CHAP 2 AIRFRAME SP 114 AL 4 SHEET 1 OF 12	SERVICING PROCEDURE F53 T55	BAC F53 & T55 (SA) 5A3A Section 1 2nd Edition

Tailplane Flying Controls - Functional Check	AFSC 43151 42152 43171 42172	TIME EST
Safety and Servicing Notes are to be complied with throughout the work detailed on this card.		

SPECIAL TOOLS AND EQUIPMENT

Tailplane incidence gauge (F53) (Left-26DK/95864).
Tailplane incidence gauge (F53) (Right-26DK/95865).
Tailplane incidence gauge (T55) (Left-26DK/95572).
Tailplane incidence gauge (T55) (Right-26DK/95573).
Auto-stabilizer neutral setting pin (CH/455/148).
Pitot/Static test set (6C/1042139).
Control column setting rig (F53-26DK/95778).
Control column setting rig (T55-26DK/95828).
Centre fuselage longitudinal levelling gauge (26DK/95099).
Tyre inflation rig (4G/1050542).
Spring balance (0-56 lbs) (1A/1275139).
Spring balance (0-10 lbs) (1A/1943999).
Retraction rig (EF5-88-367).

ASSOCIATED PROCEDURES

SP 602(AF)
603(AF)
142(AF)

43151

1. PREPARATION

1.1	Arrestor hook safety bar.	Remove from aircraft.
1.2	Arrestor hook.	Release from stowed position and lower on to two hard rubber mats pre-positioned on ground (Using retraction rig - EF5-88-367).
1.3	Arrestor hook operating handle.	Reset to unoperated position (Ball catch engaged).
1.4	Bolster.	Remove.
1.5	Drain channels.	Remove.
1.6	Access panels 93 & 103.	Remove.
1.7	Canopy seal guards.	Ensure fitted.

43151/42152

2. PREPARATION

2.1	Ground air charging/ release connexion (Access panel 63P(Left)).	Remove blank.

Continued Overleaf

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42151

2. PREPARATION (Contd)

2.2	Services system hydraulic pressure.	Release pressure by operating brake lever.
2.3	Hydraulic test trolleys.	(i) Prime. (ii) Bleed.
2.4	No.1 Services ground test connexions (Access panel 45P (Left)).	Connect hydraulic test trolley.
2.5	No.1 Controls ground test connexions (Access panel 45P (Left)).	Connect hydraulic test trolley.
2.6	No.2 Controls ground test connexions (Access panel 67P (Left)).	Connect hydraulic test trolley.
2.7	Hydraulic reservoirs (Services and No.1 controls, No.2 controls).	Replenish (SP 603(AF)).
2.8	Accumulators (Services and No.1 controls and No.2 controls system).	Check pressure (SP 602(AF)).
2.9	Tyre inflation rig (4G/1050542).	(i) Connect to ground air charging/release connexion (Access panel 63P (Left)). (ii) Set to deliver a pressure of between 16 and 18 lbf/in2.
2.10	External d.c. power supply.	(i) Connect. (ii) Set to ON.
2.11	External a.c. power supply.	(i) Connect. (ii) Set to ON.
2.12	MRG switch.	Set to OFF (See Fig.1).
2.13	Stab switch (On controller).	Set to OFF (See Fig.1).
2.14	Autopilot engage switch (On control column).	Set to OFF (See Fig.1).
2.15	Instrument master switch.	Set to ON (See Fig.1).

Continued

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

2. PREPARATION (Contd)

2.16	Autopilot master switch (On controller).	Set to ON (See Fig.1).
2.17	Tailplane auto-stabilizer actuator.	(i) Set to neutral using aircraft handpump. (ii) Check neutral using setting pin (CH/455/148). (iii) Remove setting pin.
2.18	Tailplane Incidence Gauges: F53 (Left)-26DK/95864; F53 (Right)-26DK/95865; T55 (Left)-26DK/95572); T55 (Right)-26DK/95573).	Fit.
2.19	Feel selector.	Set to OUT.
2.20	Control column setting rig. F53-(26DK/95778) T55-(26DK/95828	Fit.

