TO: ALL HOLDERS OF AUTOTHROTTLE CLUTCH ASSEMBLY OVERHAUL MANUAL, 22-34-11

REVISION NO. 9, DATED NOV 1/03

HIGHLIGHTS

DESCRIPTION OF CHANGE	TOPICS AFFECTED												
	D&O	D/Assy	Cleaning	Insp/Chk	Repair	Assy	F/C	Test	T/Shooting	S/Tools	Storage	IPL	L/Overhaul
Added specifications for rig pin for backlash check						X				X			
Changed procedure for backlash check						X							
Edited without technical change								X					
Added optional parts												X	

AUTOTHROTTLE CLUTCH ASSEMBLY
22-34-11

BOEING P/N 65-42354-1 thru -5, -7, -10

AIRLINE P/N

THE FOLLOWING DIRECTIVES APPLY TO THIS SUBJECT:

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVES	DATE DIRECTIVE INCORPORATED INTO TEXT
		PRR 16764	Nov 15/67
		PRR 22492	Nov 15/67
		PRR 30549	Nov 15/67
22-40		PRR 23174	Aug 15/69
22-1008		PRR 31579	Aug 15/69
		PRR 24521	Sep 5/80
		PRR 32900-26	Sep 5/80
22-1053			Dec 5/83

LIST OF EFFECTIVE PAGES

* Indicates pages revised, added or deleted in latest revision
F Indicates foldout pages - print one side only

	PAGE	DATE	PAGE	DATE	PAGE	DATE
	22-34-11					
	T-1	Dec 5/83				
	T-2	BLANK				
*	LEP-1	Nov 1/03				
	LEP-2	BLANK				
	T/C-1	Sep 5/80				
	T/C-2	BLANK				
	1	Sep 5/80				
	2	BLANK				
	101	Sep 5/80				
	102	Sep 5/80				
	301	Sep 5/80				
	302	BLANK				
	401	Sep 1/97				
	402	Mar 1/00				
	402A	Sep 1/97				
	402B	BLANK				
	403	Sep 5/80				
	404	Sep 5/80				
	501	Sep 5/80				
	502	Mar 5/89				
*	503	Nov 1/03				
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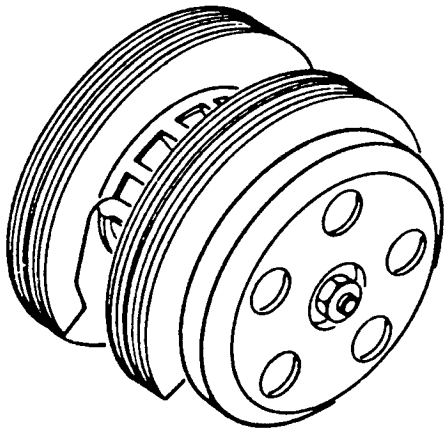
*[1] Special instructions not required. Use standard industry practices and the information contained in 20-30-01 and 20-30-02.

*[2] Special instructions not required. Use standard industry practices and the information contained in 20-44-02.

BOEING COMMERCIAL JET

OVERHAUL MANUAL

AUTOTHROTTLE CLUTCH ASSEMBLY



Autothrottle Clutch Assembly
Figure 1

DESCRIPTION AND OPERATION

1. The autothrottle clutch assembly is part of the autothrottle clutch system which connects the autopilot with the throttle system. The assembly consists of a ball type clutch, with input and output quadrants. During manual operation the input quadrant of the clutch releases the clutch mechanism and directly drives the clutch output quadrant. During autothrottle operation both input and output quadrants are driven by the clutch which in turn is driven by a servomotor controlled by the autopilot.

2. Leading Particulars (Approximate)

   Length -- 43 inches
   Diameter -- 6.4 inches
   Weight -- 5.5 pounds

DISASSEMBLY

1. General (Fig. 1101)

   A. Do not remove pins (17) or ring (16) from disk (15), unless repair or replacement is required.

   B. Do not remove bearing (25) from quadrant (24), unless repair or replacement is required.

   C. Do not remove pins (34) or nutplates (35) from ball carrier (33), unless repair or replacement is required.

   D. Do not remove rivets (43), markers (44) or disassemble ball race (40), unless repair or replacement is required.

2. Disassembly (Fig. 1101)

   A. Remove nuts (1), washers (2), screws (3), plate (4) and shim (5).

   B. If used, cut lockwire and remove screws (6) and nuts (7) from plates (4).

      WARNING: WHEN NUT (9) IS REMOVED, FORCE OF SPRING (13) MAY CAUSE SHAFT (11) TO BE EJECTED WITH CONSIDERABLE FORCE. TO PREVENT INJURY TO PERSONNEL OR DAMAGE TO PARTS, RESTRAIN SHAFT WHEN REMOVING NUT.

