.1	200.0
26	**Fire Protection**					
26-01	Portable Fire Extinguisher	C	1	12533-003	1.5	118.4
27	**Flight Controls**					
27-01	Flap Actuator	C	1	11787-003	4.4	173.9
27-02	Roll Trim Cartridge Assy	C	1	15660-001	0.4	161.8
27-03	Roll Trim Motor Assembly	C	1	12546-003	1.3	159.8
27-04	Pitch Trim Cartridge Assy	C	1	15650-002	0.4	310.9
27-05	Pitch Tim Motor Assy	C	1	14832-001	1.3	303.5
27-06	Yaw Trim Cartridge Assy	C	1	11898-002	0.4	106.2
27-07	Yaw Servo GSA81	O	-	24644-001	2.2	236.0
27-08	Yaw Servo Motor GSM85A	O	-	24644-011	1.6	236.0
28	**Fuel**					
28-01	Fuel Quantity Indicator	C	1	12615-003	0.8	138.0
28-02	Fuel Selector Valve	C	1	17921-001	1.8	140.8
28-03	Gascolator	C	1	14069-003	1.0	98.5
30	**Ice & Rain Protection**					
30-11	Ice-Inspection Lights	O	2	19984-001/-002	0.6	104.5
31	**Indicating & Recording**					
31-02	Hourmeter (Ea)	S	2	50485-001	0.1	142.3
32	**Landing Gear**					
32-01	Main Gear Installation	C	2	29146-003/-004	34.0	157.5
32-02	Main Gear Fairing & Pant	S	2	19890-003/-004	6.1	157.5
32-03	Brake Assembly (L/R)	C	2	13399-104	3.2	157.5
32-04	Main Wheels	C	2	13399-101	7.8	157.5
32-05	Main Tire	C	2	14075-002/-005/-006/-007	6.3	157.5
32-06	Main Tube	C	2	14076-002	1.0	157.5
32-07	Nose Gear Installation	C	1	18631-004	25	77
32-08	Fairing, NLG Strut, Oleo	S	1	26607-001	1.1	78
32-09	Nose Wheel	C	1	12798-001	4.5	71.8
32-10	Nose Tire 5.00 x 5	C	1	12020-003	4.3	71.8
32-11	Nose Tire Tube	C	1	14076-001	1.0	71.8
32-12	Nose Gear Fairing & Pant	S	1	26960-002	3.2	78.0
32-13	Brake Master Cylinder	C	4	14269-001	0.6	104.5
32-14	Brake Fluid Reservoir	C	1	12006-001	0.4	98.1
33	**Lights**					
33-01	Strobe/Nav Lights (L/R)	C	2	17140-005/-006	0.6	161.8
33-02	Strobe Power Supply (L/R)	C	2	14286-002	1.7	147.8
33-03	Landing Light Installation	S	1	18983-004	1.9	80.0
33-04	Recognition Light Installation	S	2	18957-003/-004	0.4	138.5
34	**Navigation & Pitot Static**					
34-03	Garmin 10" Display	O	1	24655-011	9.3	118.5
34-04	Garmin 10" Display	C	1	24655-012	9.3	117.0
34-05	Garmin 12" Display	O	-	24655-003	9.3	118.5
34-06	Garmin 12" Display	C	-	24655-004	9.3	117.0
34-07	Altimeter	C	1	12102-002	1.1	116.1
34-08	Airspeed Indicator	C	1	12105-003	0.7	116.9
34-09	Attitude Indicator	O	1	24668-001	2.2	114.5



ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
34-10	Magnetic Compass	C	1	12451-002	0.3	132.7
34-11	Turn Coordinator	C	1	11891-001	1.8	118.0
34-12	GMA 350 Audio Panel	O	1	29396-001	1.6	125.8
34-13	Marker Beacon Antenna	S	1	12743-003	0.6	200.0
34-14	Transponder Antenna	S	1	12739-001	0.1	105.0
	Navigator Option					
34-18	GPS/NAV/COM#1 GIA63W	O	1	24662-002	6.3	110.5
34-19	GPS/NAV/COM#2 GIA63W	O	1	24662-002	6.3	111.0
34-20	AIR DATA COMPUTER, GDC 74	O	1	24651-001	2.0	112.5
34-21	AHRS UNIT, GRS 77	O	2	24661-003	3.3	110.0
34-22	CO Detector	O	1	24660-002	0.2	104.0
34-23	FMS Keyboard, GCU 478	O	1	24654-002	1.0	124.0
34-24	ADF Receiver (KR87)	O	-	24659-001	3.2	120.0
34-25	ADF Antenna (KA44B)	O	-	24659-100	4.2	162.0
34-26	DME (KNA61)	O	-	24658-001	2.8	122.0
34-27	DME Antenna (KA61)	O	-	24658-100	0.2	114.5
34-28	GPS 1 Antenna	C	1	12744-004	0.4	136.2
34-29	GPS 2 Antenna/Iridium Combo Antenna	S	1	29301-001	0.4	200.0
34-30	COM 1 Antenna	S	1	12740-004	0.5	178.5
34-31	COM 2 Antenna	O	1	12741-002	0.5	204.6
34-32	VOR/LOC Antenna	O	1	12742-001	0.4	331.0
	Engine Monitoring					
	Rack/Unit Installation, GEA 71	O	1	24661-001	2.2	111.5
	Traffic Option					
34-36	Avidyne TAS Processor	O	1	71-2420-X-TAS610	6.7	139.0
34-37	Single Blade TAS Antenna	O	1	S72-1750-31L	0.7	157.2
34-38	Twin Blade TAS Antenna	O	1	S72-1750-32L	0.8	180.0
34-40	Garmin Traffic GTS 800	O	-	26659-001	9.9	139.0
34-41	Antenna, Monopole	O	-	26656-001	0.2	157.2
34-42	Antenna, Directional, GA 58	O	-	26659-050	0.8	180.0
	Weather Option					
34-40	• Stromscope Processor	O	-	12745-050	1.7	199.0
34-41	• Stormscope Antenna	O	-	12745-070	0.9	191.0
34-42	GSR 56 Iridium Satellite Receiver	O	-	29307-001	4.2	231.1
	Transponder Option					
34-44	• Mode A/C Transponder	O	1	24652-001	1.6	230.0
34-45	• Mode S Transponder	O	-	24653-001	2.6	121.0
34-46	• Mode S w/ES Transponder	O	1	24653-002	2.6	121.0
	XM Satellite Options					
34-48	• XM WX / Radio Receiver	O	1	24657-001/-002	1.7	114.0
34-49	• XM Radio Remote Control	O	1	24641-001	0.2	149.3
61	**Propeller**					
61-01	Propeller Governor	C	1	15524-001	3.2	61.7
61-02	• 2-Blade Propeller Installation	C	-	14680-001/-002	58.0	51.6
61-03	• 3-Blade Propeller Installation	O	1	14679-001/-002/-003	80.5	51.6
72	**Engine**					
72-02	Induction Filter	C	1	50207-200	0.4	62.9
72-03	Tanis Engine Pre-heater	O	1	25030-001	2.1	61.0
73	**Engine Fuel**					
73-02	Auxiliary Fuel Pump	C	1	19094-001	3.2	97.1
80	**Starting**					
80-01	24-volt Starter	S	1	~~657896~~ ES1416275-1	~~6.03~~ 4.74	93.0
95	**Special Equipment**					
95-01	Packed Parachute (CAPS)	C	1	25337-005	54.0	235.5
95-02	Airplane Flight Manual	C	1	11934-004	3.1	-
95-03	Enhanced Vision System	O	-	24737-007	1.2	161.0

Section 9: Log of Supplements

Inst	Part Number	Title	Rev Date
___	11934-S17	SR20 Airplanes Registered in Canada	10-10-01
___	11934-S25 R1	Winterization Kit	12-07-04
___	11934-S29	SR20 Airplanes Registered in the European Union	05-27-04
✓	11934-S36 R1	Artex ME406 406 MHz ELT System	12-18-08
___	11934-S39	S-Tec Fifty Five X Autopilot w/ Optional Flight Director	12-18-08
___	11934-S40	S-Tec Fifty Five SR Autopilot	12-18-08
✓	11934-S41 R2	GFC 700 Automatic Flight Control System	12-14-10
✓	11934-S42	Garmin Terrain Awareness/Warning System	12-18-08
___	11934-S43	SR20 Airplanes Registered in Russia	10-14-09
✓	11934-S44	Part 135 Electrical Loading Shedding Procedure	06-13-09
___	11934-S45	SR20 Airplanes Registered in Argentina	09-30-09
___	11934-S51	SR20 Airplanes Registered in Colombia	12-07-10
___	11934-S52	SR20 Airplanes Registered in Chile	11-07-12
___	11934-S53	SR20 Airplanes Registered in Mexico	01-14-13

FAA Approved POH Supplements must be in the airplane for flight operations when subject optional equipment is installed or the special operations are to be performed.

This Log of Supplements shows all Cirrus Design Supplements available for the aircraft at the corresponding date of the revision level shown in the lower left corner. A check mark in the Part Number column indicates that the supplement is applicable to the POH. Any installed supplements not applicable to the POH are provided for reference only.

**Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for**

Artex ME406 406 MHz ELT System

When Artex ME406 406 MHz ELT System is installed in the Cirrus Design SR20, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

This POH Supplement Change, dated Revision 01: 12-18-08, supersedes and replaces the Original release of this POH Supplement dated 08-15-07.

FAA Approved Joseph C Mieras **Date** 18 Dec 2008

for Charles Smalley, Acting Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The 406 MHz emergency locator transmitter (ELT) is a radio-frequency transmitter that generates a signal to assist in search and rescue for missing aircraft. The ELT automatically transmits the standard sweep tone on 121.5 MHz if rapid deceleration is detected. In addition, for the first 24 hours of operation, a 406 MHz signal containing aircraft specific information is transmitted at 50 seconds for 440 milliseconds.

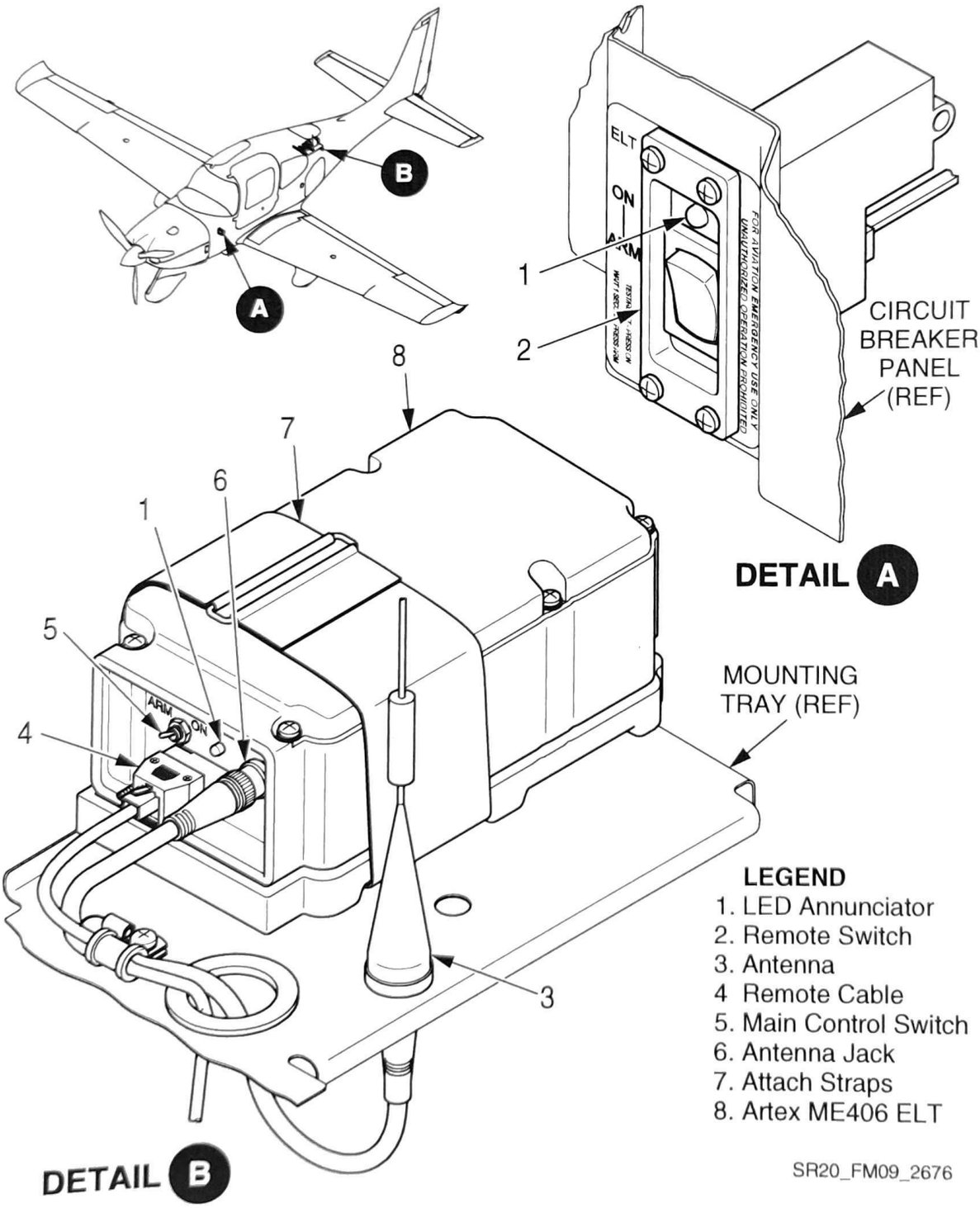


Figure - 1
Artex ME406 ELT System

Section 2 - Limitations

No Change.

Section 3 - Emergency Procedures

Forced Landing

Before performing a forced landing activate the ELT transmitter manually by turning the ELT remote switch to the 'ON'-position. Immediately after a forced landing, perform the following procedure:

• Note •

The ELT Remote Switch and Control Panel Indicator could be inoperative in the event of a forced landing. If inoperative, the inertia "G" switch will activate automatically. However, to turn the ELT OFF and ON will require manual switching of the main control switch located on the ELT unit.

1. ELT Remote Switch ..... Verify ON
   - Switch the ELT Remote Switch ON even if the red LED annunciator is flashing.
   - If airplane radio operable and can be safety used (no threat of fire or explosion), turn radio ON and select 121.5 MHz. If the ELT can be heard transmitting, it is working properly.
2. Battery Power ..... Conserve
   - Do not use radio transceiver until rescue aircraft is sighted.

After sighting rescue aircraft:

3. ELT Remote Switch ..... "ARM" position to prevent radio interference.
   - Attempt contact with rescue aircraft with the radio transceiver set to a frequency of 121.5 MHz. If no contact is established, switch the panel mounted switch to the 'ON'-position immediately.