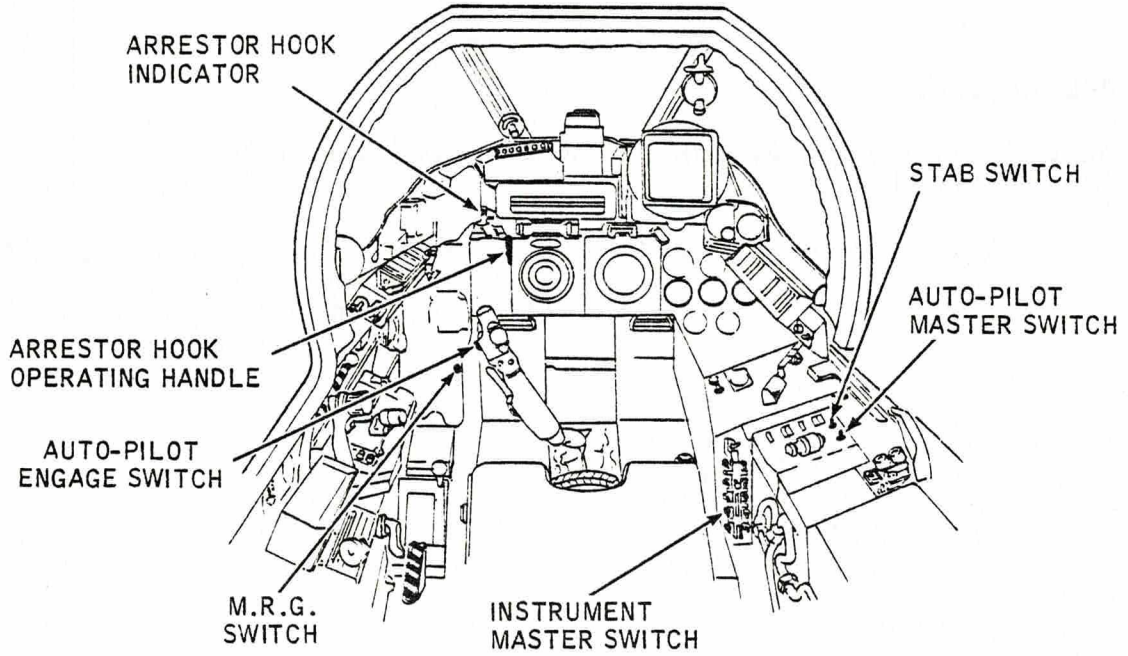
NOTE: On T55 aircraft, fit control column setting rig to right column.

2.21	Longitudinal levelling gauge (26DK/95099) and clinometer (Front fuselage).	Fit.
2.22	No.1 and No.2 controls hydraulic systems.	Pressurize to 3000 lbf/in2.
2.23	Clinometer (Front fuselage).	Record longitudinal reading.
2.24	Trim switch.	Set to NEUTRAL.
2.25	Control column.	Check neutral setting, by clinometer, on column rig is 15 degrees 30 minutes PLUS OR MINUS 0.50 degree after allowing for reading recorded in Sub-item 2.23.
2.26	Tailplanes.	Check neutral setting on tailplane gauges is MINUS 8 degrees PLUS OR MINUS 0.50 degree.

