DA40
Checklists

NORMAL OPERATIONS

Ref: AFM 4.4

This section contains abbreviated checklists for normal operations of the airplane. Refer to the AFM for more in-depth information about aircraft operations.

Preflight: Interior

Aircraft Documents.....Check (AROW)
Flight Control Lock.....Removed
Flight Controls.....Check
Ignition.....Mags Off/Key Removed
Engine Control Levers.....Idle/High RPM/Cutoff
Circuit Breakers.....Checked/In
Master Switch.....On
Exterior Lights.....Check
Pitot Heat.....On/Check/Off
Flaps.....Set As Desired for Preflight
Fuel Quantity.....Check
Master Switch.....Off
Emergency Equipment.....Check/Inspect
Baggage.....Secured
Canopy.....Check

Preflight: Exterior

Left Wing

Wing Surface…..…….....……..Inspect
Stall Warning…….....……..Check
Stall Strips…….....Inspect
Tie Downs/Chocks…….....……...Remove
Landing Gear Strut…….....……..Inspect
Tire/Wheel/Brake……..Visual Inspection
Tire Pressure……..... Check (36 psi cold)
Air Intake…….....……...Inspect
Fuel Drain…..…….……..Sample/Inspect
Fuel Vents…….....…….Inspect
Pitot-Static…….....…….Inspect
Taxi/Landing Lights…….....……..Inspect
Wing Tip/Lights…….....…….Inspect
Aileron/Paddle..…….....……Inspect
Flap…….....……Inspect

Fuselage/Empennage

Surface……...…….....Inspect
Rear Cabin Door/Window…….....……...Inspect
AP Static Source (if installed)..…….....……..Inspect
Antennas…...…….....…….Inspect
Stabilizers……...…….....……..Inspect
Elevator…….…….....……Inspect
Rudder…….....……Inspect
Skid Plate..…….....……Inspect
Tie Down…….…….....……...Remove
Rear Window…….....…….Inspect

Right Wing

Wing Surface……Inspect
Flap……Inspect
Aileron……Inspect
Wing Tip/Lights……Inspect
Stall Strips……Inspect
Fuel Vents……Inspect
Fuel Drain……Sample/Inspect
Tie Downs/Chocks……Remove
Landing Gear Strut……Inspect
Tire/Wheel/Brake……Visual Inspection
Tire Pressure…… Check (36 psi cold)

Nose

Oil…… Check (5-6 qt cold)
Cowling……Inspect
Exhaust……Inspect
Gascolator……Sample/Inspect
Air Intakes……Inspect
Propeller……Inspect
Spinner……Inspect
Nose Gear……Inspect
Tire Pressure…… Check (29 psi cold)
Oil/Fuel Vents……Inspect

Air pressure increases in warm tires. Do not let air out of warm tires to bring pressure down.

It takes time for oil to drain back into the reservoir. If the engine is warm, oil quantity may be higher than indicated.

Be careful not to drip oil into the engine compartment.

Before Start

Do not blast the hangars or other aircraft with your prop wash during start or taxi. Position the aircraft properly considering structures, other aircraft, wind, and the safety of nearby persons and property.

Preflight Inspection……Complete
Aircraft.....Move to Starting Position
Pedals……Adjust and Lock
Passenger Briefing……..Complete
Safety Belts……....Fastened
Brakes……....Set
Throttle Friction……..Adjust
Throttle……....Idle
Prop……..…….High RPM
Mixture……....Lean/Cut-Off
Alternate Air……...Closed
Alternate Static Valve…….....Closed
Avionics Master Switch…….....Off
Essential Bus Switch…….....Off
Battery Master Switch.....On
Lights……..As Required
PFD/MFD……....Set
Flaps ..... Verify Up
Canopy/Rear Door …….. Confirm Closed/Latched

Engine Start

Brief the engine start checklist items and then execute them in quick succession. Attempting to start while referring to the checklist item by item will lead to flooded engines, poor/ failed starts, and engine damage.

Items with a * may lead to flooding and a failed start if the engine is has been recently run.

Propeller Area…….....……....Clear
Throttle .....……..... Open Slightly
Fuel Pump*…….....……..On
Mixture*……. Enrichen for slight, but steady fuel flow, then Lean/Cut-Off
Ignition Switch…….....……Start

Do not keep starter engaged longer than 10 seconds. If the engine fails to start, wait 30 seconds before trying again.

