Diamond DA 40-NG

Diamond DA40-NG

Dimensions

Dimensions

Dimensions

Dimensions

Diamond DA40-NG

VHF COM 1 Antenna

VHF COM 2 antenna

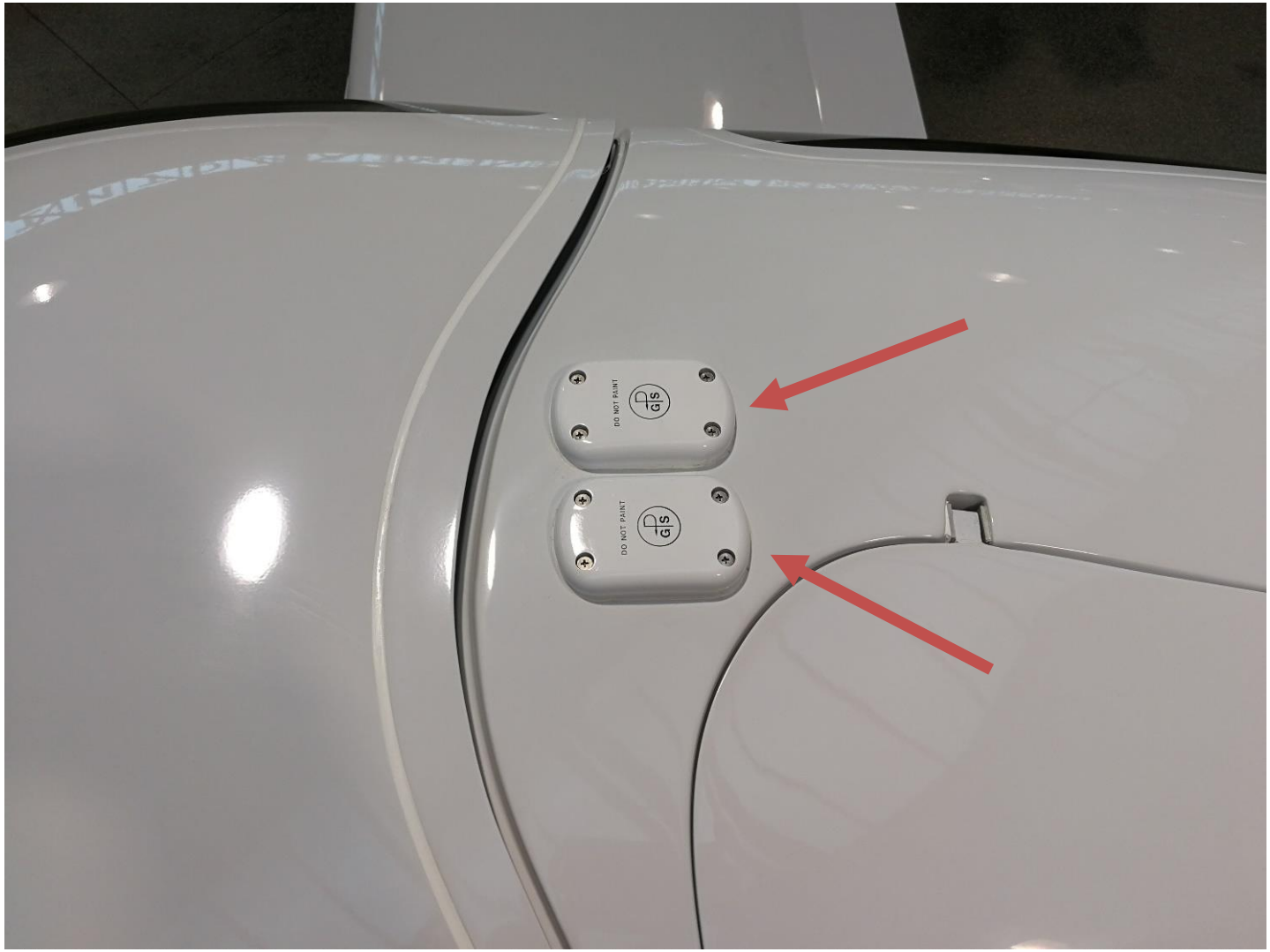
VHF NAV

WX 500 Antenna

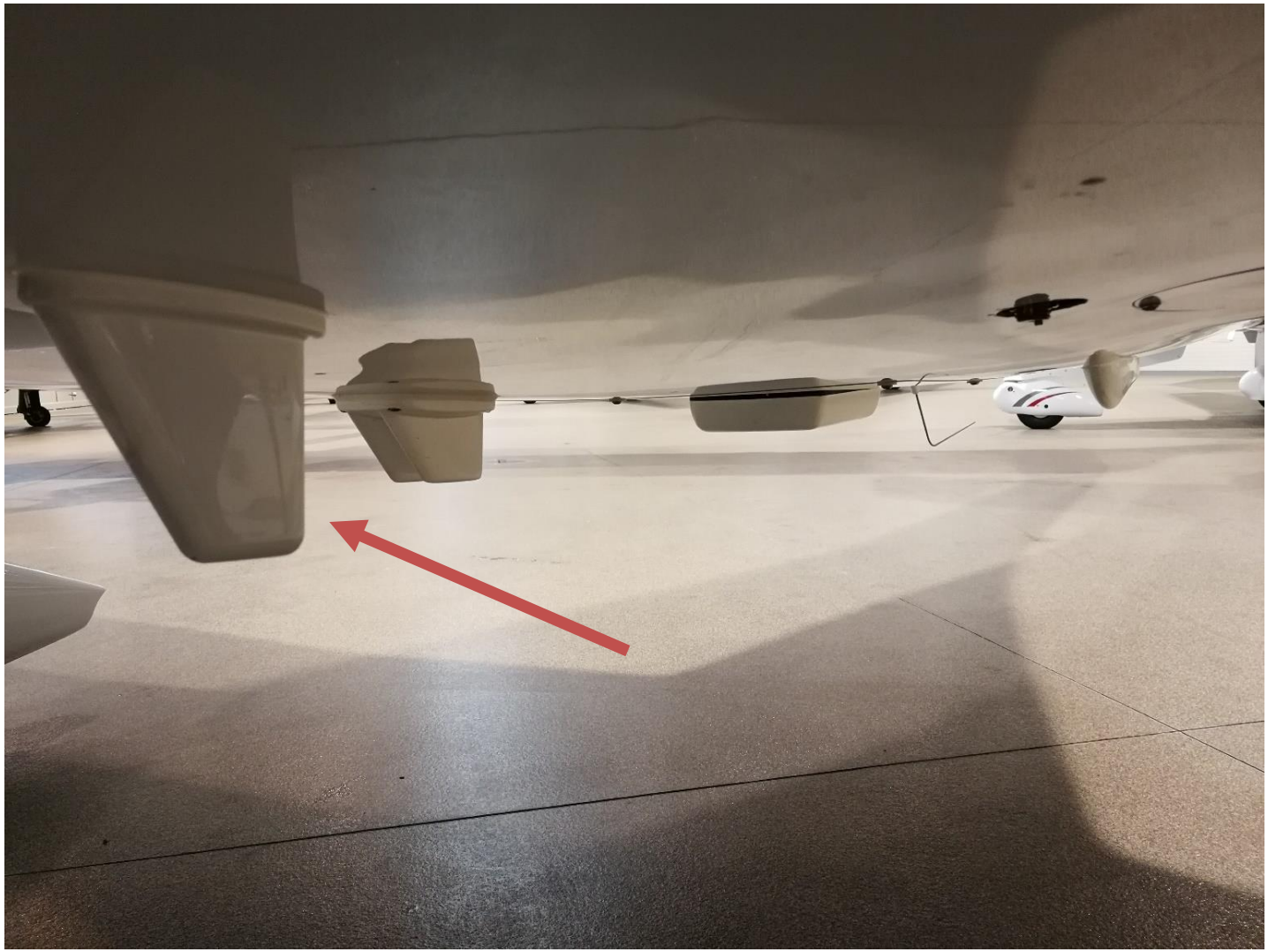
The Stormscope Model **WX-500** displays lightning information at ranges of 25 nm to 200 nm and easily interfaces with most popular Multi-Function Displays

Marker Antenna

GPS Antennas

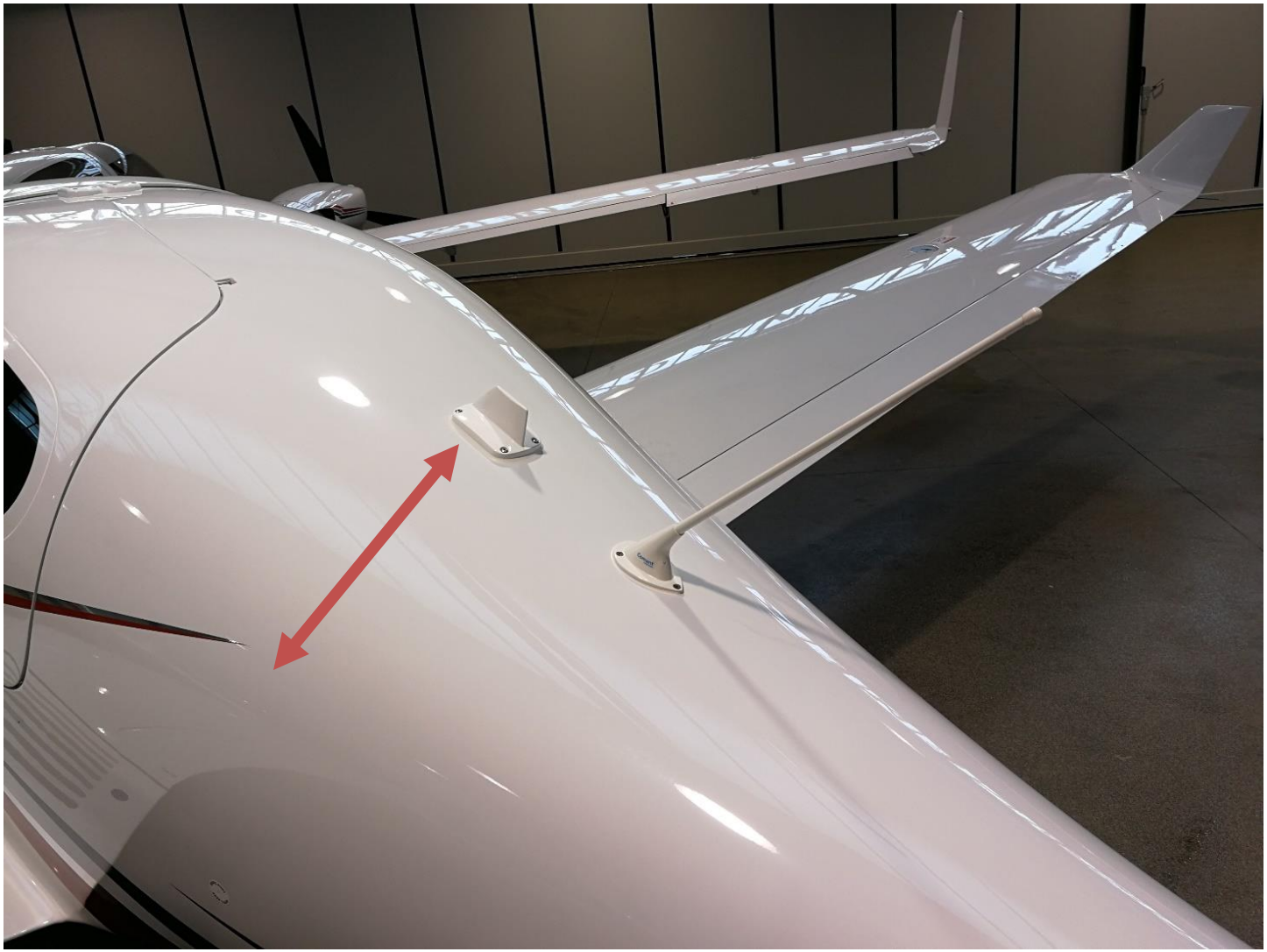


DME, XPDR Antennas



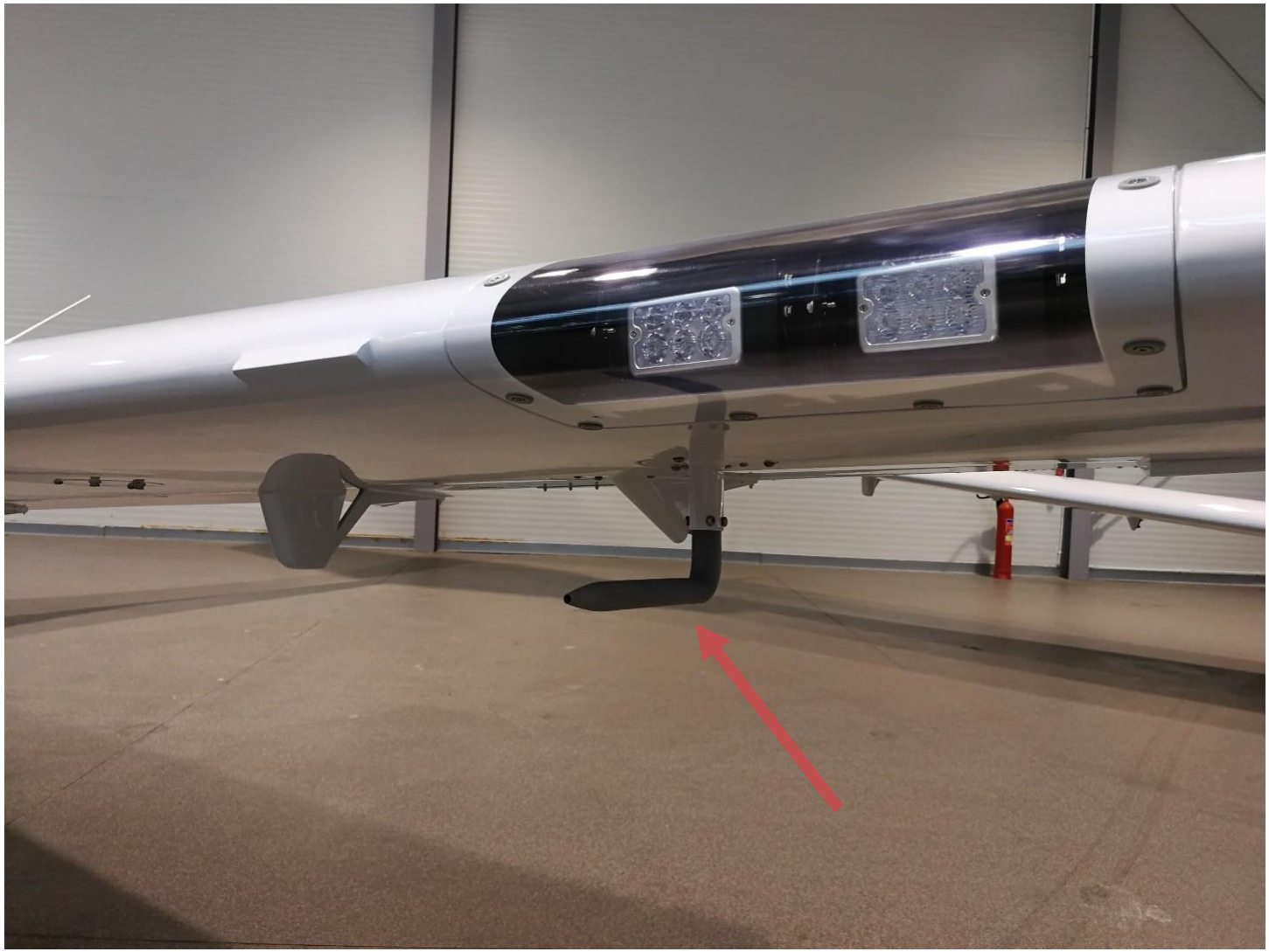
ADF antenna

TAS 600 antenna upper

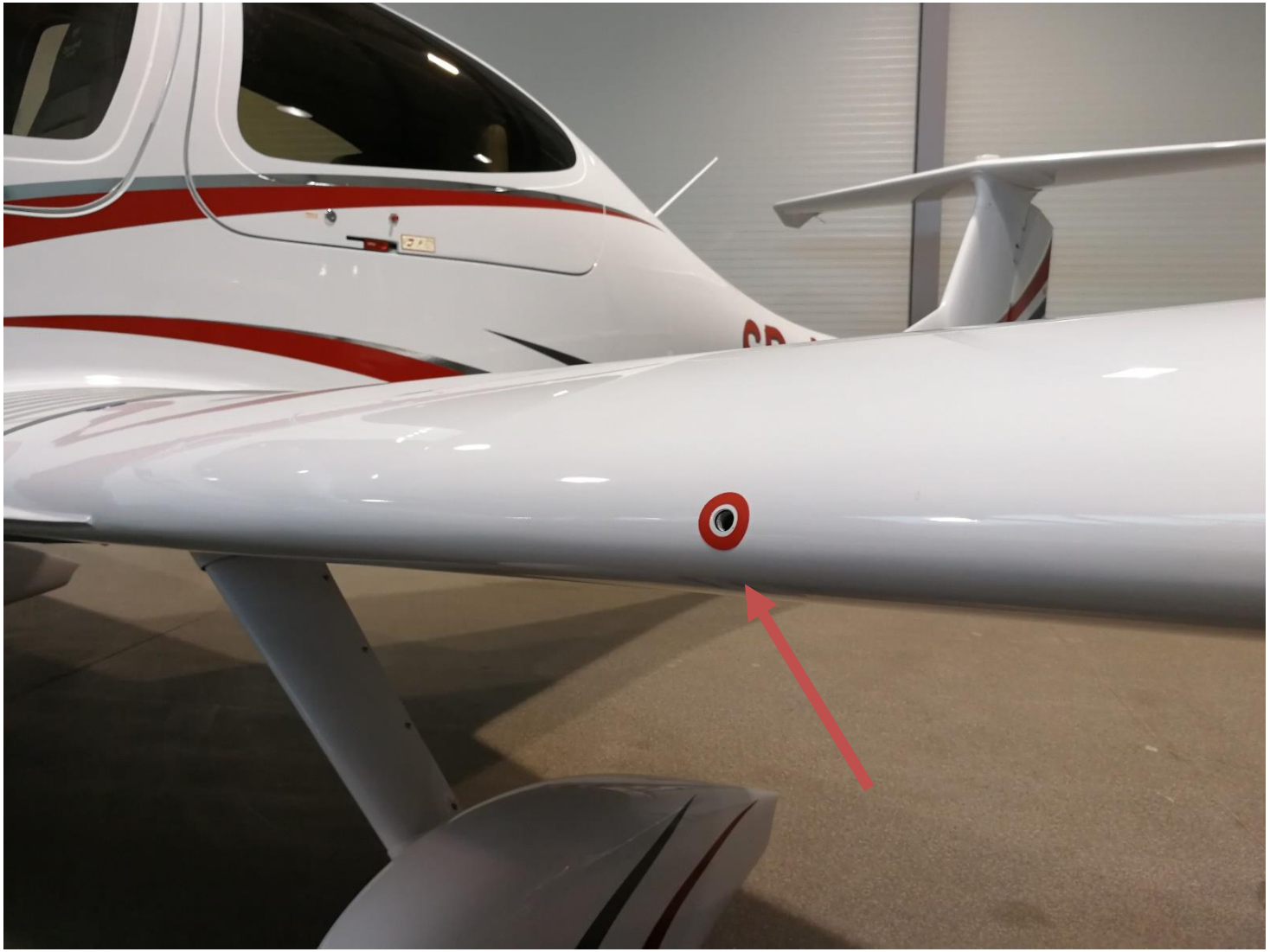


TAS 600 antenna lower

Pitot Probe



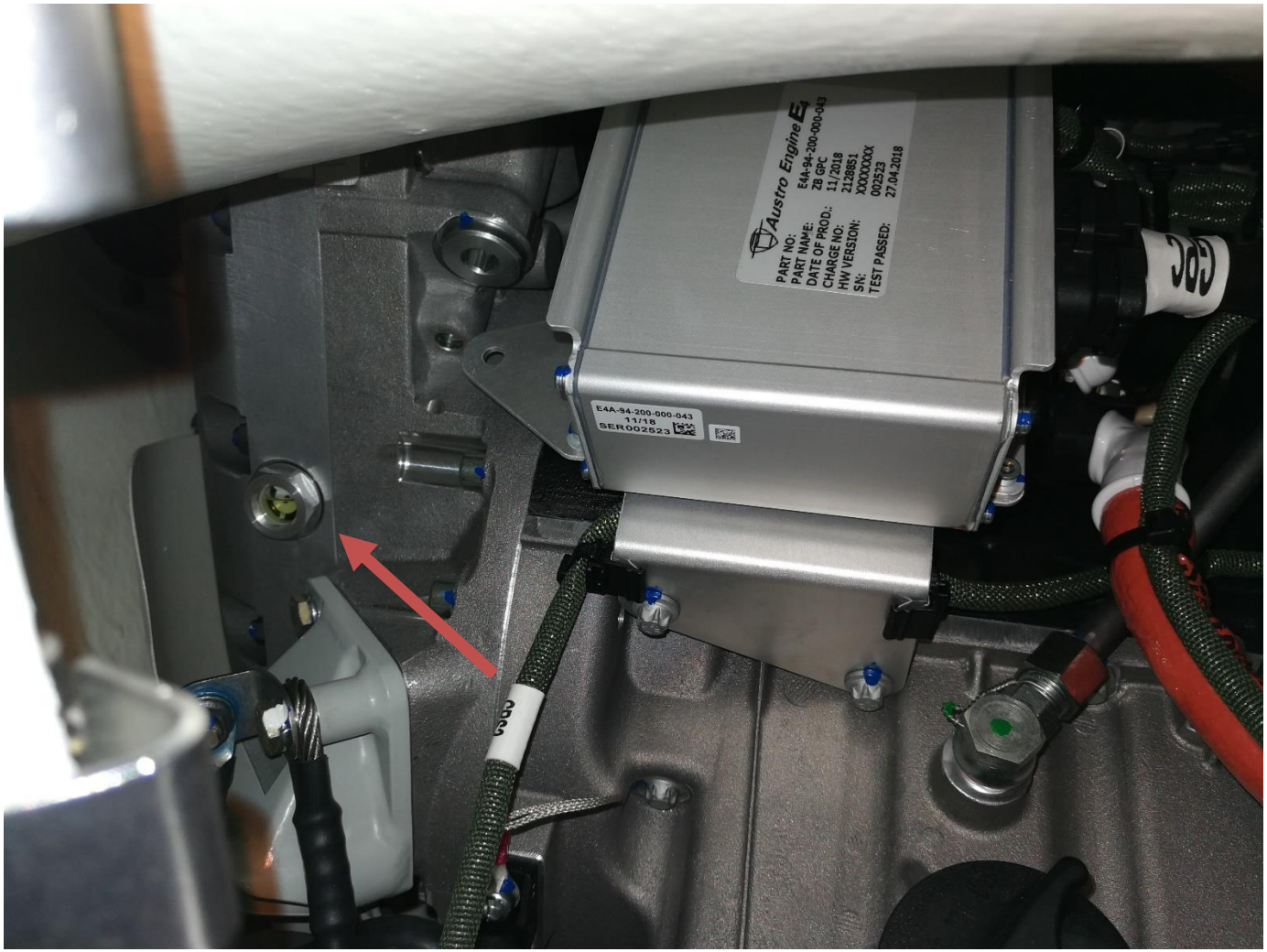
Lift Detector (Stall Warning)