(Continued on following page)

Portable Use of ELT

The ELT transmitter can be removed from the airplane and used as a personal locating device if it is necessary to leave the airplane after an accident. Access the unit as described below and set the ELT transmitter control switch to the 'ON'-position.

1. Remove avionics bay access panel along the aft portion of the RH fuselage or the lower aft center access panel of baggage compartment.
2. Disconnect fixed antenna lead from front of unit.
3. Disconnect lead from remote switch and indicator unit.
4. Disconnect antenna from mounting tray.
5. Loosen attach straps and remove transmitter unit.
6. Attach antenna to antenna jack on front of unit.
7. Set main control switch to ON.
8. Hold antenna upright as much as possible.

Section 4 - Normal Procedures

No Change.

Section 5 - Performance

No Change.

Section 6 - Weight & Balance

Installation of the subject propeller adds the following optional (Sym = O) equipment at the weight and arm shown in the following table.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
25-01	Artex ME406 ELT and Batteries	O	1	17190-100	3.4	229.5

Section 7 - Systems Description

This airplane is equipped with a self-contained Artex ME406 406 MHz ELT System. The transmitter unit is automatically activated upon sensing a change of velocity along its longitudinal axis exceeding 4 to 5 feet per second. Once activated, the transmitter transmits VHF band audio sweeps at 121.5 Mhz until battery power is gone. In addition, for the first 24 hours of operation, a 406 MHz signal is transmitted at 50-second intervals. This transmission lasts 440 ms and contains identification data received by Cospas-Sarsat satellites. The transmitted data is referenced in a database maintained by the national authority responsible for ELT registration to identify the beacon and owner.

The ELT transmitter is installed immediately behind the aft cabin bulkhead, slightly to the right of the airplane centerline. The transmitter and antenna are accessible through the avionics bay access panel along the aft portion of the RH fuselage or the lower aft center access panel of baggage compartment. The main transmitter control switch is labeled "ON" - "ARM". The transmitter is in the armed position for normal operations. A red LED annunciator flashes when the ELT is transmitting. A battery pack consisting of two "D" cell lithium batteries mounts to a cover assembly within the transmitter to provide power to the transmitter. The expiration date of the batteries are indicated on the outside of the ELT battery case and recorded in the aircraft logs.

A warning buzzer is mounted to the transmitter mounting tray. When the ELT is activated, the buzzer "beeps" periodically. This buzzer operates in tandem with the ELT panel indicator and serves as a redundant annunciation. Power to the buzzer is supplied by the ELT batteries.

Serials 1005 thru 2015: The ELT Remote Switch and Control Panel Indicator (RCPI) is located below the circuit breakers on the circuit breaker panel or *Serials 2016 and subsequent,* below the Alternate Induction Air Control knob near the pilot's right knee.

The RCPI provides test and monitoring functions for the transmitter. The panel contains a switch labeled "ON" - "ARM", and a red LED annunciator. The red LED annunciator flashes when the ELT is transmitting. Power to the LED is supplied by the clock bus on the MCU.

Section 8 - Handling, Servicing & Maintenance

ELT and RCPI batteries must be inspected in accordance with the Airplane Maintenances Manual, 5-20 - Scheduled Maintenance Checks.

The ELT and RCPI batteries must be replaced upon reaching the date stamped on the batteries, after an inadvertent activation of unknown duration, or whenever the batteries have been in use for one cumulative hour.

Inspection / Test

After setting transmitter switch to ARM position, the ELT automatically enters a self-test mode. The self-test transmits a 406 MHz test coded pulse that monitors certain system functions before shutting off. The test pulse is ignored by any satellite that receives the signal, but the ELT uses this pulse to check output power and frequency. Other parameters of the ELT are checked and a set of error codes is generated if a problem is found. The error codes are indicated by a series of pulses on the transmitter LED, remote control panel indicator LED, and alert buzzer.

• Note •

FAA regulations require that transmitter tests only be done during the first 5 minutes of each hour and must not last for more than 3 audio sweeps (1.5 seconds). If you are at a location where there is an FAA control tower or other monitoring facility, notify the facility before beginning the tests. Never activate the ELT while airborne for any reason.

Operators may wish to use a low quality AM broadcast receiver to determine if energy is being transmitted from the antenna. When the antenna of the radio (tuning dial on any setting) is held about 6 inches from the activated ELT antenna, the ELT aural tone will be heard on the AM broadcast receiver. This is not a measured check, but it does provide confidence that the antenna is radiating sufficient power to aid search and rescue. The aircraft's VHF receiver, tuned to 121.5 MHz, may also be used. This receiver, however, is more sensitive and could pick up a weak signal even if the radiating ELT's antenna is disconnected. Thus it does not check the integrity of the ELT

system or provide the same level of confidence as does an AM radio.

1. Tune aircraft receiver to 121.5 MHz.
2. Turn the ELT aircraft panel switch "ON" for about 1 second, then back to the "ARM" position. The receiver should transmit about 3 audio sweeps.
3. At turn-off (back to 'ARM' state) the panel LED and buzzer should present 1 pulse. If more are displayed, determine the problem from the list below.
4. Codes displayed with the associated conditions are as follows:
   a. 1-Flash: Indicates that the system is operational and that no error conditions were found.
   b. 2-Flashes: Not used. If displayed, correct condition before further flight.
   c. 3-Flashes: Open or short circuit condition on the antenna output or cable. If displayed, correct condition before further flight.
   d. 4-Flashes: Low power detected. If displayed, correct condition before further flight.
   e. 5-Flashes: Indicates that the ELT has not been programmed. Does not indicate erroneous or corrupted programmed data. If displayed, correct condition before further flight.
   f. 6-Flashes: Indicates that G-switch loop is not installed. If displayed, correct condition before further flight.
   g. 7-Flashes: Indicates that the ELT battery has too much accumulated operation time (> 1hr). If displayed, correct condition before further flight.

Section 10 - Safety Information

No Change.

Intentionally Left Blank

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for the

GFC 700 Automatic Flight Control System

(Aircraft Serials w/ Perspective Avionics Only)

Including optionally installed Electronic Stability and Protection (ESP), Underspeed Protection (USP), and Hypoxia Detection and Automatic Descent functions.

When the GFC 700 Automatic Flight Control System is installed on the aircraft, this POH Supplement is applicable and must be inserted in the Supplements Section of the basic Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic Pilot's Operating Handbook.

• Note •

This POH Supplement Change, dated Revision 02: 12-14-10, supersedes and replaces the Revision 01 of this POH Supplement dated 08-26-09.

FAA Approved Joseph C Mieos Date Dec 14 2010

for Charles Smalley, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The aircraft is equipped with a Garmin GFC 700 Automatic Flight Control System (AFCS) which is fully integrated within the Cirrus Perspective Integrated Avionics System architecture. Refer to Section 7 - System Description and the Cirrus Perspective Pilot's Guide for additional description of the AFCS and operating procedures.

Determining status of Autopilot Underspeed Protection (USP) and Hypoxia Detection and Automatic Descent

If Perspective System software load 0764-09 or later is installed, the aircraft has these functions installed; software load is displayed in the upper RH corner of the first MFD screen presented after power-up.

Determining status of Electronic Stability and Protection (ESP)

If the aircraft is equipped with ESP (software load 0764-09 or later), it is identified and displayed on the second MFD splash screen presented after power-up; this page will state "This aircraft is equipped with Electronic Stability & Protection" if installed.

Section 2 - Limitations

1. The appropriate revision of the Cirrus Perspective Cockpit Reference Guide (p/n 190-00821-XX, where X can be any digit from 0 to 9) must be immediately available to the pilot during flight. The system software version stated in the reference guide must be appropriate for the system software version displayed on the equipment.
2. Minimum Autopilot Speed ..... 80 KIAS
3. Maximum Autopilot Speed ..... 185 KIAS
4. Autopilot Minimum-Use-Height:
   a. Takeoff and Climb ..... 400 feet AGL
   b. Enroute and Descent ..... 1000 feet AGL
   c. Approach (GP or GS Mode) ..... Higher of 200 feet AGL or Approach MDA, DA, DH.
   d. Approach (IAS, VS, PIT or ALT Mode)...Higher of 400 feet AGL or Approach MDA.
5. The Autopilot may not be engaged beyond the Engagement Limits. If the Autopilot is engaged beyond the command limits (up to engagement limits) it will be rolled or pitched to within the

command limits and an altitude loss of 1000 feet or more can be expected while attitude is established in the selected mode.

Axis	Autopilot Engagement Limit
Pitch	± 30°
Roll	± 75°

6. The Autopilot and Flight Director will not command pitch or roll beyond the Command Limits.

Axis	Autopilot Command Limit
FD Pitch Command Limits	+20°, -15°
FD Roll Command Limits	± 25°

7. Use of VNAV is not supported during an approach with a teardrop course reversal. VNAV will be disabled at the beginning of the teardrop.
8. For aircraft with optional USP, If Stall Warning is inoperative, Autopilot Underspeed Protection will not be provided in Altitude Critical Modes (ALT, GS, GP, TO and GA)

Section 3 - Emergency Procedures

Autopilot Malfunction

Refer to Electric Trim/Autopilot Failure abnormal procedure in the basic POH. Do not reengage the Autopilot until the malfunction has been identified and corrected. The Autopilot may be disconnected by:

1. Pressing the A/P DISC on the control yoke.

   or

2. Pulling the AP SERVOS circuit breaker on MAIN BUS 1.

Altitude lost during a roll or pitch axis Autopilot malfunction and recovery:

Flight Phase	Bank Angle	Altitude Loss
Climb	45°	300 ft
Cruise	45°	300 ft
Maneuvering	45°	300 ft
Descent	45°	300 ft
Approach	45°	70 ft

Section 3A - Abnormal Procedures

Altitude Miscompare

ALT MISCOMP Caution

ALT MISCOMP

For dual ADC installations, altitude difference is greater than 200 feet between ADC1 and ADC2.

1. Altitude..... CROSS-CHECK ADC1 against Standby Altimeter
2. ADC2 ..... SELECT
   a. Press SENSOR softkey on PFD, followed by ADC2 softkey.
   b. Expect USING ADC2 message on PFD
3. Altitude..... CROSS-CHECK ADC2 against Standby Altimeter
4. ADC ..... SELECT more reliable
   a. Press SENSOR softkey, then select the ADC that provided the most reliable altitude indication

Airspeed Miscompare

IAS MISCOMP Caution

IAS MISCOMP

For dual ADC installations, airspeed difference is greater than 7 knots between ADC1 and ADC2.

1. Airspeed..... CROSS-CHECK ADC1 against Standby Airspeed Indicator
2. ADC2 ..... SELECT
   a. Press SENSOR softkey on PFD, followed by ADC2 softkey
   b. Expect USING ADC2 message on PFD
3. Airspeed..... CROSS-CHECK ADC2 against Standby Airspeed Indicator
4. ADC ..... SELECT more reliable
   a. Press SENSOR softkey, then select the ADC that provided the most reliable airspeed indication

Heading Miscompare

HDG MISCOMP Caution

HDG MISCOMP

For dual AHRS installations, heading difference is greater than 6° between AHRS 1 and AHRS 2.

1. Heading..... CROSS-CHECK AHRS1 against Magnetic Compass
2. AHRS2 ..... SELECT
   a. Press SENSOR softkey on PFD, followed by AHRS2 softkey
   b. Expect USING AHRS2 message on PFD
3. Altitude ..... CROSS-CHECK AHRS2 against Magnetic Compass
4. AHRS ..... SELECT more reliable
   a. Press SENSOR softkey, then select the AHRS that provided the most reliable heading indication

Pitch Miscompare

PIT MISCOMP Caution

PIT MISCOMP

For dual AHRS installations, pitch difference is greater than 5° between AHRS 1 and AHRS 2. Flight Director, Autopilot, and ESP (if installed) will not be available when pitch miscompare exists.

1. Pitch .....CROSS-CHECK AHRS1 against Stdby Attitude Indicator
2. AHRS2 ..... SELECT
   a. Press SENSOR softkey on PFD, followed by AHRS2 softkey
   b. Expect USING AHRS2 message on PFD
3. Pitch .....CROSS-CHECK AHRS2 against Stdby Attitude Indicator
4. AHRS ..... SELECT more reliable
   a. Press SENSOR softkey, then select the AHRS that provided the most reliable pitch indication
5. UNRELIABLE AHRS CIRCUIT BREAKER..... PULL

   Pulling circuit breaker for unreliable AHRS will clear miscompare condition, but will result in 'NO PIT/ROLL/HDG COMPARE'

advisory since backup source is not available for comparison. Flight Director, Autopilot and ESP will become available when unreliable AHRS CB is pulled.

Roll Miscompare

ROLL MISCOMP Caution

ROLL MISCOMP

For dual AHRS installations, roll (bank) difference is greater than 6° between AHRS 1 and AHRS 2.

1. Roll.....CROSS-CHECK AHRS1 against Stdby Attitude Indicator
2. AHRS2 ..... SELECT
   a. Press SENSOR softkey on PFD, followed by AHRS2 softkey
   b. Expect USING AHRS2 message on PFD
3. Roll.....CROSS-CHECK AHRS2 against Stdby Attitude Indicator
4. AHRS ..... SELECT more reliable
   a. Press SENSOR softkey, then select the AHRS that provided the most reliable roll indication
5. UNRELIABLE AHRS CIRCUIT BREAKER..... PULL

   Pulling circuit breaker for unreliable AHRS will clear miscompare condition, but will result in 'NO PIT/ROLL/HDG COMPARE' advisory since backup source is not available for comparison. Flight Director, Autopilot and ESP will become available when unreliable AHRS CB is pulled.

Autopilot Miscompare

AP MISCOMP Caution

AP MISCOMP

Autopilot miscompare, Autopilot is not available.

1. Continue flight without Autopilot or isolate and remove the unreliable sensor to clear the MISCOMP as described for ROLL or PIT MISCOMP checklists to restore the autopilot.

Autopilot and PFD Using Different AHRSs

AP/PFD AHRS Caution

AP/PFD AHRS

The Autopilot and PFD are using different Attitude and Heading Reference Systems.

1. Continue flight without Autopilot. Monitor Standby Instruments. Pilot may manually select other AHRS if installed.

No Autopilot ADC Modes Available

NO ADC MODES Caution

NO ADC MODES

Autopilot air data modes are not available.

1. Autopilot may only be engaged in pitch (PIT) mode.

No Autopilot Vertical Modes Available

NO VERT MODES Caution

NO VERT MODES

Autopilot vertical modes are not available.

1. Autopilot may only be engaged in lateral mode.

Altitude Selection Deviation

ALTITUDE SEL Advisory

ALTITUDE SEL

The pilot has programmed the Autopilot to climb or descend away from the selected altitude. Typically done unintentionally.