When Engine Starts:

Mixture…….....……..Rich
Fuel Pump…….....……...Off
Throttle ..... Adjust to maintain 1000RPM

High RPM prior to oil pressure and temperature stabilization will cause engine damage. Reduce RPM as soon as practicable after start.

Oil Pressure……..... Green Band within 15 Seconds
Fuel Pressure…….....……...Check
Mixture ……..Ground Lean (Slight rise in RPM)
Alternator Master Switch…….....……...On
Ammeter…….....……...Check

After Start

Avionics Master Switch…..……..On
Fuel Tank Selector…….....……..Switch Tanks
Brakes…….....Release/Check
Taxi Clear of Start Area

Pre-Taxi Check

Flight Instruments/Avionics…..…..….Set
Annunciator Panel…….....….....Check
Flaps…….....……..Check
Pitot Heat…….....….....Test
Flight Controls……...……...Free & Correct
Trim/Autopilot…….....……Check/Test
Trim.....Set T/O

Run-up

Brakes…….....……...Set
Oil Temperature minimum 90 Degrees, then:
Fuel Pump…….....….....On
Mixture…….....……Rich
Throttle…….....2000 RPM
Prop…….....Cycle
Magnetos.....……..……..Check
(Max RPM Drop 175 / Max RPM Difference 50)
Engine Instruments……..…….....…..Check
Throttle……...…….Closed/Check
Throttle……..... 1000RPM
Fuel Tank Selector…….....…….Fullest Tank
Fuel Pump…….....……..Off
Mixture…….....Ground Lean
Circuit Breakers…….....……..Check
Brakes…….....…….Release

Before Takeoff

Transponder……..……..Set
Heading Indicator…….……...Check
Takeoff Briefing…….....Complete

Runway; Take-off Type; Performance; Speeds; Departure Instructions; Emergency Actions; Questions

Flaps…….....……...Set
Mixture…….....…….Rich
Prop……..…….....…..High RPM
Canopy…….....Closed/Locked
Fuel Pump…….....…….On
Landing Light…….....….....On

Climb

Flaps…….....…….... Retract
Climb Power ..... Set
Fuel Pump…….....……..Off
Landing Light …….....…….Off
Trim…….....As Required

Keep CHTs below 380°F

Cruise

Fuel Pump…….....…...Verify Off
Throttle…….....Set Cruise Power
Prop……..…….....Set Cruise RPM
Mixture…….... Lean as Required

Refer to AFM for power settings appropriate for your flight.

Engine Instruments…….....……...Check
Trim…….....…….....As Required
Fuel Tank Selector…….....As Required

Fuel Pump should be on when switching tanks.

			Engine Power as % of Max. Take-Off Power						
			45 %				55 %		
	RPM		1800	2000	2200	2400	2000	2200	2400
Fuel Flow	Best Economy		5.8	6	6.3	6.6	7	7.2	7.5
[US gal/h]	Best Power		-	-	7.3	7.7	-	8.5	8.7
ISA	[°C]	[°F]	Manifold Pressure (MP) [inHg]						
MSL	15	59	**22.7**	21.3	20.2	19.0	**23.9**	22.4	21.2
1000	13	55	**22.4**	21.0	19.9	18.7	**23.6**	22.2	21.0
2000	11	52	**22.1**	20.7	19.6	18.4	**23.3**	21.9	20.7
3000	9	48	**21.8**	20.4	19.3	18.2	**23.0**	21.6	20.4
4000	7	45	**21.5**	20.2	19.0	17.9	**22.7**	21.2	20.1
5000	5	41	**21.2**	19.9	18.7	17.6	**22.3**	20.9	19.8
6000	3	38	**20.9**	19.6	18.4	17.4	**22.0**	20.6	19.5
7000	1	34	**20.5**	19.3	18.2	17.1	**21.7**	20.3	19.3
8000	-1	31	**20.2**	19.0	17.9	16.9	**21.3**	**20.0**	19.0
9000	-3	27	**19.9**	18.7	17.6	16.6	**21.1**	**19.7**	18.7
10000	-5	23	**19.6**	**18.4**	17.3	16.3	-	**19.4**	**18.4**
11000	-7	19	**19.3**	**18.2**	17.0	16.1		**19.1**	**18.1**
12000	-9	16	-	**17.9**	**16.7**	15.8		-	**17.8**
13000	-11	12		**17.6**	**16.4**	15.5			**17.6**
14000	-13	9		-	**16.1**	15.3			-
15000	-15	6			**15.8**	**15.0**			
16000	-17	2			**15.5**	**14.7**			
17000	-19	-2			-	**14.5**			