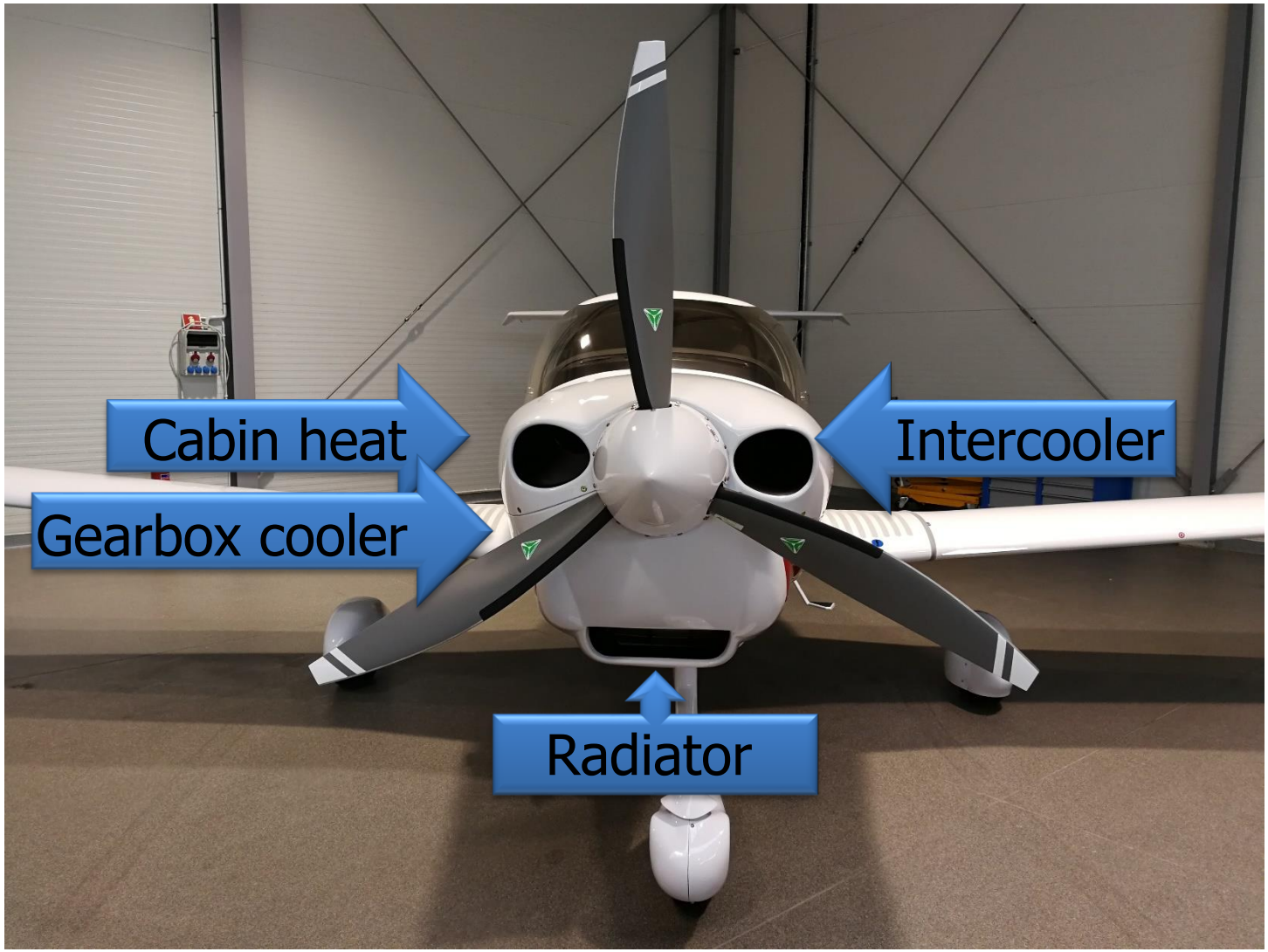
Engine Oil

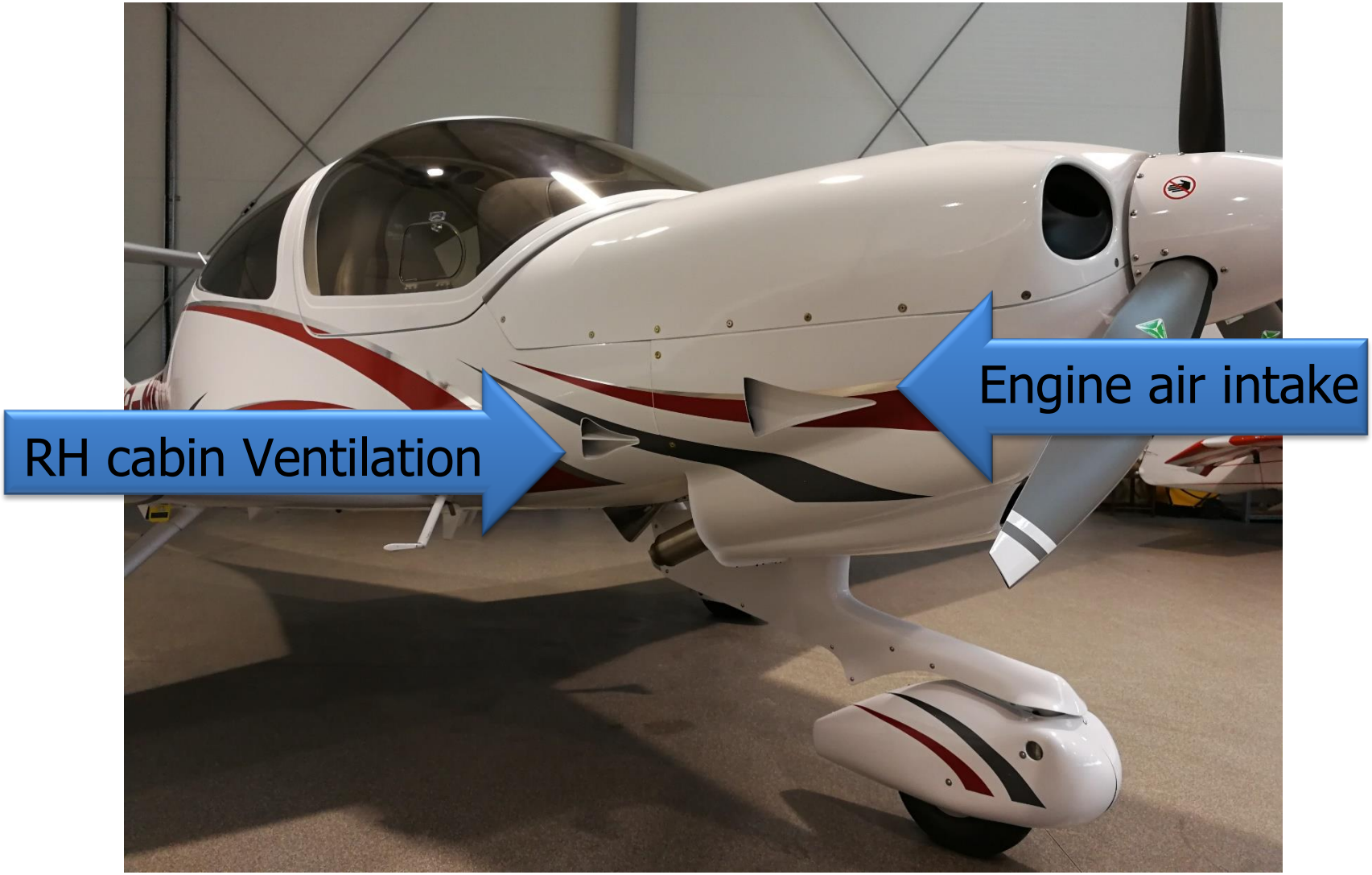
Engine Oil

Gearbox Oil



Air Inlets





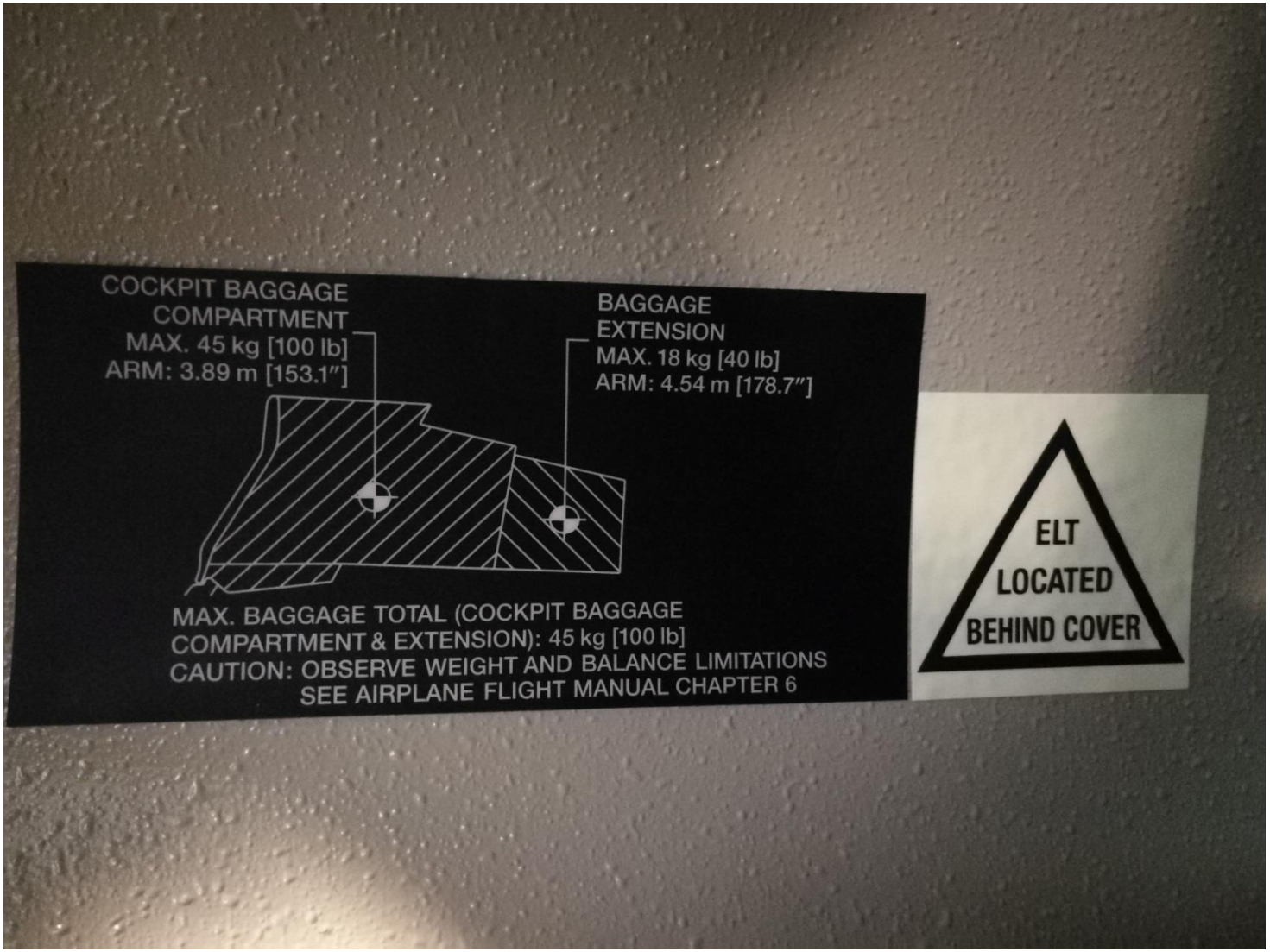
Diamond DA40 NG

Mass (Weight)

Empty SP-MKD	944,9 kg
Max T/OFF	1310 kg
Max LDG	1216 kg
Max Baggage with „Baggage Extension“	45 kg (max 18 kg in aft compartment)

Baggage Compartment

Baggage Compartment



Attention!

JET fuel is heavier than AVGAS!

Typical fuel weight:

JET A1:	AVGAS:
0,8 kg/ltr	0,72 kg/ltr
3,03 kg/USG	2,8 kg/USG

Diamond DA40-NG

Characteristic Speeds

Flight Mass	940 kg (2072 lb)	1000 kg (2205 lb)	1100 kg (2425 lb)	1200 kg (2646 lb)	1280 kg (2822 lb) and above
Airspeed for rotation (Take-off run, v_R) (Flaps T/O)	56 KIAS	58 KIAS	61 KIAS	65 KIAS	67 KIAS
Airspeed for initial climb (v_{50}) (Flaps T/O)	62 KIAS	65 KIAS	67 KIAS	70 KIAS	72 KIAS
Airspeed for take-off climb (best rate-of-climb speed v_Y) (Flaps T/O)	72 KIAS	72 KIAS	72 KIAS	72 KIAS	72 KIAS
Airspeed for cruise climb (Flaps UP)	88 KIAS	88 KIAS	88 KIAS	88 KIAS	88 KIAS

V_{NO}	130 KIAS
V_{NE}	172 KIAS
V_o up to 1080 kg	101 KIAS
V_o 1080-1180 kg	108 KIAS
V_o above 1180	113 KIAS

V_{FE} (Flaps T/O)	110 KIAS
V_{FE} (Flaps LDG)	98 KIAS

Vs 1000 kg	58 KIAS
Vs 1100 kg	61 KIAS
Vs 1200 kg	64 KIAS
Vs 1310 kg	66 KIAS

AFM str. 198

Flight Mass	940 kg (2072 lb)	1100 kg (2425 lb)	1200 kg (2646 lb)	1216 kg (2681 lb)
Approach speed for normal landing (Flaps LDG)	66 KIAS	72 KIAS	76 KIAS	76 KIAS
Minimum speed during go-around (Flaps T/O)	72 KIAS	72 KIAS	72 KIAS	72 KIAS

Stalling Speeds

Diamond AIRCRAFT

1000 kg (2205 lb)	Bank Angle							
	0°		30°		45°		60°	
Flaps	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	58	56	59	60	64	66	76	79
T/O	54	53	58	57	63	63	75	74
LDG	55	52	56	55	61	61	72	73

1100 kg (2425 lb)	Bank Angle							
	0°		30°		45°		60°	
Flaps	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	61	59	63	64	70	71	83	84
T/O	56	55	60	60	66	66	79	78
LDG	57	54	59	58	65	65	77	77

Stalling Speeds

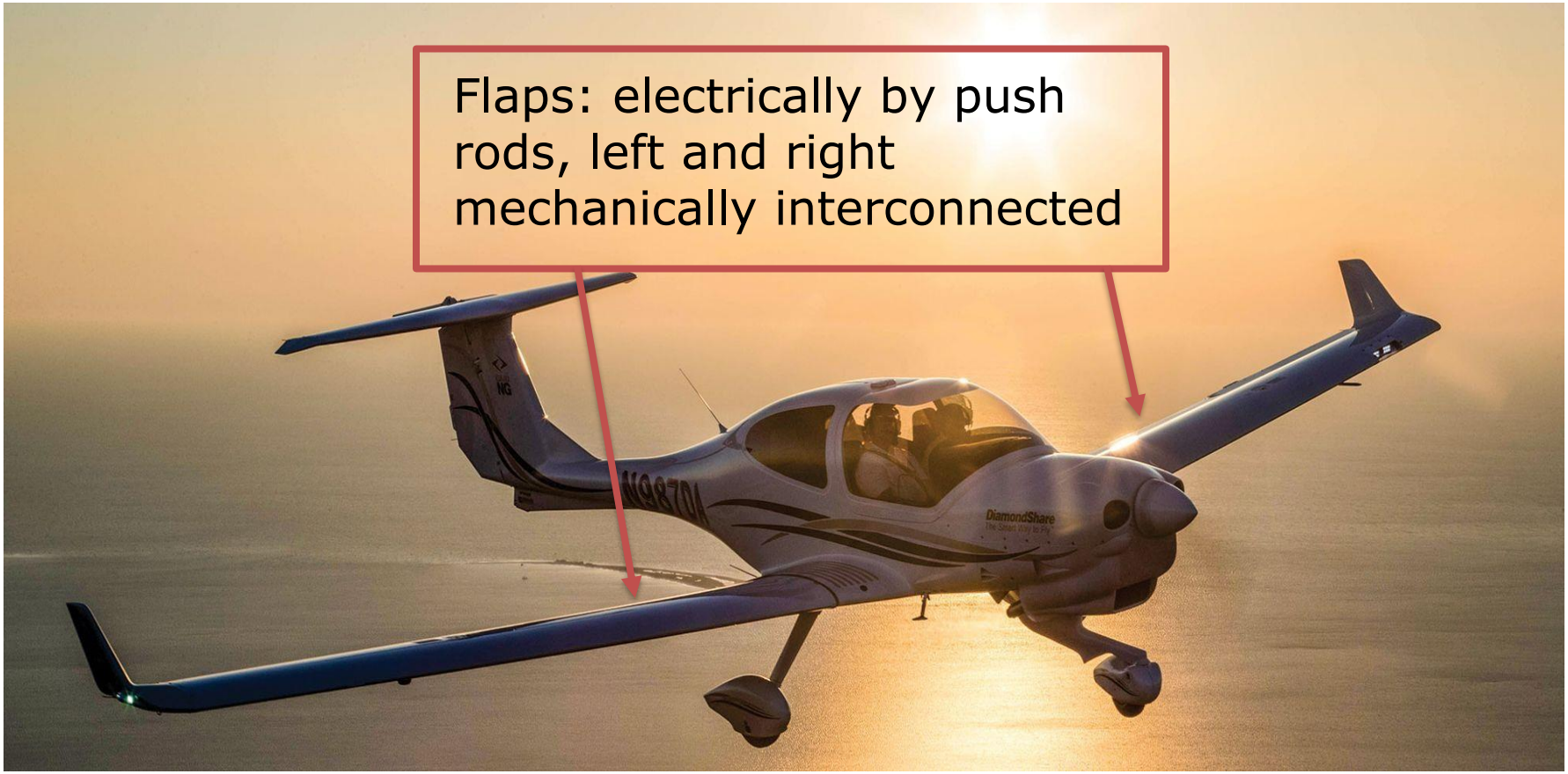
1200 kg (2646 lb)	Bank Angle							
	0°		30°		45°		60°	
Flaps	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	64	61	67	66	73	73	86	87
T/O	60	57	64	62	69	68	82	81
LDG	59	56	62	61	68	67	81	80

1310 kg (2888 lb)	Bank Angle							
	0°		30°		45°		60°	
Flaps	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	66	63	68	68	74	75	88	89
T/O	62	59	65	63	71	70	84	83
LDG	60	58	63	62	69	69	82	82