1. Altitude Selection ..... CORRECT, AS REQUIRED

Course Selection Track Error

COURSE SEL Advisory

COURSE SEL

The pilot has selected an Autopilot mode (ROL) and engaged a NAV mode (VLOC or GPS) and the current aircraft track will not intercept the selected course. Typically done unintentionally.

1. Course Heading ..... CORRECT, AS REQUIRED

Autopilot Hypoxia Detection System (Optional)

ARE YOU ALERT? Advisory

ARE YOU ALERT?

No pilot activity has been detected over a prescribed interval of time, interval decreases as altitude increases.

1. Actuate any Integrated Avionics System softkey or knob to reset system.

HYPOXIA ALERT Caution

HYPOXIA ALERT

No pilot response to the ARE YOU ALERT? annunciation detected after one minute.

1. Actuate any Integrated Avionics System softkey or knob to reset system.

AUTO DESCENT Warning

AUTO DESCENT

No pilot response to the HYPOXIA ALERT annunciation detected after one minute. Warning remains until pilot responds. Automatic descent begins after one minute of unanswered Warning. Once it begins automatic descent will commence to 14,000 for 4 minutes, then to 12,500' thereafter. Once descent begins, only a decouple of the Autopilot will interrupt this process.

1. If within 60 seconds of AUTO DESCENT Warning (prior to descent):
   a. Actuate Integrated Avionics System softkey or knob to reset.
2. If greater than 60 seconds of AUTO DESCENT Warning:
   a. Autopilot ..... DISCONNECT
   b. Situation ..... ASSESS

• WARNING •

Pilot should carefully asses aircraft state, altitude, location, and physiological fitness to maintain continued safe flight.

   c. ATC ..... COMMUNICATE SITUATION
   d. ALT Bug ..... RESET to desired
   e. Autopilot ..... ENGAGE

   If hypoxia suspect:

   f. Oxygen Masks or Cannulas ..... DON
   g. Oxygen System ..... ON
   h. Oxygen Flow Rate ..... MAXIMUM
   i. Blood Oxygen Saturation Level ..... CHECK

Underspeed Protection Recovery (Optional)

UNDERSPEED PROTECT ACTIVE Warning

UNDERSPEED PROTECT ACTIVE

Autopilot engaged and airspeed has fallen below minimum threshold.

Recovery may be initiated in one of three ways:

1. Power Lever ..... INCREASE
   as required to correct underspeed condition.

   or

1. Autopilot AP DISC Switch ..... SELECT
   and manually fly aircraft.

   or

1. Autopilot ..... CHANGE MODES
   to one in which the AFCS can maintain.

Section 4 - Normal Procedures

• Note •

Normal operating procedures for the GFC 700 Automatic Flight Control System are described in the Cirrus Perspective Pilot's Guide.

PreFlight Inspection

1. A self test is performed upon power application to the AFCS. A boxed AFCS annunciator will appear on the PFD in white text on a red background, followed by a boxed PFT in black text on a white background. Successful completion is identified by all Mode Controller annunciations illuminating for two seconds.

Before Taxiing

1. Manual Electric Trim.....TEST

   Press the AP DISC button down and hold while commanding trim. Trim should not operate either nose up or nose down.
2. Autopilot .....ENGAGE (press AP button)
3. Autopilot Override .....TEST
   Move flight controls fore, aft, left and right to verify that the Autopilot can be overpowered.
4. Autopilot .....DISENGAGE (press AP button)
5. Trim ..... SET FOR TAKEOFF

Enabling/Disabling ESP (Optional)

1. Turn the large FMS Knob to select the AUX page group
2. Turn the small FMS Knob to select the System Setup Page.
3. Press the SETUP 2 Softkey.
4. Press the FMS Knob momentarily to activate the flashing cursor.
5. Turn the large FMS Knob to highlight the 'Status' field in the Stability & Protection Box.
6. Turn the small FMS Knob to select 'ENABLED' or 'DISABLED'.
7. Press the FMS Knob momentarily to remove the flashing cursor.

Temporary Interrupt of ESP (Optional)

Although ESP is only provided when AFCS Autopilot is disengaged, the AFCS and its servos are the source of ESP guidance. When the AP Disconnect button is pressed and held, the servos will provide no ESP control force feedback. Upon release of the AP Disconnect button, ESP will be restored.

1. AP Disconnect .....PRESS and HOLD until maneuver complete

Section 5 - Performance

• WARNING •

The Autopilot may not be able to maintain all selectable vertical speeds. Selecting a vertical speed that exceeds the aircraft's available performance may cause the aircraft to stall.

If AFCS Underspeed Protection function is not installed, the Autopilot will disconnect if the Stall Warning System is activated.

Section 6 - Weight & Balance

Refer to Section 6 - Weight and Balance of the basic POH.

Section 7 - System Description

This airplane is equipped with a GFC 700 - a two axis, fully digital, dual channel, fail passive Automatic Flight Control System (AFCS). The system consists of the GFC 705 AFCS Mode Controller, Flight Management System Keyboard, Roll Servo, Pitch Servo, Integrated Avionics Units, Pitch Trim Adapter, Autopilot Disconnect Switch, Take Off / Go Around Button, Electric Pitch-Trim and Roll-Trim Hat Switch. The GFC 700 AFCS can be divided into two primary operating functions:

Flight Director - The Flight Director provides pitch and roll commands to the AFCS system and displays them on the PFD. With the Flight Director activated, the pilot can hand-fly the aircraft to follow the path shown by the command bars. Flight Director operation takes place within the #1 Integrated Avionics Unit and provides:

- Mode annunciation
- Vertical reference control
- Pitch and roll command calculation
- Pitch and roll command display

Autopilot - The Autopilot controls the aircraft pitch and roll, while following commands received from the Flight Director. Autopilot operation occurs within the trim servos and provides:

- Autopilot engagement and annunciation
- Autopilot command and control
- Auto-trim operation
- Manual electric trim
- Two axis airplane control (pitch and roll), including approaches
- Level (LVL) mode engagement command of zero roll and zero vertical speed.

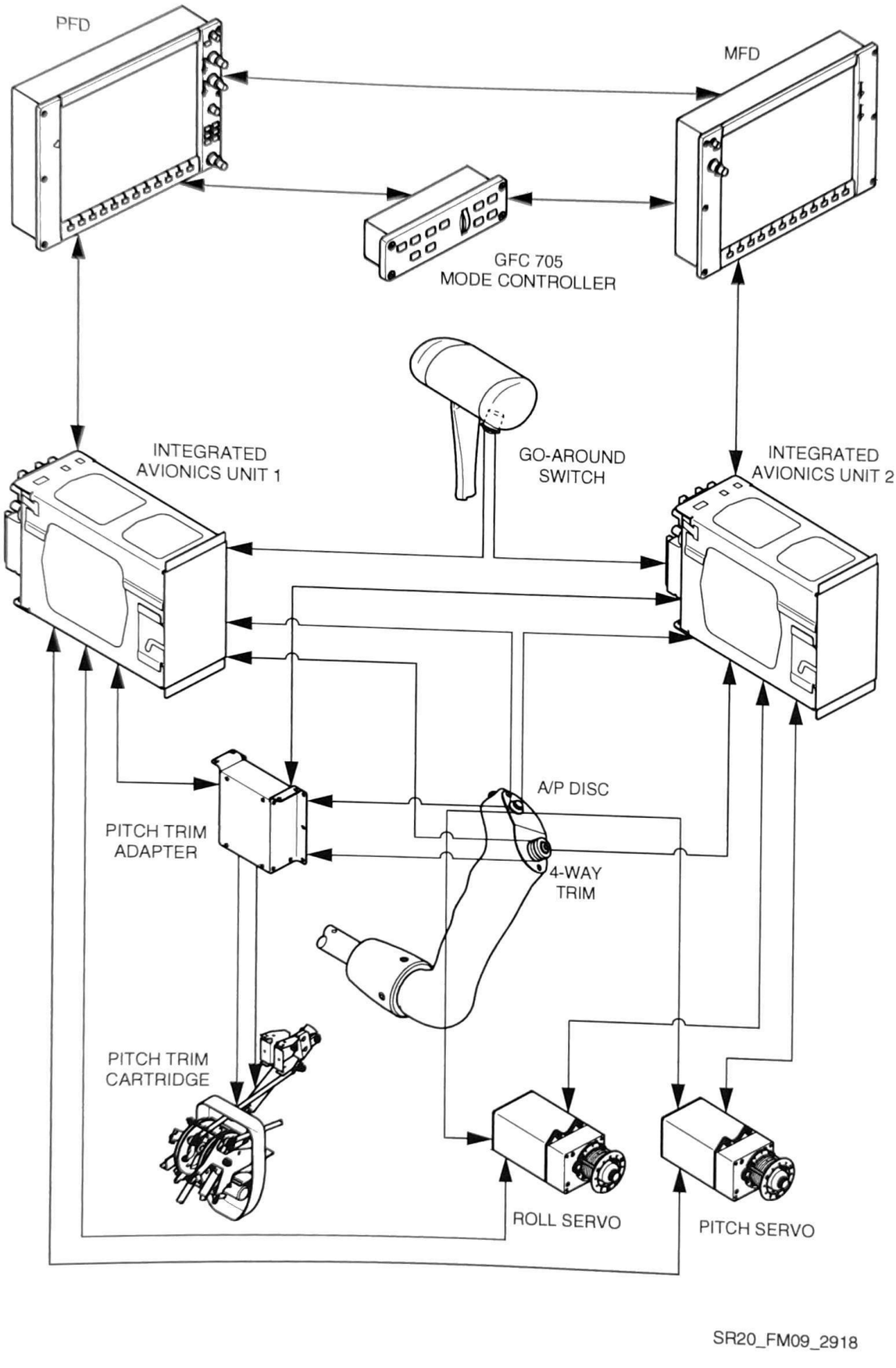


Figure - 1
GFC 700 Automatic Flight Control System Schematic

GFC 705 AFCS Mode Controller

The GFC 705 AFCS Mode Controller, located in the upper section of the center console provides primary control of Autopilot modes. A pitch wheel is included for adjustment of pitch mode reference. 28 VDC for GFC 705 AFCS Mode Controller operation is supplied through 5-amp KEYPADS / AP CTRL circuit breaker on MAIN BUS 1.

All Autopilot mode selection is performed by using the mode select buttons and pitch wheel on the controller. Available functions are as follows:

HDG - Heading Button

The HDG hold button selects/deselects the Heading Select mode. Heading Select commands the Flight Director to follow the heading bug (selected with the HDG knob).

NAV - Navigation Button

The NAV button selects/deselects the Navigation mode. This provides lower gains for VOR enroute tracking and disables glideslope coupling for localizer or back course approaches and glideslope coupling for GPS approaches. This button is also used to couple to the GPS.

APR - Approach Button

The APR button selects the Approach mode. This provides higher gains for VOR approach tracking and enables glideslope coupling for ILS approaches and GPS coupling for LPV (Localizer Performance with Vertical Guidance) and LNAV +V approaches.

AP - Autopilot Button

The AP button engages/disengages the Autopilot.

LVL - Level Button

The LVL button engages the Autopilot (within the Autopilot Engagement Limits if not already engaged) and commands roll to zero bank angle and pitch to zero vertical speed. The LVL button will not engage, or will disengage, if the Stall Warning System is activated.

FD - Flight Director Button.

The FD button toggles the Flight Director activation. It turns on the Flight Director in the default pitch and roll modes if no modes were previously selected. Pressing the FD button with command bars in view, will deactivate the Flight Director and remove the command bars unless the Autopilot is engaged. If the Autopilot is engaged, the FD button is deactivated.

UP/DN - Pitch Wheel

The Pitch UP/DN Wheel on the controller is used to change the Flight Director pitch mode reference value. Each click of the wheel results in a step increase or decrease in the Flight Director pitch mode by the amount shown in the table below. The Pitch Wheel controls the reference for Pitch Hold (PIT), Vertical speed (VS), and Indicated Airspeed (IAS) FD modes. The reference value is displayed next to the active mode annunciation on the PFD. Go-Around and Glidescope modes are not controlled by the nose Pitch Wheel, however, use of the Pitch Wheel during Go-Around mode will cause reversion to Pitch Hold mode. The Pitch Wheel controls altitude reference when in altitude hold mode.

Flight Director Mode	Step Value
Default Pitch Hold (PIT)	0.50 Degree
Vertical speed (VS)	100 Feet per Minute
Indicated Airspeed (IAS)	1 Knot
Altitude Hold (ALT)	10 Feet

IAS - Indicated Airspeed Hold Button

The IAS button selects/deselects the Indicated Airspeed Hold mode.

ALT - Altitude Button

The ALT hold button selects/deselects the Altitude Hold mode.

VS - Vertical Speed Button

The VS button selects/deselects the Vertical Speed mode.

VNV - VNAV Button

The VNV button selects/deselects the Vertical Navigation mode.

Flight Management System Keyboard

The Flight Management System Keyboard, found in the center console below the AFCS mode controller, is the primary means for data entry for the MFD and is used to control NAV/COM Radios, transponder, and flight management system entry. Heading, course and altitude select are also provided.

28 VDC for Flight Management System Keyboard operation is supplied through the 5-amp KEYPADS / AP CTRL circuit breaker on MAIN BUS 1.

AFCS related functions are as follows:

HDG - Heading Knob.

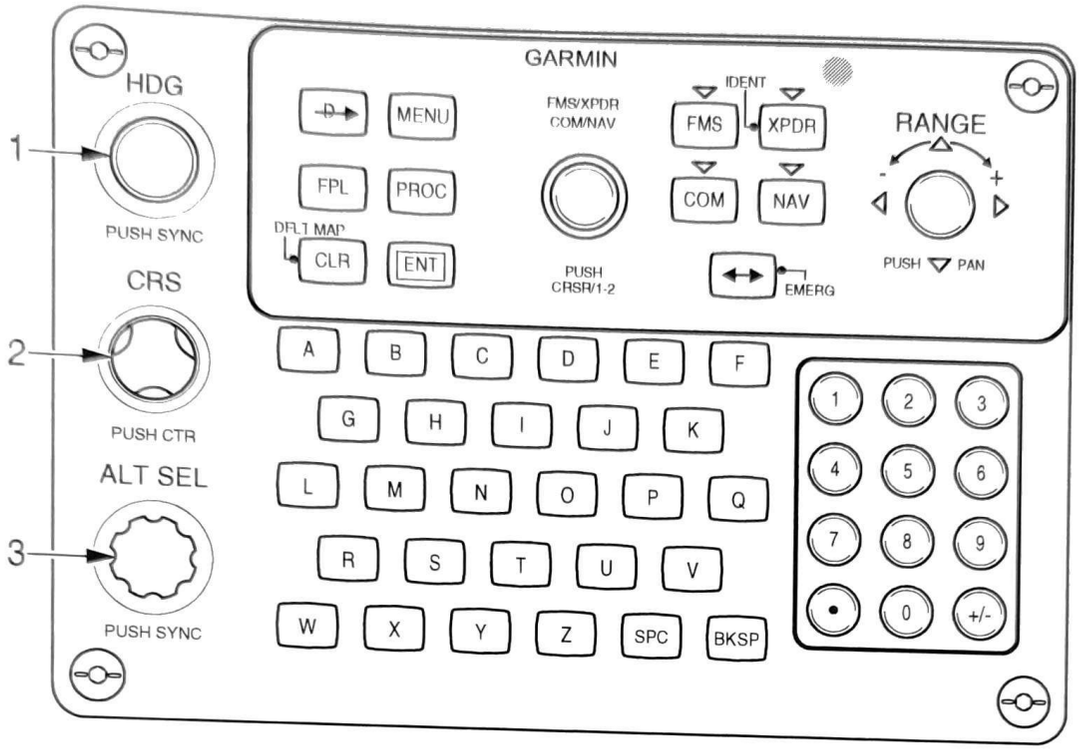
The HDG knob controls the selected heading bug on the HSI portion of the PFD. It provides the reference for heading select mode. Pushing the HDG knob synchronizes the selected heading to the current heading.

