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COMPONENTE COMPONENT	O.S W.O	MODELO Model	P/N	S/N
FUEL CONTROL UNIT		DP-F2 Main Fuel Control Unit		

IDENTIFICAÇÃO IDENTIFICATION	
TÍTULO TITLE	FICHA PARA REGISTROS DE TESTE DA FUEL CONTROL UNIT FUEL CONTROL UNIT TEST SHEET

PUBLICAÇÃO PUBLICATION	REFERÊNCIA REFERENCE	TLN	DATA DATE
COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST	73-20-71	TLN02391	January 2 nd , 2018 Temporary Revision 73-76
		CONJUNTO MAIOR MAIN PART	
		P/N	S/N

TESTE APLICÁVEL AOS PART NUMBERS TEST APPLICABLE TO PART NUMBERS
3244883-3

TESTE DA UNIDADE DE CONTROLE DE COMBUSTÍVEL FUEL CONTROL UNIT TEST				
ITEM Item	PROCEDIMENTOS TOLERÂNCIAS Procedures Serviceable limits	Resultado Result	Data Date	Executante Performed by
A	Monte a FCU na bancada de teste, usando o adaptador estriado e o adaptador de montagem. <i>Assemble the Main Fuel Control Unit to the test stand, using spline adapter and mounting adapter, or equivalent.</i>			
B	Remova o plugue e instale o acessório especial de teste. Remova o plugue e instale um adaptador padrão nas portas. Instale o Quadrante de Aceleração na extremidade do eixo de aceleração e torqueie de 40-45 lb.in. <i>Remove plug and assemble, special testing fixture. Remove plug and install a standard adapter into ports. Assemble throttle quadrant and pointer on the end of throttle shaft and tighten to 40-45 lb.in.</i>			
C	Remova o contra pino, porca e espaçador do eixo de aceleração. <i>Remove cotter pin, nut, and spacer from throttle shaft.</i>			
D	Mantenha uma pressão Po dentro de ± 10 psi dos limites especificados, usando uma válvula de controle Po. Pn deve ser definido em 157 psig com o fluxo de combustível de 400 pph. Não a altere durante todo o teste. <i>Maintain Po pressure to within ± 10 psi of specified limits, using Po control valve. Pn to be set to 157 psig with nozzle flow of 400 pph. Do not alter for whole of test.</i>			
E	Ajuste o parafuso de pressão diferencial P1-P2 para uma pressão entre 26 – 42 in.Hg. Ajuste o orifício da <i>sleeve</i> da metering valve até a pressão diferencial P1-P2 e o fluxo de injeção estarem de acordo com os limites especificados.			

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TESTE DA UNIDADE DE CONTROLE DE COMBUSTÍVEL FUEL CONTROL UNIT TEST				
ITEM Item	PROCEDIMENTOS TOLERÂNCIAS Procedures Serviceable limits	Resultado Result	Data Date	Executante Performed by
	Adjust P1-P2 pressure differential adjustment screw between 26 - 42 in.Hg. Adjust metering valve sleeve assembly orifice until P1-P2 pressure differential and nozzle flow are within the limits specified.			
F	Torqueie as porcas para os valores especificados. Registre todas as pressões diferenciais de P1-P2 e fluxo de injeção e adicionalmente, a pressão de Pc-Px, Px-Py e P ₂ no Ponto de Teste. Torque nuts to values specified. Record all P1-P2 differential pressure and nozzle flows and additionally, (Pc-Px) pressure, (Px-Py) pressure and (P ₂) pressure at Test Point.			
G	Se o fluxo do injetor não estiver de acordo com os limites especificados, troque o fluxo de ar (Py). Torqueie o fluxo de ar Py no valor especificado. Registre o fluxo de ar (Py) instalado. If the nozzle flow is not within the specified limits, change Py air flow jet. Torque air flow jet to value specified. Record (Py) air flow jet size installed.			
H	Após ajustar o parafuso de ajuste da velocidade de marcha lenta, torqueie a porca de 20 – 25 lb.in. After resetting idle speed adjustment screw, torque nut to 20 – 25 lb.in.			