Diamond DA40-NG

Flight Control Operation

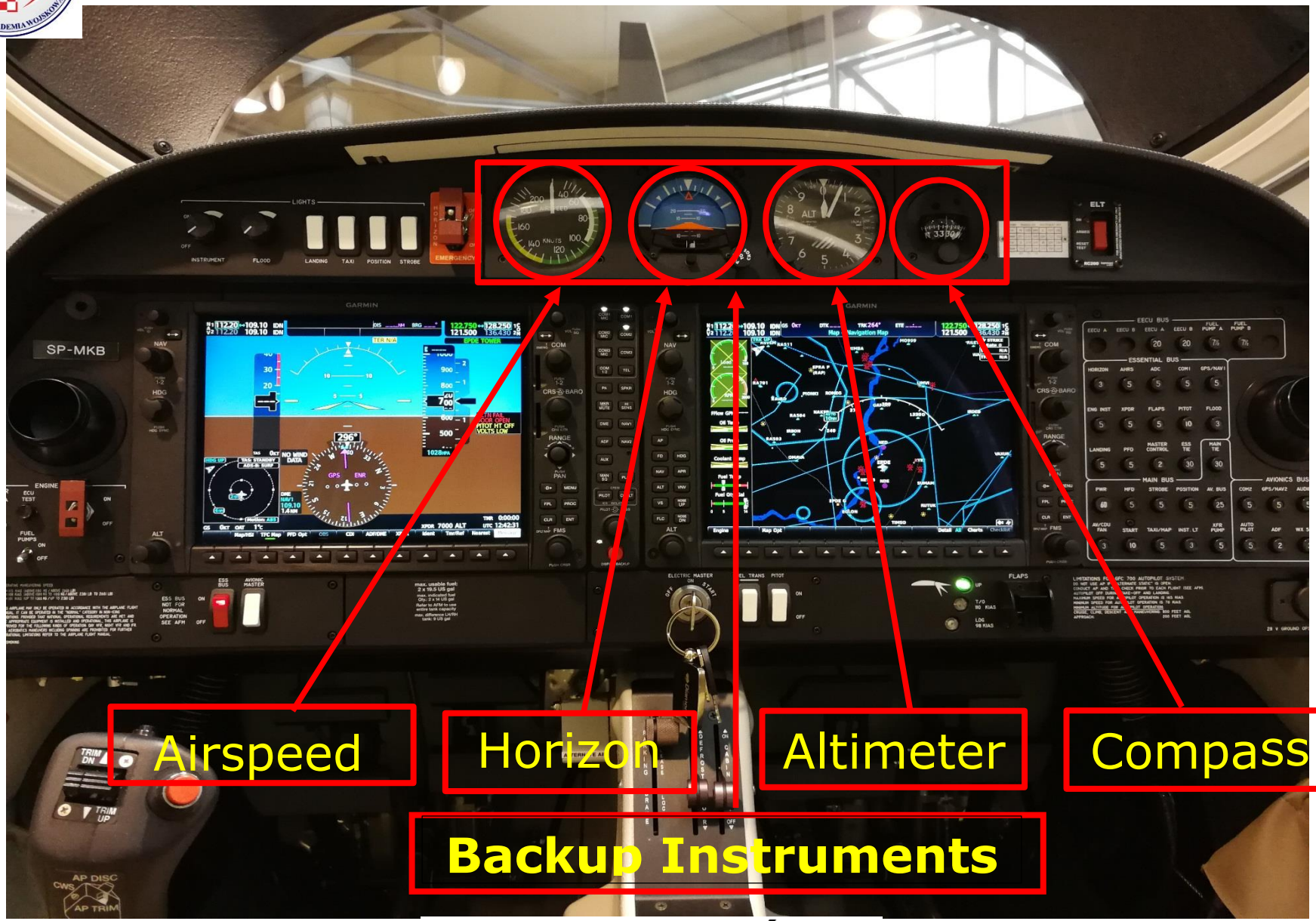
Flight Control Operation

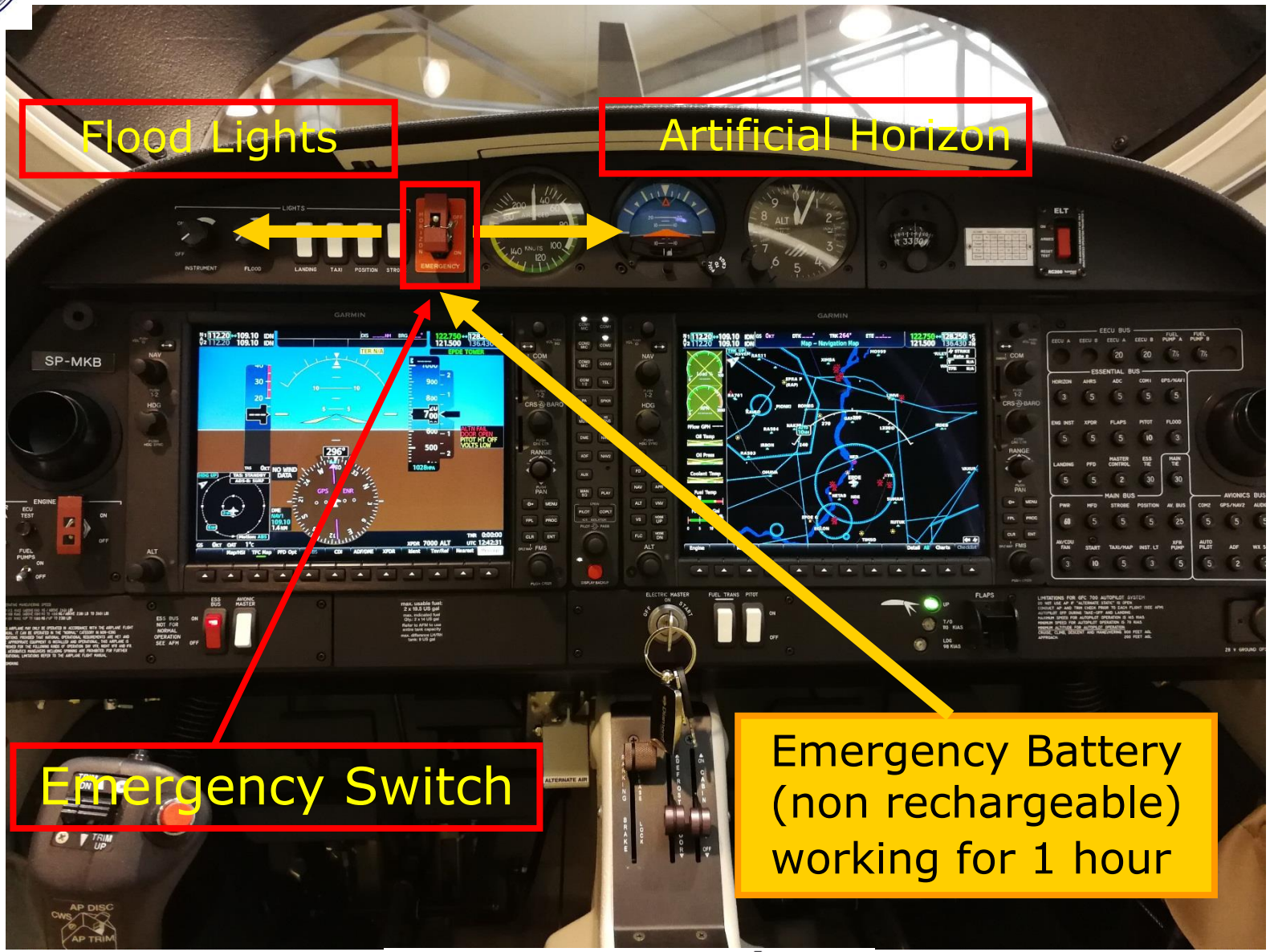


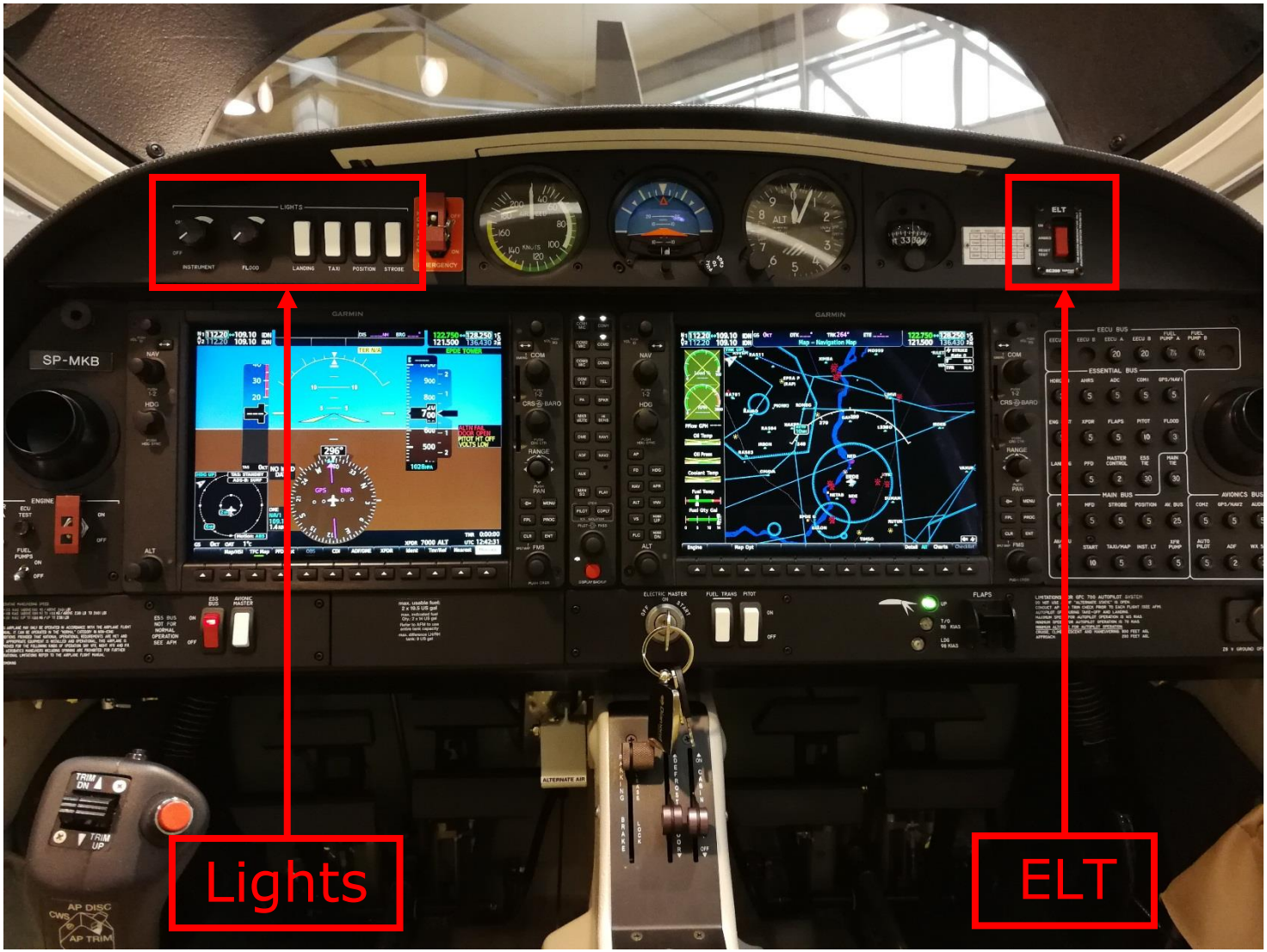
Diamond DA40-NG

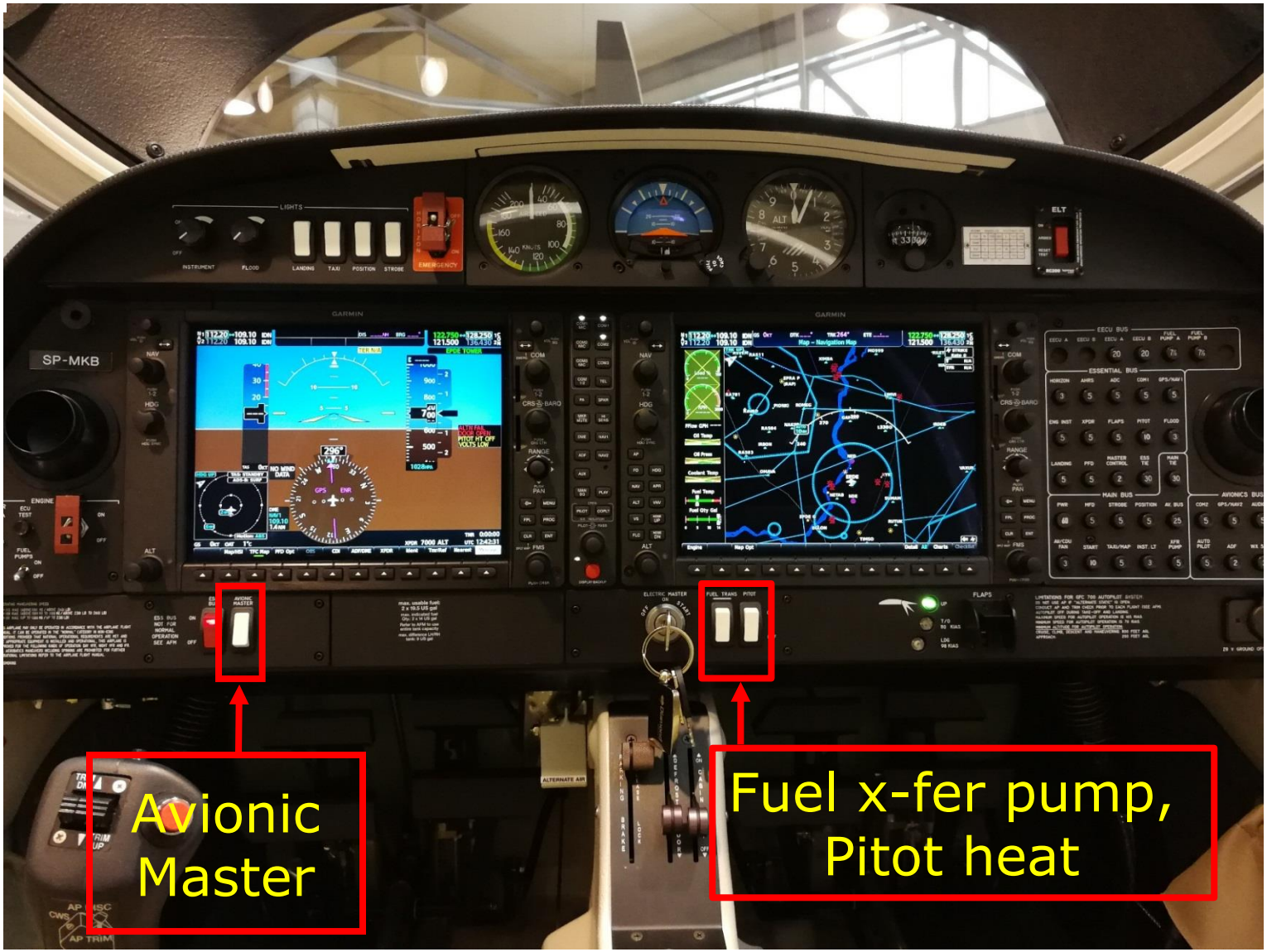
Instrument Panel

Instrument Panel









Alternate Static Valve

Diamond DA40-NG

DA 40Garmin 1000

DA 40 Garmin 1000

PFD

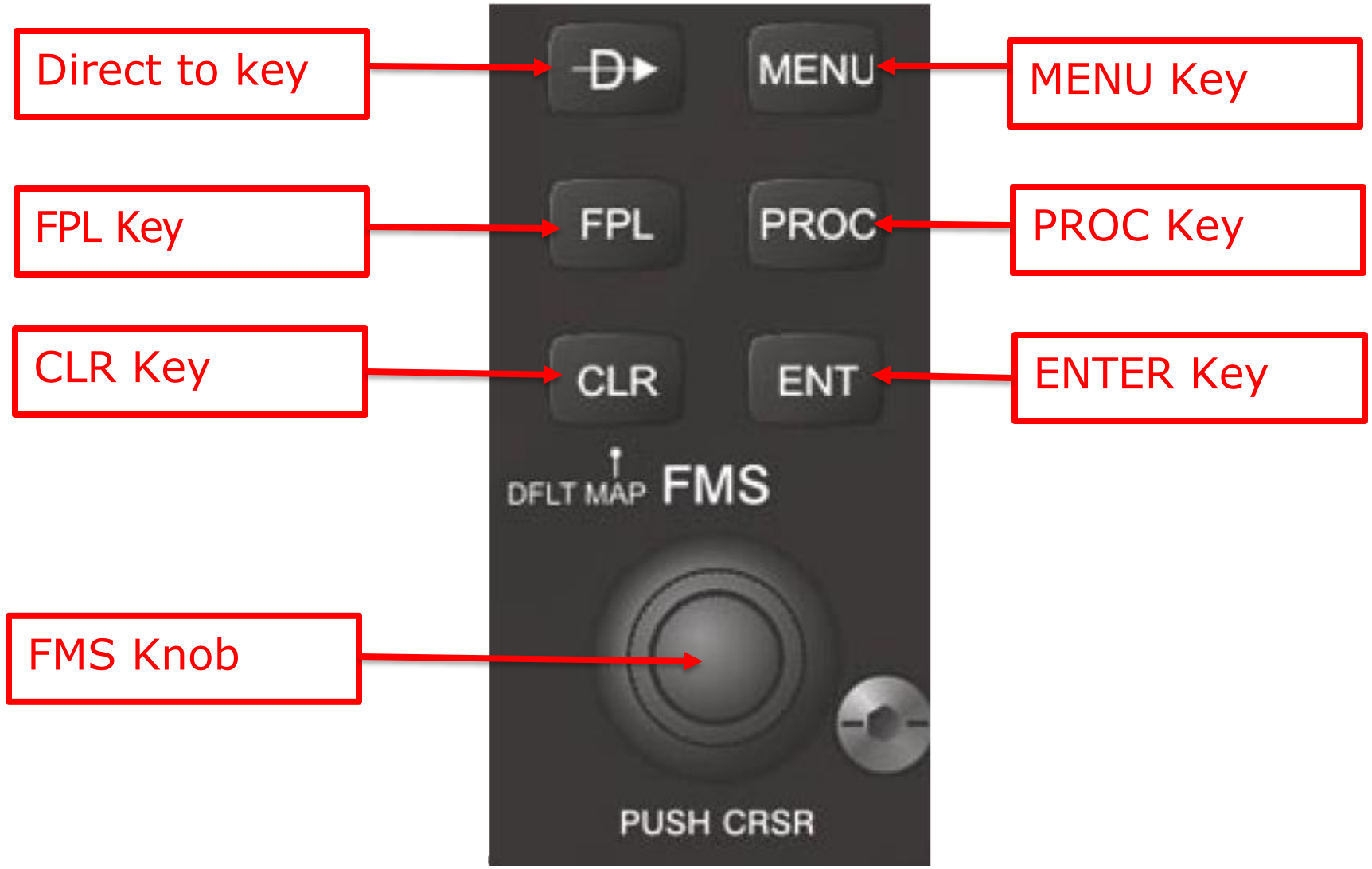
Audio Panel

MFD

Autopilot

PFD


Airspeed
Attitude
Skid and Slip
Altitude
Vertical speed
NAV1 109.10 ↔ 112.50 BRK
NAV2 109.90 115.40 BJC
C08
DIS 51.6NM BRG 202°
19.900 ↔ 125.000 COM1
24.000 121.700 COM2
TRAFFIC
120
110
100
90
80
TAS 100KT
7700
7600
7500
7400
7300
29.92IN
231°
TRACK UP
TFR: N/A
ART CARSON
10NM
DME NAV1 112.50 14.4 NM
14.4 NM BRK NAV1
71.4 NM BJC NAV2
ADF/DME TUNING
ADF 368.0 ↔ 346.0
MODE ADF VOL 50%
DME MODE NAV1
ENT TO TRANSFER
XPDR 1752 ALT
LCL 08:34:37
OAT 0°C
INSET
PFD
OBS
CDI
ADF/DME
XPDR
IDENT
TMR/REF
NRST
ALERTS
NAV
HDG
ALT
COM
CRS BARO
RANGE
PAN
MENU
FPL
PROC
CLR
ENT
FMS
OAT
TAS System
DG+CDI (HSI)
Transponder, Time



Autopilot

AP Key- Engages/disengages the autopilot

FD Key- Activates/deactivates the flight director

NAV Key- Selects/deselects Navigation Mode

ALT Key- Selects/deselects Altitude Hold Mode

VS Key- Selects/deselects Vertical Speed Mode

FLC Key- Selects/deselects Flight Level Change Mode

HDG Key- Selects/deselects Heading Select Mode

APR Key- Selects/deselects Approach Mode

VNV Key- Selects/deselects Vertical Path Tracking Mode for Vertical Navigation flight control

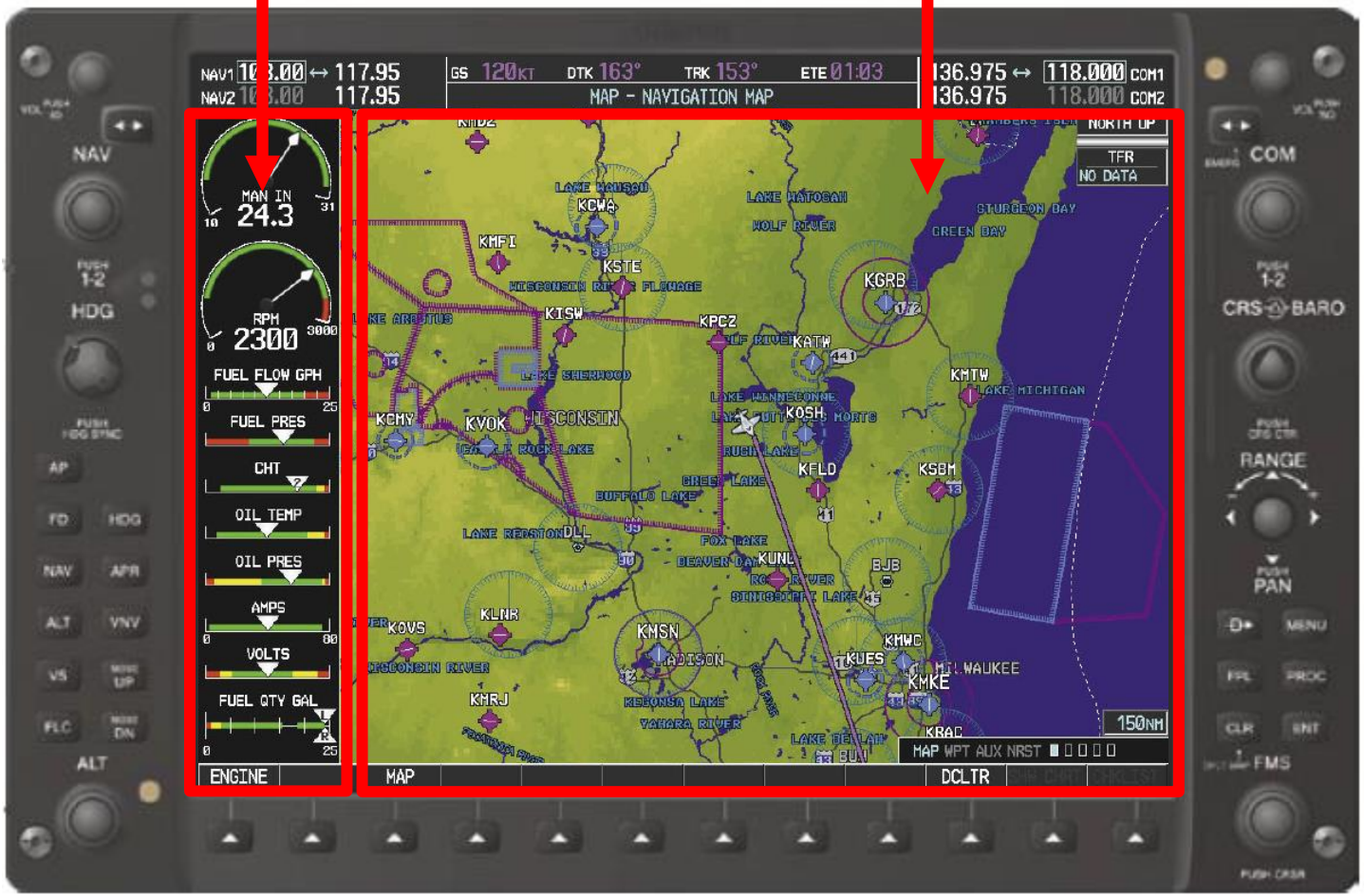
NOSE UP/NOSE DN Keys-
Control the mode reference in Pitch Hold, Vertical Speed, and Flight Level Change modes

Autopilot

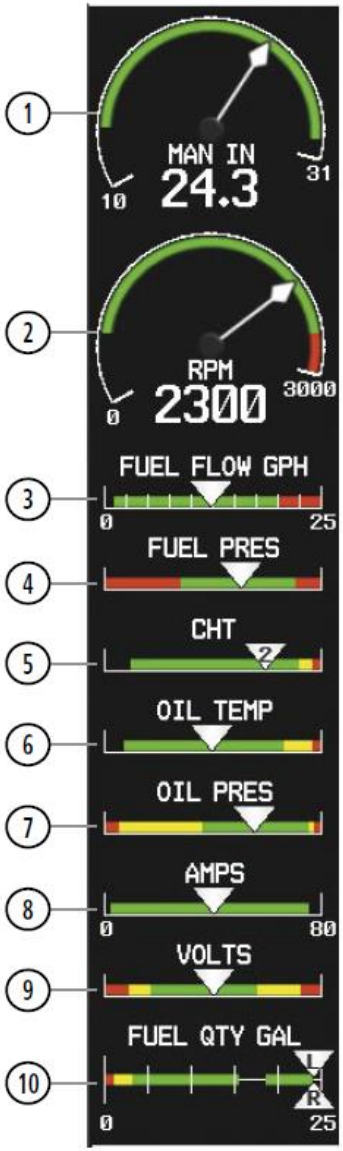
Garmin 1000 MFD

EIS / Engine Indication System

Multi Function Display



Engine Indication System



Engine Manifold Pressure Gauge (MAN IN HG)

Tachometer (RPM)

Fuel Flow Indicator (FUEL FLOW GPH)

Fuel Pressure Indicator (FUEL PRESS PSI)

Cylinder Head Temperature Indicator (CHT)

Oil Temperature Indicator (OIL TEMP)

Oil Pressure Indicator (OIL PRES)

Ammeter (AMPS)

Voltmeter (VOLTS)

Fuel Quantity Gauges (L/R FUEL QTY)

NAV and COM Tuning

LH identical RH

Garmin 1000

Diamond AIRCRAFT

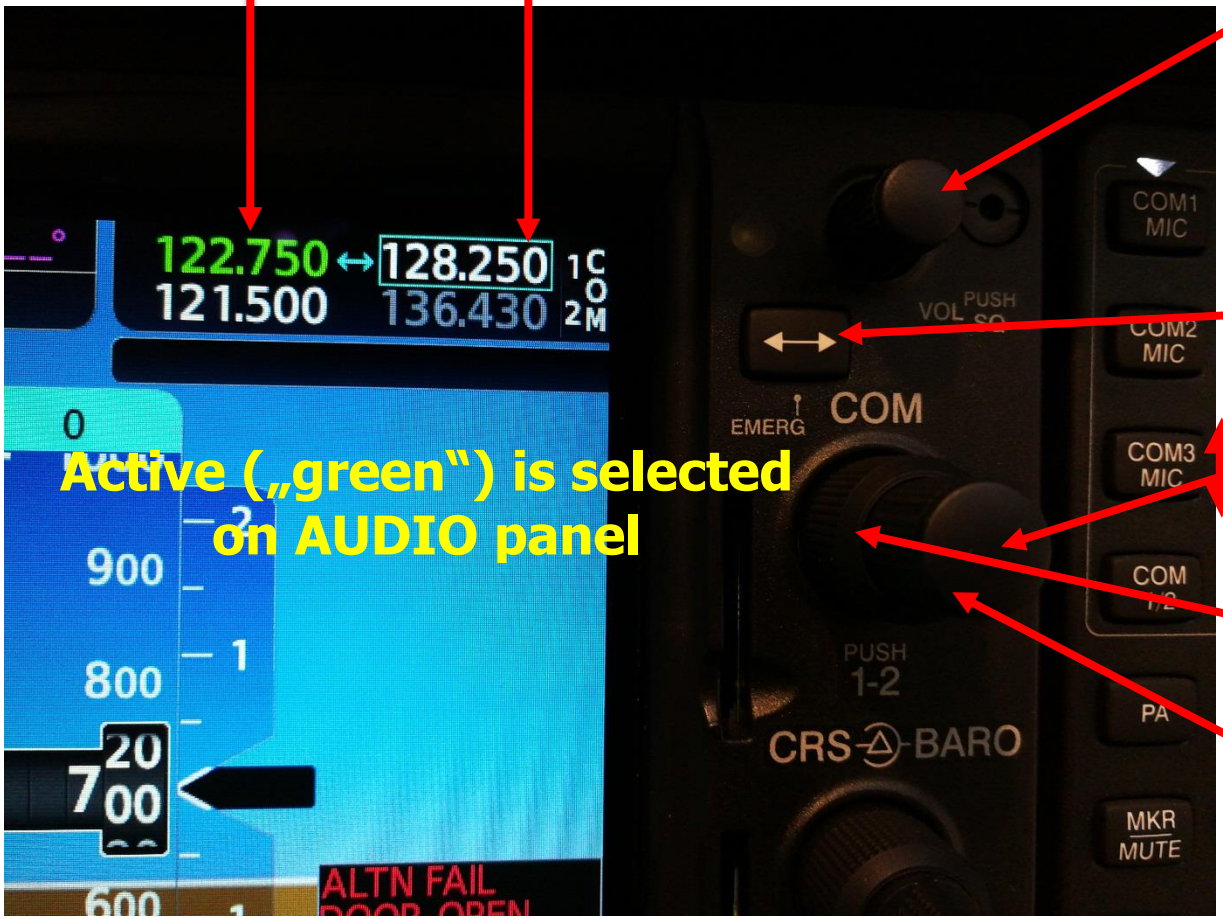
Active: inside

Standby: outside

Active: green

Standby cursor: boxed

COM volume/squelc



COM

COM flip-flop

Cursor toggle

MHz tuning

KHz tuning

NAV volume
ident filter

Standby: outside

Standby cursor: boxed

Active: inside

Active: green

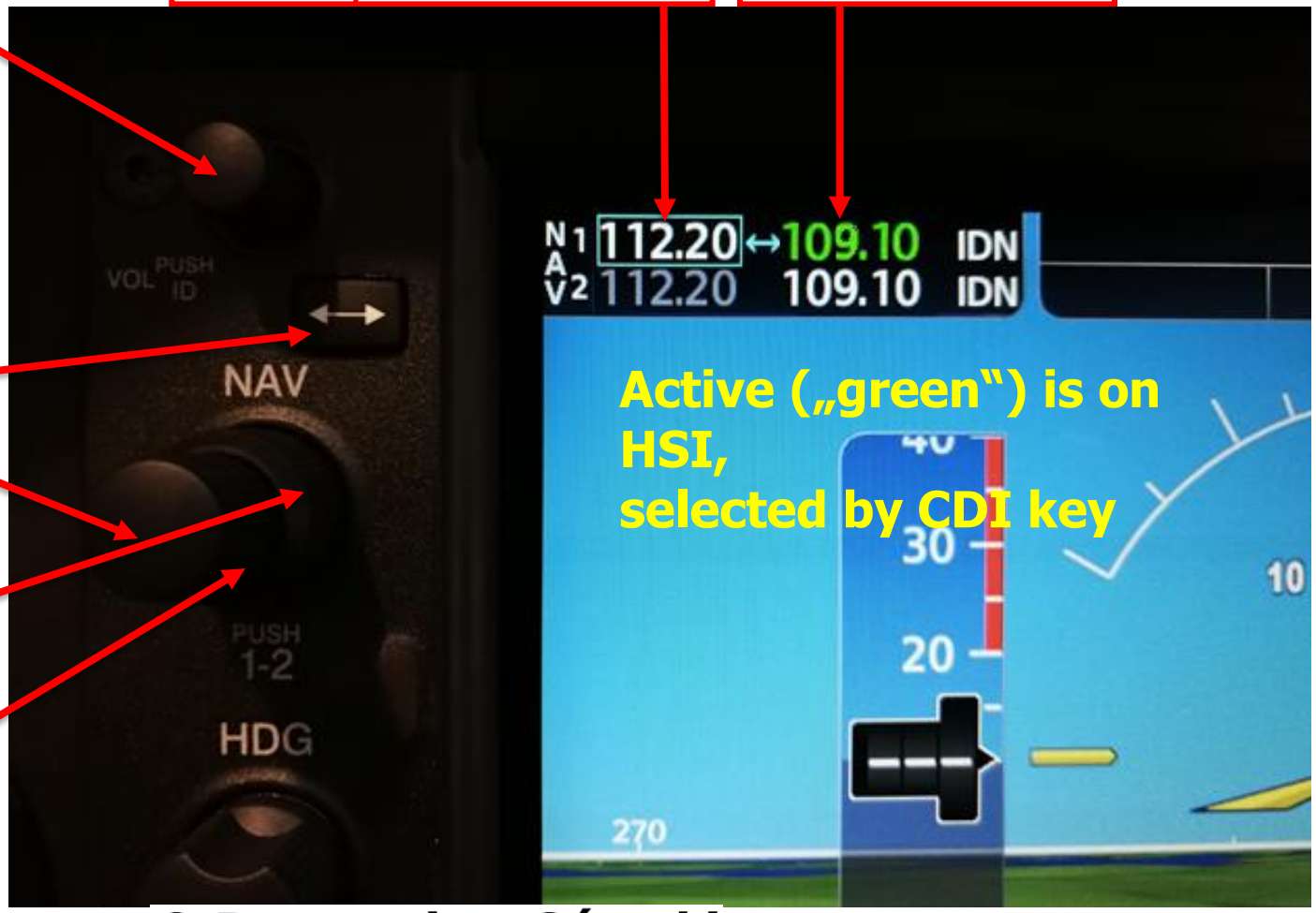
NAV

NAV flip-flop

Cursor toggle

MHz tuning

KHz tuning



Audio panel

COM1 MIC – Selects the #1 transmitter for transmitting.

