

	REGISTRO RECORD	REVISÃO REVISION 0
CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS Service Sheet	PÁGINA PAGE 1/10

COMPONENTE Component	O.S W.O	MODELO Model	PN	SN
FUEL CONTROL UNIT		DP-F2 Main Fuel Control Unit		

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

PUBLICAÇÃO PUBLICATION	REFERÊNCIA REFERENCE	TLN	DATA DATE
COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST	73-20-46	TLN02397	July 15,1987 Revision 00
		CONJUNTO MAIOR MAIN PART	
		PN	SN

TESTE APLICÁVEL AOS PART NUMBERS TEST APPLICABLE TO PART NUMBERS
3244834-6 MOD 7

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. <i>Remove plug and assemble, special testing fixture. Remove plug and install a standard adapter into ports.</i>			
C	Remova o contra pino, porca e espaçador do eixo de aceleração. Instale o Quadrante de Aceleração na extremidade do eixo de aceleração e torqueie de 40-45 lb.in. <i>Remove cotter pin, nut, and spacer from throttle shaft. Assemble throttle quadrant and pointer on the end of throttle shaft and tighten to 40-45 lb.in.</i>			
D	Mantenha uma pressão Po de 10-30 psig na conexão de Po, usando uma válvula reguladora de pressão de retorno Po, exceto quando houver outra especificação. Mantenha a pressão P2 dentro de ± 10 psi do valor especificado em pressões abaixo de 300 pph e dentro de ± 25 psi em pressões mais altas, usando a válvula reguladora de contrapressão Pn. <i>Maintain Po pressure of 30 to 50 psig, using Po back pressure regulator valve, except where otherwise specified. Maintain P2 pressure within ± 10 psi of the value specified at pressures below 300 pph and within ± 25 psi at higher pressures, using Pn back pressure regulator valve.</i>			

	REGISTRO <i>RECORD</i>	REVISÃO <i>REVISION</i> 0
CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS <i>Service Sheet</i>	PÁGINA <i>PAGE</i> 2/10

TESTE DA UNIDADE DE CONTROLE DE COMBUSTÍVEL <i>FUEL CONTROL UNIT TEST</i>				
ITEM <i>Item</i>	PROCEDIMENTOS TOLERÂNCIAS <i>Procedures Serviceable limits</i>	Resultado <i>Result</i>	Data <i>Date</i>	Executante <i>Performed by</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 <i>metering valve</i> até a pressão diferencial P1-P2 e o fluxo de injeção estejam de acordo com os limites especificados. <i>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.</i>			
F	Torqueie as porcas para os valores especificados. Registre todas as pressões diferenciais de P1-P2 e fluxo de injeção e adicionalmente, as pressões diferenciais de Px-Py e Pc-Px. <i>Torque nuts to values specified. Record all P1-P2 differential pressure and nozzle flows, and additionally (Px-Py) and (Pc-Px) pressure differentials.</i>			
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. <i>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.</i>			
H	Após ajustar o parafuso de ajuste da velocidade de marcha lenta, torqueie a porca de 20 – 25 lb.in. <i>After resetting idle speed adjustment screw, torque nut to 20 – 25 lb.in.</i>			

	REGISTRO RECORD	REVISÃO REVISION 0
	CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS Service Sheet

TESTE AETS 48182 | AETS 48182 TEST

TEST SPECIFICATION		Number AETS 48182	Rev. G
		Sheet 1 of 6	
Orig By: G. Chan	Chk By: W.H. Foster	Project Leader: W.H. Foster	MFG Approval:
Date:	Test Stand No.:	Operator:	S/N:
Unit: Automatic Fuel Control		Model: DP-F2 / A-135	P/N: 3244834
REL DATE 29 JUN 19 2004-02-12 2005-1-21	REV. E F G	SHT STATUS SHT REV SHT REV G G G G G G 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	

- A. See AEEI 48180 for location of adjustments and pressure taps.
- B. Connect TS-E2 Slave Sensor to control. Mechanical position sensor needle to dial indicator readings as designated on sensor for +105°, +59°, and -50° temp. stations. A fixture conforming to the requirements of AEEI 48418 may be used as an alternative.
- C. (1) Install throttle quadrant fixture with a 4.0 lbs. load applied to throttle stop lever to hold lever against max. throttle stop.
(2) Index throttle quadrant to 90° T.A. Torque throttle quadrant fixture to 40-45 in. lbs.
- D. Control rotation CW as viewed from control shaft end.
- E. Maintain Po pressure of 10 to 30 PSIG at control by-pass tap.
- F. P2 must meet limits shown in Figure 2 of AEEI 48180.
- G. Set test conditions (speed, supply, Pc, etc.) in the sequence indicated by numbers 1, 2, 3, etc.
(a) When two numbers are listed, set and then trim test condition in the sequence indicated.
(b) Approach all speeds, total fuel supplies, and Pc settings from a lower value, except at hysteresis points.
- H. All adjustments are to be properly torqued.
Test points indicated (*) require special attention and are to be checked below following proper torquing.