CRS - Course Knob

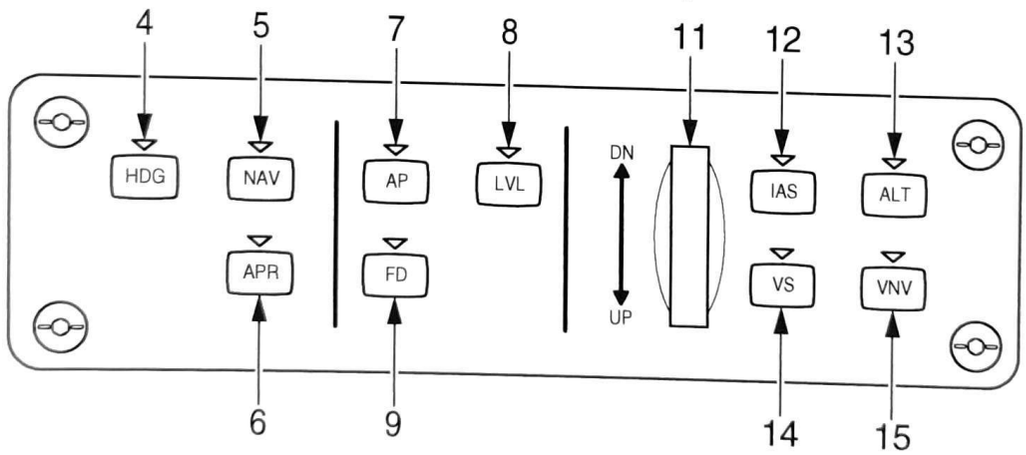
The CRS knob controls the course pointer on the HSI portion of the PFD. It provides the reference for FD navigation modes when the Flight Director is selected. Pushing the CRS knob re-centers the CDI and returns the course pointer to the bearing of the active waypoint or navigation station.

ALT SEL - Altitude Select Knob

The ALT knob controls the Selected Altitude, which is used as the reference for the altitude alerter and the altitude capture function. Pushing the ALT SEL knob synchronizes the selected altitude to the displayed altitude to the nearest 10 ft.



Flight Management System Keyboard



GFC 705 Mode Controller

Legend

1. Heading Selection
2. Course Selection
3. Altitude Selection
4. Heading Select Mode
5. Navigation Mode
6. Approach Mode
7. Autopilot
8. Wings Level
9. Flight Director
10. Pitch Wheel
11. Indicated Airspeed Hold
12. Altitude Hold
13. Vertical Speed Mode
14. Vertical Navigation Mode

SR20_FM09_2920

Figure - 2
FMS Keyboard and GFC 705 AFCS Mode Controller

Roll and Pitch Servo

The Roll Servo, located below the passenger seat, and the Pitch Servo, located below the baggage compartment, position the aircraft flight controls in response to commands generated by the Integrated Avionics Units Autopilot calculations.

28 VDC for Roll and Pitch Servo operation is supplied through the 5-amp AP SERVOS circuit breaker on MAIN BUS 1.

Integrated Avionics Units

The Integrated Avionics Units located behind the MFD and instrument panel, function as the main communication hubs to the Avionics System and GFC 700, linking the systems to the PFD and MFD displays. Each Integrated Avionics Unit receives air and attitude data parameters from the Air Data Computer and Attitude and Heading Reference System. Each Integrated Avionics Unit contains a GPS WAAS receiver, VHF COM/NAV/GS receivers, and system integration microprocessors. The AFCS function within the Integrated Avionics Units control the active and armed modes for the Flight Director, as well as Autopilot engagement. The Flight Director commands for the active modes are calculated and sent to the PFD for display and mode annunciation. The sensor data and Flight Director commands are also sent to the servos over a common serial data bus.

28 VDC for Integrated Avionics Unit 1 operation is supplied through the 7.5-amp COM 1 and 5-amp GPS NAV1 circuit breakers on the ESS BUS 1. 28 VDC for Integrated Avionics Unit 2 operation is supplied through the 7.5-amp COM 2 and 5-amp GPS NAV2 circuit breakers on the MAIN BUS 2.

Autopilot Disconnect Switch

The yoke mounted Autopilot Disconnect (AP DISC) Switch disengages the Autopilot and may also be used to mute the aural alert associated with an Autopilot Disconnect.

For ESP equipped aircraft, the Autopilot Disconnect Switch will also temporarily suspend the servo's from providing ESP correction forces, thus having an "interrupt" function. This may be useful to alleviate control forces if intentional maneuvers are necessary beyond ESP's engagement threshold (i.e., isolated training maneuvers).

Take Off / Go Around Button

The remote TO/GA switch, located on the left side of the power lever, selects the Takeoff or Go Around mode on the Flight Director. When the aircraft is on the ground, pressing the TO/GA switch engages the Flight Director command bars in Takeoff (TO) mode. When the aircraft is in the air, pressing the TO/GA switch engages the Flight Director command bars in Go Around (GA) mode and cancels all armed modes except ALT ARM (ALTS).

• Note •

For aircraft *without* USP, selection of the TO/GA switch will also disengage the autopilot.

For aircraft *with* USP, selection of TO/GA switch will not change autopilot engagement (i.e., if initially engaged, autopilot will remain engaged; if initially not engaged, autopilot will remain not engaged).

After TO/GA engagement, other roll modes may be selected and Autopilot engagement is allowed. However, an attempt to modify the pitch attitude with the Pitch Wheel will result in a reversion to PIT mode. Additionally, if in Approach mode, pressing the TO/GA switch resumes automatic sequencing of waypoints by deactivating the "SUSP" mode.

For aircraft with optional USP function, if power is insufficient to maintain go-around attitude, the Autopilot will enter Underspeed Protection Mode.

Pitch Trim Adapter

The Pitch Trim Adapter, located below the passenger seat, takes input from the trim switches, Integrated Avionics Units, and the pitch servos to allow the GFC 700 to drive the pitch trim cartridge.

28 VDC for Pitch Trim Adapter operation is supplied through the 2-amp PITCH TRIM circuit breaker on Main Bus #1.

Electric Pitch/Roll-Trim Hat Switch

The yoke mounted Electric Pitch Trim and Roll Trim Hat Switch allows the pilot to manually adjust aircraft trim when the Autopilot is not engaged.

Electronic Stability and Protection (Optional)

When installed, Electronic Stability and Protection (ESP) assists the pilot in maintaining the airplane in a safe flight condition. Through the use of the GFC 700 AFCS sensors, processors, and servos, ESP provides control force feedback, i.e. a "soft barrier", to maintain the aircraft within the pitch, roll, and airspeed flight envelope by automatically engaging one or more servos when the aircraft is near the defined operating limit.

This feature is only active when in flight and the GFC 700 Autopilot is off. The ESP engagement envelope is the same as the Autopilot engagement envelope and is not provided beyond the Autopilot engagement limits.

The pilot can interrupt ESP by pressing and holding the Autopilot Disconnect (AP DISC) button. If frequent maneuvers are necessary beyond the engagement threshold, such as commercial pilot training, the system can be disabled from AUX/SETUP 2 page. Disabling will cause the ESP OFF advisory to annunciate. The system can be re-enabled from the same page, or is automatically re-enabled at the next system power-up.

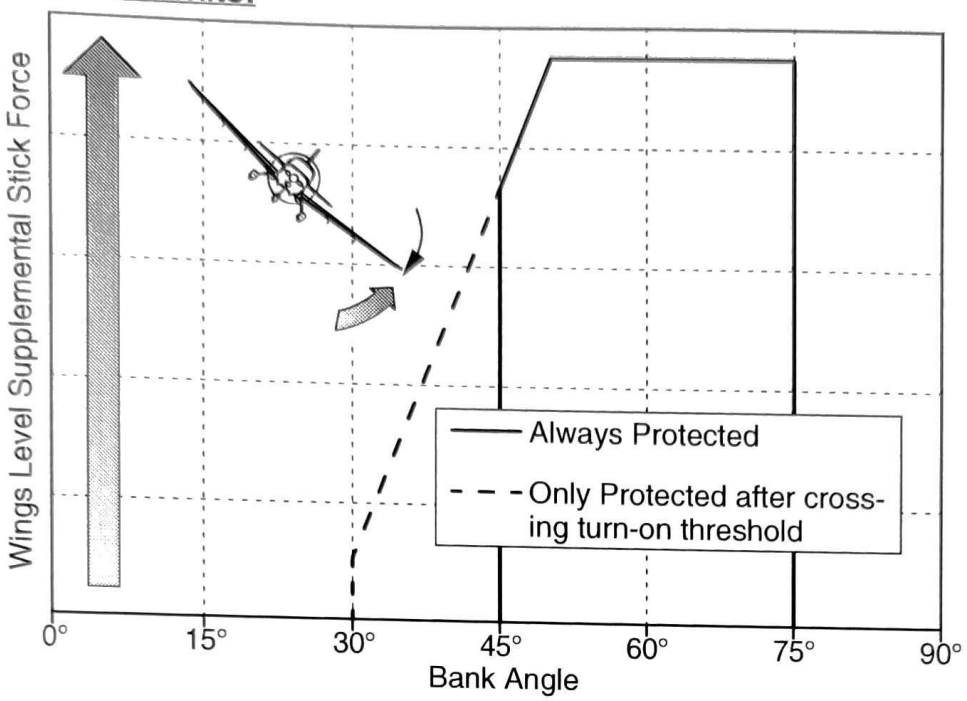
Pitch and Roll Modes

When the aircraft reaches the pitch and/or roll engagement limit, the system commands the servos to apply a supplemental stick force back toward the nominal attitude range. If the aircraft continues to pitch and/or roll away from the nominal attitude range, stick forces will increase with increasing attitude deviation until the maximum Autopilot engagement limits are reached - at which point ESP will disengage.

ESP attempts to return the aircraft to the nominal attitude range not to a specific attitude. As the attitude returns to the nominal range, the stick forces and attitude rate change are reduced until the aircraft reaches the disengagement threshold and ESP becomes inactive. The disengagement threshold is sized so that the transition from ESP being active to being inactive is transparent to the pilot.

Roll protection engagement limits are annunciated on the PFD as double ticks at 45° roll attitude. If the aircraft exceeds 45° roll attitude ESP becomes engaged and these indicators migrate to 30° roll attitude denoting the disengagement threshold - the point at which stick forces will be removed. No PFD annunciation is provided during pitch ESP engagement.

Roll Protection Limits:

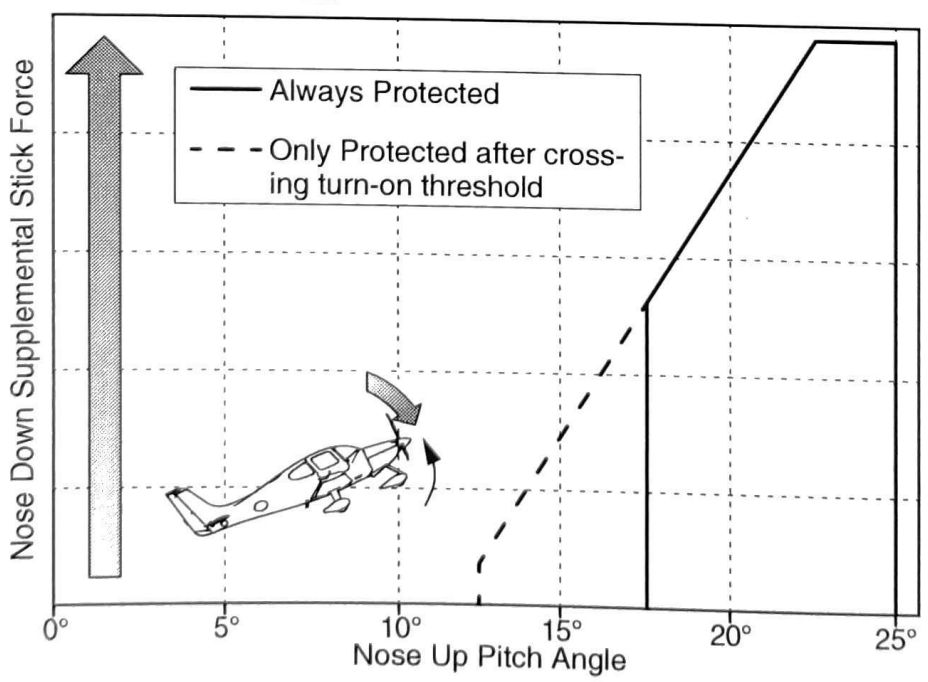


Engagement Limit: .....45°

Maximum Stick Force attained at .....50°

Disengagement Threshold (Zero Stick Force) .....30°

High Pitch Protection Limits

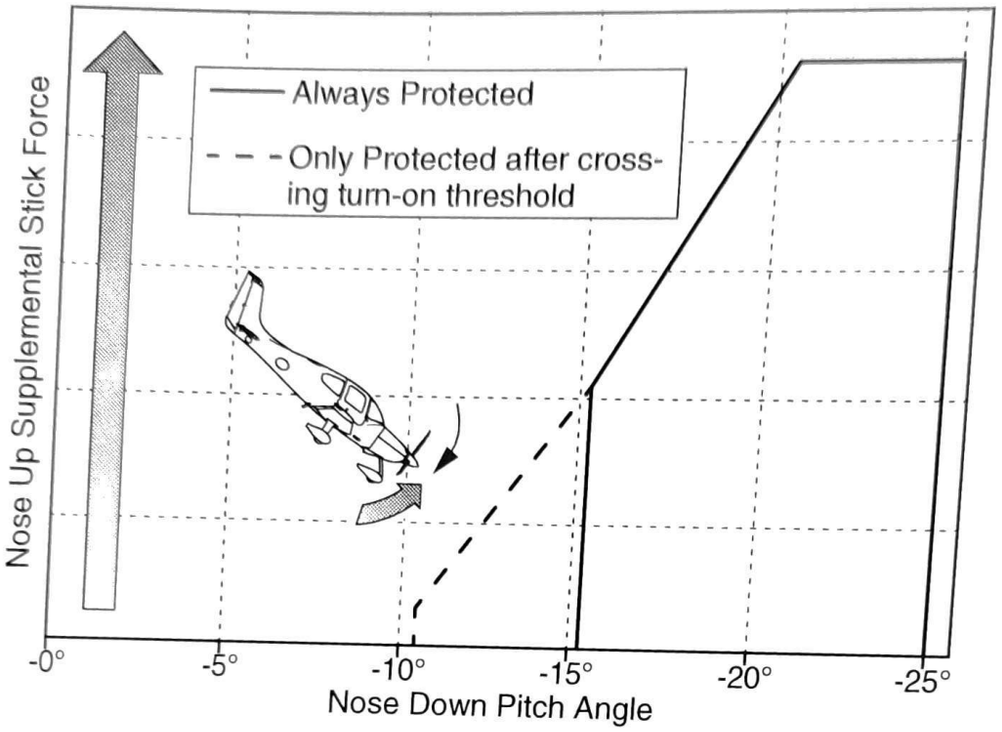


Engagement Limit: .....+17.5°

Maximum Stick Force attained at: .....+22.5°

Disengagement Threshold (Zero Stick Force): .....+12.5°

Low Pitch Protection Limits



Engagement Limit: ..... -15.5°

Maximum Stick Force attained at: ..... -20.5°

Disengagement Threshold (Zero Stick Force) ..... -10.5°

High Airspeed Mode

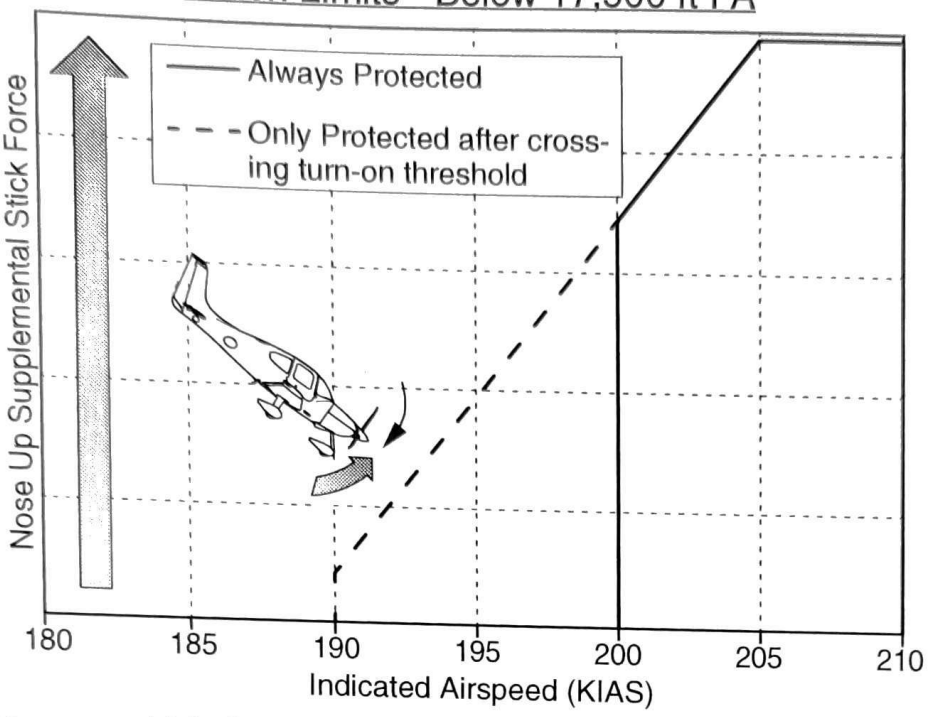
To protect against an overspeed condition, the High Airspeed Mode uses engagement limits, thresholds, and stick forces similar to those used for the pitch and roll modes, but is instead triggered by airspeed and controlled by pitch attitude. When the aircraft reaches the ESP engagement limit, the system commands the pitch servo to apply a supplemental stick force back toward the nominal airspeed range.

• Note •

For turbocharged equipped aircraft, V_{ne} reduces above 17,500 ft PA to follow a Mach limit of 0.42.

At high altitudes Mach number determines the threshold.

High Airspeed Protection Limits - Below 17,500 ft PA



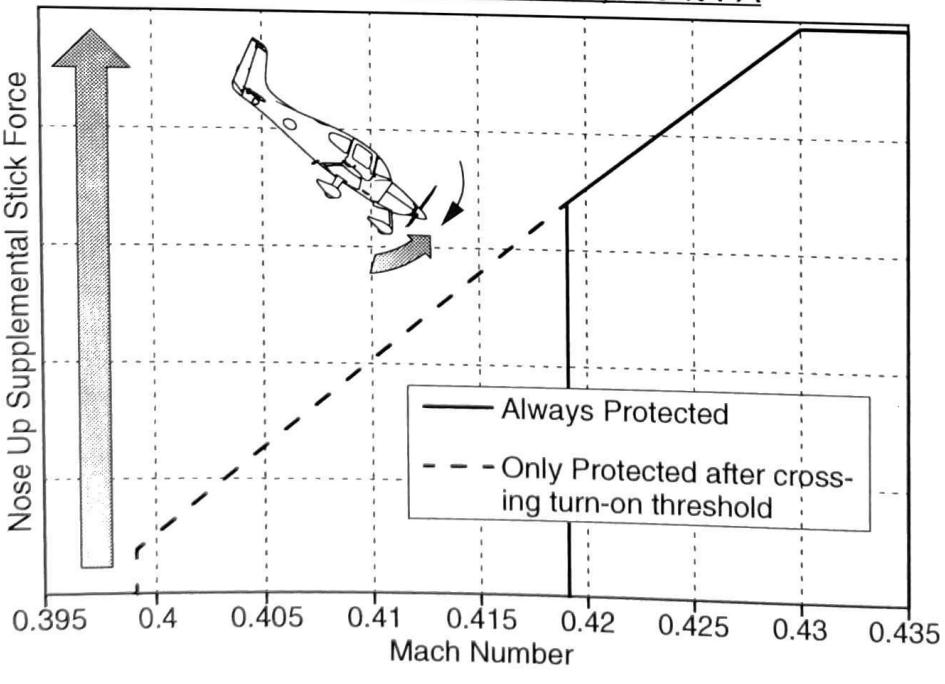
SR22_FM09_3405

Engagement Limit: ..... 200 KIAS

Maximum Stick Force attained at: ..... 205 KIAS

Disengagement Threshold (Zero Stick Force) ..... 190 KIAS

High Airspeed Protection Limits - Above 17,500 ft PA



SR22_FM09_3428

Engagement Limit: ..... Mach 0.419

Maximum Stick Force attained at: ..... Mach 0.430

Disengagement Threshold (Zero Stick Force) ..... Mach 0.399

Underspeed Protection Mode (Optional)

When installed, to discourage aircraft operation below minimum established airspeeds the AFCS will automatically enter Underspeed Protection Mode when the Autopilot is engaged and airspeed falls below the minimum threshold. If aircraft stall warning system is not operational, autopilot underspeed protections that depend on that system will also not be functional (affects altitude critical modes only: ALT, GS, GP, TO, and GA).

As described in the following table, when the aircraft reaches predetermined airspeeds a yellow MINSPD annunciation will appear above the airspeed indicator and a single aural "AIRSPEED" will sound to alert the pilot to an impending underspeed condition.

Anti-Ice System	Flaps	MINSPD Annunciations	Aural Alert Annunciations
OFF	0%	80 KIAS	85 KIAS
	50%	76 KIAS	80 KIAS
	100%	70 KIAS	80 KIAS
ON	0%	85 KIAS	90 KIAS
	50%	81 KIAS	85 KIAS

The system differentiates two types of vertical modes based on which vertical Flight Director mode is selected; Altitude-Critical - where terrain hazards are more probable and minimized altitude loss is critical and Non-Altitude Critical - which generally correspond with activities that can afford exchange of altitude for airspeed without introducing terrain hazards.

Altitude-Critical Mode (ALT, GS, GP, GA, TO)

Upon stall warning system activation, the AFCS will abandon its Flight Director and Autopilot reference modes and sacrifice altitude for airspeed. The system will hold wings level and airspeed will progressively increase by 1 knot per second until stall warning becomes inactive. The system will then increase airspeed an additional 2 knots above the speed at which the stall warning discontinued. Recovery may be initiated in one of three ways:

1. Add sufficient power to recover to a safe flight condition.

   If a small power addition is made, the AFCS will pitch the aircraft to maintain speed reference. If a large power addition is made the

AFCS recognizes it via acceleration and the AP/FD will transition to a nose-up pitch to aggressively return to original altitude or glidepath/slope.

2. Disengage Autopilot via AP DISC and manually fly.
3. Change Autopilot modes to one in which the AFCS can maintain (such as VS with a negative rate).

Non-Altitude Critical Mode (VS, PIT, VNAV, LVL, IAS)

For all non-altitude critical modes the Autopilot will maintain its original reference (VS, PIT, etc...) until airspeed decays to a minimum airspeed (MINSPD). Crew alert and annunciation during a non-altitude critical underspeed event are similar to an altitude-critical event, except that;

- Stall warning may not be active. Depending on load tolerances, the AP/FD may reach the minimum airspeed reference and take underspeed corrective action before stall warning occurs. If stall warning does coincide or precede the aircraft reaching its minimum airspeed reference, it has no influence - only airspeed affects the AP/FD in non-altitude critical events.
- The originally selected lateral mode remains active.

Upon reaching minimum airspeed, the AFCS will abandon its Flight Director and Autopilot reference modes and maintain this airspeed until recovery. As with altitude-critical modes, available options for recovery are add power, decouple/manually fly, or change Autopilot modes.

When adding power, unlike the altitude-critical modes, which performs an aggressive recovery, the AP/FD will maintain MINSPD until the original reference can be maintained. Non-altitude critical modes will maintain the originally selected lateral mode (HDG, NAV, etc...).

Coupled Go-Around

Airplanes equipped with Underspeed Protection Mode are capable of flying fully coupled go-around maneuvers. Pressing the GA button on the throttle will not disengage the Autopilot. Instead, the Autopilot will attempt to capture and track the Flight Director command bars. If insufficient airplane performance is available to follow the commands, the AFCS will enter Altitude-Critical Mode when the stall warning sounds.

Hypoxia Detection and Automatic Descent (Optional)

When installed, the AFCS Hypoxia Detection and Automatic Descent function monitors pilot inputs to the Integrated Avionics System to identify if a pilot has become incapacitated due to hypoxia, and upon determination, automatically descends to a lower altitude where pilot recovery is more probable. The feature is only available when the GFC 700 Autopilot is engaged and the aircraft is above 14,900 ft PA.

Mode of Operation

Pilot interaction with the Integrated Avionics System is monitored by detecting key presses and turns of the knobs. If the pilot has not made a system interaction within a defined interval - based on altitude and time of useful consciousness - the AFCS prompts the pilot for a response with an ARE YOU ALERT? CAS Advisory.

If no pilot response to the Advisory is detected, after one minute the AFCS annunciates an HYPOXIA ALERT Caution and a double chime aural alert.

After one minute, if no response to the Caution is detected the system annunciates an AUTO DESCENT Warning and continuous aural warning tone.

Lack of response after one minute of Warning annunciation is considered evidence of pilot incapacitation. The AFCS will automatically engage emergency descent mode (EDM) as follows:

1. EDM will annunciate in the AFCS status window.
2. The altitude bug will be automatically set to 14,000 ft indicated.
3. The airspeed bug will be set to the maximum commandable Autopilot speed - i.e., the lesser of 185 KIAS or Mach 0.420.
4. The Autopilot vertical mode will change to IAS, and initiate a descent to intercept 14,000 ft indicated.

Once descent begins only Autopilot Disconnect (AP DISC) will interrupt this process. Autopilot lateral mode remains unchanged throughout the descent and the aircraft will continue on its previously selected course or heading. After reaching 14,000 ft indicated, the aircraft will maintain this flight level for 4 additional minutes. If the pilot does not acknowledge the Warning and resume control of the aircraft, the AFCS will automatically perform a secondary descent to 12,500 ft PA at 185 KIAS. An altitude of 12,500 ft PA will be maintained if the pilot remains unresponsive

Annunciation System

• Note •

Refer to the Cirrus Perspective Pilot's Guide for a detailed description of the annunciator system and all warnings, cautions and advisories.

Crew Alerting System

AFCS alerts are displayed in the Crew Alerting System (CAS) window located to the right of the altimeter and VSI. AFCS annunciations are grouped by criticality and sorted by order of appearance with the most recent message on top. The color of the message text is based on its urgency and required action:

- Warning (red) – Immediate crew awareness and action required.
- Caution (yellow) – Immediate crew awareness and future corrective action required.
- Advisory (white) – Crew awareness required and subsequent action may be required.

In combination with the CAS Window, the system issues an audio alert when specific system conditions are meet and an expanded description of the condition is displayed in the Alerts Window located in the lower RH corner of the PFD.

• Note •

For specific pilot actions in response to AFCS alerts, refer to Section 3A - Abnormal Procedures.

AFCS Status Box and Mode Annunciation

Flight Director mode annunciations are displayed on the PFD when the Flight Director is active. Flight director selection and Autopilot statuses are shown in the center of the AFCS Status Box. Lateral Flight Director modes are displayed on the left and vertical on the right. Armed modes are displayed in white and active in green.

AFCS status annunciations are displayed on the PFD above the Airspeed and Attitude indicators. Only one annunciation may occur at a time. Messages are prioritized by criticality.

Section 8 – Handling, Service, & Maintenance

No Change.

Section 10 – Safety Information

No Change.

Pilot's Operating Handbook and

FAA Approved Airplane Flight Manual Supplement

for the

Garmin Terrain Awareness/Warning System

When the Garmin Terrain Awareness/Warning System is installed on the aircraft, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic Pilot's Operating Handbook.

FAA Approved Joseph C Mieos **Date** 18 Dec 2008

for Charles Smalley, Acting Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The airplane is equipped with the Garmin Terrain Awareness/Warning System that performs the functions of a Class C Terrain Awareness and Warning System (TAWS) in accordance with TSO C151b.

Refer to the Cirrus Perspective Integrated Flight Deck Pilot's Guide for a additional information on the system and its operating modes.