COM2 MIC – Selects the #2 transmitter for transmitting.

COM3 MIC – Not used in DA40 NG aircraft.

COM 1/2 – Not used in DA40 NG aircraft.

PA – Selects the passenger address system.

MKR/MUTE – Selects marker beacon receiver audio.

DME – Turns optional DME audio on or off.

ADF – Turns optional ADF receiver audio on or off.

AUX – Not used in DA40 NG aircraft.

MAN SQ – Enables manual squelch for the intercom. When the intercom is active, press the **PILOT Knob** to illuminate **SQ**. Turn the **PILOT/PASS Knobs** to adjust squelch.

PILOT – Selects and deselects the pilot intercom

PILOT Knob – Press to switch between volume and squelch control as indicated by illumination of **VOL** or **SQ**. Turn to adjust intercom volume or squelch. The **MAN SQ Key** must be selected to allow squelch adjustment.

COM1 – When selected, audio from the #1 COM receiver can be heard.

COM2 – When selected, audio from the #2 COM receiver can be heard.

COM3 – Not used in DA40 NG aircraft.

TEL – Not used in DA40 NG aircraft.

SPKR – Selects and deselects the cabin speaker.

HI SENS – Press to increase marker beacon receiver sensitivity

NAV1 – When selected, audio from the #1 NAV receiver can be heard.

NAV2 – When selected, audio from the #2 NAV receiver can be heard.

PLAY – Press once to play the last recorded COM audio.

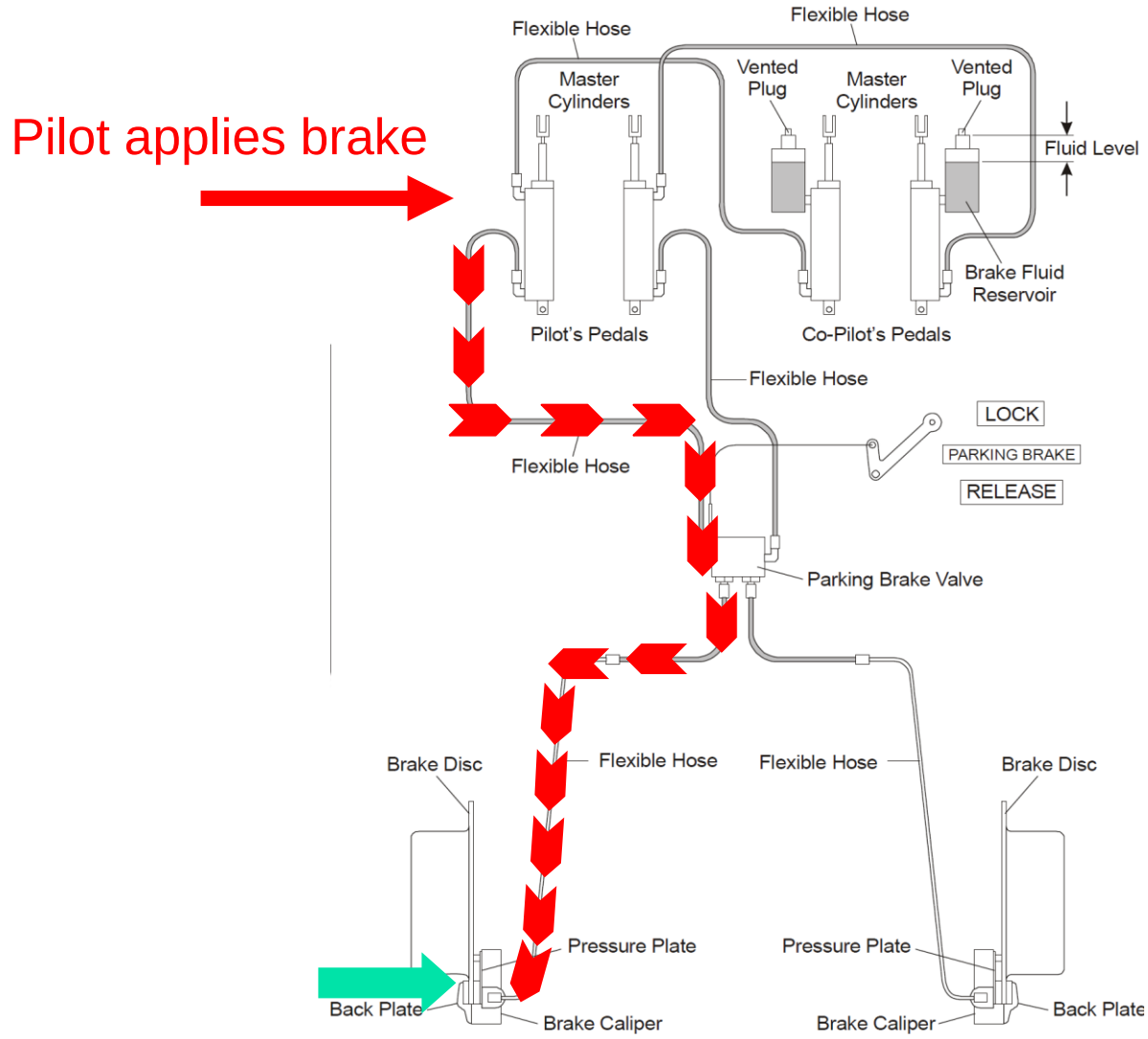
COPLT – Selects and deselects the copilot intercom isolation.

PASS Knob – Turn to adjust Copilot/Passenger intercom volume or squelch. The **MAN SQ Key** must be selected to allow squelch adjustment.

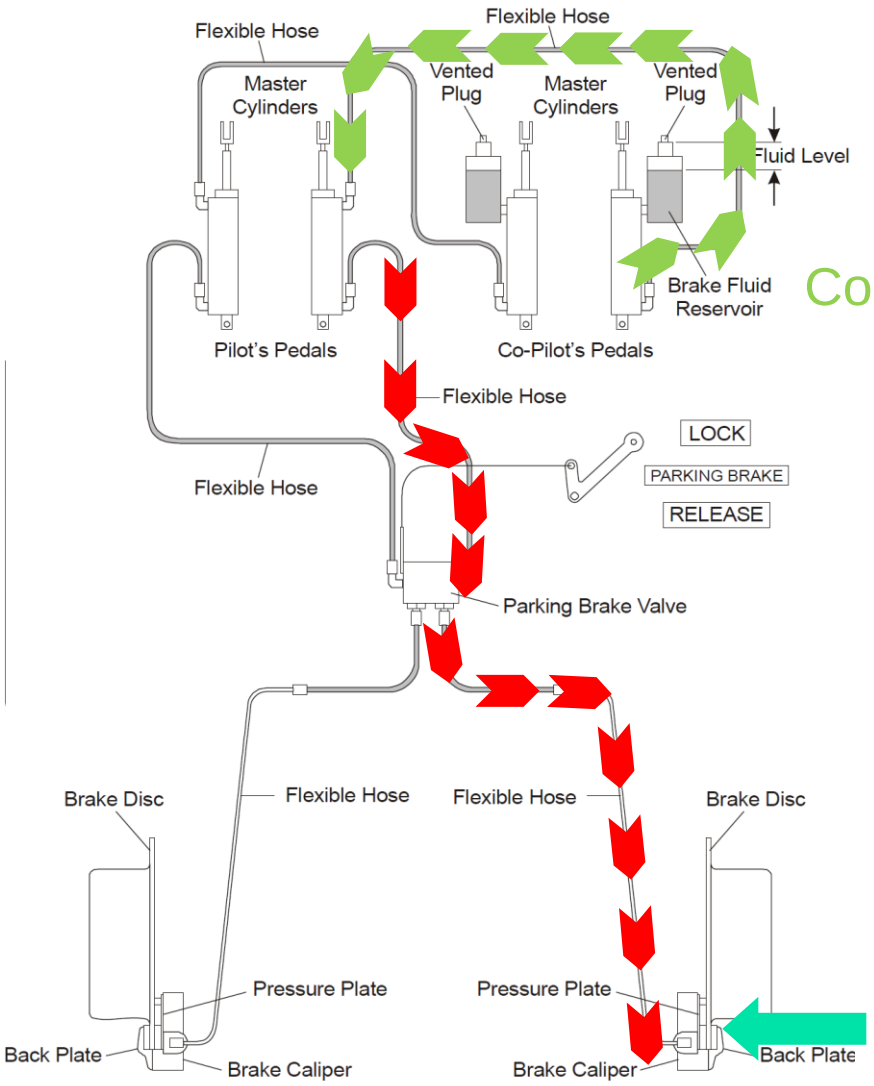
DISPLAY BACKUP Button – Manually selects Reversionary Mode.