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					TEST SPECIFICATIONS			AETS 68471		
					SHEET		SHEETS		REV	
					3		OF 9		A	
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ - P ₂ "Hg	Pn psi
						MIN	REC	MAX		
K. All adjustment are to be properly torqued. Test point indicated (*) require special attention and are to be checked below following proper torquing.										
1.		Metering valve orifice torque			35					40 in lb.
2.		By-pass setting torque			25					35 in lb.
3.		Min M/V stop (breakaway) torque			4					20 in lb.
4.		Max. flow M/V stop torque			20					25 in lb.
5.		Max. gov. eccentric torque			7					7.5 in lb.
6.		Max. throttle stop torque			20					25 in lb.
7.		Idle speed stop torque			20					25 in lb.
8.		Flow body to drive body			20					25 in lb.
9.		Air adapter to drive body in 5 in-lb increments			25					30 in lb.
10.		Bleeds (Py, Pg)			9					11 in lb.
11		Air regulator adjust nut			20					25 in lb.
12.		Air regulator to flow body			10					15 in lb.
CHECKED _____										

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TEST		SPECIFICATIONS				AETS-68471				
SHEET		SHEETS		REV						
4		OF 9		B						
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ -P ₂ "Hg	Po psig
						M:N	REC	MAX		
METERING VALVE ORIFICE AND BY-PASS HEAD (P1-P2) "HG) SETTING										
A) Test point 1.01 thru 1.03 are interrelated and should be recorded after all three (3) adjustments have been made.										
B) At T.P. 1.03, if P1-P2 is higher than 41 in Hg, remove by-pass valve cover and replace existing spacer P/N 3240905 with thicker spacer P/N 3240905-1. If P1-P2 is lower than 33 in Hg, remove and discard existing spacer.										
C) Torque the by-pass valve retaining screws to 22-24 in-lb in increments of 5 in-lb and re-calibrate T.P. 1.01 to 1.03. After 20 minutes minimum, re-torque to 22-24 in-lb and re-verify T.P. 1.01 to 1.03.										
* 1.01	6800	3-6 1600	1 MAX		40.0	262		272		5 300
Adjust head and orifice, P1-P2= 26-46 in Hg. Pn PSIG										
* 1.02	2900	720	30-32		40.0	76		79		80
Set minimum M/V stop after removing Py line.										
* 1.03	6800	1600	MAX		90.0	588		612		175
Retrim head and re-adjust 1.01-1.02 if out of limits.										
Px-Py 1.2 in Hg max. Pn PSIG										
As per note (B), check appropriate box.										
						Original spacer				
						Spacer removed				
						Spacer replaced				
* 1.04	6800	1600	MAX		125.0	712		728		140
Set maximum M/V stop.										
1.05	6800	1600	MAX		40.0	-10		+10		300
Hysteresis of T.P. 1.01										

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TEST POINT		SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ - P ₂ "Hg	Pn psi
							MIN	REC	MAX		
TEST SPECIFICATIONS							AETS 68471				
							SHEET 5	SHEETS OF 9		REV D	
<u>ENRICHMENT SPRING SETTING</u>											
2.01	2-7 6800	3-6 1600	1 MAX		4 70.0	X		X			5 220
	Record nozzle flow.										
2.02	6606	1500	MAX		70.0	-12		-16			200
	Adjust enrichment spring to obtain -12 to -16 pph less than 2.01. To verify setting, approach enrichment speed from 6,000 rpm.										
2.03	5800	1350	MAX		70.0	421		438			160
						Px bleed size	51		56		
If not in limits, select Px bleed per parts list. (Higher no. bleed reduces flow.) If bleed has been changed, recheck test points 1.01 to 1.04, and 2.01 to 2.03.											