Section 2 - Limitations

1. The Cirrus Perspective by Garmin Integrated Avionics System Pilot's Guide for the SR20 and SR22, P/N 190-00820-02 Rev A or later must be immediately available to the pilot during flight. The software status stated in the pilot's guide must match that displayed on the equipment.
2. Do not use Terrain Awareness and Warning System for navigation of the aircraft. The TAWS is intended to serve as a situational awareness tool only and may not provide the accuracy fidelity on which to solely base terrain or obstacle avoidance maneuvering decisions.
3. To avoid getting unwanted alerts, TAWS must be inhibited when landing at an airport that is not included in the airport database.

• Note •

Only vertical maneuvers are recommended responses to warnings and cautions unless operating in VMC or the pilot determines, using all available information and instruments, that a turn, in addition to the vertical escape maneuver, is the safest course of action. During certain operations, warning thresholds may be exceeded due to specific terrain or operating procedures. During day VFR flight, these warnings may be considered as cautionary.

Pilots are authorized to deviate from their current air traffic control (ATC) clearance to the extent necessary to comply with a TAWS warning.

Section 3 - Emergency Procedures

To prevent unwanted aural alerting during ditching or other off-airport landings, inhibit the Terrain Awareness System functions by selecting the INHIBIT Softkey on the TAWS Page.

Response To TAWS Warnings

Red PULL UP Warning

PULL UP

Aural "PULL UP" Warning
Aural "TERRAIN AHEAD" Warning
Aural "OBSTACLE AHEAD" Warning

1. Level the wings, simultaneously adding full power.
2. Increase pitch attitude to 15 degrees nose up.
3. Adjust pitch attitude to ensure terrain clearance while respecting stall warning. If flaps are extended, retract flaps to the UP position.
4. Continue climb at best angle of climb speed (V_X) until terrain clearance is assured.

Section 3A - Abnormal Procedures

Response To TAWS Cautions

Amber TERRAIN Caution

TERRAIN

Aural "TERRAIN AHEAD" Caution
Aural "OBSTACLE AHEAD" Caution
Aural "CAUTION, TERRAIN" Caution
Aural "SINK RATE" Caution
Aural "DON'T SINK" Caution
Aural "TOO LOW, TERRAIN" Caution

1. Take positive corrective action until the alert ceases. Stop descending, or initiate a climb turn as necessary, based on analysis of all available instruments and information.

Section 4 - Normal Procedures

Normal operating procedures are outlined in the Cirrus Perspective Integrated Flight Deck Pilot's Guide.

Alert Priority

When any of the TAWS aural alerts are in progress, all aural TRAFFIC alerts are inhibited.

Advisory Callout

The advisory callout "*FIVE HUNDRED*", occurs at approximately 500 feet AGL.

Section 5 - Performance

No Change.

Section 6 - Weight & Balance

No Change.

Section 7 - System Description

The Terrain Awareness/Warning System receives data from the GPS receiver to determine horizontal position and altitude and compares this information to the onboard terrain and obstacle databases to calculate and "predict" the aircraft's flight path in relation to the surrounding terrain and obstacles. In this manner, TAWS provides advanced alerts of predicted dangerous terrain conditions via aural alerts communicated thru the pilot's headset and color-coded terrain annunciations displayed on the PFD.

Refer to the Cirrus Perspective Integrated Flight Deck Pilot's Guide for a additional information on the system and its operating modes.

System Constraints

System test at startup: Aural tone lasting approximately one second indicates successful completion of internal system test.

Red TAWS FAIL Warning

TAWS FAIL

Aural "TAWS SYSTEM FAILURE" Warning

1. TAWS power-up self-test has failed or TAWS has detected problems with database validity, hardware status, and/or GPS status.

White TAWS N/A Advisory

TAWS N/A

Aural "TAWS NOT AVAILABLE" Advisory

Should the 3-D GPS navigation solution become degraded or if the aircraft is out of the database coverage area, the annunciation 'TAWS N/A' is generated in the annunciation window and on the TAWS Page. The aural message "TAWS NOT AVAILABLE" is generated. When the GPS signal is re-established and the aircraft is within the database coverage area, the aural message "TAWS AVAILABLE" is generated.

Geometric Altitude versus Measured Sea Level

TAWS uses information provided from the GPS receiver to provide a horizontal position and altitude. This data serves as the reference for color-coding for the TAWS Page and as an input to the TAWS Hazard Avoidance algorithms. Because it is derived from GPS, Geometric Altitude may differ from corrected barometric altitude. Therefore, Geometric Altitude may be in error by as much as 100 ft and should not be used for navigation.

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Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

14 Code of Federal Regulations (CFR) Part 135 Commercial Operation of Small Aircraft Electrical Loading Shedding Procedure

Aircraft Serials with Avidyne PFD/MFD Avionics

This supplement provides the necessary guidance for load shed in the event of a primary electrical generating source failure in accordance with 14 CFR Section 135.163(f).

When the Cirrus Design SR20 aircraft is being operated under the provisions 14 CFR 135, this Supplement is applicable and must be inserted in the Supplements section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook (Handbook). Information in this Supplement adds to, supersedes, or deletes information in the basic handbook.

FAA Approved Joseph C Mieos **Date** 16 June 2009
for Charles Smalley, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

No Change.

Section 2 - Limitations

Kinds of Operation Equipment List

Aircraft Serial Numbers 1005 thru 2016 before SB2X-33-03 Rev 1 or later, LED Position/Strobe Assembly Installation:

System, Instrument, and/or Equipment	Kinds of Operation			
	VFR Day	VFR Nt.	IFR Day	IFR Nt.
Lights				
LED Position/Strobe Assembly	1	1	1	1

Section 3 - Emergency Procedures

ALT 1 Failure (Alt 1 Light Steady)

Steady illumination indicates failure of alternator 1. Attempt to restore alternator. If alternator cannot be restored, it will be necessary to divert the flight to land within one hour.

Loads on Main Buses, Non-essential Buses, and Ventilation Buses must be reduced and available equipment on these buses managed as necessary for flight conditions. Equipment essential for continued safe flight and landing will be powered by Alternator 2 and Battery 2 through the Essential Buses. However, depending upon flight conditions, additional equipment is required.

For 14 CFR 135 Operations, the load shedding and equipment management in the following procedure will provide at least one-hour operating time on aircraft with a fully charged, 13.6 amp-hour battery (available from Cirrus Design Spare Parts Sales) in good condition for equipment required for emergency operation under 14 CFR 135.163(f) and meets the requirements of that paragraph.

• Note •

Circuit breakers that "PULL" should only be pulled and not reset.

1. ALT 1 Master Switch ..... OFF
2. Alternator 1 Circuit Breaker..... Check and Reset
3. ALT 1 Master Switch ..... ON

If alternator does not reset

4. ALT 1 Master Switch ..... OFF
5. Notify ATC of Alternator Failure and that transponder may be switched off depending upon flight conditions.
6. Autopilot ..... ENGAGE
   Use of autopilot will reduce work load and provide trim function. Expect a slight pitch change when autopilot is disengaged.
7. NAV Lights ..... ON

8. Reduce loads as required for flight conditions:
   a. Ventilation Fan ..... OFF
   b. Convenience Outlet ..... Disconnect appliance
   c. Audio Panel ..... OFF
      COM 1 will be supplied to pilot's headset. Communication with passengers through audio panel will not be available.
   d. GPS/COM 2 ..... OFF
   e. Fuel Pump ..... OFF
      except for landing and switching tanks.
   f. Panel and Overhead Lights ..... OFF
   g. Landing Light ..... OFF

• WARNING •

Do not shed loads from Avionics Essential, Essential, or Essential 2 Bus row.

   h. Skywatch/TAWS Circuit Breaker ..... PULL
   i. Weather/Stmscpe Circuit Breaker ..... PULL
   j. MFD Circuit Breaker ..... PULL

9. Assess flight conditions:

   If in Visual Meteorological Conditions (VMC):

   a. Pitot Heat ..... OFF

   If in Instrument Meteorological Conditions (IMC) or visible moisture:

   a. Pitot Heat ..... ON
   b. Strobe Lights ..... OFF

10. Replan flight for a landing as soon as practical (within one hour) at a landing field with visual minimums. Increase landing speed 10 KIAS for flaps up. Do not use landing lights.

Section 3A - Abnormal Procedures

No Change.

Section 4 - Normal Procedures

No Change.

Section 5 - Performance Data

No Change.

Section 6 – Weight and Balance

No Change.

Section 7 – Airplane and Systems Description

No Change.

Section 8 – Handling, Service, & Maintenance

No Change.

Section 9 – Supplements

No Change.

Section 10 – Safety Information

No Change.

Ryan International Corporation
4800 Evanswood Drive
Columbus, Ohio 43229
A subsidiary of Avidyne Corporation

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

CIRRUS DESIGN MODEL SR20, SR22, & SR22T

SERIAL NUMBER: 2229

REGISTRATION NUMBER: N230WA

AVIDYNE TAS PROCESSOR PART NUMBER: (Check one)

(9900BX) 70-2420[-X]	☐
70-2420[-X TAS600]	☐
70-2420[-X TAS610]	☑
70-2420[-X TAS620]	☐

This Supplement must be included with the FAA Approved Flight Manual/Pilot's Operating Handbook when the Avidyne/Ryan International Corporation, 9900BX Traffic and Collision Alert Device or Avidyne TAS600, TAS610 or TAS620 (identified collectively as TAS600 series) is installed in accordance with Supplemental Type Certificate SA02013CH.

The information contained within this Airplane Flight Manual Supplement supersedes or is in addition to those elements listed. For Limitations, Normal Procedures, Abnormal/Emergency Procedures and Performance Data not contained within this Supplement, consult the Airplane Flight Manual/Pilot's Operating Handbook.

FAA APPROVED: for Steven L. Lardinois, Manger
Systems and Flight Test Branch
Chicago Aircraft Certification Office
Des Plaines, IL 60018

FAA APPROVED: MAY 04 2010

Ryan International Corporation
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A subsidiary of Avidyne Corporation

LOG OF REVISIONS

Rev	Description	Date	FAA Approved
0	Initial Release	N/A	N/A
1	Added to II (B)	N/A	N/A
2	Added table of displays	N/A	N/A
3	Added Avidyne Manual and traffic display description	N/A	N/A
4	Changes to Figure 1 and control information	N/A	N/A
5	Remove references to Avidyne Display	N/A	N/A
6	Added references to Avidyne Display added TAS600 series	7/23/07	Smalley
7	Added SR22T	MAY 0 4 2010	for ACE-117C

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Ryan International Corporation
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LIMITATIONS

The TAS 600 Series Traffic Advisory System Pilot's Operating Handbook, Part Number 32-2352, Revision 6, or subsequent, should be referred to for operating instructions. It must be kept accessible to the flight crew at all times.

A. Altitude information provided by the Avidyne TAS is advisory only and is not to be used for dispatch purposes.

B. Federal Regulations state that "When an ATC clearance has been obtained, no pilot in command may deviate from that clearance, except in an emergency, unless he obtains an amended clearance." Traffic information provided by the Avidyne TAS does NOT relieve the pilot in command of this responsibility.

C. Refer to Pilot's Handbook, Part Number 32-2352, Revision 6, or subsequent, for other appropriate limitations.

D. This AFM Supplement is intended for use with the TAS processor part number (70-2420) suffix of -[8] (-[8 TAS600], -[8 TAS610], -[8 TAS620] and subsequent). The numbers and letters may increment from time to time in accordance with Technical Standard Order procedures and are minor changes.

E. Each Avidyne TAS is limited in the display of Other Traffic, in range and altitude. The following table shows the display limitations. If the TAS is operated above Maximum Operating Altitude no traffic, including Traffic Advisories and Proximity Traffic will be announced or displayed. See the Avidyne TAS Pilot's Handbook for more information.

The TAS Systems are limited in the following ways:

TAS Processor Part Number	70-2420-[XTAS600]	70-2420-[XTAS610]	70-2420-[XTAS620] and 70-2420-[X] Model9900BX
Display Range	7 nm	12 nm	21 nm
Vertical Filter of displayed traffic	±3500 feet	±3500 feet	±9900 feet
Maximum Operating Altitude	18,500 ft.	25,000 ft.	55,000 ft.
Traffic Alert Limits	TSO-C147 specified warning times	TSO-C147 specified warning times	TSO-C147 specified warning times

NORMAL PROCEDURES

Reference to Pilot's Handbooks:

1) The following pilot's handbooks should be referred to for operating instructions.
   a) The TAS 600 Series Traffic Advisory System Pilot's Operating Handbook, Part Number 32-2352, Revision 6, or subsequent.
   b) Garmin 400/500 Series Display Interfaces Pilot's Guide Addendum, Part Number 190-00140-10, Revision D, or subsequent.
   c) Flight Max EX5000C or Flight Max EX3000C Multi-Function Displays Pilot's Guide for the Cirrus SRV, SR20 & SR22, Part Number 600-00108-000 Rev 03 or subsequent.

2) The following general information pertains to all multi-function displays that show the TAS600 Series traffic data:
   a) Intruding aircraft symbols connote the level of threat to the host aircraft. Each Traffic Alert (TA) is depicted with an amber filled circle (●); each Proximate Alert (PA) is depicted with a cyan filled diamond (◆); Other Traffic (OT) is depicted with an open cyan diamond (◇). (Note: The diamonds are white on the Garmin displays.)
   b) If displayed traffic is transmitting altitude information, then the vertical speed and relative altitude from the host aircraft is displayed. Note: The vertical speed arrow indicates the intrinsic climb or descent rate of the traffic, *not* the relative vertical closure or separation with respect to the host.
   c) If the vertical speed of an intruder is greater than or equal to 500 feet per minute, a vertical trend arrow is displayed to the immediate right of the symbol. An up arrow (↑) indicates the traffic is ascending and a down arrow (↓) indicates the traffic is descending. If the traffic's vertical speed is less than 500 ft/min, or if the intruder is not transmitting altitude data, no arrow is displayed.
   d) The altitude separation of the intruder from the host is displayed in hundreds of feet using two digits. A plus sign (+) precedes the digits if the intruder is above the host, and a minus sign (-) if the intruder is below the host. No sign and "00" appears if the intruder is at the same altitude as the host. If the intruder is above the host, then the text for the relative altitude is displayed directly above the traffic symbol; otherwise, the relative altitude text is displayed below the traffic symbol. If the intruder is not reporting altitude data, relative altitude is not displayed.
   e) Both the relative altitude and the vertical speed arrow are displayed in the same color as the corresponding symbol (amber for TA's, cyan for PA's and OT's).

3) The following Traffic Function control information is to be used in connection with the Garmin 430:
   a) To access the traffic page from the NAV mode of the Garmin 430, turn the small right knob to the third (traffic) page.
   b) Intruders are displayed as they are received from and identified by the TAS600 series. The threat level assigned to an intruder is the threat level specified by the sensor when it transmits the intruder data. Threat data, range, bearing, and relative altitude are presented.
   c) Traffic Indications - Shows traffic symbol relative to current position and includes relative altitude (when available) with respect to airplane symbol.