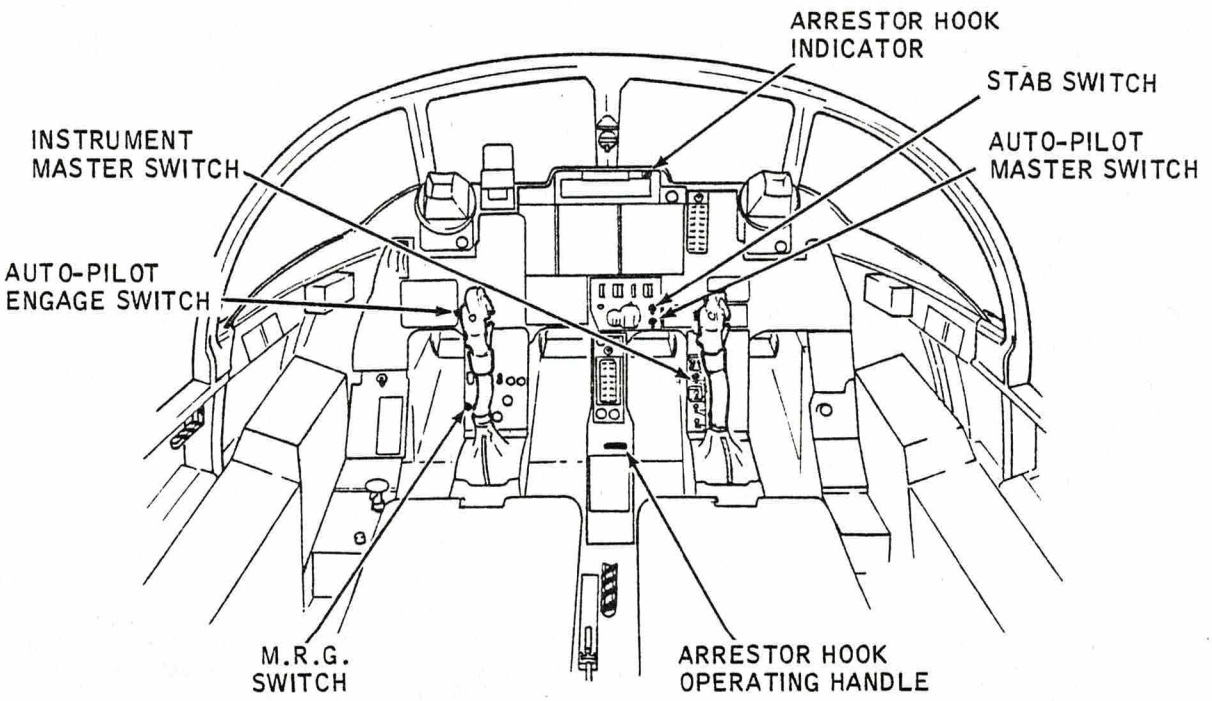
NOTE: On T55 aircraft, carry out items 3 to 5 on pupil's and instructor's columns.

Continued Overleaf

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.



MK.53



MK.55

INSTRUMENT AND AUTO-PILOT SWITCHES
FIGURE 1

Continued

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

3. SMOOTHNESS CHECK (FEEL OUT)

3.1	Control column.	Operate through full range.
3.2	Tailplane.	(i) Ensure consistent smoothness of movement. (ii) Ensure correct sense of movement.

NOTE: The following checks carried out on centering, spring-feel and feel performance are written for an aircraft standing on its wheels. Alternatively, if the aircraft is on jacks, it may be adjusted to the rigging position, and clinometer readings taken from rigging position datum of the control column, which is 15 degrees 30 minutes PLUS OR MINUS 0.50 degree aft of vertical.

4. CENTERING CHECK (FEEL OUT)

4.1	Control column.	(i) Move fully forward. (ii) Allow to return under restraint. (iii) Check hands-off position is within 3 degrees of reading recorded in Sub-item 2.23. (iv) Move fully aft. (v) Allow to return under restraint. (vi) Check that hand-off position is within 3 degrees of reading recorded in Sub-item 23.

5. FRICTION CHECK

5.1	Control column datum point (15.5 in.from column pivot).	Connect 0 to 10 lbs spring balance (1A/1943999).
5.2	Control column.	(i) Check initial force required to move forward does not exceed 16 oz. (ii) Check initial force required to move aft does not exceed 15 oz.

6. RANGE OF MOVEMENT CHECK

NOTE: In item 6, to ensure feel is correctly selected, the services hydraulic system should be pressurized to a minimum of 1000 lbf/in2.

Continued Overleaf

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

6. RANGE OF MOVEMENT CHECK (Contd)

6.1	Pitot/Static system.	Pressurize to equivalent of 250 Kt.
6.2	Stab switch (On controller).	Set to STAB.
6.3	Feel switch.	Set to ON.

NOTE: The tailplane incidence angles quoted are relative to the aircraft horizontal fuselage datum.

6.4	Control column.	Set to NEUTRAL.
6.5	Tailplane.	Check neutral position is minus 8 degrees PLUS OR MINUS 0.50 degree.
6.6	Control column.	Move fully forward.
6.7	Tailplane.	Check tailplane up position is plus 5 degrees PLUS OR MINUS 0.50 degree.
6.8	Control column.	Move fully aft.
6.9	Tailplane.	Check tailplane down position is minus 22 degrees 22 minutes, PLUS OR MINUS 0.50 degree.