1.	Metering valve orifice torque	35		40 in. lbs.
2.	By-pass setting torque	25		35 in. lbs.
3.	Min. flow M.V. stop torque	4		20 in. lbs.
4.	Max. flow M.V. stop torque	20		25 in. lbs.
5.	Max. gov. eccentric torque	7		7.5 in. lbs.
6.	Max. throttle stop torque	20		25 in. lbs.
7.	Idle speed stop torque	20		25 in. lbs.
8.	Flow body to drive body torque	20		25 in. lbs.
9.	Drive body adapter to drive body torque	25		30 in. lbs. – in 5 in. lbs. increments
10.	Bleeds torque	9		11 in. lbs.

	REGISTRO RECORD	REVISÃO REVISION 0
	CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS Service Sheet

TEST SPECIFICATION						AETS 48182				
						SHEET	SHEETS		REV.	
						2	OF 6		G	
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 "Hg	P2 psi
						MIN	REC	MAX		
I. Speed for tests points indicated (#), is to be set to ± 2 RPM of specified value. All other points are to be set within ± 20 RPM of specified value. J. Total supply is to be set to ± 20 PPH of the specified value or within limits when shown. K. Before calibration, check for external air leakage using M73/9. Slow bubbling is permitted at the joint of drive body and flow body, at the joint of drive body and drive body adapter, at the torsion shaft cover and at the bellows and torsion shaft locknuts. No leakage is permitted at any other point. Pc = 100 psia. If leakage is considered excessive, measure Px-Py when Pc = 100 PSIA, RPM = 0 and T/A = Max. Px to be measured at bellows ratio lever cover. Px - Py ± 1.2" Hg. Max. L. After by-pass valve adjustment has been completed and the detent cup has been locked in position check specific gravity adjustment at min. M/V setting. 1) Rotate the cup 3 clicks cw from original position - nozzle flow must increase at each click. 2) Rotate the cup 3 clicks ccw from original position - nozzle flow must decrease at each click. 3) Return the detent cup to the original position and recheck M/V settings.										

TEST SPECIFICATION						AETS 48182				
						SHEET	SHEETS		REV.	
						3	OF 6		G	
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 "Hg	P2 psi
						MIN	REC	MAX		
CHECK RELIEF VALVE OPENING (a) Cap outlet port. (b) Increase P1 pressure until fuel supply is within supply limits specified and observe P1-Po differential. (c) If P1-Po differential is out of limits, shim as required. (1) Add shims to increase differential. 1.01 1 5 2 3 4 0 200-275 Max. +105 85.0 Relief valve opening P1-Po 950 1000 psi METERING VALVE ORIFICE AND BY-PASS HEAD (P1-P2 "HG) SETTING (a) Test point 2.01 thru 2.03 are interrelated and should be recorded after all three (3) adjustments have been made. (b) If at T.P. 2.03 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 less than 33 in. Hg. remove and discard existing spacer. (c) Re-torque the bypass valve retaining screws to 20 in. lb. in increments of 5 in. lb. and recalibrate T.P. 2.01 to 2.03. 2.01* 3 4-6 1 2 5 5800 1350 Max. +105 40 223 233 Adjust head and orifice. P1 - P2 = 26-42 in. Hg. 2.02* 2900 720 30-32 +105 40 80 84 Set Min. M.V. stop after removing Py line. P2 75 90 psig 2.03* 5800 1350 Max. +105 70 398 402 Retrim head and re-adjust 2.01 & 2.02 if out of limits Pc-Px 1.0" Hg. Max. Px-Py 1.2" Hg. Max. P2= 445 455 psig As per note (b) check appropriate box Original spacer Spacer removed Spacer replaced										

	REGISTRO RECORD	REVISÃO REVISION 0
CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS Service Sheet	PÁGINA PAGE 5/10