   C. Remove pin (8), nut (9) and washer (10) from shaft (11) and withdraw shaft.

   D. Remove coupling and spring as follows:

      (1) (Assys 65-42354-1, -2) -- Remove coupling (12), spring (13) and spacer (18).

      (2) (Assys 65-42354-3, and on) -- Remove coupling (12), disk assembly (14), spring (13) and spacer (18).

   E. Remove lockwire and screws (19).

   F. On assys 65-42354-3, and on, remove guide (20).

   G. Remove quadrant (21), spacer (22), and quadrant assembly (23).

   H. Assys 65-42354-1, thru -4 -- Remove screws (31) from bearing retainer (39).

I. Rotate ball race (40) until hole with loading slot is aligned with hole in ball carrier (32). With retainer (39) rotated to clear, remove spring (27), washers (27A and 27B), ball seat (28), and balls (29 and 30).

J. Remove ball carrier (32), bearings (37), spacer (38) and retainer (39), if used, from ball race (40).

INSPECTION/CHECK

1. Check all parts for obvious defects in accordance with standard industry practices.

2. Examine the dry lubricant on shaft (11), coupling (12) and ball race assembly (40) under 10-power magnification. Check for cracks, blisters, and a continuous unbroken film of lubricant.

   NOTE: Coating is dull in appearance. Parts which have the coating burnished may be continued in service as long as the coating is smooth and unbroken. A coating that is worn through or galled is cause for repair or replacement.

3. Perform penetrant check per 20-20-02 on shaft (11), coupling (12) and quadrants (21, 24).

4. Perform magnetic particle examination per 20-20-01 on plate (4).

5. Check springs (13, 27) in accordance with Fig. 301.

Index No. Fig. (3)	Free Length Inches	Test Length Inches	Load Limits Pounds
13 (69-33524-1)	3.02	2.02 0.73	11.25-13.75 25.74-31.46
13 (69-36989-1)	2.26	1.62 0.62	9.70-11.90 25.02-30.58
27 (69-34102-1)	1.75	1.35 0.85	3.26- 3.86 7.20- 8.80
27 (69-36965-1)	1.35	1.10 0.85	2.70- 3.30 5.40- 6.60
27 (69-52122-1)	1.13	0.90 0.72	6.40- 7.20 11.60-12.80

Spring Check Data
Figure 301

REPAIR

1. Repair minor defects in accordance with standard industry practices.

2. Refinish (Fig. 1101)

   NOTE: Refer to 20-30-02 for stripping of protective finishes and to 20-41-01 for explanation of F and SRF finish codes.

   A. Plate (4), Disc (15) and Guide (20) -- Cadmium plate (F1.1913) all over. Material: 4130, 4140 or 4340 steel (180-300 ksi).

   B. Spacers (18, 22, 38) -- Alodize or chromic acid anodize and apply primer BMS 10-11, Type 1 (SRF 2.30) all over. Material: Al alloy.

   C. Quadrants (21, 24) -- Chromic acid anodize and apply primer, BMS 10-11, Type 1 (SRF 2.19) all over except in bearing bores. Material: Al alloy.

   D. Ball carrier (33) (69-34108-2) -- Cadmium plate (F-1.1924) 0.0003-0.0005 thickness, all over. Material: 4340 steel, 150-170 ksi.

   E. Ball carrier (33A) (65-65274-2) -- Cadmium plate (F-1.1924) 0.0003-0.0005 thickness, all over, except in V-groove. Chrome plate (F-15.04) V-groove as shown in Fig. 401, grind to final dimensions. Material: 4340 steel, 150-170 ksi.

