CHECK FLIGHT CERTIFICATE

Beech Model B90, C90, C90A, C90B, E90 & F90 **CFS 219 Issue 1**

Date:	Crew:	Observer:	Registration:

Performance	Climb #1	Climb #2	
Average Weight			
Average Altitude			ft
Average Temp.			°C
Speed			KIAS
Achieved Rate			fpm
Scheduled Rate			fpm
Margin			fpm
Permitted Margin	-70	-70	fpm

Airfield:

Start Weight Kg/Lbs*:

Takeoff cg:

Performance:

SATIS/UNSATIS/NOT APPLICABLE*

*(delete as applicable)**

Defects

No.	Defect	-/R/FT	Action?

(use a continuation sheet as necessary)

Conclusions/Comments

I CERTIFY that I have tested the above aircraft and have detailed the deficiencies and unsatisfactory features above. Those items annotated R or FT must be dealt with as shown in the notes on the reverse side.

Name:	Signed:	Date:	Licence No.:
For CAA Use only	Report Logged by:	Date:	Report No.:

NOTES

General

Only CAA personnel or pilots specifically briefed to carry out CAA check flights may conduct the test.

General notes on test conduct can be found in the CAA Check Flight Handbook.

This sheet replaces any check flight certificate given in the schedule.

Registration: If the aircraft is not on the UK register, add the manufacturers serial number and expected UK registration (if known).

Crew: Captain, co-pilot, Flight engineer (where applicable).

Airfield: Departure airfield.

Start Weight: Actual all up weight at first engine start. Also delete Kg or Lbs as appropriate.

Takeoff cg: Actual cg at lift-off, preferably as a % of the Mean Aerodynamic Chord.

Performance

A full description of climb analysis is given in the CAA Check Flight Handbook.

Climb#1/Climb#2: Enter in these columns data from the first and second climbs.

Average Weight: The aircraft all up weight at the midpoint of the measured climb. through at the mid time.

Average Altitude: The altitude at which the line drawn to average the measured points passes

Average Temp: The temperature at which the line drawn to average the measured points passes through at the mid time.

Speed: The target climb speed (Indicated Airspeed.)

Achieved Rate: The climb rate as given by the slope of the line drawn to average the measured altitude points in feet per minute.

Scheduled Rate: The expected gross rate of climb read from the appropriate graph in the Flight Manual with any adjustments for configuration differences. For large aircraft, the basic gross data are normally to be found in a separate supplement labelled 'Additional Flight Test Data'.

Margin: The difference between the Scheduled and Achieved rates of climb (negative if achieved is lower than scheduled).

Defects

Enter all defects from the flight. All defects must also be entered in the Technical Log. Procedural items entered in the Technical Log (such as re-stowing oxygen masks) need not be entered here. Items affecting flight safety which were known before the flight, whether or not they were deferred should be entered. In the latter case, the defect should be annotated accordingly after the details.

No.: The first column is to allow the items to be numbered.

Defect: Enter details of the defect.

-/R/FT: Classify each defect according to its impact on safety, regardless of whether it can be deferred according to the MEL. Any deferrals should be dealt with in the normal way in the Technical Log. Items requiring rectification (or deferral under the MEL) before further flight for hire or reward or before the issue of the CofA should be marked 'R'. Additionally, items that require re-checking in-flight following rectification (such as inadequate climb performance) should be marked 'FT'. Items requiring both should be marked 'R/FT'.

Action?: This column should be left blank unless further information is required from the engineers or the item is considered to be of sufficient import that CAA action is considered necessary, then the person/department/agency from whom further action is required should be noted in this column. Annotate accordingly if an MOR or similar report is to be raised.

Conclusions/Comments

Any conclusions, notes or comments useful for tracking defects may be entered.

Name: Only the pilot who carried out the test may sign this sheet.

CAA Check Flight Schedules

All CAA Check Flight Schedules (CFSs) are prepared based on a design standard which, before September 2003, was the UK Type Certificate. Following the creation of EASA there may be different design standards in service within the European Union (EU) - this may include modifications approved in any EU country.

It is the responsibility of the flight crew to ensure that the exercises and limitations in the CFS are correct for the aircraft under test.