			TEST SPECIFICATION			AETS 48182				
						SHEET 4 OF 6		SHEETS 6		REV. G
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 "Hg	P2 psi
						MIN	REC	MAX		
2.04*	3 5800	4-6 1350	1 Max.	2 +105	5 100	506		520		
Set max. M.V. Stop.										
2.05	5800	1350	Max.	+105	40	-10		+10		
Hysteresis of Pt. 2.01										
ENRICHMENT SPRING SETTING										
3.01	3-7 5800	4-6 1350	1 Max.	2 -50	5 55	X		X		
Record nozzle flow.										
3.02	5100	1170	Max.	-50	55	-13		-17		
Set speed enrichment 13 to 17 PPH less than 3.01 increasing spring tension (CW on Adj. nut) increases difference (decrease and reset speed after adj.).										
4.01	3 4000	4-6 1000	1 Max.	2 -50	5 40	190		202		
						Pc-Px	9.5		12.5 "Hg.	
MAX. GOVERNOR SPRING SETTING										
(a) Adjust eccentric shaft to meet flow limits. (b) If unable to set with eccentric, max. T.A. may be varied within T.A. limits. (c) If unable to set with eccentric or max. T.A., maintain eccentric on scribe line and determine amount of RPM off. (d) Split control and adjust gov. spring as required. (CW adj. of gov. spring delays break-approx. 1 flat on adj. nut per 50 RPM). (e) If gov. slope is not in limits, select Py bleed. P/N 2525107 #56 thru #64 (Higher number bleed to increase difference in flow). Py bleed size										
5.01#*	5 6475	4-7 1440	1 	2 +59	3-6 85	335		345		
Set Gov. Break T.A. at 89° - 91°						Px-Py		"Hg		
5.02#	6625	1530	"	+59	85	105		125		
Diff. From Pt. 5.01 (Gov. Slope)						Px-Py		"Hg		

	REGISTRO RECORD	REVISÃO REVISION 0
	CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS Service Sheet

						TEST SPECIFICATION		AETS 48182		
						SHEET 5 OF 6			REV. G	
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 °Hg	P2 psi
						MIN	REC	MAX		
5.03#	5 []	4-7 1440	1 "	2 +59	3-6 85	X	[]	X		
Hysteresis of test point 5.01						-50	[]	0		
Px-Py						[]		°Hg		
IDLE SPEED STOP SETTING AND PICK-UP ANGLE										
(a) At test point 6.02 increase T.A. until 4 pph max. fuel flow from 6.01 is observed. (T.A. where flow starts to increase is pick-up angle).										
(b) If throttle cam pick-up angle is out of limits, replace governor spring.										
(1) Use stronger spring (3 stripes) if pick-up angle exceeds 60° diff. From Pt. 5.01.										
(2) Use weaker spring (one stripe) if pick-up angle is less than 56° diff. From Pt. 5.01.										
(3) Adjust spring tension to same load as set on spring removed.										
(4) Re-set governor break at test point 5.01 and re-run test points 5.02 and 5.03.										
(5) Re-set idle stop screw at test point 6.01.										
6.01#	4 3200	1-7 800	5 28-30	2 +59	3-6 30	104	[]	112		
Px-Py						[]		°Hg		
Set idle stop screw (CW adj. incr. Flow) dec. and reset speed after adjustment.										
6.02#	3200	800		+59	30	Throttle cam pick-up angle		56° []	60° of test point 5.01	
						Spring Stripe		[]		
LOW END OF ACCEL. CURVE AND THROTTLE MOVEMENT EFFECT										
7.01	3 815	5 200	4 40	2 +59	1 Local	60	[]	X		
						P2	75 psig minimum			
7.02	2100	670	40	+59	25	125	[]	137		
						Move T.A. to 30°		[]	5 PPH max. decrease	
(a) After recording nozzle flow at test point 7.02 move throttle to 30° T.A.										
(1) Observe nozzle flow change and record.										

						TEST SPECIFICATION		AETS 48182		
						SHEET 6 OF 6			REV. G	
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 °Hg	P2 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.										
						OK	[]	REJ.		