Diamond DA40-NG

Hydraulic brakes



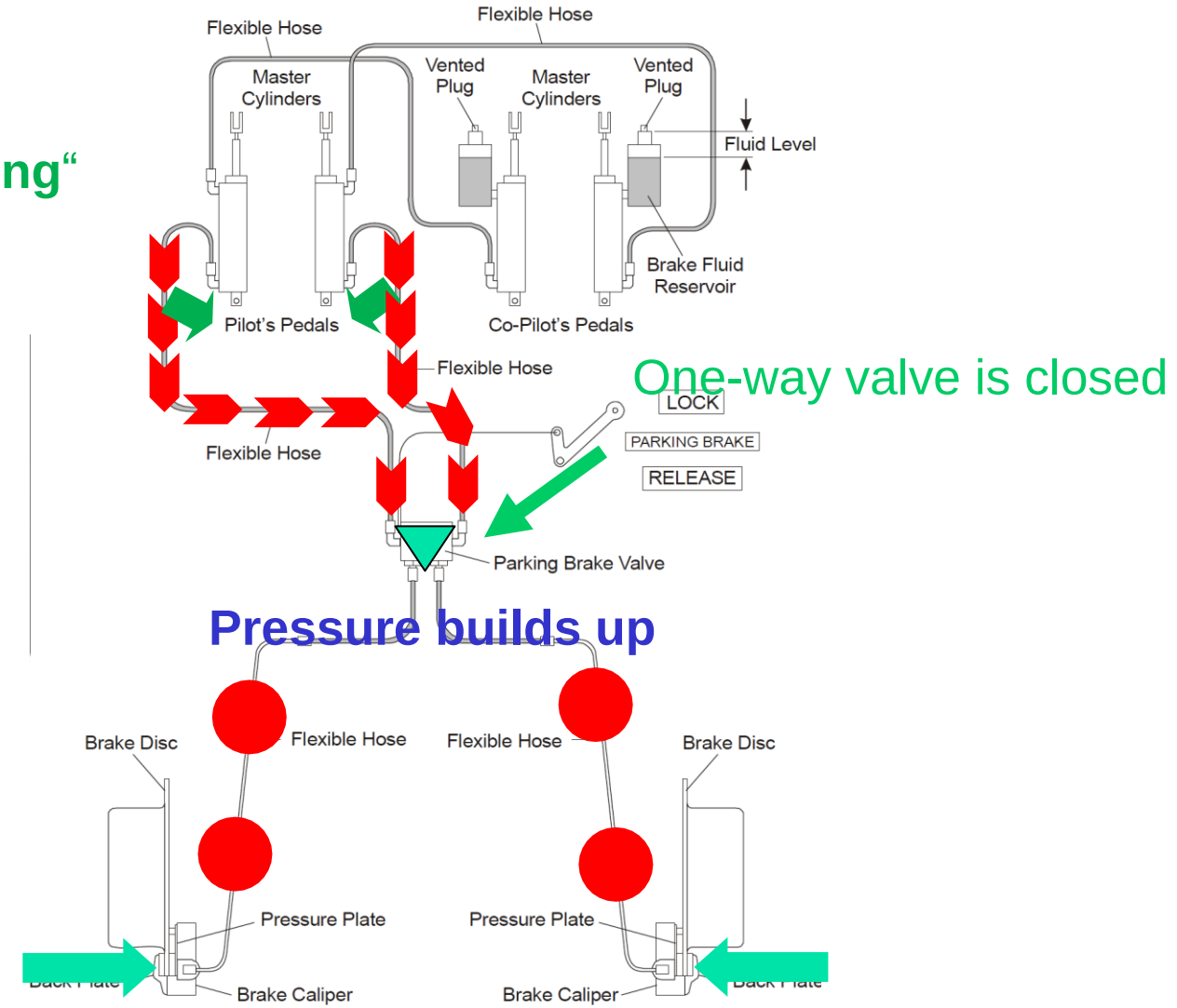
Hydraulic brakes



Copilot applies brake

Parking brake

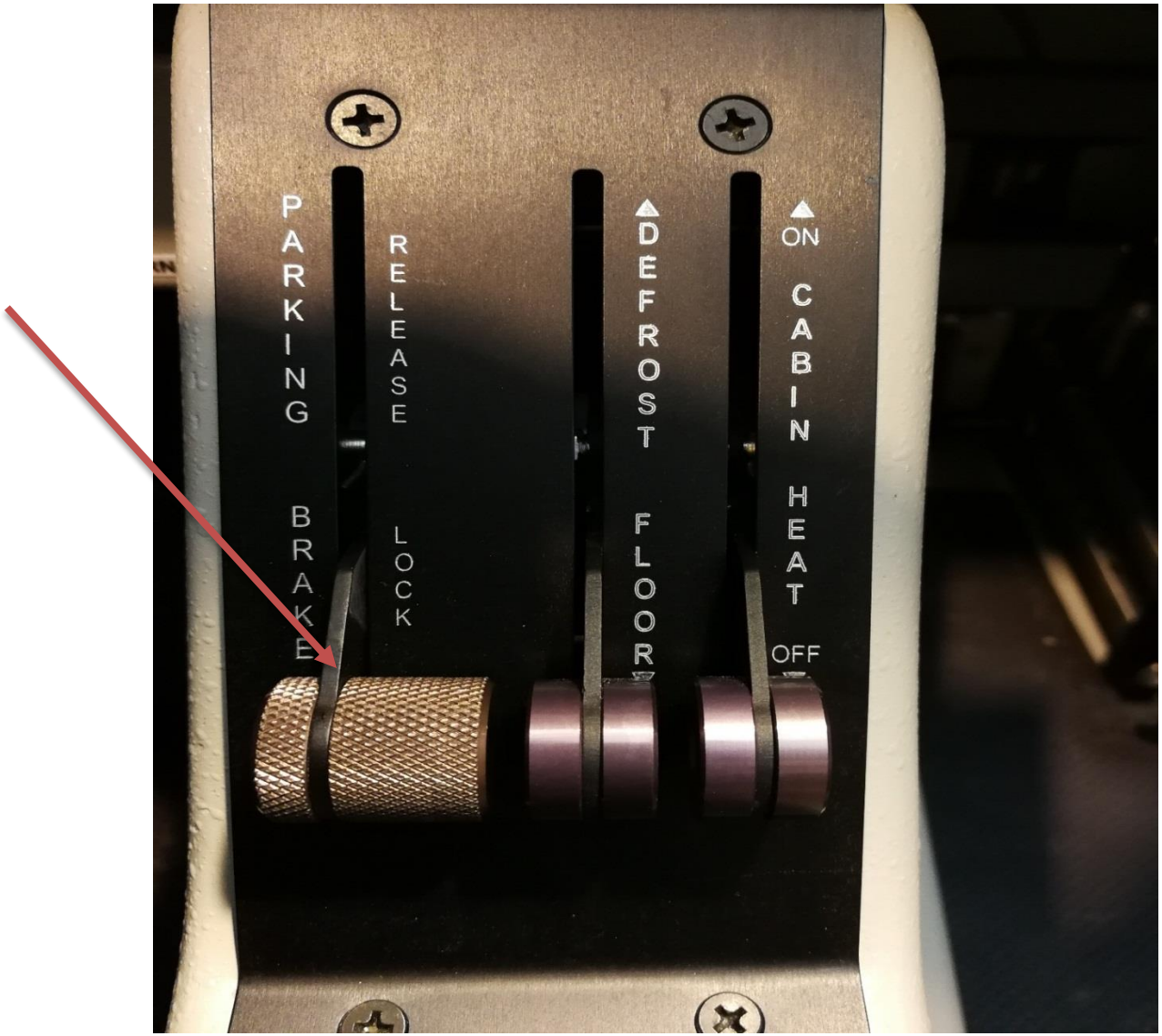
„Pumping“



One-way valve is closed

Pressure builds up

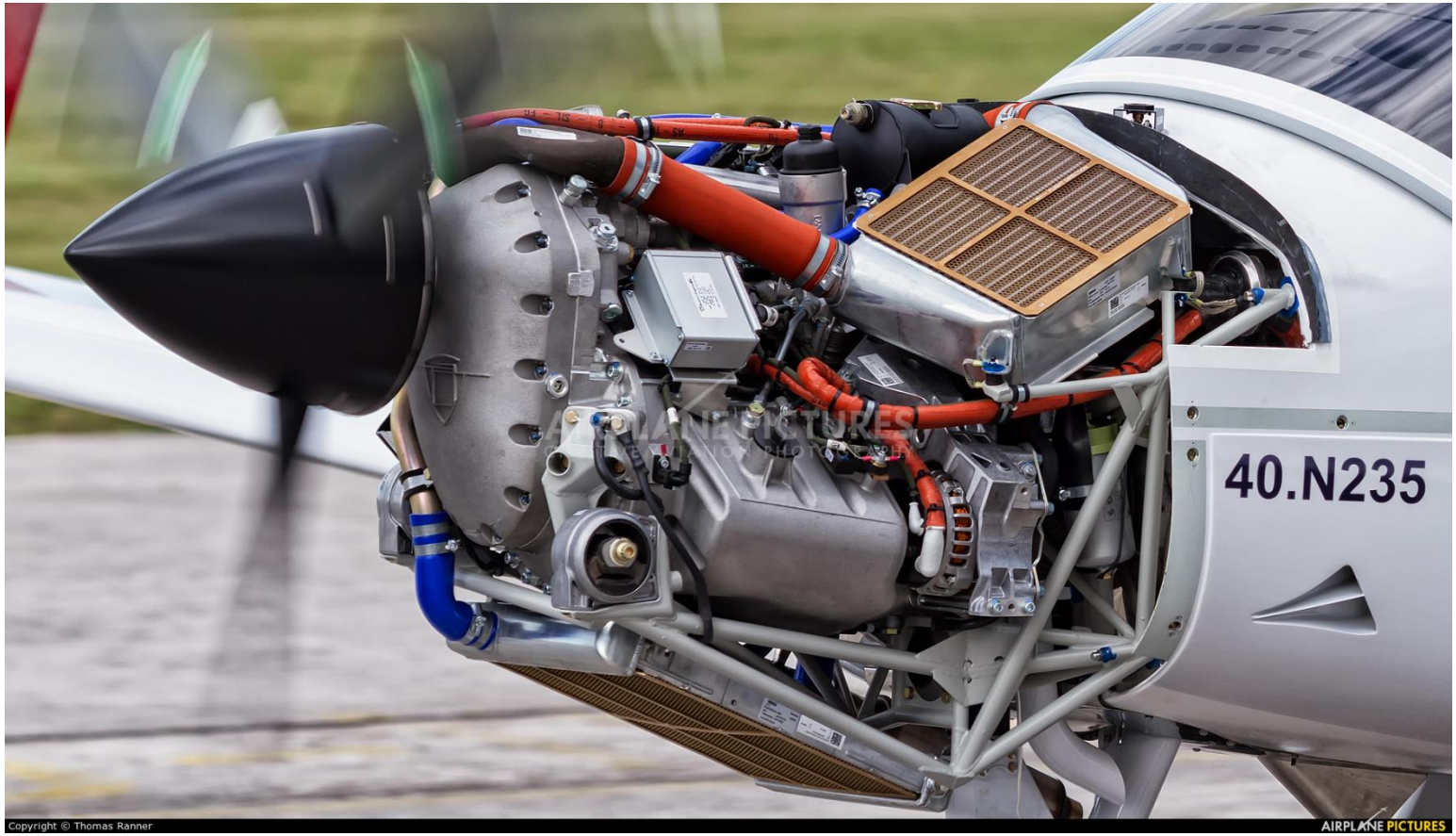
Parking brake



Diamond DA40-NG

Power Plant

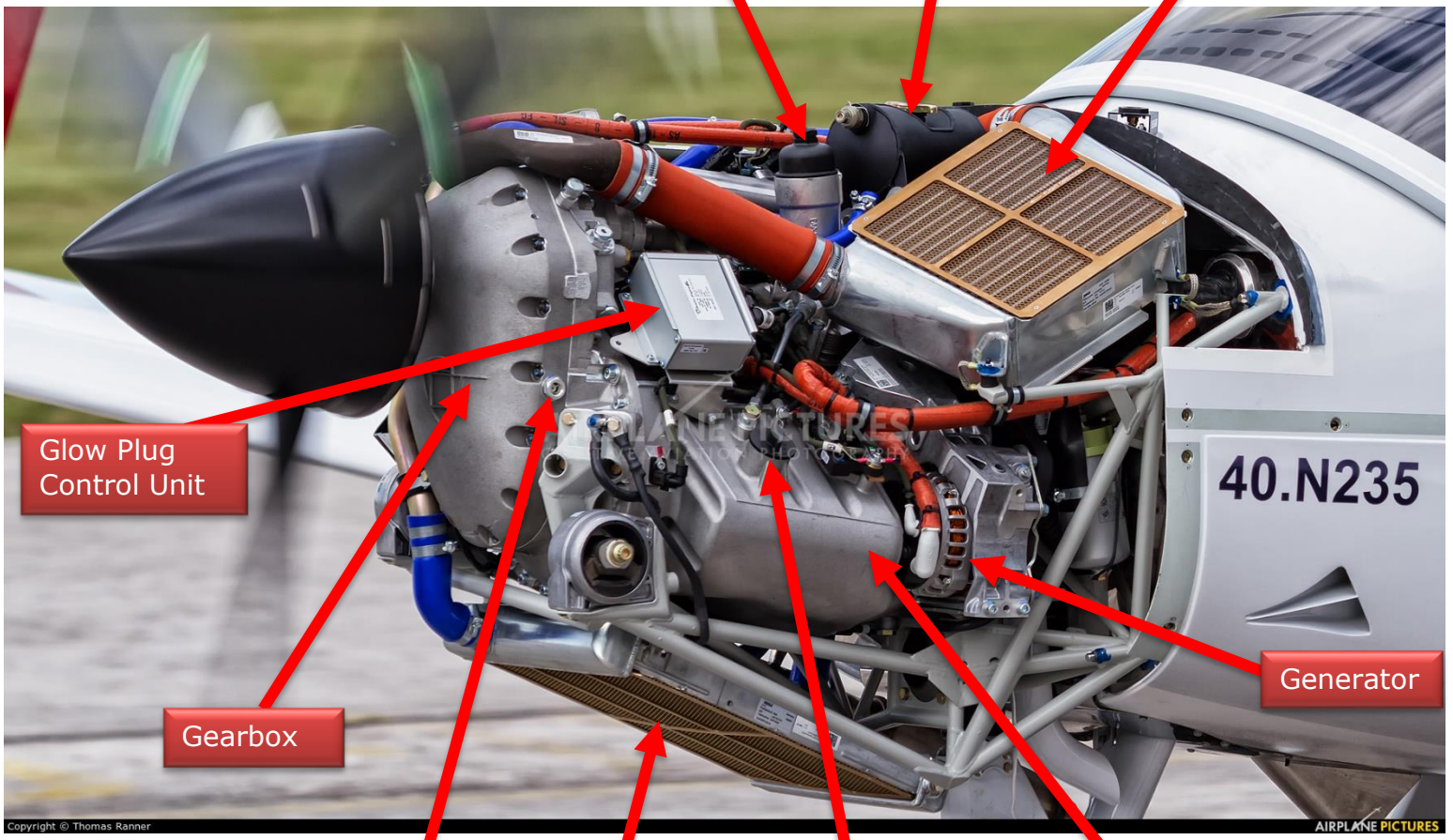
Diamond DA40-NG Powerplant



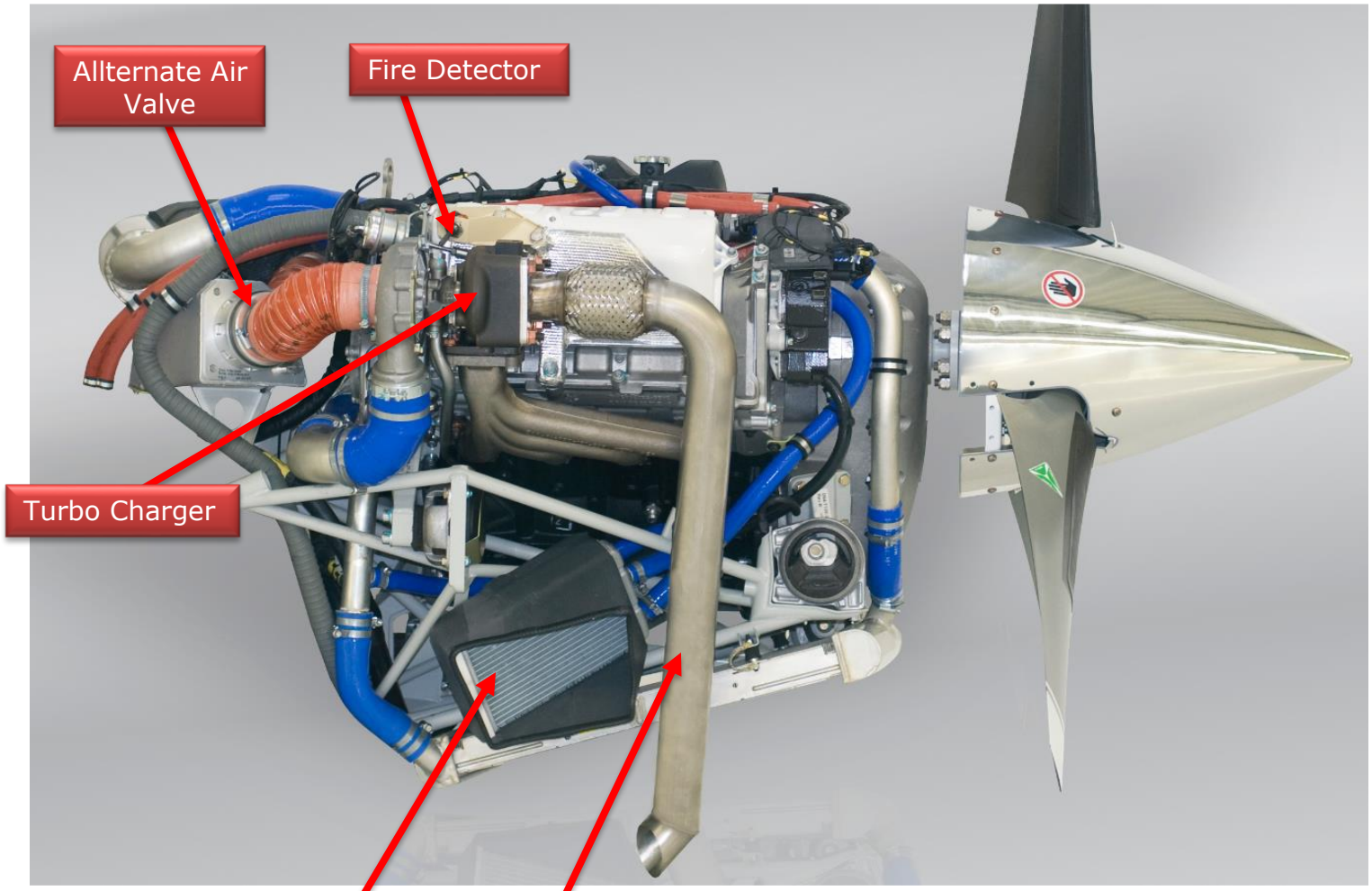
Diamond DA40-NG

- ✓ Austro Engine E4-A engine
- ✓ Liquid-cooled four-cylinder four-stroke engine with wet sump lubrication, 1991 ccm
- ✓ Inline construction
- ✓ Propeller speed reducing gear 1:1.69
- ✓ Digital engine control with integrated propeller governor (using the gearbox oil system)
- ✓ Turbo charger with intercooler
- ✓ Max. power 123,5kW (165,6 HP) at 2300 RPM
- ✓ Max cont. Power 114kW (152,8 PS) at 2100 RPM

Diamond DA40-NG



Diamond DA40-NG



Power plant limitations

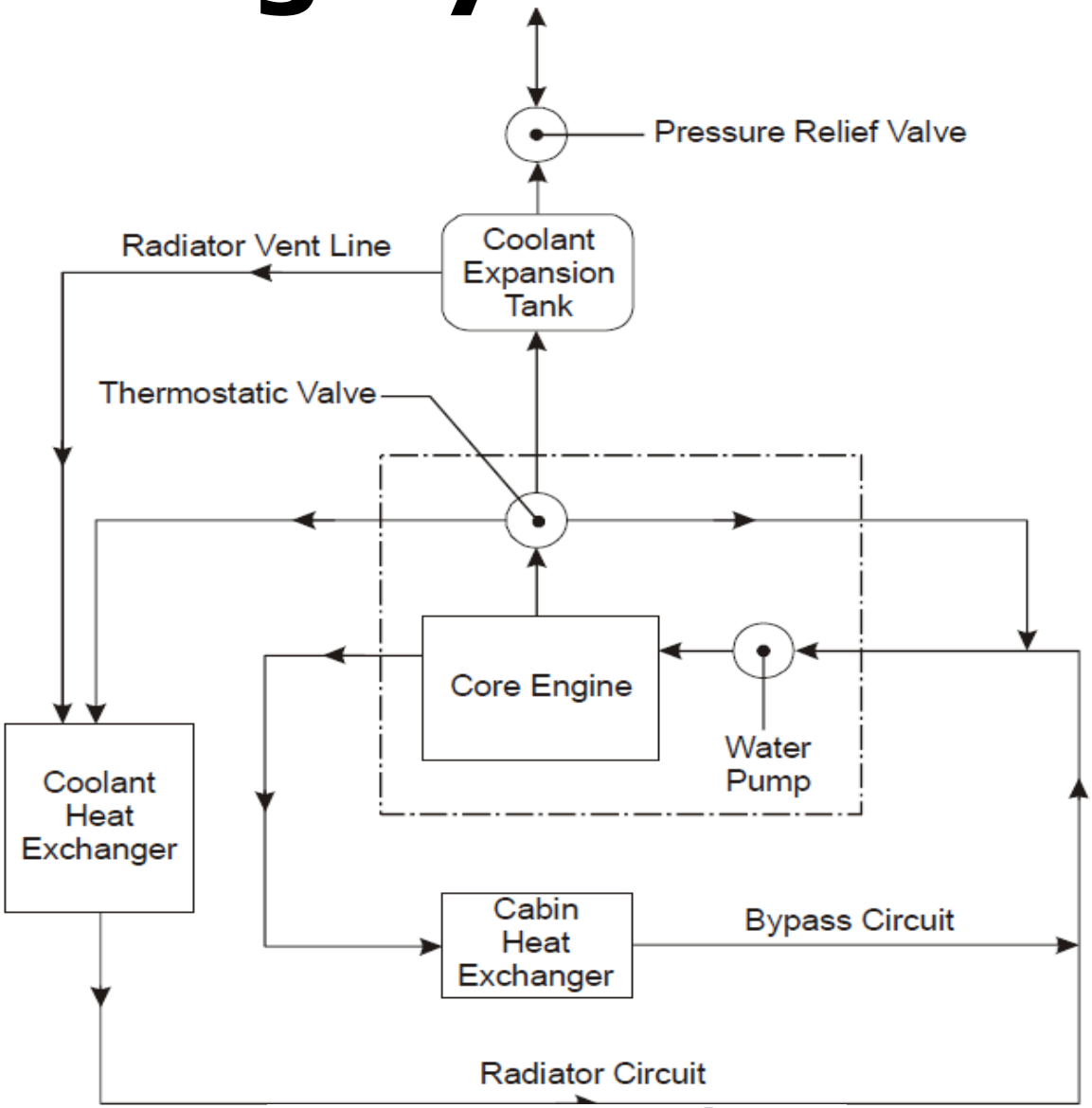
- ✓ Max overspeed: 2500 RPM, max 20 sec.
- ✓ Oil pressure: 0.9 – 6.5 bar
- ✓ Oil quantity: 5.0 – 7.0 liters
- ✓ Max. oil consumption: 0.1 liters/hr
- ✓ Oil temperature: -30 °C 140 °C
- ✓ Gearbox temperature: max. 120 °C
- ✓ Coolant temperature: -30 °C 105 °C
- ✓ Fuel temperature: -25 °C 60 °C
- ✓ Fuel pressure: 4bar – 7bar

Power plant fluid specifications

- Fuel: JET A-1
- Oil: SHELL Helix Ultra 5W30
- Gearbox oil: SHELL SPIRAX GSX 75W-80
- Coolant: Distilled water / Cooler protection (BASF Glysantin Protect Plus / G48)
  Mixture ratio 50% / 50% for freezing point -38°C

Diamond DA40-NG

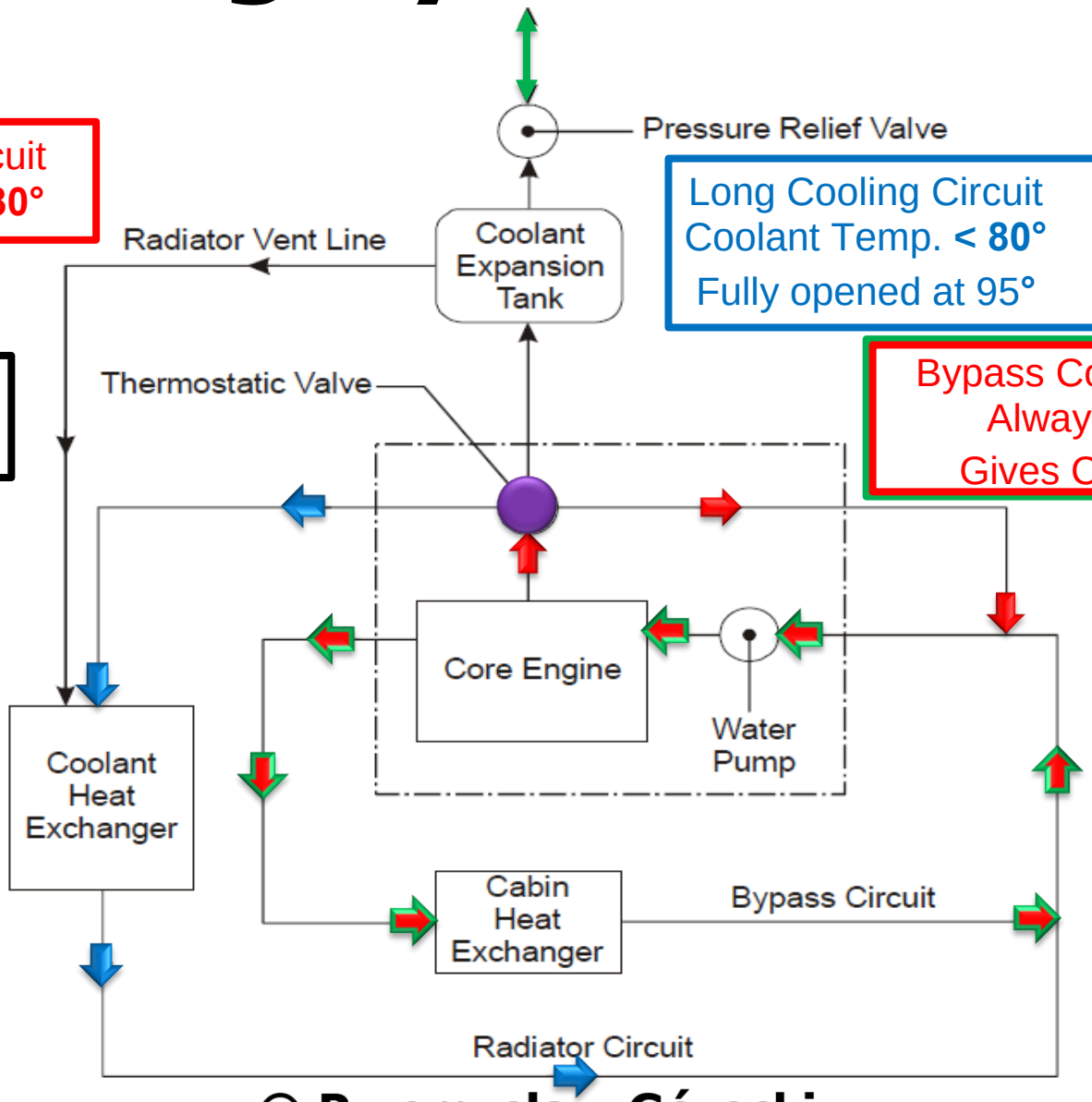
Cooling System



Cooling System

Small Cooling Circuit
Coolant Temp. **> 80°**

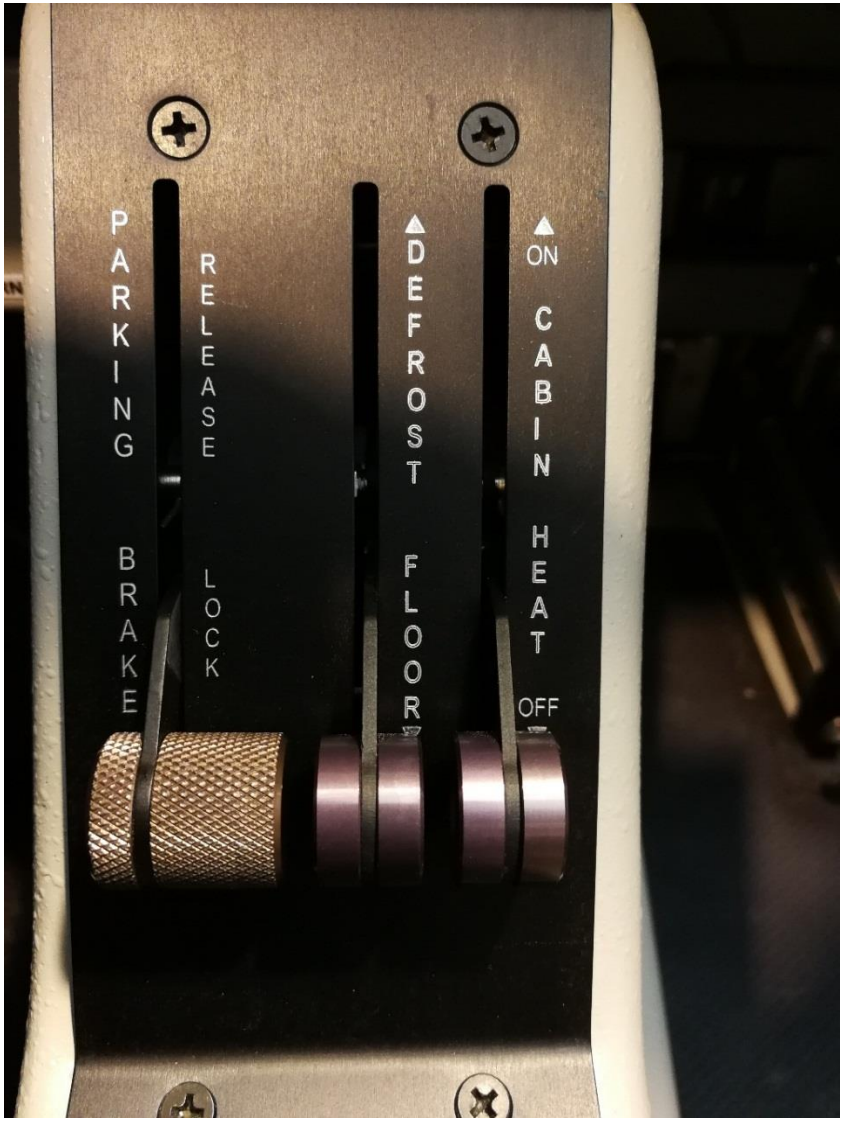
Coolant Temp.
<105°



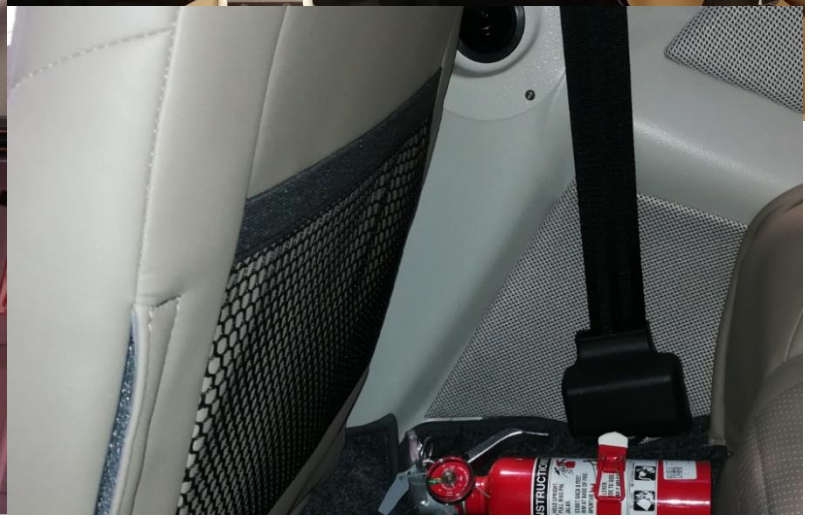
Long Cooling Circuit
Coolant Temp. **< 80°**
Fully opened at 95°