The prime source of information will be the aircraft flight manual and in the event of conflict the flight manual should be taken as overriding.

CAA policy is that pilots who conduct check flights on the behalf of the Authority must be acceptable to the Authority, must have been briefed on techniques and safety considerations before carrying out the tests in these schedules and must have carried out a check flight within the last 4 years.

The CAA does not accept responsibility for the use of a CAA CFS on a test flight not directly under their control.

CHECK FLIGHT SCHEDULE

Beech Model B90, C90, C90A, C90B, E90 & F90 **CFS 219 Issue 1**

Registration	
Flight Date	

INTRODUCTION

This schedule is applicable only to Beech 90 aircraft and is based on the assumption that the correct functioning of all normal services is checked in the course of everyday operation. The tests in the schedule are intended to cover those items, including emergency systems, which are not routinely checked. On this check flight, however, the crew are expected generally to monitor the behaviour of all equipment and to report any unservicable items. In particular, any characteristics which are considered to be unsafe or undesirable must be recorded. The tests should, if possible, be flown in the sequence of the schedule and altitude conditions must be observed. Except where otherwise indicated, the flight techniques shall be those associated with normal operation of the aeroplane. The limitations and procedures of the Flight Manual must be observed. The data in this schedule was correct at the time of issue, but may not agree with later Flight Manual amendments. In case of conflict, observe current Flight Manual and report the inconsistency to CAA Flight Department.

Commanders are reminded that it is illegal to carry passengers on a check flight made under ‘A’ or ‘B’ Conditions, except where they are required to perform duties in the aircraft in connection with the flight. While it is legal to carry passengers on a check flight of an aircraft with a valid Certificate of Airworthiness, the practice is not recommended. If passengers are carried, however, they should be informed that the risk is greater than on an ordinary flight.

CREW

The minimum crew shall be as specified in the Flight Manual, supplemented by one observer to record the results.

LOADING

The aircraft should be loaded to within Flight Manual limits. When the aircraft weight is required to be recorded for a particular test, it should be calculated from the fuel contents gauges which should be read in steady level flight.

Record: Zero Fuel Weight.	Lb.
Ramp Weight.	Lb.
CG Position.	% MAC

PRE-FLIGHT INFORMATION

Record: - total airframe hours

		Port	Starboard
Engine serial number	*SIN*		
Engine hours run	TSN		

CHECK FLIGHT SCHEDULE

1 PRE-FLIGHT CHECK

Carry out a comprehensive external and internal pre-flight check SAT/UNSAT

2 TAKE-OFF

Before take-off set 9,000ft on the Cabin Pressure Control in preparation for test 4. Carry out a normal take-off recording any unusual characteristics below.

Record the propeller RPM after un-stick, while maintaining take-off power.

Left	Right

Tolerance: 2,200rpm -20, -21 & -28 engines
1,900 for -135 engines

3 PERFORMANCE

3,000 ft AGL to FL150

Carry out the performance climbs for 5 minutes, on a constant heading, clear of cloud and significant turbulence. Start recording when in stabilised, trimmed condition at the scheduled speed using not more than 5 degrees of bank towards the live engine. Aim to keep IAS within ±2kts of scheduled speed, and adjust the live engine as necessary to maintain the scheduled thrust setting.

3.1 No. 2 Engine Inoperative En-Route Climb

Configuration	No. 1 Engine	Maximum Continuous Power
	No. 2 Engine	Shutdown, Propeller feathered
	Gear	Up
	Flap	Up
	Anti-ice	OFF
	ECS	As required
	V_{ENR} for weight	[ ] Kts (from AFM)
	Captains Altimeter set to 1013mb	

RIGHT ENGINE INOPERATIVE EN-ROUTE CLIMB

ZERO FUEL WEIGHT	Lb.	
FUEL CONTENTS	Lb.	Lb.
AIRCRAFT WEIGHT	Lb.	