7. TRIM RANGE CHECK

7.1	Services system.	Pressurize to 3000 lbf/in2.
7.2	Control column.	Set to NEUTRAL.
7.3	Pitot/Static system.	Pressurize to equivalent of 650 Kt.
7.4	Trim switch.	Set fully forward.
7.5	Tailplane.	Check UP position is 3 degrees 27 minutes, PLUS 1 degree MINUS 0 degree.
7.6	Trim indicator.	Ensure indication is correct.
7.7	Trim switch.	Set fully aft.
7.8	Tailplane	Check DOWN position is minus 12 degrees 24 minutes PLUS 0 degrees, MINUS 1 degree.

Continued

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

7.	TRIM RANGE CHECK (Contd)	
7.9	Trim indicator.	Ensure indication is correct.
7.10	Trim switch.	Trim forward until trim indicator reads ZERO (Mid-position).
7.11	Tailplane.	Check position is minus 4 degrees 28 minutes PLUS OR MINUS 0.50 degree.
7.12	Pitot/Static system.	Release pressure.
8.	SMOOTHNESS CHECK (FEEL ON)	
8.1	Trim switch.	Operate to give approximate range of 19 degrees forward and 16 degrees aft of control column.
8.2	Control column.	(i) Operate through full range (ensure consistent smoothness). (ii) Move fully forward. (iii) Permit to return under restraint. (iv) Check hands off position is within 2.50 degrees of reading recorded in sub-item 2.23. (v) Move fully aft. (vi) Permit to return under restraint. (vii) Check hands-off position is within 2.50 degrees of reading recorded at sub-item 2.23.
9.	SPRING FEEL CHECK	
9.1	Feel switch.	Ensure set to OUT.
9.2	Trim switch.	Ensure trimmed to give approximate range of 19 degrees forward and 16 degrees aft on control column.
9.3	Control column.	(i) Using spring balance 0-56 lbs (1A/1275139) move forward 15 degrees on clinometer and check spring balance reading is 6lbs.PLUS OR MINUS 1lb.

Continued Overleaf

43151/42152

9. SPRING FEEL CHECK (Contd)

9.3 Control column (contd).	(ii)	Move aft 10 degrees and check that spring balance reading is 7 lbs PLUS OR MINUS 1 lb.
	(iii)	Move 16 degrees aft and check spring balance reading is 13 lbs PLUS OR MINUS 2 lbs.

10. FEEL PERFORMANCE CHECK

NOTE: During sub-item 10.1(i) the control column and rudder pedals are to be moved away from neutral several times in varying amounts and held each time during switching of feel selector.
Ensure that a positive feel is felt through the column and there is no interaction felt on the rudder pedals on each switching.

10.1 Feel selector.	(i)	Set to IN and OUT.
	(ii)	Set to IN.
10.2 Trim switch		Ensure trimmed to give approximate range of 19 degrees forward and 16 degrees aft on control column.
10.3 Control column.	(i)	Set to NEUTRAL.
	(11)	Using spring balance 0-56 lbs (1A/1275139) move forward 15 degrees on clinometer and check that spring balance reading is 12 lbs PLUS OR MINUS 2 lbs.
	(iii)	Move aft 10 degrees and check that spring balance reading is 13 lbs PLUS OR MINUS 2 lbs.
	(iv)	Move aft 16 degrees and check that spring balance reading is 25 lbs PLUS OR MINUS 3 lbs.
	(v)	Set to NEUTRAL.
10.4 Pitot/Static system.		Pressurize to equivalent of 500 Kt.
10.5 Trim switch.		Ensure trimmed to give approximate range of 19 degrees forward and 16 degrees aft on control column.

Continued

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

10. FEEL PERFORMANCE CHECK (Contd)

10.6	Control column.	(i) Using spring balance 0.56 lbs (1A/1275139) move forward 16 degrees on clinometer and check that spring balance reading is 48 lbs. PLUS OR MINUS 4 lbs. (ii) Move aft 10 degrees and check that spring balance reading is 42 lbs. PLUS OR MINUS 4 lbs. (iii) Set to NEUTRAL.
10.7	Feel selector.	Set to OUT.
10.8	STAB switch.	Set to OFF (See Fig.1).
10.9	Hydraulic test trolley (Services).	Stop.
10.10	Pitot/Static system.	Release pressure.