Bypass Cooling Circuit
Always Active,
Gives Cabin Heat

Cabin Heat Levers



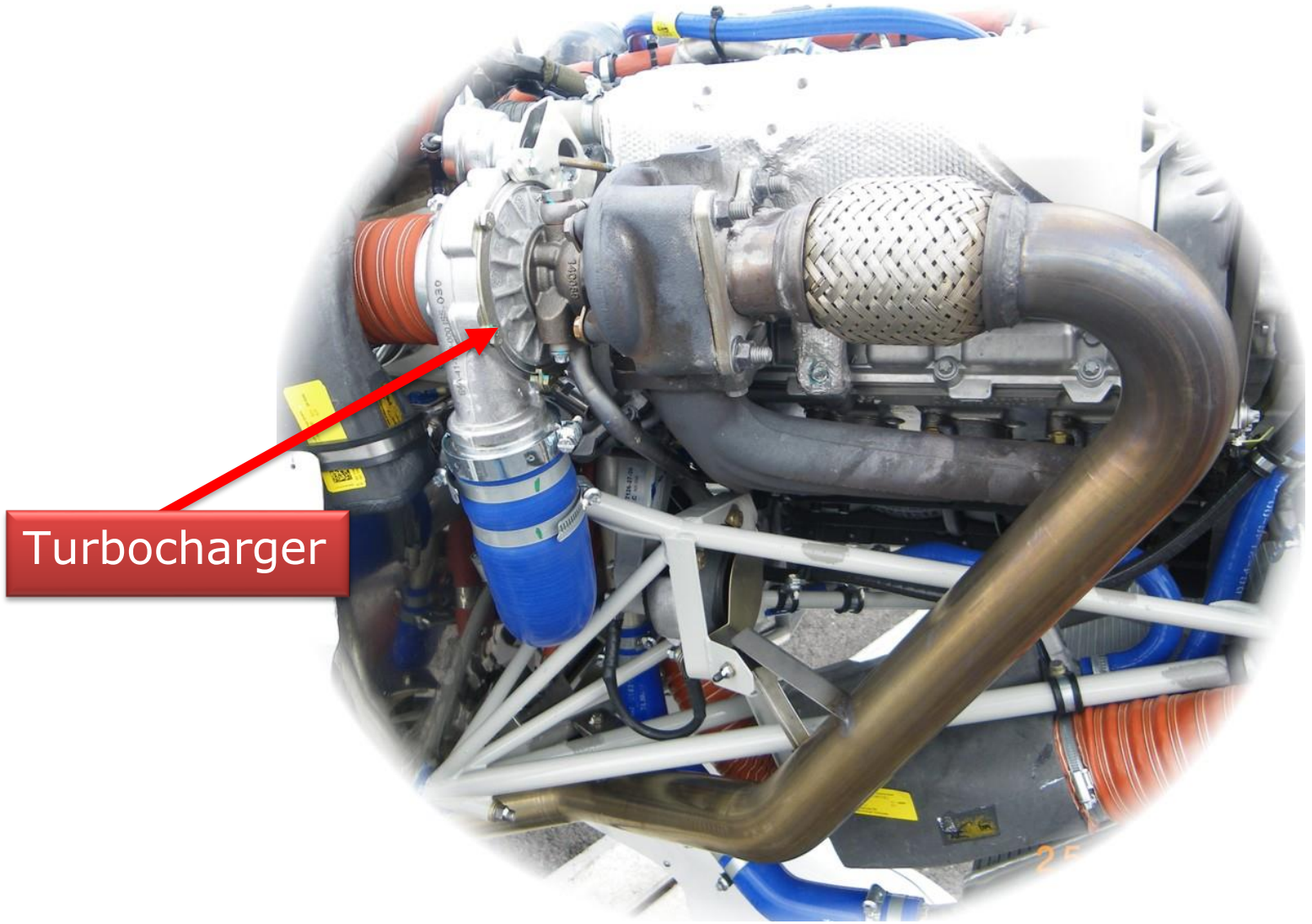
DA 40-NG Ventilation



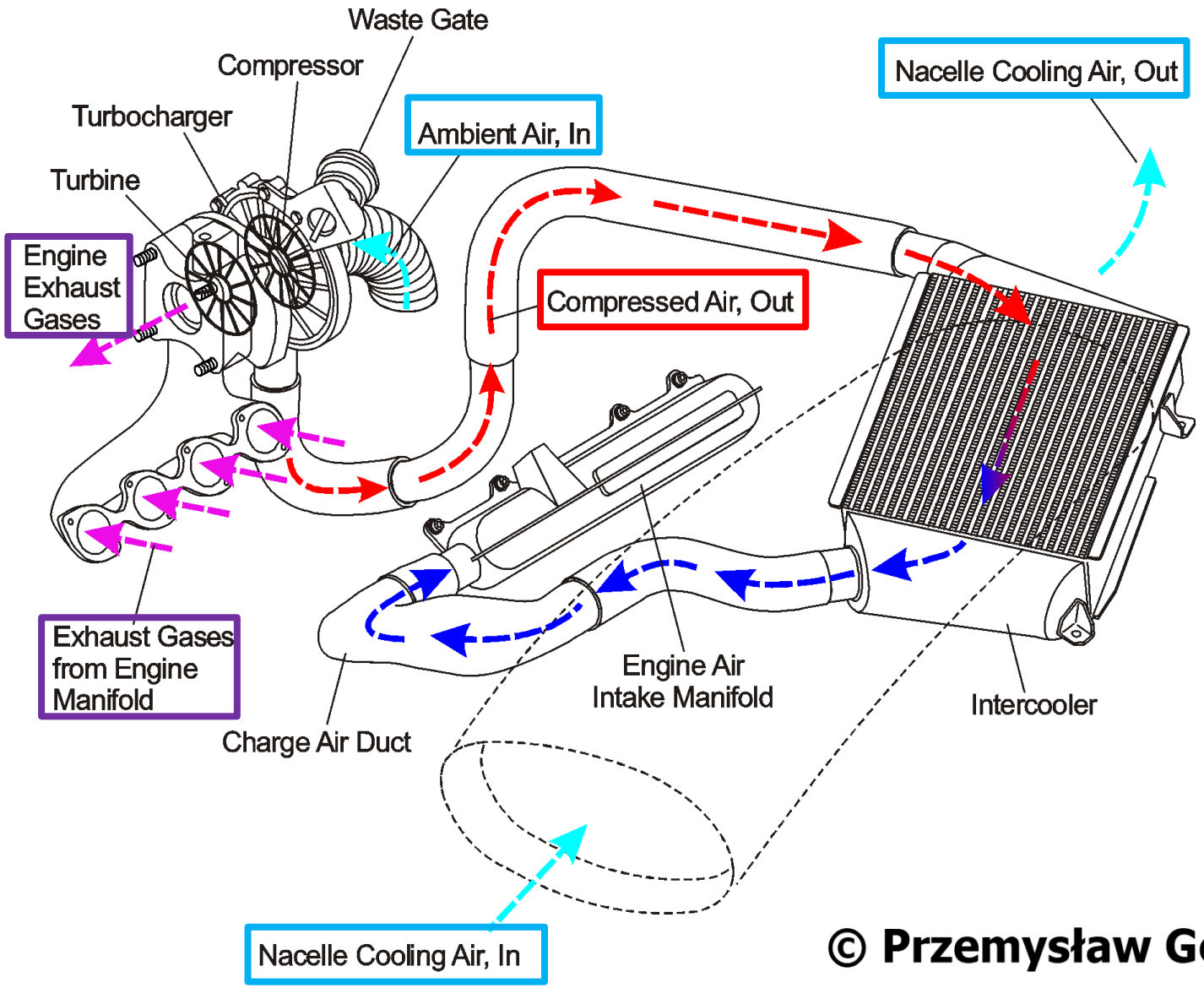
DA 40-NG Ventilation

Diamond DA40-NG

Turbocharger System



Turbocharger System



Diamond DA40-NG

DA 40 NG Fuel System

2 x 19,5 USG usable

= 39 USG

= 148 liters

= 120 kg

At 65% power: ~ 5,6 USG or 21,5L /hr

2 x 1 USG unusable

Max indicated fuel per tank: 14 USG

Max. unbalance: 9 USG

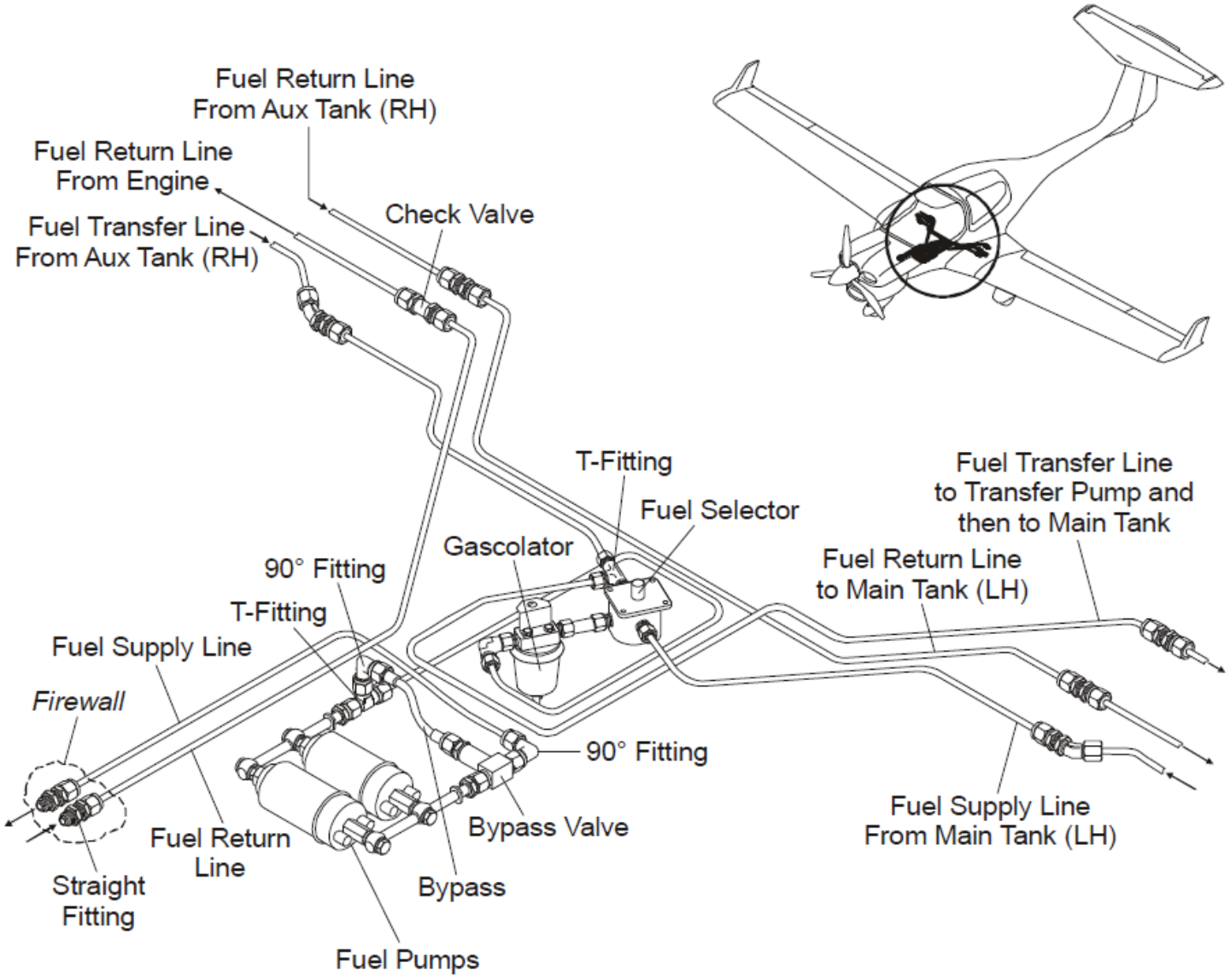
DA 40 NG Fuel System

Fuel Flow		
Power Setting [%]	Fuel Flow [US gal / h]	Fuel Flow [Liter / h]
30	2.9	11.0
35	3.3	12.5
40	3.7	14.0
45	4.0	15.5
50	4.4	16.5
55	4.7	18.0
60	5.1	19.5
65	5.6	21.5
70	6.1	23.0
75	6.6	25.0
80	7.1	27.0
85	7.6	28.5
90	8.1	30.5
92	8.3	31.5
100	9.4	35.5

DA 40 NG Fuel System

DA 40 NG Fuel System

DA 40 NG Fuel System



DA 40 NG Fuel System

CAUTION

During normal operation fuel is taken from the main tank only. Therefore fuel must be transferred from the auxiliary tank to the main tank by activating the fuel transfer pump. The transfer rate is approximately 60 US gal/h (227 liter/h).

NOTE

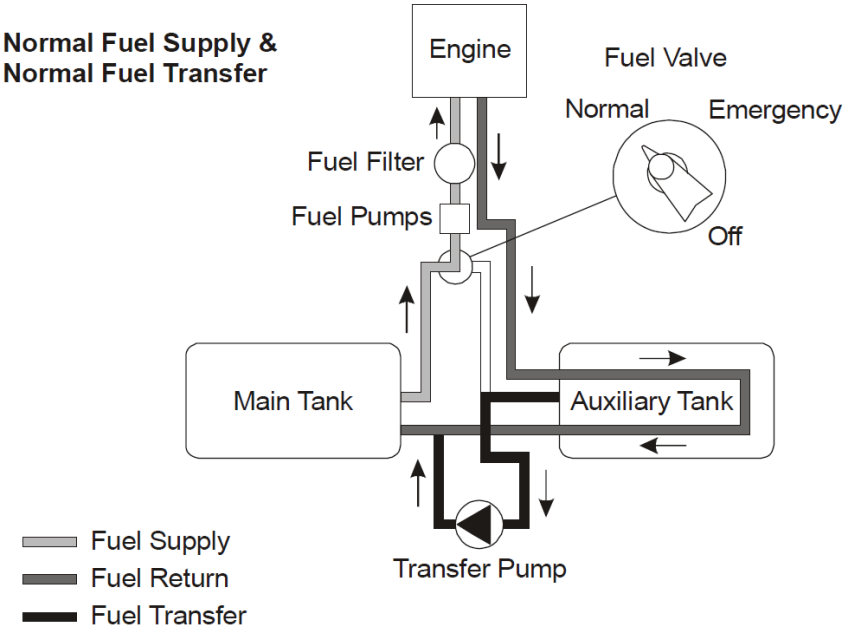
The transfer pump turns off automatically to avoid overfilling the main tank. The switch remains in its position. If the pump is not turned off, it will continue pumping each time the fuel level in the main tank drops, but only as long as there is fuel in the auxiliary tank. The fuel transfer status light is illuminated only while the pump is running.

NOTE

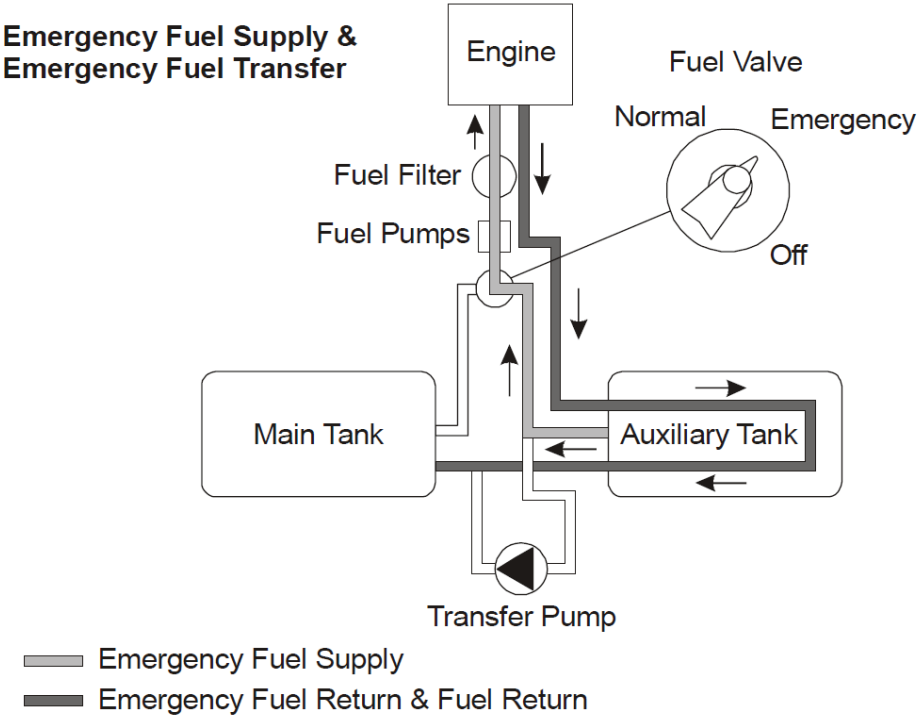
If the fuel transfer status light starts to blink, the fuel transfer pump must be switched off.

DA 40 NG Fuel System

Normal Fuel Supply &
Normal Fuel Transfer

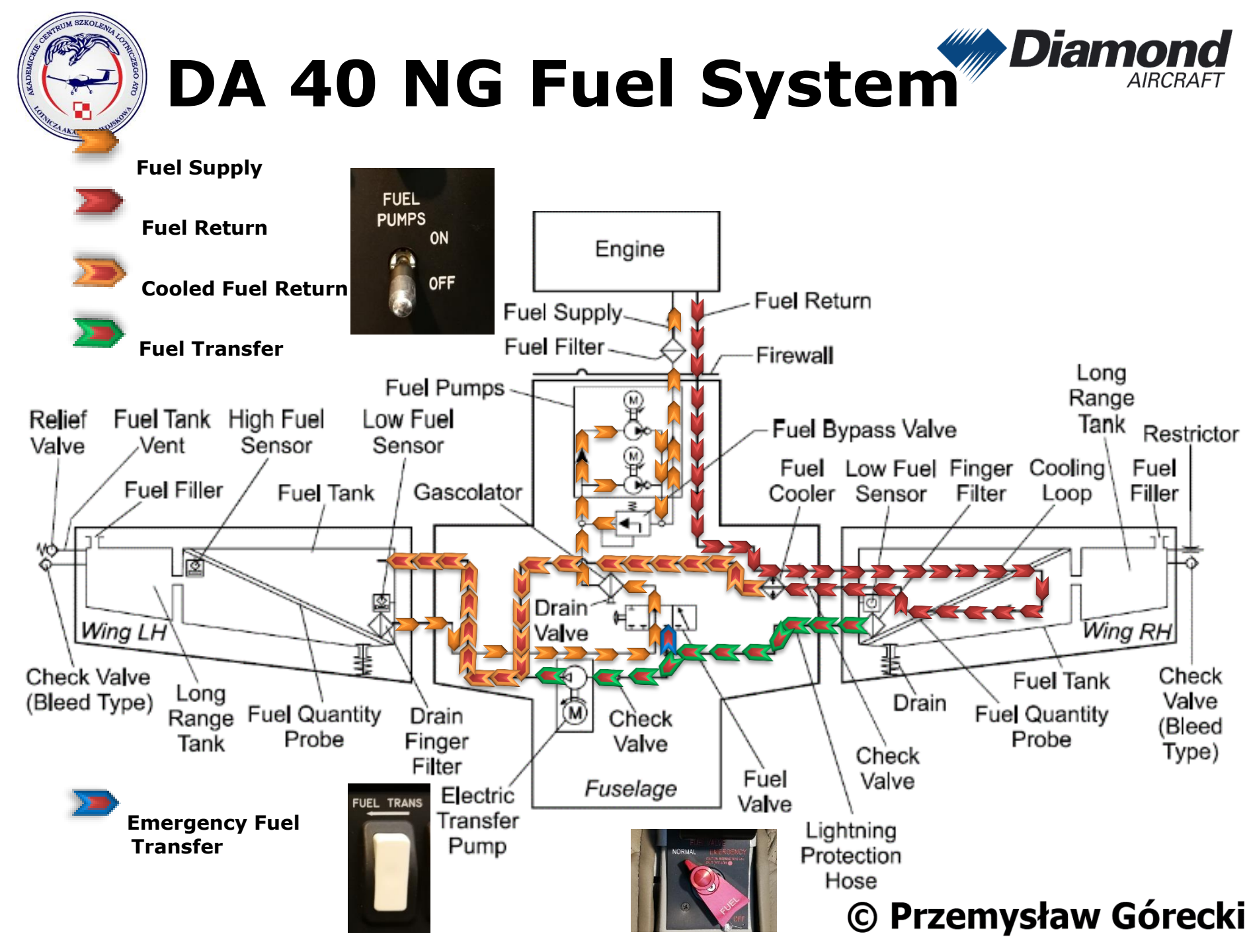


Emergency Fuel Supply &
Emergency Fuel Transfer

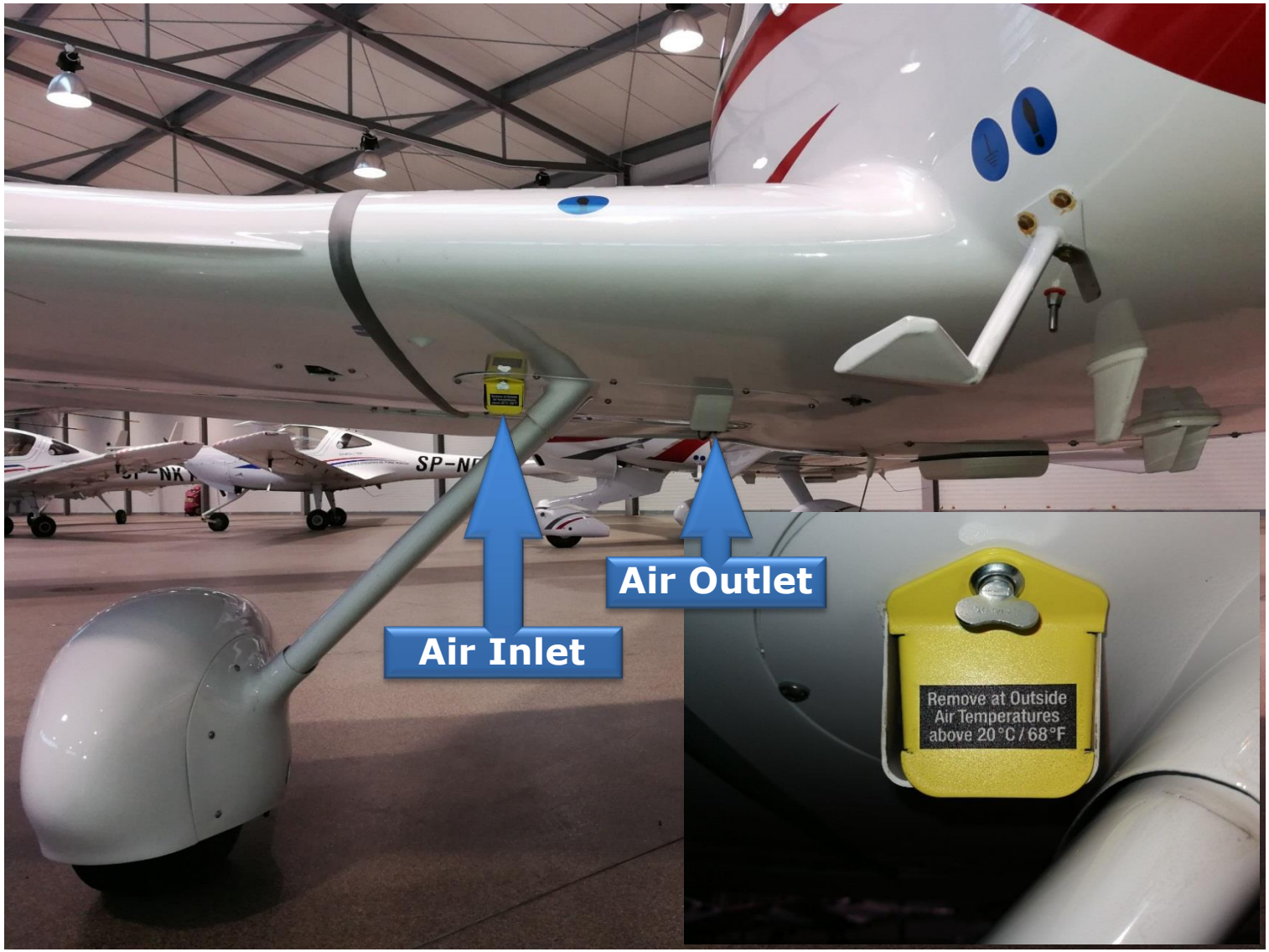


If the control lever is set to NORMAL only the left wing tank will supply fuel. If the control lever is set to EMERGENCY then only the right wing tank will supply fuel. If the control lever is set to OFF then fuel will not be supplied from the tanks.