TIME	ALTIMETER	ASI P1	IOAT	TORQUE
0				%
0.5				
1.0				
1.5				
2.0				
2.5				
3.0				
3.5				
4.0				
4.5				
5.0				

TRIM POSITIONS	AILERON	
	RUDDER	
	ELEVATOR	

AIRSPEED COMPARISON	
PILOT	
CO-PILOT	

ENGINE DATA AT 3 MIN

TORQUE	%	FUEL FLOW	
ITT	C	OIL PRESSURE	
PROP. RPM		OIL TEMPERATURE	
Ng			

FINISH WEIGHT

FUEL CONTENTS	Lb.	Lb.
AIRCRAFT WEIGHT	Lb.	
MEAN WEIGHT	Lb.	

3.2 No.2 Engine Relight

Relight the No. 2 engine at 145 KIAS at the altitude existing using a starter assisted technique

Altitude	ft	Time to ITT rise		sec
IOAT	C	Max ITT		C
		Time to Idle		sec

Abnormality during relight SAT/UNSAT

3.3 No.1 Engine Inoperative En-route Climb

Configuration	No. 1 Engine	Inoperative
	No. 2 Engine	Maximum Continuous Power
	Gear	Up
	Flap	Up
	Anti-ice	OFF
	ECS	ON
	En-route Climb Speed	kts (from AFM)
		Captains Altimeter set to 1013mb

LEFT ENGINE INOPERATIVE EN-ROUTE CLIMB

ZERO FUEL WEIGHT	Lb.	
FUEL CONTENTS	Lb.	Lb.
AIRCRAFT WEIGHT	Lb.	

TIME	ALTIMETER	ASI P1	IOAT	TORQUE
0				%
0.5				
1.0				
1.5				
2.0				
2.5				
3.0				
3.5				
4.0				
4.5				
5.0				

TRIM POSITIONS	AILERON	
	RUDDER	
	ELEVATOR	

AIRSPEED COMPARISON	
PILOT	
CO-PILOT	

ENGINE DATA AT 3 MIN

TORQUE	%	FUEL FLOW	
ITT	C	OIL PRESSURE	
PROP. RPM		OIL TEMPERATURE	
Ng			

FINISH WEIGHT

FUEL CONTENTS	Lb.	Lb.
AIRCRAFT WEIGHT	Lb.	
MEAN WEIGHT	Lb.	

3.4 No.1 Engine Relight

Relight the No.1 engine at 145 KIAS at the altitude existing using a starter assisted technique.

Altitude	ft		Time to ITT rise		sec
IOAT	C		Max ITT		C
			Time to Idle		sec

Abnormality during relight SAT/UNSAT

4 FUNCTIONING - PRESSURISATION

At or below FL170

Carry out the following checks at or below FL170:

4.1 Crew oxygen equipment check

Put on crew oxygen masks, and check satisfactory oxygen flow and functioning of mask mikes.

4.2 Cabin altitude warning check

Select the highest possible cabin altitude and record the cabin altitude at which the cabin altitude warning occurs.

Ft. Check scheduled tolerances appropriate to build standard

Select a low cabin altitude in preparation for test 6.

5 CLIMB / CRUISE

At or below FL200

5.1 CLIMB

Continue a normal climb to FL 200. During the climb check each flying control for backlash, breakout force, centering, weight and response. Check trimmers for correct functioning, backlash and friction.

Controls:	Elevator	SAT/UNSAT	Trimmers:	Pitch	SAT/UNSAT
	Aileron	SAT/UNSAT		Roll	SAT/UNSAT
	Rudder	SAT/UNSAT		Yaw	SAT/UNSAT

Confirm satisfactory operation of the autopilot and yaw damper SAT/UNSAT

5.2 CRUISE

Establish a normal cruise and record the following.

	Left	Right
Airspeed		
Altimeter		
Propeller RPM		
Ng		
Torque		
ITT		
Fuel Flow		
Oil Pressure		
Oil Temperature		

TRIMS	
Elevator	
Rudder	
Aileron	

Vmo Pointers N.B. Above FL180	
Left	Right
Tolerance Vmo±3kts	

6 FUNCTIONING

FL 120 to FL 200

6.1 Maximum Differential Pressure Check

Record the maximum differential pressure with both pressurisation bleeds ON.

NOTES Do not allow the differential pressure to exceed the flight manual limits

p.s.i.