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TEST		SPECIFICATIONS			AETS 68471					
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ - P ₂ "Hg	Pn psi
						MIN	REC	MAX		
MAX. GOVERNOR SPRING SETTING										
A) Adjust eccentric shaft to meet flow limits.										
B) If unable to set with eccentric, maximum T.A. may be varied within T.A. limits.										
C) If unable to set with per "A" or "B", maintain eccentric on scribe line and determine amount of RPM off.										
D) Split control and adjust gov. spring as required. (CW adj. of governor spring delays break, approximately 1 flat on adj. nut per 50 RPM).										
E) At T.P. 3.02, adjust speed until nozzle flow is as shown. Approach from lower speed.										
F) At T.P. 3.03, adjust speed until 150 RPM greater than recorded at T.P. 3.02. If nozzle flow is not in limits, select Py bleed per parts list (higher number bleed to decrease flow).										
G) If bleed size change is required, re-check T.P. 3.01 and reset if necessary.										
H) At T.P. 3.04 decrease speed from T.P. 3.03 until nozzle flow as shown is reached. Record speed. Speed to be less than that recorded at T.P. 3.02 by 50 RPM max.										
#*	4	3-7	1		2-6			5		
3.01	7047	1650			100.0	590		620		180
Set governor break T.A. at 89-91".										
3.02		1650	"		"		590			180
Record speed.										
#*										
3.03		1650	"		"	422		462		260
Flow to be within limits shown. BLEED SIZE 56 66										
3.04		1650	"		"		590			180
X		X Hysteresis 50 RPM max. of T.P. 3.02								

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TEST POINT		SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ - P ₂ "Hg	Po psig
							MIN	REC	MAX		
TEST SPECIFICATIONS							AETS-68471				
							SHEET 7	SHEETS OF 9	REV B		
<u>IDLE SPEED STOP SETTING AND PICK-UP ANGLE</u> A) At T.P. 4.02, increase T.A. until 4 pph max. fuel flow from 4.01 is observed. (T.A. where flow starts to increase is pick-up angle) B) If throttle angle is out of limits, replace governor spring. 1) Use a higher numbered spring if angle is too low. 2) Use a lower numbered spring if angle is too high. 3) Adjust spring tension to same load as set on spring removed. 4) Re-set governor break at T.P. 3.01 and re-run T.P. 3.02 to 3.04. 5) Re-set idle stop screw at T.P. 4.01.											
#*	3	1-7	4			2-5	30.0	110		123	6 90
4.01	3300	800	28-30								
Set idle stop screw (CW adj. to increase flow). Decrease and re-set speed after adjustment.											
#*	3300	800				30.0			Pick-up Δ 30°		34° 90
4.02									Spring stripe		
<u>LOW END OF ACCELERATION CURVE AND THROTTLE MOVEMENT EFFECT</u> At T.P. 5.02, after recording nozzle flow, move T.A. to 30°, observe nozzle flow change and record.											
5.01	815	200	40			LOCAL 60	60		X		5 30
5.02	2100	670	40			25.0	139		155		50
Move T.A. to 30° 5 PPH maximum decrease.											

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TEST POINT		SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			Pi - Pz "Hg	Pn psi
							MIN	REC	MAX		
TEST SPECIFICATIONS							AETS 68471				
							SHEET 8	SHEETS OF 9		REV E	
GOVERNOR RESET CHECK											
A) At T.P. 6.01 and 6.02, remove Pg bleed from control. Place calibrated 2529539-67X bleed fixture at the end of a pipe connected to the Pg port. Connect a manometer to a tee in this pipe. B) At T.P. 6.03 to 6.05, replace Pg bleed in control. Connect a 1/4" needle valve downstream of the calibrated 2529539-67X bleed fixture referred to in "A" above. Connect the low pressure side of the manometer to a tee between the bleed fixture and the valve. The pressure at this point is designated Ps. The speed at T.P. 6.03 must be gradually increased above 7,000 RPM until required flow is obtained. Maintain this speed setting within ± 2 RPM for T.P. 6.04 and 6.05. Pg-Ps at T.P. 6.04 and 6.05 is to be approached from lower Pg-Ps value only. C) If unable to meet T.P. 6.04, replace reset spring. 1) Use shorter spring (unmarked) to decrease Pg-Ps. 2) Use longer spring (two stripes) to increase Pg-Ps. D) At T.P. 6.06, connect pipe with needle valve and tee to Pg port. Connect manometer to tee. E) If unable to meet T.P. 6.06, readjust T.P. 6.01. Higher value Pr-Pa increases Pg-Pa. If T.P. 6.01 has been readjusted, recheck T.P. 6.02 to 6.06 inclusive.											
*	6.01	Adjust air regulator				85.0	Pr-Pa	35		37 in Hg	
	6.02					40.0	Pr-Pa	X		X in Hg.	
		Difference from T.P. 6.01								max.	
	6.03	5 X	3 1680	1 MAX		2 100.0			560		4 200
	Needle valve closed.										
*	6.04	X	1680	MAX		100.0			536		210
							Pg-Ps	2.4		3.5 in Hg	
	6.05	X	1680	MAX		100.0			424		250
		Difference from T.P. 6.04					Pg-Ps	0.8		1.3 in Hg	
#	6.06	4000	900	MAX		35.0	106		122		125
							Pg-Pa	6.0		9.0 in Hg	
Note: Open needle valve fully. Adjust valve to meet the flow requirements of T.P. 6.06 as required (nozzle flow must be seen to increase a minimum of 1 P.P.H. during this adjustment before recording actual PPH and Pg-Pa values).											