DA 40 NG Fuel System



Fuel cooler



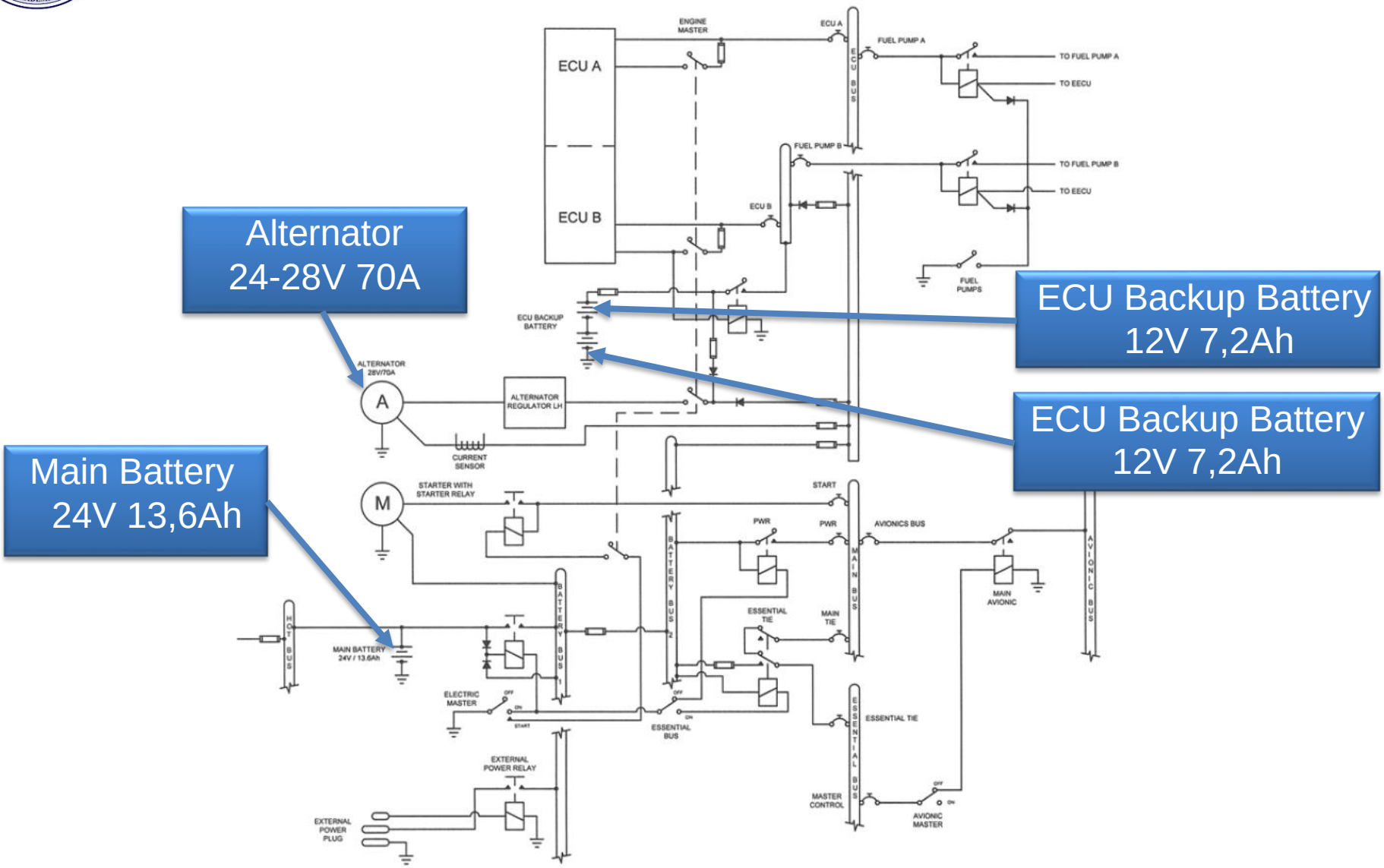
Fuel vents

Fuel tank drain

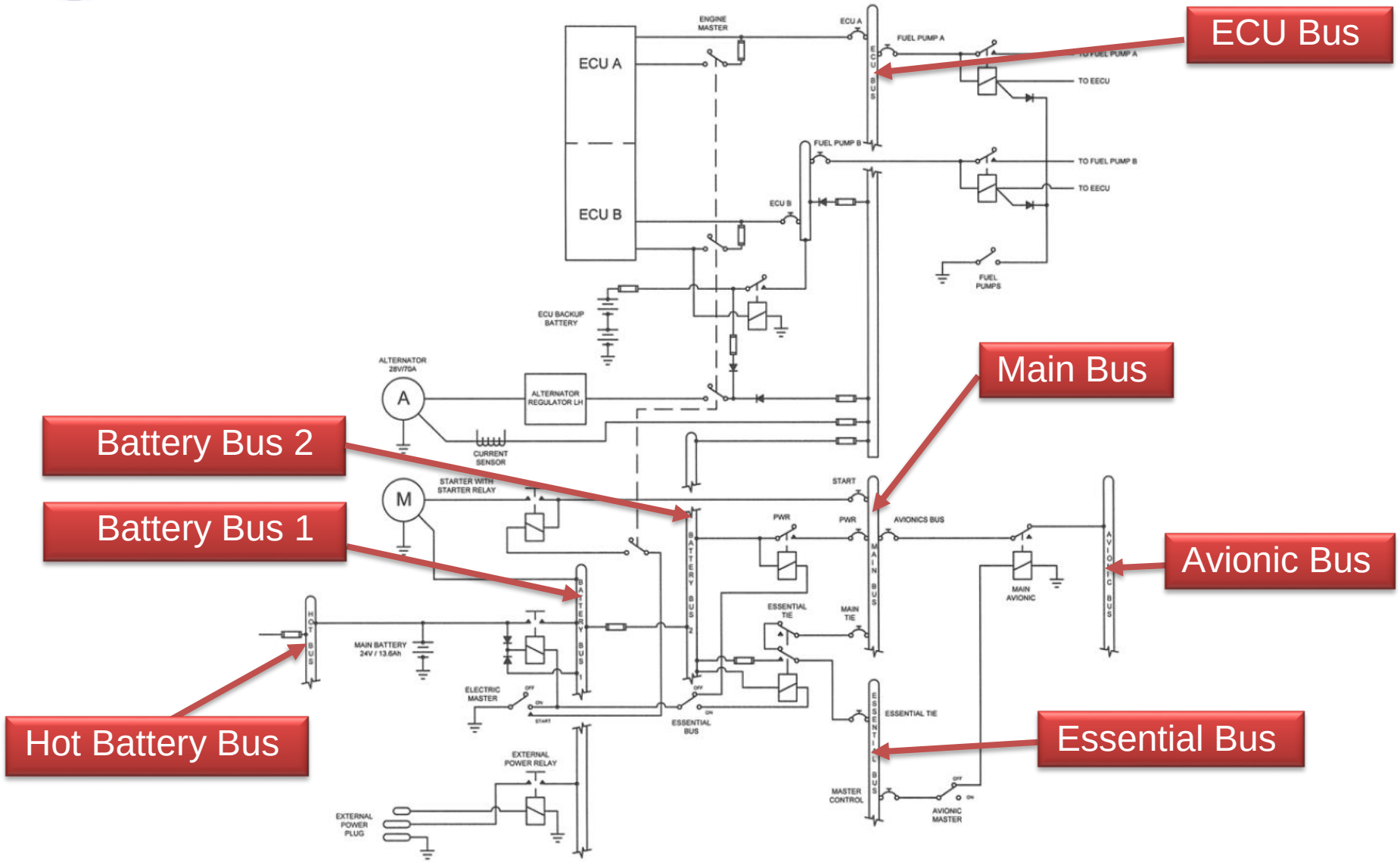
Fuel gascolator drain

Diamond DA40-NG

Power Sources



Power Distribution



Hot Battery Bus:

Directly connected to the main-battery cannot be disconnected from it, provides power to the accessory power plug and ELT

Battery Bus 1:

Connected to the main-battery can be controlled by the ELECTRIC MASTER key switch, provides power to the battery bus 2 and heavy duty power to the starter. Also connected to the power input line of the external power plug.

Battery Bus 2:

Connected to the battery bus 1 provides power to the ECU bus, also provides power to the main bus can be controlled by the ELECTRIC MASTER key switch and the ESSENTIAL BUS switch. The ELECTRIC MASTER key switch must be set to ON and the ESSENTIAL BUS switch must be set to OFF to connect the battery bus to the main bus.

ECU Bus:

Connected to the battery bus 2 provides power for the ECU A and ECU B and their fuel pumps. It is also connected to the power output line of the alternator provides power for charging the ECU backup battery.

The ENGINE MASTER switch must be set to ON to activate the ECU A and ECU B to the ECU bus.

Main Bus:

Connected to the battery bus provides power to the consumers, directly connected to the main bus and the avionic bus The AVIONIC MASTER switch must be set to ON to connect the main bus to the avionic bus. Under normal operating conditions the main bus is also connected to the essential bus. In the event of an alternator failure the pilot must switch ON the ESSENTIAL BUS switch, This separates the main bus from the battery bus and essential bus, the equipment connected to the main bus no longer has power.

Essential Bus:

Under normal operating conditions the essential bus is connected to the main bus provides power to the consumers connected to the essential bus. The AVIONIC MASTER switch must be set to ON to connect the essential bus to the avionic bus. In the event of an alternator failure the pilot must switch ON the ESSENTIAL BUS. This separates the essential bus from the main bus. The essential bus is then connected to the battery bus 2 which provides battery power for a limited time to the equipment essential for safe flight and landing.

External Power Unit

External Power Unit

Diamond DA40-NG

When is it used ?

When the generator fails

- to disconnect unnecessary electrical consumers
- to supply battery power to essential electrical consumers

Essential Electrial Power

Essential Bus

- PFD
- Horizon *)
- AHRS
- ADC
- Flaps
- Landing light
- Pitot Heating
- Landing Light
- Flood Light *)
- COM 1
- GPS / NAV Receiver 1
- Transponder
- Engine instruments

Hot Battery Bus

- (Essential Bus)
- Pilot‘s map/reading light
- Auxiliary jack

*) Emergency Battery

Main unserviceable systems

- Fuel x-fer pump
- MFD
- Avionic / CDU fan
- Position light, Strobe lights, Taxi light
- Instrument lights, Map light
- Starter
- (Avionics Bus)
- COM2, NAV/GPS2, ADF, DME, WX500, Audio, Autopilot

When switched ON during normal operation the battery won't be discharged.

Diamond DA40-NG

Cruise Power Setting

Fuel Flow		
Power Setting [%]	Fuel Flow [US gal / h]	Fuel Flow [Liter / h]
30	2.9	11.0
35	3.3	12.5
40	3.7	14.0
45	4.0	15.5
50	4.4	16.5
55	4.7	18.0
60	5.1	19.5
65	5.6	21.5
70	6.1	23.0
75	6.6	25.0
80	7.1	27.0
85	7.6	28.5
90	8.1	30.5
92	8.3	31.5
100	9.4	35.5

Cruise Speed

Cruise Performance															
Press. Alt. [ft] / [m]	Outside Air Temperature - [°C]														
	ISA-10			ISA			ISA+10			ISA+20			ISA+30		
	Pwr [%]	FF [US gal/h]	TAS [kt]	Pwr [%]	FF [US gal/h]	TAS [kt]	Pwr [%]	FF [US gal/h]	TAS [kt]	Pwr [%]	FF [US gal/h]	TAS [kt]	Pwr [%]	FF [US gal/h]	TAS [kt]
2000 610	92	8.3	134	92	8.3	136	92	8.3	137	92	8.3	138	92	8.3	140
	75	6.6	123	75	6.6	125	75	6.6	126	75	6.6	127	75	6.6	128
	60	5.1	112	60	5.1	113	60	5.1	114	60	5.1	115	60	5.1	116
	45	4.0	95	45	4.0	96	45	4.0	97	45	4.0	97	45	4.0	98
4000 1219	92	8.3	137	92	8.3	138	92	8.3	140	92	8.3	141	92	8.3	142
	75	6.6	126	75	6.6	127	75	6.6	128	75	6.6	129	75	6.6	131
	60	5.1	113	60	5.1	114	60	5.1	116	60	5.1	117	60	5.1	118
	45	4.0	96	45	4.0	97	45	4.0	98	45	4.0	98	45	4.0	99
6000 1829	92	8.3	139	92	8.3	141	92	8.3	142	92	8.3	144	89	8.0	143
	75	6.6	128	75	6.6	129	75	6.6	130	75	6.6	132	75	6.6	133
	60	5.1	115	60	5.1	116	60	5.1	117	60	5.1	118	60	5.1	119
	45	4.0	98	45	4.0	98	45	4.0	99	45	4.0	99	45	4.0	100
8000 2438	92	8.3	142	92	8.3	143	92	8.3	145	92	8.3	146	89	8.0	146
	75	6.6	130	75	6.6	131	75	6.6	133	75	6.6	134	75	6.6	135
	60	5.1	117	60	5.1	118	60	5.1	119	60	5.1	120	60	5.1	121
	45	4.0	99	45	4.0	99	45	4.0	100	45	4.0	100	45	4.0	100
10000 3048	92	8.3	144	92	8.3	146	92	8.3	148	92	8.3	149	90	8.1	149
	75	6.6	132	75	6.6	134	75	6.6	135	75	6.6	136	75	6.6	138
	60	5.1	119	60	5.1	120	60	5.1	121	60	5.1	122	60	5.1	123
	45	4.0	99	45	4.0	100	45	4.0	100	45	4.0	101	45	4.0	101
12000 3658	92	8.3	147	92	8.3	149	92	8.3	150	92	8.3	152	90	8.1	152
	75	6.6	135	75	6.6	136	75	6.6	137	75	6.6	139	75	6.6	140
	60	5.1	121	60	5.1	122	60	5.1	123	60	5.1	124	60	5.1	125
	45	4.0	100	45	4.0	100	45	4.0	101	45	4.0	101	45	4.0	100

TOR, TOD

WARNING

For a safe take-off the available runway length must be at least equal to the take-off distance over a 50 ft (15 m) obstacle.

TOR: SL, ISA, 1310 kg: 397 m

TOD: SL, ISA, 1310 kg: 590 m

T/O Distance, T/O Run

Take-Off Distance - Normal Procedure - 1310 kg / 2888 lb								
Weight: 1310 kg / 2888 lb						Flaps: T/O		
v_R: 67 KIAS						Power: MAX		
v_{50}: 72 KIAS						Runway: dry, paved, level		
Press. Alt. [ft] / [m]	Distance [m]	Outside Air Temperature - [°C] / [°F]						ISA
		0 / 32	10 / 50	20 / 68	30 / 86	40 / 104	50 / 122	
SL	Ground Roll	365	385	410	430	460	495	397
	15 m / 50 ft	550	580	610	640	680	720	590
1000	Ground Roll	390	410	435	465	500	535	418
305	15 m / 50 ft	580	610	640	680	730	770	616
2000	Ground Roll	415	440	465	500	540	575	439
610	15 m / 50 ft	610	640	680	730	780	830	646
3000	Ground Roll	440	470	500	540	580	625	463
914	15 m / 50 ft	650	680	720	780	840	890	677
4000	Ground Roll	470	500	540	590	630	680	490
1219	15 m / 50 ft	690	720	780	840	900	960	708
5000	Ground Roll	505	535	585	640	685		519
1524	15 m / 50 ft	730	770	840	910	970		745
6000	Ground Roll	540	585	640	700	750		549
1829	15 m / 50 ft	770	830	900	980	1040		783
7000	Ground Roll	580	640	700	765	820		585
2134	15 m / 50 ft	820	900	980	1060	1130		828
8000	Ground Roll	635	700	770	845	900		628
2438	15 m / 50 ft	890	970	1060	1160	1230		881
9000	Ground Roll	695	770	850	915	990		674
2743	15 m / 50 ft	970	1060	1160	1250	1330		937
10000	Ground Roll	765	850	910	995			729
3048	15 m / 50 ft	1050	1160	1240	1340			1000
For the distance in [ft] divide by 0.3048 or multiply by 3.28.								

T/O Run

T/O Distance
50 ft Obstacle

Grass Runway, Wind

Length of grass	TKOF roll	Wet grass
5cm	+10%	significantly longer
5 – 10cm	+15%	
>10cm	min + 25%	
Headwind	-10% for Each 12 Kt	
Tailwind	+ 10% for each 2 Kt	

Take off climb

Take - Off Climb - Flaps T/O											
Flaps: T/O v_Y: 72 KIAS										Power: 92% or max. 2100 RPM	
Weight [kg] / [lb]	Press. Alt. [ft]	Press. Alt. [m]	Rate of Climb - [ft/min]								
			Outside Air Temperature - [°C] / [°F]								
			-20 -4	-10 14	0 32	10 50	20 68	30 86	40 104	50 122	ISA
1310 / 2888	SL		660	650	640	630	620	615	590	550	629
	2000	610	640	630	620	610	605	595	555	515	613
	4000	1219	620	610	600	595	585	560	520	475	597
	6000	1829	600	590	580	570	555	520	475		580
	8000	2438	580	570	555	540	525	480	435		557
	10000	3048	555	540	525	510	480	435			533
	12000	3658	525	510	495	480	435	400			509
	14000	4267	500	485	475	460	425	360			492
	16000	4877	490	470	440	385	325				487
	16400	4999	475	450	420	370	305				471
1280 / 2822	SL		675	665	655	645	635	625	600	560	643
	2000	610	655	645	635	625	615	605	570	525	627
	4000	1219	635	625	615	605	595	575	530	485	611
	6000	1829	615	605	595	580	570	535	485		593
	8000	2438	595	580	565	550	535	490	445		570
	10000	3048	565	550	535	520	490	445			545
	12000	3658	535	520	505	490	445	410			520
	14000	4267	510	495	485	470	430	370			503
	16000	4877	500	480	450	395	330				498
	16400	4999	485	460	430	375	310				482

Cruise Climb

Cruise Climb - Flaps UP											
Flaps: UP v_Y: 88 KIAS										Power: 92% or max. 2100 RPM	
Weight [kg] / [lb]	Press. Alt. [ft]	Press. Alt. [m]	Rate of Climb - [ft/min]								
			Outside Air Temperature - [°C] / [°F]								ISA
			-20 -4	-10 14	0 32	10 50	20 68	30 86	40 104	50 122	
1310 / 2888	SL		665	660	655	650	645	645	620	585	651
	2000	610	655	650	645	640	635	630	595	555	644
	4000	1219	645	640	635	630	620	605	565	525	633
	6000	1829	635	630	620	615	605	580	540		621
	8000	2438	620	615	605	600	590	550	505		609
	10000	3048	605	600	590	580	555	510			596
	12000	3658	590	580	570	560	520	480			581
	14000	4267	575	565	555	540	500	445			568
	16000	4877	560	550	520	470	405				561
	16400	4999	545	535	500	450	380				546
1280 / 2822	SL		690	685	680	675	670	665	645	605	674
	2000	610	680	675	670	665	660	655	615	575	667
	4000	1219	670	665	660	650	645	630	590	545	656
	6000	1829	660	650	645	635	630	600	560		644
	8000	2438	645	635	630	620	610	570	525		632
	10000	3048	630	620	615	605	580	535			619
	12000	3658	615	605	590	580	540	500			604
	14000	4267	595	585	580	560	525	465			591
	16000	4877	585	575	545	490	425				583
	16400	4999	570	555	525	470	400				568

ROC to gradient conversion

$$Gradient\ [\%] = \frac{ROC\ [fpm]}{TAS\ [KTAS]} \cdot 0.98$$

$$Gradient\ [\%] = \frac{643\ [fpm]}{71\ [\mathrm{KTAS}]}\, 0.98$$

Gradient = 8.87%

LD, LR

WARNING

For a safe landing the available runway length must be at least equal to the landing distance over a 50 ft (15 m) obstacle.

LR: SL, ISA, 1280 kg: 310 m
LD: SL, ISA, 1280 kg: 639 m

Landing Distance

Landing Distance - Flaps LDG - 1280 kg / 2822 lb								
Weight: 1280 kg / 2822 lb						Flaps: LDG		
v_{REF}: 77 KIAS						Power: IDLE		
						Runway: dry, paved, level		
Press. Alt. [ft] / [m]	Distance [m]	Outside Air Temperature - [°C] / [°F]						
		0 / 32	10 / 50	20 / 68	30 / 86	40 / 104	50 / 122	ISA
SL	Ground Roll	295	305	320	330	345	365	310
	15 m / 50 ft	610	630	650	670	710	750	639
1000	Ground Roll	305	320	330	340	365	385	320
305	15 m / 50 ft	630	650	670	690	730	770	647
2000	Ground Roll	320	330	340	360	380	405	329
610	15 m / 50 ft	640	660	680	720	750	800	657
3000	Ground Roll	330	340	355	375	400	425	338
914	15 m / 50 ft	650	670	700	740	780	830	667
4000	Ground Roll	340	355	375	395	420	445	348
1219	15 m / 50 ft	670	690	720	770	810	860	679
5000	Ground Roll	355	370	390	415	440		359
1524	15 m / 50 ft	680	710	750	800	840		690
6000	Ground Roll	365	385	415	440	465		370
1829	15 m / 50 ft	700	740	780	830	870		702
7000	Ground Roll	395	420	450	475	505		396
2134	15 m / 50 ft	730	780	820	870	920		732
8000	Ground Roll	450	480	510	540	570		445
2438	15 m / 50 ft	800	850	900	950	1010		792
9000	Ground Roll	510	545	580	615	650		501
2743	15 m / 50 ft	880	930	990	1040	1100		861
10000	Ground Roll	575	610	650	685			557
3048	15 m / 50 ft	960	1010	1070	1130			925
For the distance in [ft] divide by 0.3048 or multiply by 3.28.								

L

LD
50 ft Obstacle

Grass, Wind, Slope

Length of grass	Landing roll	Wet grass
5cm	+30%	Significantly longer
5 -10 cm	+45%	
Downhill	+10% for each 1%	
Tailwind	+10% for each 3 Kt	
Headwind	-10% for each 20Kt	

Go Around

5.3.14 GO-AROUND CLIMB PERFORMANCE

Conditions:

- Power lever . . . . . MAX
- Flaps . . . . . LDG
- Airspeed . . . . . V_{REF}

$$Gradient\ [\%] = \frac{ROC\ [fpm]}{TAS\ [KTAS]} \cdot 0.98$$

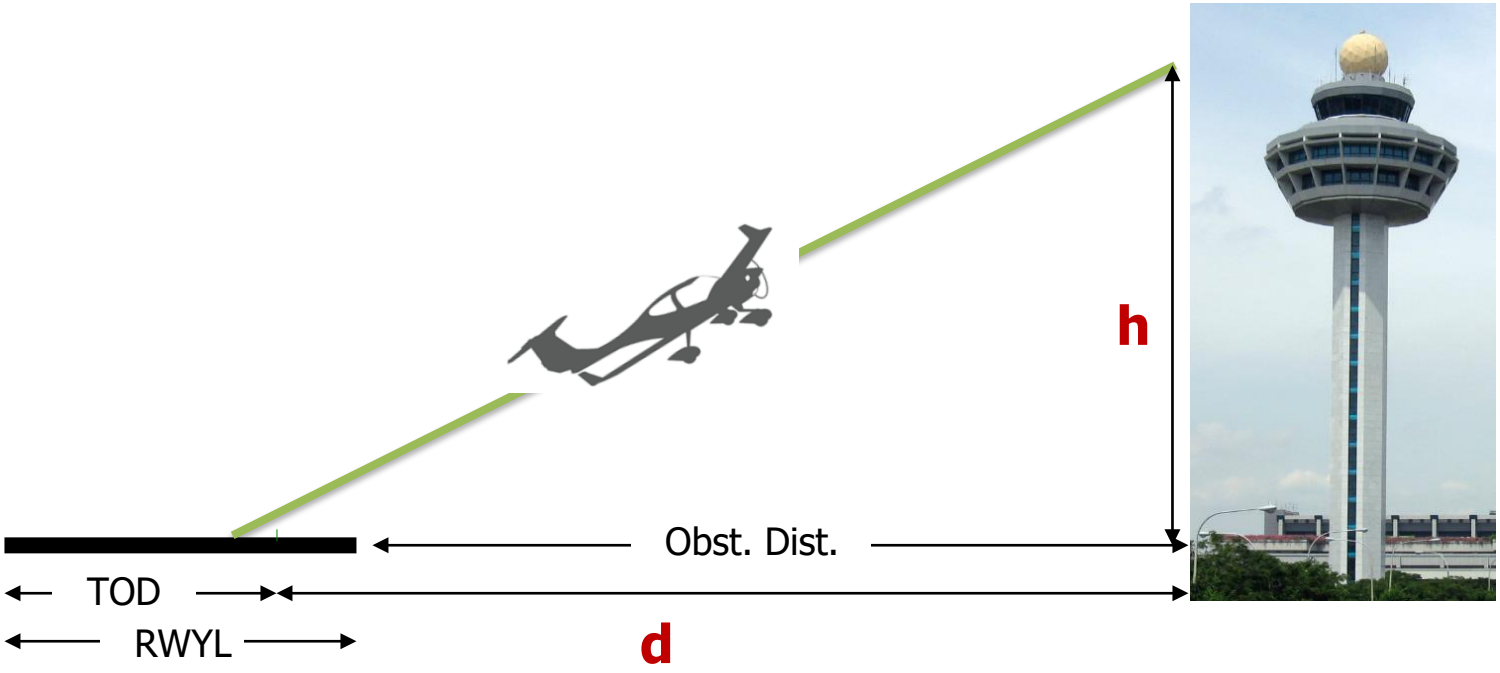
Go Around

Go-Around Climb Performance										
Flaps: LDG									**Power: MAX**	
v_{REF}:	77 KIAS at 1280 kg (2822 lb) and 1310 kg (2888 lb) 76 KIAS at 1200 kg (2645 lb) 72 KIAS at 1100 kg (2425 lb)									
Weight [kg] / [lb]	Press. Alt. [ft]	Press. Alt. [m]	Rate of Climb - [ft/min]							
			Outside Air Temperature - [°C] / [°F]							
			-20	-10	0	10	20	30	40	50	ISA
			-4	14	32	50	68	86	104	122	
1310 / 2888	SL		410	405	395	390	385	375	360	335	388
	2000	610	395	390	380	375	370	360	340	310	376
	4000	1219	380	375	365	360	350	340	315	285	364
	6000	1829	365	360	350	345	335	315	285		351
	8000	2438	350	345	335	320	310	280	250		336
	10000	3048	330	320	310	295	275	240			315
1280 / 2822	SL		425	415	410	400	395	385	370	345	400
	2000	610	410	400	395	385	380	370	350	320	387
	4000	1219	395	385	380	370	365	350	325	295	375
	6000	1829	380	370	360	355	345	325	295		361
	8000	2438	360	355	345	330	320	290	260		346
	10000	3048	345	330	320	305	285	250			326
1200 / 2645	SL		505	500	495	490	480	475	460	425	488
	2000	610	495	490	480	475	465	460	435	400	475
	4000	1219	480	475	465	455	450	435	410	375	462
	6000	1829	465	455	450	440	435	410	380		448
	8000	2438	450	440	430	425	410	380	345		434
	10000	3048	430	420	410	395	375	335			418