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NORMAL PROCEDURES Cont'd

d) Traffic Mode: When a Traffic Advisory (TA) is reported from the 9900BX traffic sensor, the MFD displays the TA using a yellow circle symbol.
e) More information is available in the Garmin 400/500 Display Interfaces Addendum.
f) Overlay of traffic on the moving map requires heading input. The heading input can be determined by the three letter abbreviation located at approximately the one o'clock position of the outer ring on the traffic page. TRK indicates GPS track and HDG indicates heading input. If HDG is displayed, then traffic information should be available as an overlay on the moving map.
g) The audio volume for the TAS600 series may be adjusted by accessing the traffic page on the Garmin display. To accomplish this from the traffic page;
    i) Press menu
    ii) Select set-up
    iii) Press enter
    iv) Use the large knob to highlight the volume control and press enter
    v) Turn the small right knob to increase or decrease volume
h) The Approach Mode can be enabled when a destination airport is selected by selecting the traffic page, then press the Menu button. Press enter to acknowledge the prompt to enable the Approach Mode.

Built in Test

4) The TAS600 system provides a continuous built-in test. If the traffic display is shown on the Garmin displays or the Avidyne display with no warning conditions, then the system self tests correctly. For additional information refer to the TAS600 Series Pilot's Operating Handbook.

Circuit Breaker

5) The 3-amp circuit breaker (marked traffic) is located on a non-essential bus in the circuit breaker panel. The circuit breaker panel is on the pilot's side of the pedestal.

ABNORMAL/EMERGENCY PROCEDURES

1) No Change.

PERFORMANCE DATA

1) No Change.

Garmin International, Inc.
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FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT
or
SUPPLEMENTAL AIRPLANE FLIGHT MANUAL
for the
Garmin GTX 33X and GTX 3X5 Transponders with ADS-B
as installed in

Cirrus SR-20

Make and Model Airplane

Registration Number: N230WA Serial Number: 2229

This document serves as an FAA Approved Airplane Flight Manual Supplement or Supplemental Airplane Flight Manual when the GTX 33X or GTX 3X5 with ADS-B is installed in accordance with Supplemental Type Certificate SA01714WI. This document must be incorporated into the FAA Approved Airplane Flight Manual or provided as an FAA Approved Supplemental Airplane Flight Manual.

The information contained herein supplements the FAA approved Airplane Flight Manual. For limitations, procedures, loading and performance information not contained in this document, refer to the FAA approved Airplane Flight Manual, markings, or placards.

FAA Approved By: JR Brownell

JR Brownell
ODA STC Unit Administrator
Garmin International, Inc.
ODA-240087-CE

Date: 6/16/2021

LOG OF REVISIONS

Revision Number	Page Date	Page Number	Description	FAA Approved
1	05/01/2013	All	Complete Supplement	*Robert Murray* Robert Murray ODA STC Unit Administrator Garmin International, Inc. ODA-240087-CE Date: *05/01/2013*
2	03/08/2016	All	New supplement format with GTX 3X5 added.	*Michael Warren* Michael Warren ODA STC Unit Administrator Garmin International, Inc. ODA-240087-CE Date: *03/08/2016*
3	12/07/2017	All	Updated SW versions and removed section 3.2.3. Updated section 2.2 Corrected PED FAR reference and additional minor corrections.	*Erik Frisk* Erik Frisk ODA STC Unit Administrator Garmin International, Inc. ODA-240087-CE Date: *12/21/2017*
4	09/09/2019	4, 6, 7, 9, 11, 13, 14, 18	Added GTX diversity units, updated SW versions, expanded allowed remote control panels, and incorporated other minor changes	*JR Brownell* JR Brownell ODA STC Unit Administrator Garmin International, Inc. ODA-240087-CE Date: *09/09/2019*
5	06/16/2021	10, 11, 14, 18	Updated GTX 3X5 Main software to version 2.60, added GI 275 as a control display and GPS 175/GNC 355 as a GPS source	See cover page 1

Table of Contents

Section 1. GENERAL

1.1 GTX 33X

The Garmin GTX 33X family consists of the GTX 330 ES and GTX 33 ES (Non-Diversity Mode S Transponders) and the GTX 330D ES and GTX 33D ES (Diversity Mode S Transponders). The ES option of any of the transponders provides ADS-B extended squitter functionality.

All Garmin GTX 33X transponders are a radio transmitter/receiver that operates on radar frequencies, receiving ground radar or TCAS interrogations at 1030 MHz and transmitting a coded response of pulses to ground-based radar on a frequency of 1090 MHz. Each unit is equipped with IDENT capability to initiate the SPI (special position identification) pulse for 18 seconds and will reply to ATCRBS Mode A, Mode C and Mode S All-Call interrogation. Interfaces to the GTX 33X are shown in the following block diagrams.

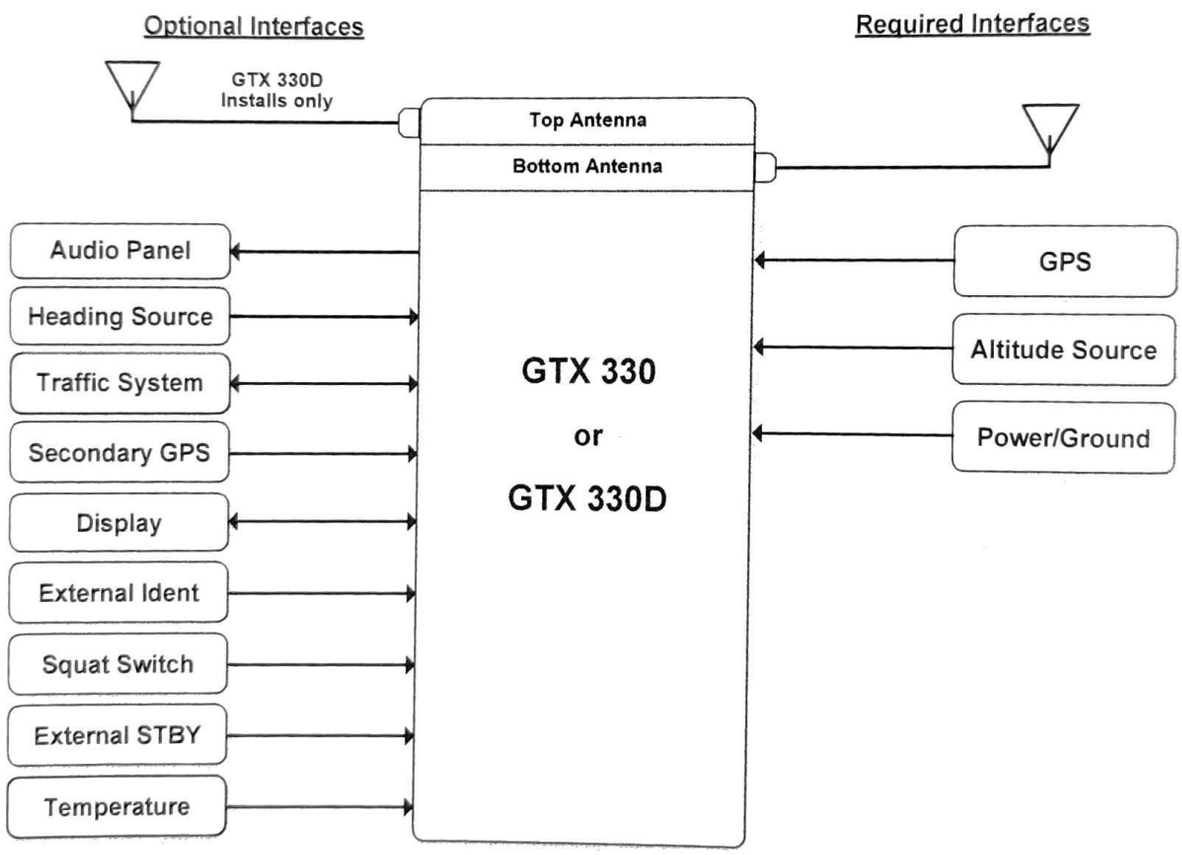

Figure 1 – GTX 330 or GTX 330D Interface Summary

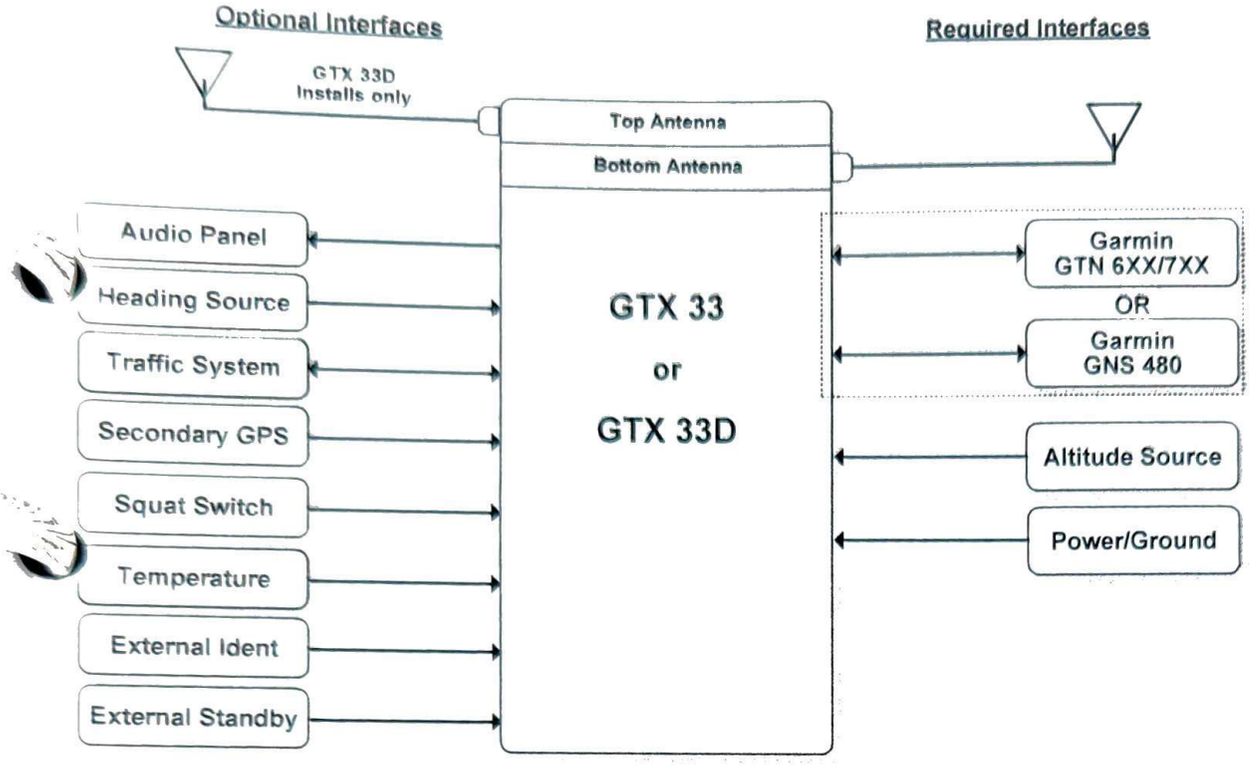

Figure 2 – GTX 33 or GTX 33D Interface Summary

The GTX 33X performs the following functions:

- Transmission of ADS-B out data on 1090 extended squitter (1090 MHz)
  - Integration of data from internal and external sources to transmit the following data per 14 CFR 91.227:
    - GPS Position, Altitude, and Position Integrity
    - Ground Track and/or Heading, Ground Speed, and Velocity Integrity
    - Air Ground Status
    - Flight ID, Call Sign, ICAO Registration Number
    - Capability and Status Information
    - Transponder Squawk Codes between 0000-7777.
    - Emergency Status
    - IDENT - initiates SPI (special position identification) pulse for 18 seconds
  - Pressure Altitude Broadcast Inhibit
- Reception of TIS-A traffic data from a ground station
- Provides TIS-A traffic alerting to the pilot via interfaced display and audio output

1.2 GTX 3X5

The Garmin GTX 3X5 family consists of the GTX 335, 335D, 335R, 335DR, 345, 345D, 345R, and 345DR transponders. The functional differences between each of these transponders are described in Table 1. Transponder models with a "D" designation are diversity capable and support both a top fuselage and bottom fuselage antenna.

Function	GTX 335/ 335D	GTX 335 w/GPS	GTX 335R/ 335DR	GTX 335R w/GPS	GTX 345/ 345D	GTX 345 w/GPS	GTX 345R/ 345DR	GTX 345R w/GPS
Panel mount	x	x			x	x		
Remote mount			x	x			x	x
Mode S	x	x	x	x	x	x	x	x
ADS-B (out)	x	x	x	x	x	x	x	x
ADS-B Traffic					x	x	x	x
FIS-B					x	x	x	x
Internal GPS		x		x		x		x
Bluetooth					x	x	x	x
Optional Garmin Altitude Encoder	x	x	x	x	x	x	x	x

Table 1 – GTX 3X5 Unit Configurations

Interfaces to the GTX 3X5 are shown in Figure 3.