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						TEST SPECIFICATIONS			AETS-68471	
						SHEET 9 OF 9		SHEETS 9 OF 9		REV B
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ -P ₂ "Hg	Pn psi
						MIN	REC	MAX		
EXTERNAL LEAKAGE CHECK										
A) Cap Po at drive flange by-pass tap. B) Remove Po line to control and install Po plug. C) Cap outlet port. D) Set P1 pressure to 1000 psig. E) Observe leakage for 2-3 minutes. F) No leakage permitted.										
7.01										OK ☐ REJECT
7.02										X ☐ 4.8 lbs. max
						CHECKED				
						INSPECTED BY				
						ACCEPTED BY				

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TESTE AETS 68472 | AETS 68472 TEST

		TEST SPECIFICATION		NUMBER AETS-68472	
				SHEET 1 OF 5	
ORIG BY G. CHAN		CHK BY W.H. FOSTER <i>W.H.F.</i>		APP BY M. TAYLOR	
DATE		TEST STAND NO		OPERATOR	
S/N					
REL DATE 25 FEB 93 PRO REL 22 APR 93 24 MAY 93 18 OCT 93 5 NOV 93 22 MAR 94	A B C D E F	STATUS REV BIT 13 14 15 16 17 18 19 20 21 22 23 24	1 2 3 4 5 6 7 8 9 10 11 12	F D D F B	13 14 15 16 17 18 19 20 21 22 23 24
AUDIT SPECIFICATION					
A. See AEEI-68403 for location of adjustments and pressure taps.					
B. (1) Install throttle quadrant fixture with a 4.0 lb load applied to throttle stop lever to hold lever against maximum throttle stop. (2) Index throttle quadrant to 90° T.A. Torque throttle quadrant fixture to 40-45 in-lb.					
C. Control rotation CW as viewed from control shaft end.					
D. Po pressure must meet limits where given ± 10 psi. (Po need not be set when unit is calibrated with an aircraft pump.)					
E. Set Pn at 157 PSIG with nozzle flow of 400 PPH. Do not alter valve for the whole of test.					
F. Set test conditions (RPM, Supply, & Pc) in the sequence indicated by number 1, 2, 3 etc. (1) When two numbers are listed, set and then trim test condition in the sequence indicated. (2) Approach all speeds, total fuel supplies, and Pc settings from a lower value, except at hysteresis points.					
G. Speed for Test Points indicated (#) (2.02, 3.01, 3.03, 4.01, 4.02, 6.04), is to be set to ± 2 RPM of specified value. All other points are to be set within ± 20 RPM of specified value.					
H. Total fuel supply is to be set to ± 20 PPH of the specified value or within limits when shown. (Po need not be set when unit is calibrated with an aircraft pump.)					