11. MOTOR RESPONSE CHECK (NO.1 CONTROLS SYSTEM)

11.1	No.2 Controls system hydraulic test trolley.	Stop.

NOTE: In Sub-Items 11.2 and 11.4 one stroke is defined as a movement of control column from neutral to one extreme position and back to neutral.

11.2	Accumulators (No.2 Controls system).	Exhaust by operating control column at a rate of 1 stroke in 5 sec.
11.3	No.1 Controls system.	Ensure pressurized to 3000 lbs/in2.
11.4	Control column.	Operate fore and aft at rate of 1.50 strokes per sec. for 3 sec, ensuring motor operation is not sluggish.
11.5	Tailplane motor.	Ensure free from vibration and excessive noise.

Continued Overleaf

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

12. ACCUMULATOR CAPACITY CHECK (NO.1 CONTROLS SYSTEM)

12.1	Control column.	Set to NEUTRAL.
12.2	No.1 Controls system.	Ensure pressurized to 3000 lbf/in2.
12.3	No.1 Controls system Hydraulic test trolley.	Stop.

NOTE: In Sub-item 12.4, one stroke is defined as the movement of control column from neutral to one extreme position and back to neutral.

12.4	Control column.	Operate fore and aft at rate of 1 stroke in 5 sec. and check that 3.50 strokes are obtainable before accumulator pressure is exhausted.

13. MOTOR RESPONSE CHECK (NO.2 CONTROLS SYSTEM)

13.1	No.2 Controls system.	Pressurize to 3000 lbf/in2.

NOTE: In Sub-Item 13.2 one stroke is defined as the movement of control column from neutral to one extreme position and back to neutral.

13.2	Control column.	Operate fore and aft at rate of 1.50 strokes per sec. for 3 sec. ensuring motor operation is not sluggish.
13.3	Tailplane motor.	Ensure free from vibration and excessive noise.

14. ACCUMULATOR CAPACITY CHECK (NO.2 CONTROLS SYSTEM)

14.1	Control column.	Set to NEUTRAL.
14.2	No.2 Controls system.	Ensure pressurized to 3000 lbf/in2.
14.3	No.2 Controls system hydraulic test trolley.	Stop.

NOTE: In Sub-item 14.4 one stroke is defined as the movement of control column from neutral to one extreme position and back to neutral.

Continued

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151/42152

14. ACCUMULATOR CAPACITY CHECK (NO.2 CONTROLS SYSTEMS) (Contd)

14.1	Control column.	Operate fore and aft at rate of 1 stroke in 5 sec. and check 3.50 strokes are obtainable before accumulator pressure is exhausted.
14.5	Services system.	Exhaust pressure.

42172/43171 (INSPECTOR)

15. INSPECTION STAGE

15.1	Inspect.	After component replacement or if the system has been disturbed.

43151

16. COMPLETION

16.1	Pitot/static test set.	Remove.
16.2	Hydraulic system (Services).	Release pressure by operating brake lever.
16.3	Instrument master switch.	Set to OFF (See Fig.1).
16.4	Auto-pilot master switch.	Set to OFF (See Fig.1).
16.5	External d.c. power supply.	(i) Switch to OFF. (ii) Disconnect.
16.6	External a.c. power supply.	(i) Switch to OFF. (ii) Disconnect.
16.7	Hydraulic test trolleys (No.1 Services and controls and No.2 controls).	Remove.
16.8	Tailplane incidence gauges.	Remove.
16.9	Control column setting rig and clinometer.	Remove.

Continued Overleaf

Safety and Servicing Notes are to be complied with throughout the work detailed on this card.

43151

16. COMPLETION (Contd.)

16.10	Longitudinal levelling gauge.	Remove.
16.11	Tyre inflation rig.	(i) Remove. (ii) Fit blank and wirelock.
16.12	Hydraulic pump quick release connexions (Services and No.1 controls - Access panel 45P (Left); No.2 controls - Access panel 67P (Left)).	(i) Reconnect to aircraft. (ii) Wirelock.
16.13	Access panels 93 & 103.	Refit.
16.14	Drain channels	Refit.
16.15	Bolster.	Refit.
16.16	Arrestor hook.	Reset (SP 142(AF)).
16.17	Reservoirs (Services No.1 and No.2 Controls).	Replenish (SP 603(AF)).

NOTE: All wirelocking must be of 22 SWG stainless steel unless otherwise stated.