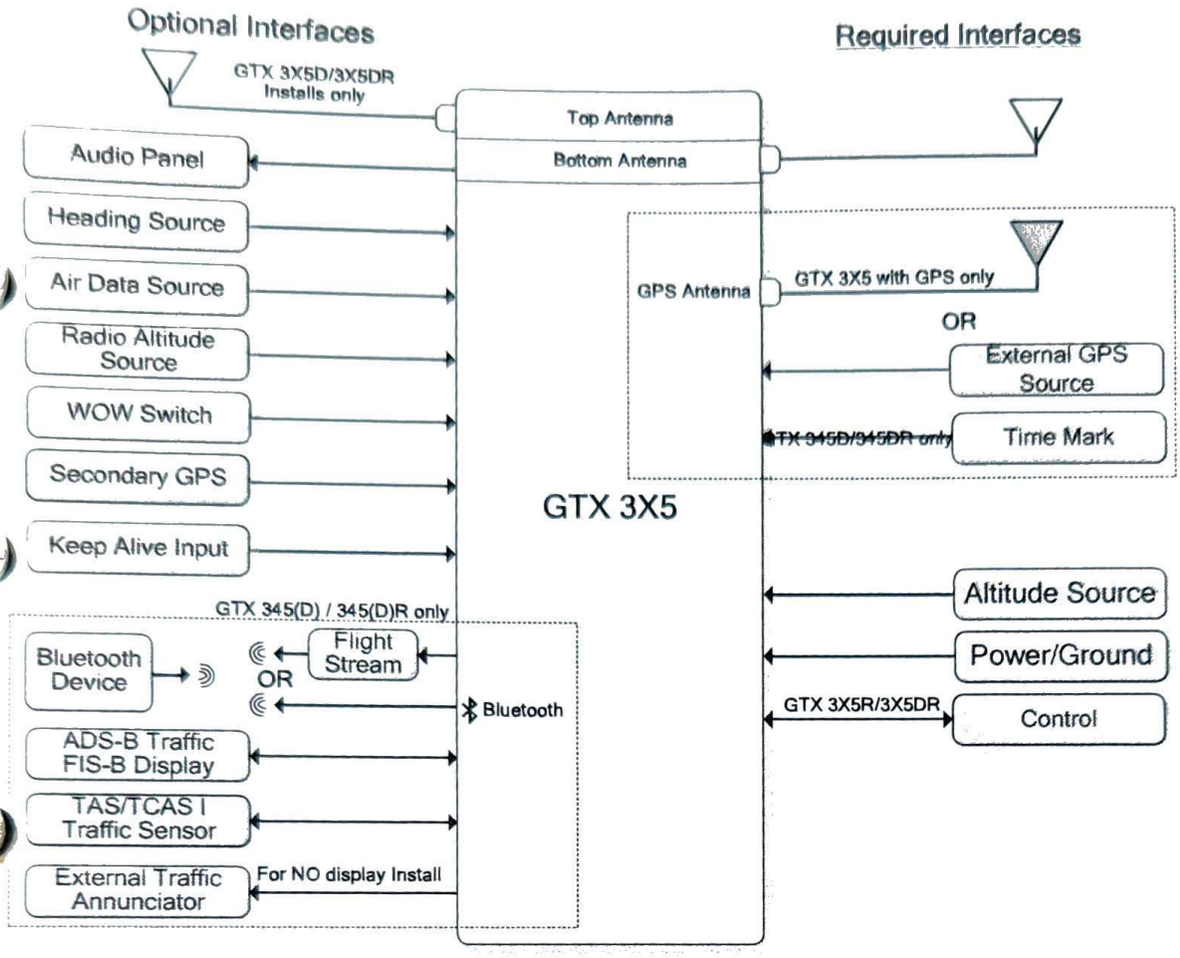

Figure 3 – GTX 3X5 Interface Summary

The GTX 3X5 performs the following functions:

- Transmission of ADS-B out data on 1090 extended squitter (1090 MHz)
  - Integration of data from internal and external sources to transmit the following data per 14 CFR 91.227:
    - GPS Position, Altitude, and Position Integrity
    - Ground Track and/or Heading, Ground Speed, and Velocity Integrity
    - Air Ground Status
    - Flight ID, Call Sign, ICAO Registration Number
    - Capability and Status Information
    - Transponder Squawk Codes between 0000-7777.
    - Emergency Status
    - IDENT - initiates SPI (special position identification) pulse for 18 seconds
  - Pressure Altitude Broadcast Inhibit

The GTX 335 performs the following additional functions:

- Reception of TIS-A traffic data from a ground station
- Provide TIS-A traffic alerting to the pilot via interfaced display and audio output.

The GTX 345 performs the following additional functions:

- Reception of ADS-B In data on 1090 MHz
  - ADS-B (Data directly from another transmitting aircraft)
  - ADS-R (Rebroadcast of ADS-B data from a ground station)
- Reception of ADS-B In data on UAT (978 MHz)
  - ADS-B (Data directly from another transmitting aircraft)
  - ADS-R (Rebroadcast of ADS-B data from a ground station)
  - TIS-B (Broadcast of secondary surveillance radar) (SSR) derived traffic information from a ground station.
  - FIS-B (Broadcast of aviation data from a ground station)
- Provide ADS-B traffic information and alerting to the pilot via an interfaced display
  - Correlation and consolidation of traffic data from multiple traffic sources
  - Aural and visual traffic alerting
- Provide FIS-B data to the pilot via an interfaced display
  - Graphical and textual weather products
    - NEXRAD
    - PIREPs
    - AIRMET/SIGMETs
    - METARs
    - TAFs
    - Winds Aloft
  - Aviation Data
    - TFRs
    - NOTAMs

1.3 Capabilities

The Garmin GTX 33X and GTX 3X5 as installed in this aircraft have been shown to meet the equipment requirements of 14 CFR § 91.227 when operating in accordance with sections 2.1 and 2.2 of this supplement.

1.4 Installation Configuration

This aircraft is equipped with a GTX 33X and/or GTX 3X5 with the following interfaces/ features:

Equipment Installed:

Transponder #1

- ☐ GTX 330
- ☐ GTX 330D
- ☐ GTX 33
- ☐ GTX 33D
- ☐ GTX 335
- ☐ GTX 335D
- ☐ GTX 335R
- ☐ GTX 335DR
- ☐ GTX 345
- ☐ GTX 345D
- ■ GTX 345R
- ☐ GTX 345DR

Transponder #2 (if installed)

- ☐ GTX 330
- ☐ GTX 330D
- ☐ GTX 33
- ☐ GTX 33D
- ☐ GTX 335
- ☐ GTX 335D
- ☐ GTX 335R
- ☐ GTX 335DR
- ☐ GTX 345
- ☐ GTX 345D
- ☐ GTX 345R
- ☐ GTX 345DR

Interfaced GPS/SBAS Position Source(s):

GPS #1	GPS #2 (if installed)
☐ Internal	☐ Internal
☐ GTN 6XX/7XX Series	☐ GTN 6XX/7XX Series
☐ GNS 400W/500W Series	☐ GNS 400W/500W Series
☐ GNS 480	☐ GNS 480
■ GIA 63W	■ GIA 63W
☐ GDL 88 (GTX 330 only)	☐ GDL 88 (GTX 330 only)
☐ GPS 175/GNC 355	☐ GPS 175/GNC 355

Interfaced Pressure Altitude Source:

Pressure Altitude Source #1	Pressure Altitude Source #2 (if installed)
■ GDC-74A	☐ _____
☐ Garmin Altitude Encoder	☐ Garmin Altitude Encoder

Interfaced Remote Control Display (Required for remotely mounted GTX variants):

Transponder #1 Remote Control Display

- ☐ GTN 6XX/7XX
- ☐ GNS 480
- ■ G950/1000 Display
- ☐ GI 275
- ☐ Gables 7534 Controller
- ☐ Gables 7614 Controller
- ☐ CTL-92 Controller
- ☐ CTL-92E Controller

Transponder #2 Remote Control Display (if installed)

- ☐ GTN 6XX/7XX
- ☐ GNS 480
- ☐ G950/1000 Display
- ☐ GI 275
- ☐ Gables 7534 Controller
- ☐ Gables 7614 Controller
- ☐ CTL-92 Controller
- ☐ CTL-92E Controller

Interfaced Active Traffic System:

- ☐ None
- ■ TCAD
- ☐ TAS/TCAS

NOTE

If the system includes all of the following components:

- GTX 345R or GTX 345DR,
- G950/1000 Display, and
- TCAD or TAS/TCAS

Then the aircraft is no longer equipped with a TSO compliant active TCAD, TAS or TCAS system. Any operational requirement to be equipped with such system is no longer met.

1.5 Definitions

The following terminology is used within this document:

ADS-B: Automatic Dependent Surveillance-Broadcast

AFM: Airplane Flight Manual

AFMS: Airplane Flight Manual Supplement

ATCRBS: Air Traffic Control Radar Beacon System

CFR: Code of Federal Regulations

ES: Extended Squitter

GNSS: Global Navigation Satellite System

GNS: Garmin Navigation System

GPS: Global Positioning System

GTX: Garmin Transponder

GTN: Garmin Touchscreen Navigator

ICAO: International Civil Aviation Organization

LRU: Line Replaceable Unit

PABI: Pressure Altitude Broadcast Inhibit

POH: Pilot Operating Handbook

SBAS: Satellite-Based Augmentation System

SW: Software

TCAS: Traffic Collision Avoidance System

TIS: Traffic Information Service

TX: Transmit

Section 2. LIMITATIONS

2.1 Minimum Equipment

The GTX 33X and GTX 3X5 must have the following system interfaces fully functional in order to be compliant with the requirements for 14 CFR 91.227 ADS-B Out operations:

Interfaced Equipment	Number Installed	Number Required
Uncorrected Pressure Altitude Source	1	1
GPS SBAS Position Source	1 or more	1
Remote Control Display (for remotely mounted transponders)	1 or more	1

Table 2 – Required Equipment

2.2 ADS-B Out

The GTX 33X and GTX 3X5 only comply with 14 CFR 91.227 for ADS-B Out when all required functions are operational. When the system is not operational, ADS-B Out transmit failure messages will be present on the remote control display interface, or the GTX 330 or GTX 3X5 panel display. If a Gables 7534 controller or Collins CTL-92/92E controller is being used the ADS-B equipment failure condition will be annunciated on the Gables or Collins display "Transponder Fail" while the ADS-B Out Position failure will be annunciated by the remotely installed "ADS-B POSN FAIL" Annunciator.

2.3 TIS Traffic Display with User Navigation Angle

Display of TIS traffic from a GTX 33/330 or GTX 335 is not permitted with an interfacing display configured for a navigation angle of "user".

2.4 Applicable System Software

This AFMS/AFM is applicable to the software versions shown in Table 3.

The Main GTX software version is displayed on the splash screen during start up for the GTX 330 and GTX 3X5 panel mounted units, and the External LRU or System page on the interfaced remote control display for remotely mounted GTX transponders.

Software Item	Software Version *(or later FAA Approved versions for this STC)*
GTX 33X Main SW Version	8.04
GTX 3X5 Main SW Version	2.60

Table 3 - Software Versions

2.5 Pressure Altitude Broadcast Inhibit (PABI)

Pressure Altitude Broadcast Inhibit shall only be enabled when requested by Air Traffic Control while operating within airspace requiring an ADS-B Out compliant transmitter. PABI is enabled by selecting the GTX to ON mode.

2.6 Datalinked Weather Display (GTX 345 Only)

Do not use datalink weather information for maneuvering in, near, or around areas of hazardous weather. Information provided by datalink weather products may not accurately depict current weather conditions.

Do not use the indicated datalink weather product age to determine the age of the weather information shown by the datalink weather product. Due to time delays inherent in gathering and processing weather data for datalink transmission, the weather information shown by the datalink weather product may be significantly older than the indicated weather product age.

Do not rely solely upon datalink services to provide Temporary Flight Restriction (TFR) or Notice to Airmen (NOTAM) information.

2.7 Portable Electronic Devices

This STC does not relieve the operator from complying with the requirements of 91.21 or any other operational regulation regarding portable electronic devices.

Section 3. EMERGENCY PROCEDURES

3.1 Emergency Procedures

No Change.

3.2 Abnormal Procedures

3.2.1 LOSS OF AIRCRAFT ELECTRICAL POWER GENERATION

XPDR Circuit Breaker..... **PULL**

Transponder and ADS-B Out functions will no longer be available.

NOTE

This guidance is supplementary to any guidance provided in the POH or AFM for the installed aircraft for loss of power generation.

3.2.2 LOSS OF GPS/SBAS POSITION DATA

When the GPS/SBAS receiver is inoperative or GPS position information is not available or invalid, the GTX will no longer be transmitting ADS-B Out data.

For GTX 330 installations:

NO ADSB annunciator illuminated:

Interfaced GPS position sources..... **VERIFY VALID POSITION**

For GTX 3X5 installations:

NO 1090ES TX annunciator illuminated:

Interfaced GPS position sources..... **VERIFY VALID POSITION**

For GTX 33 and GTX 3X5R installations:

Reference Display Device documentation for applicable annunciation:

Interfaced GPS position sources..... **VERIFY VALID POSITION**

The procedures described below are specific only to the panel mounted GTX 330 or GTX 3X5 transponders. Cockpit Reference Guides and Pilot Guides for interfaced remote control displays will provide additional operating information specific to the displays or other traffic systems.

ADS-B Out functionality resides within the GTX transponders thereby providing a single point of entry for Mode 3/A code, Flight ID, IDENT functionality and activating or deactivating emergency status for both transponder and ADS-B Out functions. Details on performing these procedures are located in the GTX 330/330D Pilot's Guide and GTX 3X5 Series Transponder Pilot's Guide.

4.1 Unit Power On

For GTX 330 installations:

GTX Mode..... **VERIFY ALT**
NO ADSB..... **CONSIDERED**

For GTX 3X5 installations:

GTX Mode..... **VERIFY ALT**
NO 1090ES TX ..... **CONSIDERED**

NOTE

The NO ADS-B or NO 1090ES TX Annunciation (or associated display annunciations) may illuminate as the unit powers on and begins to receive input from external systems, to include the SBAS position source.

4.2 Before Takeoff

For GTX 330 installations:

ADS-B TX ..... **VERIFY ON**
NO ADSB ..... **EXTINGUISHED**

For GTX 3X5 installations:

1090ES TX CTL ..... **VERIFY ON**
NO 1090ES TX ..... **EXTINGUISHED**

NOTE

The ADS-B TX or 1090ES TX CTL must be turned on and the NO ADS-B or NO 1090ES TX Annunciation (or associated display annunciations) must be **EXTINGUISHED** for the system to meet the requirements specified in 14 CFR 91.227. This system must be operational in certain airspaces after January 1, 2020 as specified by 14 CFR 91.225.

Section 5. PERFORMANCE

No change.

Section 6. WEIGHT AND BALANCE

See current weight and balance data.

Section 7. SYSTEM DESCRIPTION

The Garmin GTX 330 and GTX 3X5 Pilot's Guides, part numbers, and revisions listed below contain additional information regarding GTX system description, control, and function.

Title	Part Number	Revision
GTX 330 Pilot's Guide GTX 3X5 Pilot's Guide	190-00207-00 190-01499-00	Rev. G (or later) Rev. A (or later)

Pilot's Guides for interfaced displays, part numbers and revisions listed below, provide additional operating information for the Garmin GTX 33 and GTX 3X5R.

Title	Part Number	Revision
Garmin GTN 725/750 Pilot's Guide	190-01007-03	Rev. E (or later)
Garmin GTN 625/635/650 Pilot's Guide	190-01004-03	Rev. E (or later)
GNS 480 Pilot's Guide	190-00502-00	Rev. D (or later)
GTX 3X5 Series Transponder G1000 Pilot's Guide	190-01499-01	Rev. A (or later)
Garmin GI 275 Pilots's Guide	190-02246-01	Rev. F (or later)
Garmin GPS 175/GNC 355/GNX 375 Pilot's Guide	190-02488-01	Rev. B (or later)

7.1 GTX TIS Behavior

The TIS Standby/Operate controls for GTX 33/330 and GTX 335/335D units only function when the aircraft is airborne.

7.2 GTX 345R/345DR and G950/1000 No Bearing Traffic Alerts

No visual indication is provided for no bearing traffic alerts. Only an aural indication of the no bearing traffic alert is provided. If an aural alert for no bearing traffic has been previously issued, a "no bearing traffic clear" aural indication will be provided once all traffic alerts are resolved.

All aural alerts are inhibited below 500' AGL, therefore a "no bearing traffic clear" aural may not be heard in a landing or touch and go flight scenario.