TESTE AETS 48183 | *AETS 48183 TEST*

AUDIT SPECIFICATION

- A. See AEEI 48180 for location of adjustments and pressure taps.
- B. Connect TS-E2 Slave Sensor to control. Mechanical position sensor needle to dial indicator readings as designated on sensor for +105°, +59° and -50° temp. stations. A fixture conforming to the requirements of AEEI 48418 may be used as an alternative.
- C. (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. lbs.
- D. Control rotation CW as viewed from control shaft end.
- E. Maintain Po pressure to 10 to 30 psig at control by-pass tap.
- F. P2 must meet limits shown in Figure 2 of AEEI 48180.
- G. Set test conditions (speed, supply, Pc, etc.) in the sequence indicated by numbers 1, 2, 3, etc.
 - a) When two numbers are listed, set and then trim test condition in the sequence indicated.
 - b) Approach all speeds, total fuel supplies, and Pc settings from a lower value, except at hysteresis points.
- H. Speed for Test Points 3.02, 5.01, 5.02 and 6.01 is to be set to ± 2 RPM of specified value. All other points are to be set to ± 20 RPM of specified value.
- I. Total supply is to be set to ± 20 PPH of the specified value or within limits when shown.

	REGISTRO <i>RECORD</i>	REVISÃO <i>REVISION</i> 0
CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS <i>Service Sheet</i>	PÁGINA <i>PAGE</i> 8/10

			TEST SPECIFICATION				AETS 48183			
							SHEET 2	SHEETS OF 4	REV. 	
TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 "Hg	P2 psi
						MIN	REC	MAX		
<u>CHECK RELIEF VALVE OPENING</u>										
(a) Cap outlet port. (b) Increase P1 pressure until fuel supply is within limits specified and observe P1-Po differential.										
1.01	1 0	5 200-275	2 Max	3 +105	4 85	Relief valve opening P1-Po 950 1000 psig				
<u>METERING VALVE ORIFICE AND BYPASS HEAD (P1-P2"HG) SETTING</u>										
2.01	3 5800	4-6 1350	1 Max	2 +105	5 40.0	221		235		
P1 - P2 = 24 - 43 "HG									P2	PSIG
2.02	2900	720	30-32	+105	40.0	80		85		
Remove Py line. P2 = 75 PSIG min.										
2.03	5800	1350	Max	+105	70.0	392		406		
							Px-Py		1.2" HG max.	
							Pc-Px		1.5" HG max.	
							P2 =		PSIG	
2.04	5800	1350	Max	+105	100.0	505		525		
2.05	5800	1350	Max	+105	40.0	-10		+10		
Hysteresis of T.P. 2.01										
<u>ENRICHMENT SPRING SETTING</u>										
3.01	3-7 5800	4-6 1350	1 Max	2 -50	5 55	X		X		
Record nozzle flow										
3.02	5100	1170	Max	-50	55	-9		-21		

	REGISTRO RECORD	REVISÃO REVISION 0
	CODIGO CODE IAS-RG-0223	FICHA DE SERVIÇOS Service Sheet

	TEST SPECIFICATION	AETS 48183	
		SHEET 3 OF 4	REV. D

TEST POINT	SPEED RPM	SUPPLY PPH	THRO DEG.	TEMP °F	Pc psia	NOZZLE FLOW, PPH			P1 - P2 "Hg	P2 psi
						MIN	REC	MAX		

4.01	3 4000	4-6 1000	1 Max	2 -50	5 40	186		206		
------	-----------	-------------	----------	----------	---------	-----	--	-----	--	--

Pc-Px 9.5 12.5"Hg

MAX. GOVERNOR SPRING SETTING

5.01	5 6475	4-7 1440	1 Max	2 +59	3-6 85	310		370
5.02	6625	1530	Max	+59	85	100		130

Difference from test point 5.01

5.03		1440	Max	+59	85	X		X
------	----------------------	------	-----	-----	----	---	----------------------	---

Hysteresis -50 0 of test point 5.01

IDLE SPEED STOP SETTING AND PICK-UP ANGLE

At test point 6.02 increase T.A. until 4 PPH max. fuel flow from 6.01 is observed. (T.A. where flow starts to increase is pick-up angle).

6.01	4 3200	1-7 800	5 28-30	2 +59	3-6 30	103		113	P2 = 75 psig min.
6.02	3200	800		+59	30				

Throt. Cam pick-up angle 56° 60° of test point 5.01.

LOW END OF ACCEL. CURVE, AND THROTTLE MOVEMENT EFFECT

7.01	3 815	5 200	4 40	2 +59	1 Local	60		X	P2 = 75 PSIG min.
7.02	2100	670	40	+59	25	124		140	

Move. T.A. to 30° 5 PPH maximum decrease

- (a) After recording nozzle flow at test point 7.02 move throttle to 30° T.A.
 (b) Observe nozzle flow change and record.