   F. Ball carrier (33A) (65-65274-4) -- Cadmium plate (F-15.02) all over, except in V-groove. Chrome plate (F-15.04) V-groove as shown in Fig. 401, grind to final dimensions. Material: 4340 steel, 150-170 ksi.

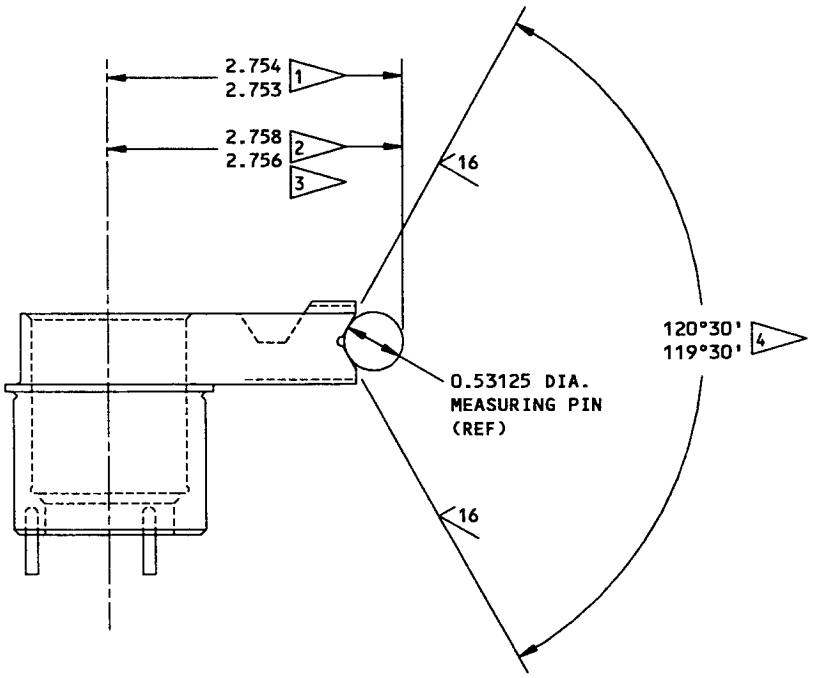
   G. Retainer (39) -- Chemical treat or chromic acid anodize and apply primer MIL-P-8585 (SRF 2.150), all over.

   H. Springs (13, 27) -- Cadmium plate (SRF-1.92) all over; omit primer. Material: Music wire, QQ-W-470.

   I. Shaft (11) -- Passivate (F-8.07) all over. Apply solid film lubricant per BMS 3-3C, Type 1, on external bearing lands. Material: 17-4 PH, 170-190 ksi.

   J. Coupling (12) -- Passivate (F-8.07) all over. Apply solid film lubricant per BMS 3-3C, Type 1, on splines. Material: 17-4 PH, 170-190 ksi.

   K. Ball Race Assembly (40) -- Apply solid film dry-lube, per BMS 3-3C, Type 1, on splines and internal bearing lands.



REFINISH

1. DIMENSION BEFORE PLATING
2. DIMENSION AFTER PLATING
3. 0.53125 DIA. MEASURING PIN TO BE PERPENDICULAR TO CENTERLINE OF 0.649-0.652 DIA. WITHIN 0.002 IN 4 INCHES
4. F-1.846 (CHROME PLATE) -0.002 MINIMUM THICKNESS ON V-GROOVE AFTER FINISH GRINDING

BALL CARRIER (33A)

Refinish Diagram
Figure 401

G74573

3. Replacement (Fig. 1101)

   A. Replace all unserviceable items.

   B. Replace lockwire at each overhaul.

   C. Disc (14) component parts

      (1) Press pins (17) from disc (15) and ring (16).

      (2) Remove ring (16) from disc (15).

      (3) Clean faying surfaces of disc (15) and ring (16) with methyl ethyl ketone.

      (4) Apply adhesive to faying surface of disc (15). Allow adhesive to dry for at least 1 hour at room temperature.

      (5) Apply a thin coat of adhesive to faying surfaces of disc (15) and ring (16).

      (6) Position ring (16) on disc (15), and apply pressure to ensure complete contact of the faying surfaces. Remove excessive adhesive.

      (7) Press pins (17) into place. Pins (17) must not protrude more than 0.01 inch beyond face of disc (15).

