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CF-105 - INSTRUMENTATION - ISSUE 7

FLYING CONTROL HYDRAULICS

In the following list, changes from Issue 5, Ref. 4361/22/J, dated October 21, 1955, are underlined, or indicated by a vertical line in the margin.

The sketch, on the following page, indicates the location of instrumentation in the Flying Control Hydraulic System.

Item	System	Range	Accuracy	Accuracy % of full range	Sampling Frequency
<u>Location (1) see sketch</u>					
1. Port engine pump inlet temp.	<u>B</u>	-65 +300°F	± 5°F	± 2%	2/min
2. Port engine pump inlet press.	<u>B</u>	0 -200 psi	± 5 psi	± 3%	40/sec
3. Port engine pump outlet press.	<u>B</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
<u>Location (2) see sketch</u>					
4. Port elevator valve inlet press.	<u>A</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
5. Port elevator valve inlet press.	<u>B</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
6. Port elevator jack return press.	<u>B</u>	0 -2000 psi	± 40 psi	± 2%	40/sec
7. Port aileron valve inlet press.	<u>A</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
8. Port aileron valve inlet press.	<u>B</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
9. Port aileron jack return press.	<u>B</u>	0 -2000 psi	± 40 psi	± 2%	40/sec
10. Rudder valve inlet pressure.	<u>A</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
11. Rudder valve inlet pressure.	<u>B</u>	0 -5000 psi	± 100 psi	± 2%	40/sec
12. Rudder jack return pressure.	<u>B</u>	0 -2000 psi	± 40 psi	± 2%	40/sec
<u>Location (3) see sketch</u>					
13. No. 1 Heat Ex. inlet temperature	<u>B</u>	-65 +300°F	± 5°F	± 2%	2/min
14. No. 1 Heat Ex. outlet temperature	<u>B</u>	-65 +300°F	± 5°F	± 2%	2/min
15. No. 2 Heat Ex. outlet temperature	<u>B</u>	-65 +300°F	± 5°F	± 2%	2/min
<u>Location (4) see sketch</u>					
16. Accumulator piston position	<u>B</u>	0 - 9.6"	± 0.1"	± 1%	10/sec
<u>Location (5) see sketch</u>					
17. Compensation piston position	<u>B</u>	0 -10.75"	± 0.2"	± 2%	10/min

(Cont'd.)

Item	Range	Accuracy	Accuracy % of full range	Sampling Frequency
<u>Location (2) see sketch</u>				
Port Elevator Jack				
18. Pressure in chamber (a)	0-5000 psi	± 100 psi	± 2%	40/sec
19. Pressure in chamber (b)	0-5000 psi	± 100 psi	± 2%	40/sec
20. Pressure in chamber (c)	0-5000 psi	± 100 psi	± 2%	40/sec
21. Pressure in chamber (d)	0-5000 psi	± 100 psi	± 2%	40/sec
Port Aileron Jack				
22. Pressure in chamber (a)	0-5000 psi	± 100 psi	± 2%	40/sec
23. Pressure in chamber (b)	0-5000 psi	± 100 psi	± 2%	40/sec
24. Pressure in chamber (c)	0-5000 psi	± 100 psi	± 2%	40/sec
25. Pressure in chamber (d)	0-5000 psi	± 100 psi	± 2%	40/sec
Rudder Jack				
26. Pressure in chamber (a)	0-5000 psi	± 100 psi	± 2%	40/sec
27. Pressure in chamber (b)	0-5000 psi	± 100 psi	± 2%	40/sec
28. Pressure in chamber (c)	0-5000 psi	± 100 psi	± 2%	40/sec
29. Pressure in chamber (d)	0-5000 psi	± 100 psi	± 2%	40/sec
Valve Position				
30. Port elevator valve	0 - 0.25 in.	± 0.002	± 1%	40/sec
31. Port aileron valve	0 - 0.14 in.	± 0.002	± 1%	40/sec
32. Rudder valve	0 - 0.10 in.	± 0.002	± 2%	40/sec

(Friction of the valve position indicator potentiometers should not exceed 0.02 lb.)

NOTE ON FLYING CONTROL HYDRAULIC (See Sketch Opposite).

The flying controls are operated by two independent but practically identical hydraulic systems, A & B, each system having in parallel a pump driven by the Port engine and a pump driven by the starboard engine.

Whereas each system contains a number of actuators and servo units in parallel, as detailed in the following table, only one actuator has been drawn in the sketch:-

System "A"	System "B"
Port Elevator Jack.	Port Elevator Jack.
Stbd Elevator Jack.	Stbd Elevator Damper Servo.
Port Aileron Jack.	Stbd Elevator Jack.
Stbd Aileron Jack.	Stbd Elevator Damper Servo.
Rudder Jack.	Port Aileron Jack.
Rudder Emergency Damper Servo.	Port Aileron Damper Servo.
	Stbd Aileron Jack.
	Stbd Aileron Damper Servo.
	Rudder Jack.
	Rudder Damper Servo.
	Elevator Parallel Servo.
	Aileron Parallel Servo.

The control surface actuator jacks are each composed of two units in tandem as indicated in the sketch, one unit being supplied by System "A", the other unit by System "B".

Key:	
Location In Sketch	Quantities to be Measured
1.	Port engine pump - System "B" Pump inlet temp. and pressure: pump outlet pressure.
2.	Port elevator, port aileron, and rudder jacks. System "A" valve inlet pressure: System "B" valve inlet and outlet pressures. Jack internal pressures. Valve positions.
3.	Heat exchangers System "B". Inlet temperature to H. Ex. No.1: outlet temp. H. Ex. No. 1: outlet temp, H.Ex. No. 2.
4.	Accumulator piston position, System "B"
5.	Compensation piston position, System "B".