			Engine Power as % of Max. Take-Off Power				
			65 %			75 %	
	RPM		2000	2200	2400	2200	2400
Fuel Flow	Best Economy		7.9	8.2	8.5	9.2	9.5
[US gal/h]	Best Power		-	9.5	9.8	10.7	11
ISA	[°C]	[°F]	Manifold Pressure (MP) [inHg]				
MSL	15	59	26.8	**24.9**	23.4	**27.3**	25.8
1000	13	55	26.4	**24.5**	23.2	**26.8**	25.5
2000	11	52	26.0	**24.2**	22.9	**26.5**	**25.2**
3000	9	48	25.7	**23.8**	22.6	**26.1**	**24.8**
4000	7	45	25.4	**23.5**	22.3	-	**24.5**
5000	5	41	-	**23.1**	22.0		**24.1**
6000	3	38		**22.8**	**21.7**		-
7000	1	34		**22.4**	**21.4**		
8000	-1	31		-	**21.0**		
9000	-3	27			**20.7**		
10000	-5	23			-		

The areas shaded grey under each RPM heading are the recommended bands.

Correcting the Table for Variation from Standard Temperature

- At ISA + 15 °C (ISA + 27 °F) the performance values fall by approx. 3 % of the power selected according to the above table.
- At ISA - 15 °C (ISA - 27 °F) the performance values rise by approx. 3 % of the power selected according to the above table.

Pre-Maneuver

Mixture…..…….....Rich/As Required
Fuel Pump…..…….....On/As Required
Landing Light …….....……..On

Post-Maneuver

Landing Light …….....……...Off
Fuel Pump ….……....Off
Mixture…...…….....Lean/As Required

Descent

ATIS/AWOS/Wx…….....Check
Altimeter…….....……....Set
Mixture….....Enrichen as Required During Descent
Prop…….……..Adjust RPM for Descent
Throttle……....Adjust for Descent

Avoid large or abrupt power reductions. CHTs should not decrease more than 50 degrees per minute.

Approach

Seat Belts…….....……Fastened
Landing Light…….....…….On
Fuel Pump…….....……...On
Fuel Tank Selector…….....……Fullest Tank
Flaps……...…..……....T/O (Max 108)

Final

Flaps……LDG (Max 91)
Mixture……Rich
Prop……High RPM

After Landing

Flaps……Up
Fuel Pump……Off
Mixture ……Ground Lean
Pitot Heat……Off
Landing Light……Off
Taxi Light……On
Trim……Neutral

Shutdown

Avionics Master ……Off
Throttle……1000 RPM
Mixture……Idle Cut-off
Ignition……Off
Lights (except strobes) ……Off
Hobbs/TIS……Record
Master Switch……Off
Parking Brake……Release
Aircraft……Secure

Leave strobe switch on to prevent leaving master switch on.

EMERGENCY OPERATIONS

Ref: AFM 3.3

This section contains abbreviated checklists for emergency operations of the airplane. Refer to the Checklist Usage section of the SFT Training Handbook for school standards and practices. Refer to the AFM for more in-depth information about emergency operations.