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TEST SPECIFICATIONS						AETS 68472						
						SHEET 2	SHEETS OF 5	REV D				
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ -P ₂ "Hg	Pn psi		
						MIN	REC	MAX				
<u>METERING VALVE ORIFICE AND BY-PASS HEAD (P1-P2) "HG) SETTING</u>												
1.01	2 6800	3-6 1600	1 MAX		4 40.0	260		274		5 300		
P1-P2= 26-46 in Hg.						Pn		PSIG				
1.02	2900	720	30-32		40.0	75		80		80		
Remove Py line.												
1.03	6800	1600	MAX		90.0	585		615		175		
Px-Py							1.2 in Hg max.			Pn		PSIG
1.04	6800	1600	MAX		125.0	710		730		140		
1.05	6800	1600	MAX		40.0	-10		+10		300		
Hysteresis of T.P. 1.01												
<u>ENRICHMENT SPRING SETTING</u>												
2.01	2-7 6800	3-6 1600	1 MAX		4 70.0	X		X		5 220		
# 2.02	6606	1500	MAX		70.0	-10		-18		200		
Approach enrichment speed from 6,000 rpm, fuel flow is to be -10 to -18 pph less than 2.01.												
2.03	5800	1350	MAX		70.0	419		440		160		

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		TEST SPECIFICATIONS						AETS 68472		
		SHEET 3 OF 5						REV D		
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ - P ₂ "Hg	Pn psi
						MIN	REC	MAX		
MAX. GOVERNOR SPRING SETTING										
#	4	3-7	1		2-6					5
3.01	7047	1650	MAX		100.0	585		625		180
3.02		1650	"		"		590			180
Record speed.										
#		1650	"		"	417		467		260
3.03		1650	"		"	417		467		260
Increase speed 150 RPM above that recorded at T.P. 3.02. Flow to be within limits as shown.										
3.04		1650	"		"		590			180
X ☐ X Hysteresis 50 RPM max. of T.P. 3.02										
IDLE SPEED STOP SETTING AND PICK-UP ANGLE										
A) At T.P. 4.02, increase T.A. until 4 pph max. fuel flow from 4.01 is observed.										
#	3	1-7	4		2-5					6
4.01	3300	800	28-30		30.0	106		127		90
#		800			30.0					90
4.02	3300	800			30.0					90
Pick-up Δ 30° ☐ 34°										
LOW END OF ACCELERATION CURVE AND THROTTLE MOVEMENT EFFECT										
At T.P. 5.02, after recording nozzle flow, move T.A. to 30°, observe nozzle flow change and record.										
#	2	4	3		1					5
5.01	815	200	40		LOCAL 60			X		30
5.02	2100	670	40		25.0	136		158		50
Move T.A. to 30° ☐ 5 PPH maximum decrease.										

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TEST SPECIFICATIONS						AETS 68472				
SHEET 4		SHEETS OF 5		REV F						
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG	COND DEG	Pc psia	NOZZLE FLOW, PPH			P ₁ - P ₂ "Hg	Pn psi
						MIN	REC	MAX		
<u>GOVERNOR RESET CHECK</u>										
A) At T.P. 6.01 to 6.03, place calibrated 2529539-67X bleed fixture at the end of a pipe connected to Pg port. Connect the high pressure side of the manometer to a tee in this pipe. Connect a ¼" needle valve downstream of the bleed fixture. Connect the low pressure side of the manometer to a tee between the bleed fixture and the valve. The pressure at this point is designated Ps. The speed at T.P. 6.01 must be gradually increased above 7,000 RPM until required flow is obtained. Maintain this speed setting within ± 2 RPM for T.P 6.02 and 6.03. Pg-Ps at T.P. 6.02 and 6.03 is to be approached from lower Pg-Ps value only. B) At T.P. 6.04, connect pipe with needle valve and tee to Pg port. Connect manometer to tee.										
5	3	1	2	4						
6.01	X	1680	MAX	100.0	560	200				
Needle valve closed.										
6.02	X	1680	MAX	100.0	536	210				
						Pg-Ps	2.3		3.6 in Hg	
6.03	X	1680	MAX	100.0	424	250				
						Pg-Ps	0.7		1.4 in Hg	
# 6.04	4000	900	MAX	35.0	106		122	125		
						Pg-Pa	5.8		9.2 in Hg	
Note: Open needle valve fully. Adjust valve to meet the flow requirements of T.P. 6.04 as required. (nozzle flow must be seen to increase a minimum of 1 P.P.H. during this adjustment before recording actual PPH and Pg-Pa values).										