Obstacles

d= (RWYL + Obst.Dist.) - TOD

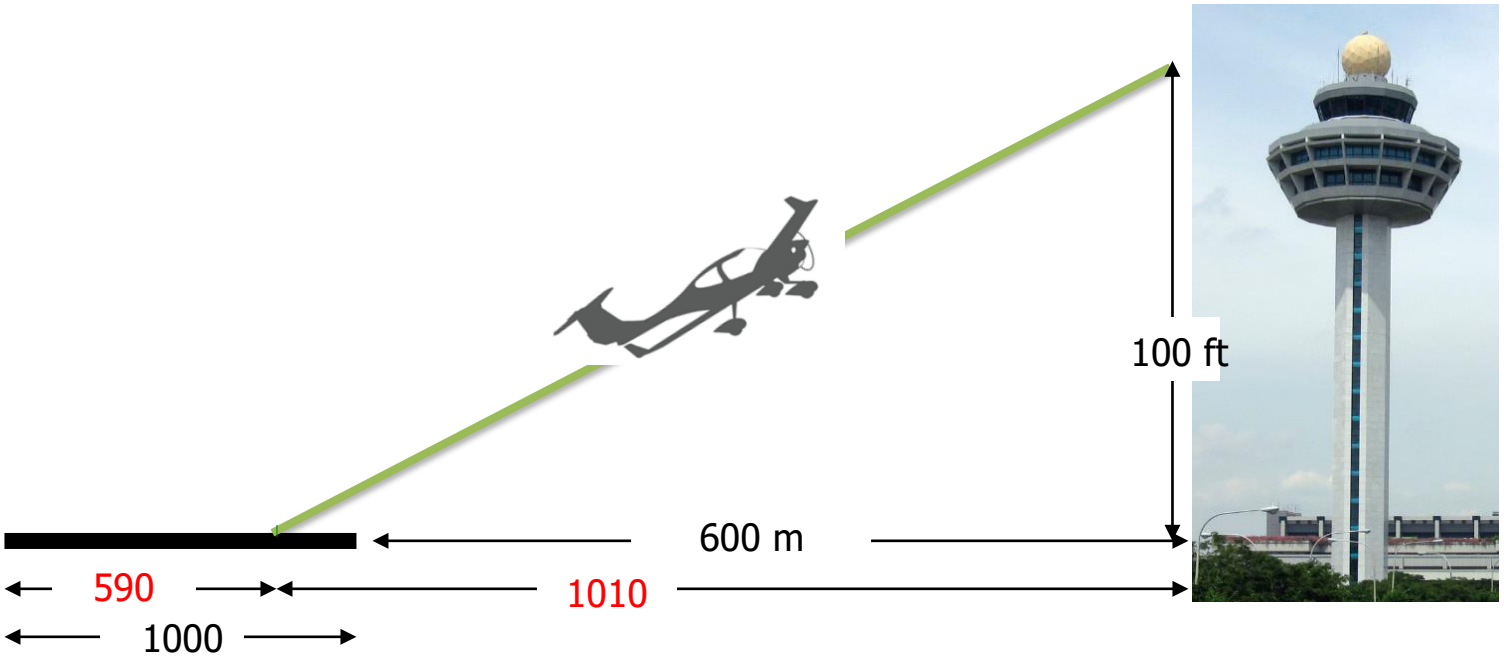
Gradient = (h / d) * 100



Example

d= (1000 + 600) – 590 = 1010

Gradient = (30 / 1010) * 100 = 2,97 %



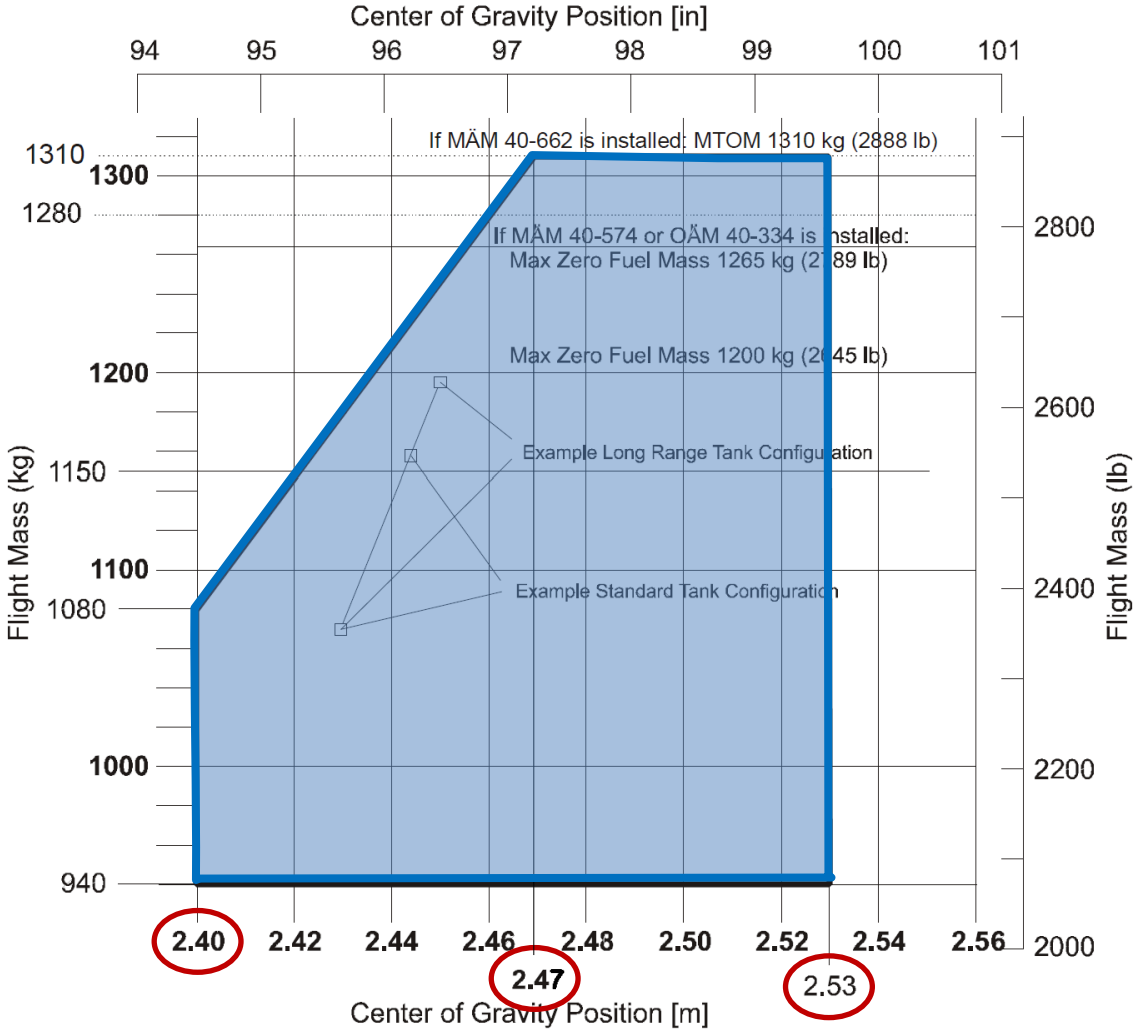
Diamond DA40-NG

Empty Mass

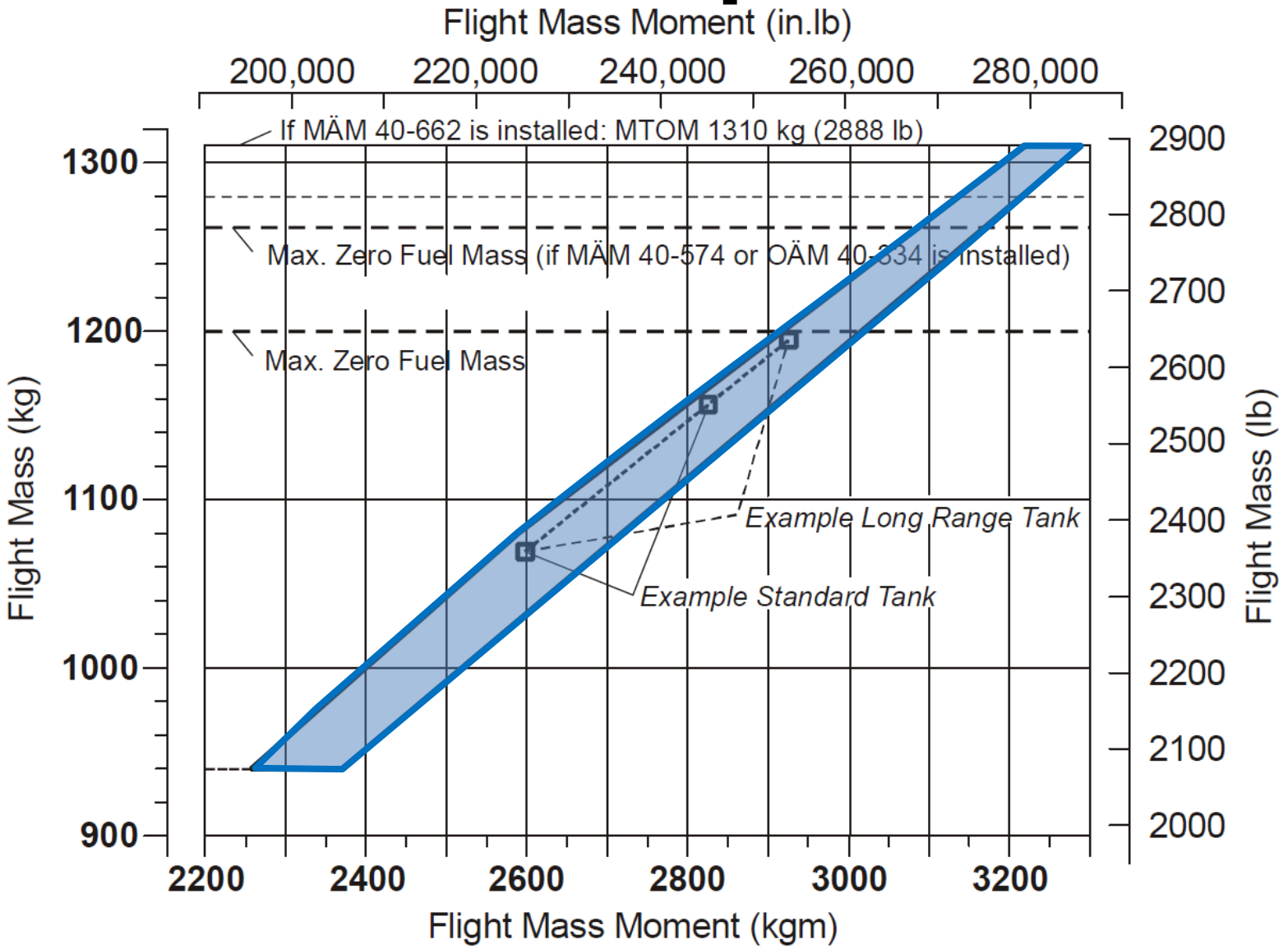
Empty Mass includes:

- Equipment as per Equipment Inventory
- Brake fluid
- Coolant fluid
- Gear oil
- Engine oil
- Unusable fuel (2 x 1,0 USG)

Center of Gravity Envelope



Moment Envelope



Moment Arms

Item	Lever Arm (m)
Front seats	2.30
Rear seats	3.25
Std. baggage compartment	3.65
Baggage tube	4.32
Fwd. baggage	3.89
Aft baggage	4.54
Wing tanks	2.63

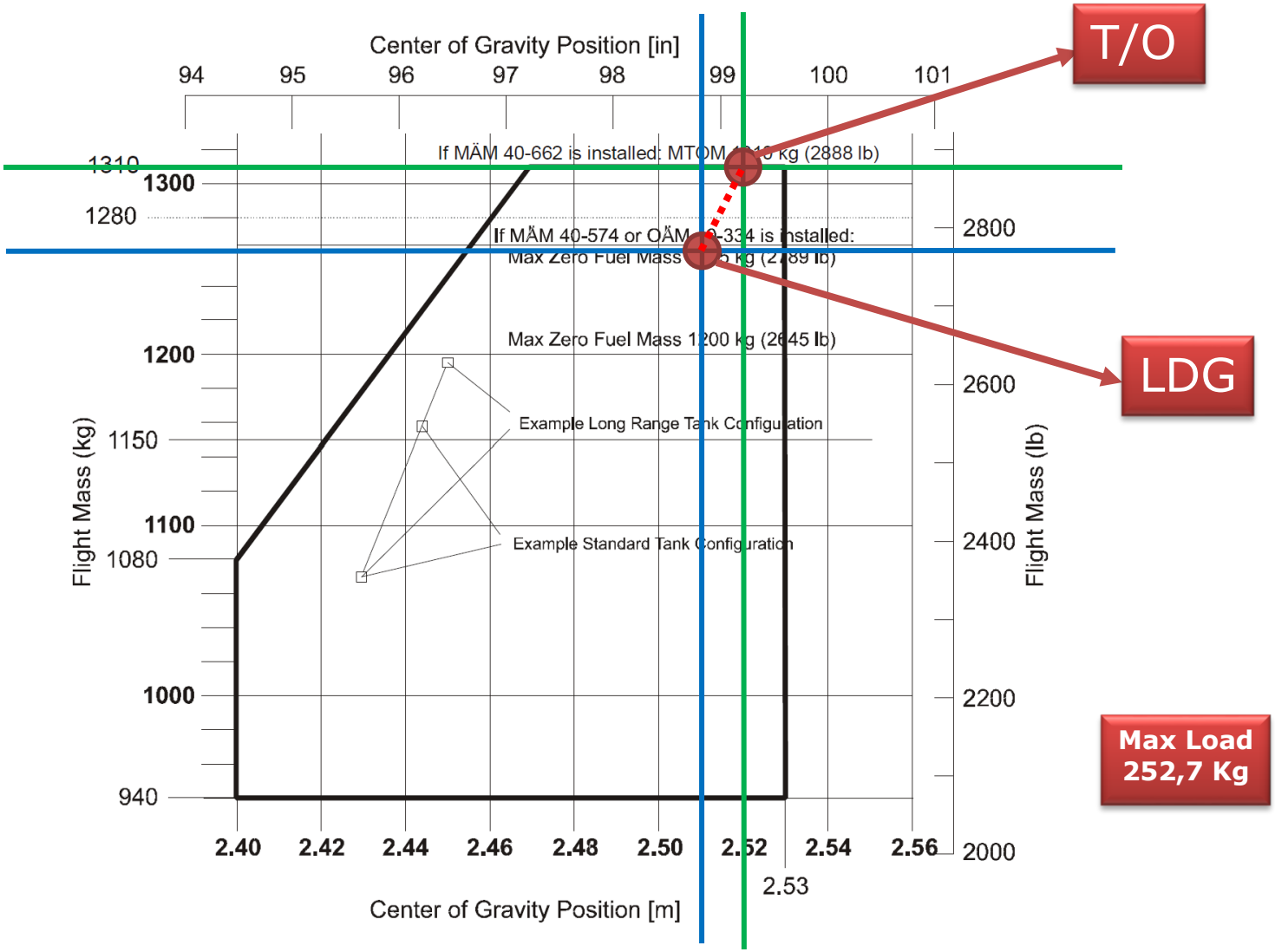
ACSL DA-40 NG Masses

Registration Marks	BEM	Moment
SP-MKA	945.8	2327.2
SP-MKB	941.3	2314.9
SP-MKC	945.0	2322.0
SP-MKD	944.9	2326.7

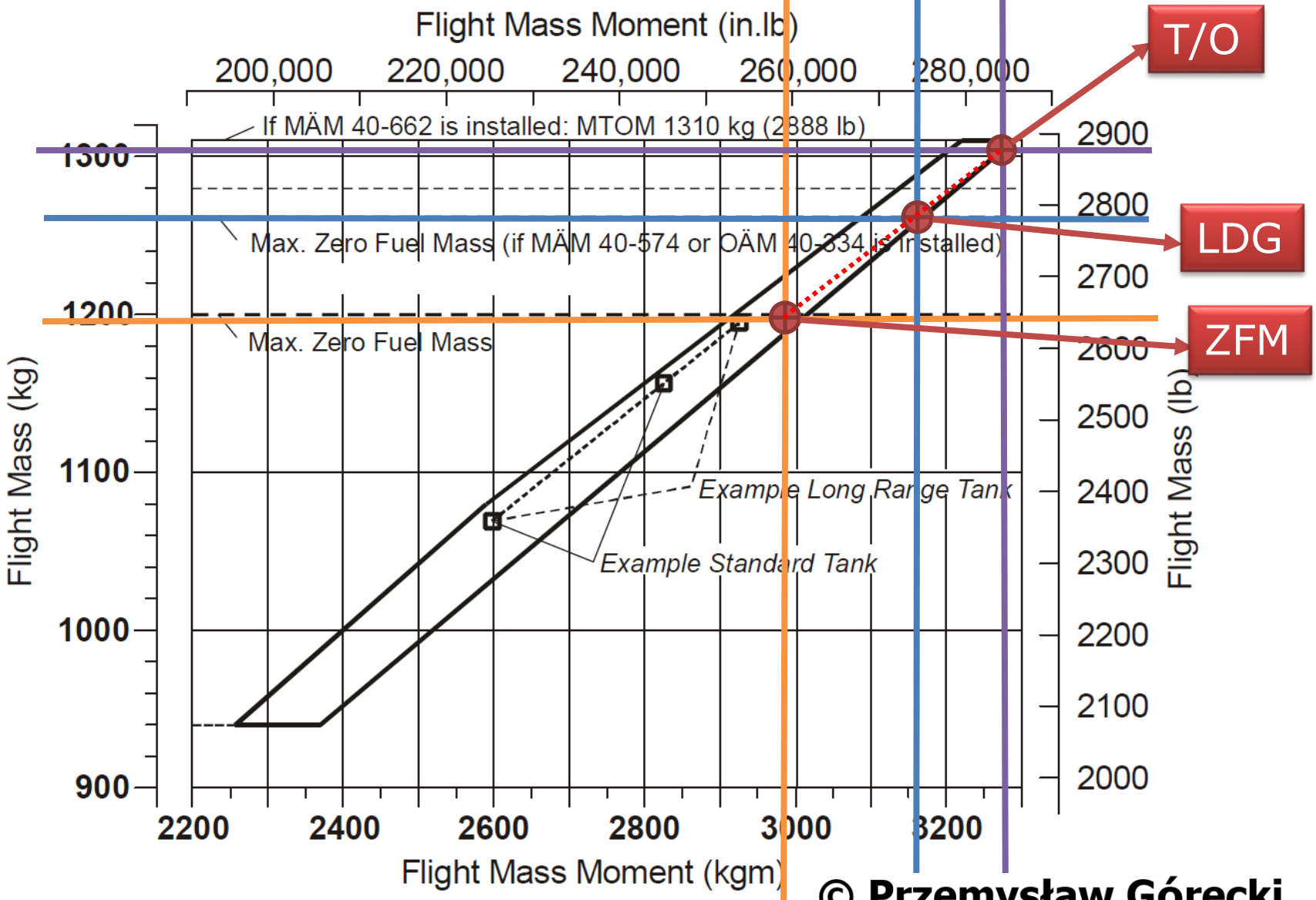
M&B Calculation

CALCULATION OF LOADING CONDITION	DA 40 Example		YOUR DA 40 NG		
	Mass [kg]	Moment [kgm]	Mass [kg]	Armlever [m]	Moment [kgm]
1.Empty mass	900	2 180,8	941.3		2314.9
2.Front seats	150.0	345.0	160	2.30	368
3.Rear seat	0	0.0	85.7	3.25	278.5
4. Standard baggage compartment	20	73.0	7	3.65	25.6
5.Baggage tube	0	0.00	0	4.32	0
6. Short baggage extension (if OAM 40-331 iscarried out)	0	0.00	0	3.97	0
7.Forward extended baggage compartment	0	0.00	0	3.89	0
8.Aft extended baggage compartment			0	4.54	0
9.Total Mass & Total moment with empty fuel tanks. (Total of 1. Through 9.) (MZFM= 1200kg)	**1 070**	**2 598.8**	**1197**		**2987**
10.Usable fuel main tanks (0.8 kg/ Liter)	124	326.1	120	2.63	315.6
11.RAMP MASS Total mass &total moment with fuel.(Total of 10.&11.) (Max Ramp Mass=1310 kg + 4kg)	**1 194**	**2 924.9**	**1314**		**3302.6**
12.Less fuel for start up, taxi& Take off	2	5.3	4	2.63	10.52
13.Subtotal takeoff mass(MTOM=1310kg)	**1 192**	**2 919.6**	**1310**		**3292.1**
14. Take off **CG**position (Total moment/ Total mass)		**CG-**		**CG=2.52**	
15.Less fuel to destination	50	131.5	50	2.63	131.5
16.Actual landing mass (MLM=1310kg)	**1 142**	**2 788.1**	**1260**		**3160.6**
17.Landing **CG**position (Total moment LDG/Total mass LDG)		**CG-**		**CG=2.51**	

Center of Gravity Envelope



Moment Envelope



Diamond DA40-NG

Emergency equipment

Emergency equipment

Emergency equipment

Emergency Exit

Diamond DA40-NG

Scheduled maintenance

Every

- 100 hours
- 200 hours
- 1000 hours
- 2000 hours

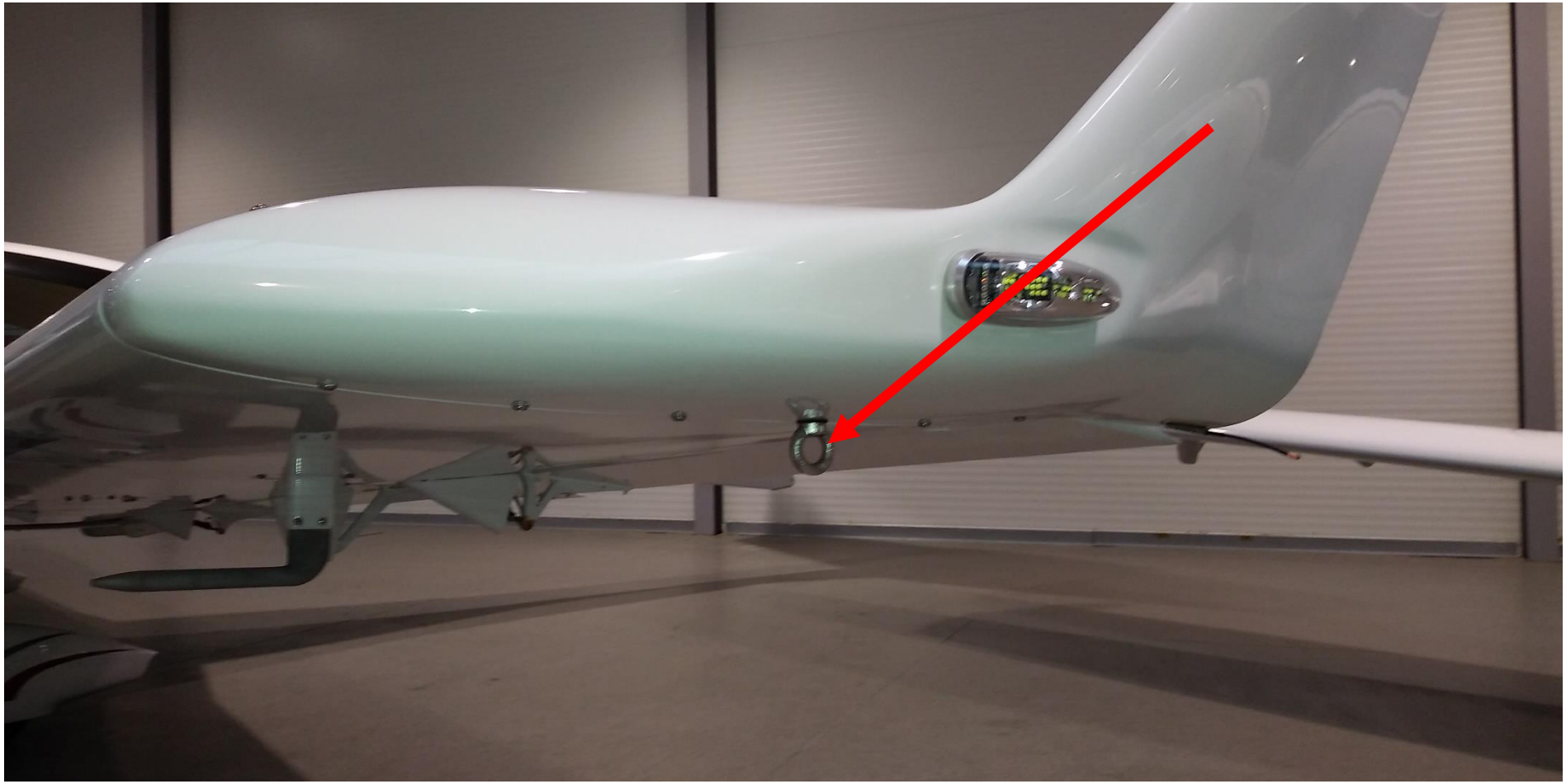
Annually

Refuelling

Control surfaces gust lock

Control surfaces gust lock

Mooring



Mooring

Tow bar

Tow bar