Engine Failure In Flight (or engine running roughly*)*

Airspeed…….Pitch for Best Glide
Landing Field……....Select a suitable place to land
Electric Fuel Pump…….....……...On
Mixture Control Lever…….....…..Set Full Rich
Fuel Tank Selector…….....Switch Tanks
Alternate Air…….....…..Open
Ignition Switch…….....……..Check R-L-Both
Throttle/RPM/Mixture……..Try various settings

If Time Allows

Communicate……..Call Approach/Tower or 121.5
Transponder…….....…….Squawk 7700

When landing field is assured

Flaps…….....…….T/O (Below 108)

On Final

Flaps…….....……..…LDG (Below 91)

Engine Restart in Flight (with Windmilling Prop)

Airspeed……..80 kts
Electric Fuel Pump…….On
Mixture…….Rich
Fuel Tank Selector…….Fullest Tank
Alternate Air…….Open
Ignition Switch…….Both
If Engine does not start
Mixture…….Lean
Push Mixture forward slowly until engine starts

Engine Restart in Flight (with Stationary Prop)

Caution: Allow for at least 1000 ft altitude loss
Airspeed…….130 kts
When Propeller begins turning
Airspeed…….80 kts
Avionics Master Switch…….Off
Battery Master…….Check On
Electric Fuel Pump…….On
Mixture…….Check
Fuel Tank Selector…….Fullest Tank
Alternate Air…….Open
Ignition Switch…….Both
If Engine does not start
Mixture…….Lean
Push Mixture forward slowly until engine starts

Engine or Electrical Fire on the Ground

Throttle……..……...Idle
Mixture…….....……...Full Lean
Fuel Tank Selector…….....……...OFF
Ignition Switch…….....…….……..OFF
Master Switch…….....……...OFF
Evacuate……....……...Quickly move back and upwind of aircraft

Spin Recovery

Immediately and Simultaneously:
Throttle…….....……...Idle
Rudder……...Full Deflection Against the Spin
Control Stick (Elevator).....Full Forward
Ailerons…….....……..Neutral
Flaps…….....……..Up

After Rotation has Stopped:
Rudder…….....……..Neutral
Control Stick (Elevator).....Smoothly Pull Nose Up
Do Not Exceed Vne

Loss of Oil Pressure or High Oil Temperature

If Oil Pressure is low and Oil Temperature and CHT are normal, it is probably a sensor failure
Cylinder Head Temperature (CHT).....Monitor
Oil Temperature……..Monitor (stays within Green Band)

If Oil Temperature is high and Oil Pressure and CHT are normal, it is probably a sensor failure
Cylinder Head Temperature (CHT).....Monitor
Oil Pressure…..……..Monitor (stays within Green Band)

If Oil Pressure is low and Oil Temperature or CHT climbing
Throttle……..Reduce to Minimum Required Power
Landing Field……Select (in case of sudden engine failure)
LAND AS SOON AS POSSIBLE

If Oil Temperature is High and CHT climbing
Oil Pressure……...Check in Green Band
If Oil Pressure in the Green Band
Mixture……....Enrich
Throttle……....Reduce Power

If Oil Temperature is High with Low Oil Pressure and CHT climbing
Throttle……..Reduce to Minimum Required Power
Landing Field……Select (in case of sudden engine failure)
LAND AS SOON AS POSSIBLE

High Cylinder Head Temperature

Mixture…….....…….……...Enrich
Oil Temperature…….....…….....Check
Oil Pressure…….....……...Check
If Oil Temperature is High
Throttle…….....Reduce to Minimum Required
CHT……...Monitor (CHT should fall)
Landing Field……Select (in case of sudden engine failure)
If CHT or Oil Temperature Remain High
LAND AS SOON AS POSSIBLE

High RPM

Oil Pressure…….....……Check
If Oil Pressure is Normal
Prop Lever…….....Reduce
If Prop Lever does not change RPM
Throttle…….Reduce to control RPM

If Oil Pressure is Low
Loss of Oil Pressure Checklist…….....….Run

Alternator Failure

Circuit Breakers……..……..Check

If a Circuit Breaker is Open, it can only be reset once

Voltmeter…….....……..Check

If Voltmeter continues to show a discharge

ESS Bus Switch…….....…..On

The Main Battery will provide at least 30 minutes of power to the ESS Bus.

See Circuit Breaker Panel for items on the ESS Bus.

LAND AS SOON AS POSSIBLE

Flaps will not operate. If Flaps are Up or T/O, plan for longer landing roll

If flight exceeds battery life

Emergency Horizon Switch…….....On

The Emergency Battery will provide at least 90 minutes of power to the Standby Attitude Indicator and Cockpit Floodlight

LAND AS SOON AS POSSIBLE

Flaps will not operate. If Flaps are Up or T/O, plan for longer landing roll