Maximum Value: (4.7 p.s.i. for B90 & E90, 5.0 p.s.i for C90 & F90)
Check scheduled tolerances appropriate to build standard

confirm maximum differential pressure can be maintained with only one bleed on

Pressurisation Source	Left	Right
Stabilised Pressure	p.s.i.	p.s.i.
Transient Cabin ROC	ft/min	ft/min

7 HIGH IAS RUN

5,000ft AGL to FL150

NOTE: This test must not be carried out in turbulent conditions. Between FL 50 and 150, increase speed slowly to Vmo.

Altitude	ft	IOAT	ºC	Scheduled VMO from AFM	

	Left	Right
Note Vmo pointer readings		

Any buffet or unusual vibrations	SAT/UNSAT
Weight and Response of flying Controls	SAT/UNSAT
Engine/Propeller behaviour	SAT/UNSAT

8 STALLING

Altitude 5,000ft AGL to FL150

Prior to each stall determine the trim and scheduled stall speeds. Trim the aircraft with the power levers at flight idle at the scheduled trim speed then reduce speed at approximately 1 knot per second until the aircraft stalls. (The scheduled stall speeds are provided in the appropriate AFM and the trim speed is 1.5 times the stall speed)

Note the aircraft behaviour at the stall (e.g. nose or wing drop, or full back stick) and any abnormal buffet or behaviour during approach to and recovery from the stall.

TOLERANCES **Stall Warning ±3 kts**
Stall speed ±3 kts

Flap 0, Gear UP Stall

Zero Fuel Weight		Fuel Contents	
Aircraft Weight			
Trim Speed		Pitch Trim	

	Scheduled	Achieved
Stall Warning Speed		
Stall Speed		
Stall Warning Margin	Min 5kt	
Stalling Behaviour		

		TOLERANCES
Time flaps 0 to 35% at 160kt (32.5% for F90)	sec	7 sec. max.
Time gear down at 140kts	sec	8 sec. max.

Flaps 35% (32.5% for F90) Gear Down Stall

Zero Fuel Weight		Fuel Contents	
Aircraft Weight			
Trim Speed		Pitch Trim	
	Scheduled	Achieved	
Stall Warning Speed			
Stall Speed			
Stall Warning Margin	Min 5kt		
Stalling Behaviour			

Time flaps 35% to 100% at 120 kts	sec.	9 sec. max.

Flap 100%, Gear DOWN Stall

Zero Fuel Weight		Fuel Contents	
Aircraft Weight			
Trim Speed		Pitch Trim	
	Scheduled	Achieved	
Stall Warning Speed			
Stall Speed			
Stall Warning Margin	Min 5kt		
Stalling Behaviour			

Time Flaps to Up at 120kts	sec	11 seconds maximum
Time Gear Up at 120kts	sec	10 seconds maximum

9 FUNCTIONING

Altitude:Up to l0000ft

9.1 Emergency Gear Extension

Lower the gear using the emergency gear extension technique given in the AFM at 120Kt (125 kt for the F90), or as stated in the AFM if different. SAT/UNSAT

NOTE: Cease pumping as soon as three green lights are obtained to prevent damage to the drive mechanism)

Reset the system to normal as advised in the AFM, but leave the gear down in preparation for the following test.

9.2 Alternate Statics

With Gear Down and Flap 100%, select alternate static source to instruments at 100kt and note:

Change in Left Hand ASI reading		Tolerance ± 4kts.
Change in Left Hand Altimeter reading		

9.3 Pressurisation Dump

With a low cabin differential pressure (Approx. 0.5 psi) open the dump valve and check that the cabin differential pressure rapidly reduces to zero. SAT/UNSAT

10 LANDING

Carry out a normal landing using reverse thrust.

Record any unusual aspects.

11 POST-FLIGHT ACTIONS

11.1 Placards

Check all cockpit placards and warning notices for presence, accuracy and legibility. SAT/UNSAT

11.2 Plot the results of the performance climbs and compare the measured rates of climb with the gross data scheduled in Flight Manual. The maximum permitted climb performance shortfall is 70 ft/min.

11.3 Complete the statement of defects and sign the Flight Test Certificate and state whether or not the aeroplane needs to be re-flown.

11.4 Pass the completed Flight Test report to the Surveyor-in-Charge of the CAA Area Office.