      (8) Allow adhesive to cure for 24 hours at not less than 70°F.

   D. Bearing (25)

      (1) Press bearing (25) from quadrant (24).

      (2) Clean and check condition of bore surface.

      (3) Apply primer, BMS 10-11, Type 1, to bore surface and to outer race of bearing. Do not allow primer to enter bearing.

      (4) Press bearing into quadrant while primer is wet and roller swage bearing in place.

E. Pins (34)

(1) Remove pins (34) from ball carrier (33).

(2) Clean and check condition of bore surfaces.

(3) Apply primer, BMS 10-11, Type 1, in bores and on pins. Press pins in place while primer is wet.

F. Nutplates (35)

(1) Drill out rivets (36) and remove nutplates (36). Use care to avoid enlarging rivet holes.

(2) Clean and check condition of rivet holes in ball carrier (33).

(3) Apply primer, BMS 10-11, Type 1, in rivet holes, to faying surfaces of ball carrier (33) and nutplates (35), and to rivets (36).

(4) Position nutplates and install rivets while primer is wet.

G. Retainer (39)

(1) Locate new retainer (39) on ball carrier (32) so that edges of retainer and carrier are flush within 0.03 inch (Fig. 501). Clamp retainer to carrier.

(2) Using nutplates on carrier as a template, drill three 0.140 - 0.143 holes in retainer and countersink 100 degrees so that screw head will be flush with face of retainer within +0.002 to -0.010 inch.

H. Ball race assembly (40) component parts

(1) Drill out rivets (43). Use care to avoid enlarging rivet holes.

(2) Remove shaft (42) from ball race (41).

(3) Clean and check condition of finish on faying surfaces of shaft and ball race.

(4) Shaft (42)

(a) Align centerline of slot in flange of shaft with centerline of one of the 1.25 in diameter holes in ball race and mate shaft to ball race.

(b) Drill flange of shaft to match ball race. Countersink for rivets (43).

(c) Separate shaft from ball race and clean both parts.

(5) Ball Race (41)

(a) Align centerline of one of the 1.25 inch diameter holes in ball race with centerline of slot in flange of shaft and mate ball race to shaft.

(b) Drill ball race to match shaft.

(c) Separate ball race from shaft and clean both parts.

(6) Apply primer, BMS 10-11, Type 1, in rivet holes, on faying surfaces of ball race and shaft, and on rivets.

(7) Mate shaft to ball race and install rivets (43) while primer is wet. Rivet heads must be flush within +0.002 to -0.010 inch.

4. Materials

A. Primer -- BMS 10-11, Type 1 (Ref 20-60-02)
B. Primer -- MIL-P-8585, Color Y (Ref 20-60-02)
C. Adhesive -- BMS 5-29, Type 1 (Ref 20-60-04)
D. Methyl Ethyl Ketone -- (Ref 20-60-01)

ASSEMBLY

1. General

   A. On 65-42354-1 thru -4 assys, apply film of grease to sides of ball track on ball race. On 65-42354-7, -10 assys, apply film of corrosion preventive compound to V-groove in ball race (41) and to balls (29 and 30). Do not apply grease or compound to 65-42354-5 assembly.

      NOTE: SB 22-1008 changes 65-42354-5 to 65-42354-7.

   B. After application of grease or compound, ensure that drain holes are open and free of foreign material.

   C. Apply film of grease to inside of 0.650-inch diameter bore on ball carrier (33) and to inner and outer races of all bearings.

2. Assembly (Fig. 1101)

   A. If used, position retainer (39) on ball race (40).

   B. Install bearings (37), spacer (38) and ball carrier (32) on shaft of ball race (40).

      NOTE: Make sure that retainer (39) is not trapped between bearing (37) and shaft (42) and that bearing is tightly seated against shoulder on shaft.

   C. Install clutch balls as follows:

      (1) Rotate ball race (41) until hole with loading slot is aligned with loading hole in ball carrier (32).

      (2) If installed, rotate retainer (39) until loading holes are completely clear.

      (3) Insert two balls (30), ball (29), ball seat (28), washers (27A and 27B) or nut (27C) , as required, and spring (27).

         NOTE: Washers (27A and 27B) or nut (27C) are used as required to meet test requirements. (See Functional Test.)

      (4) If installed, rotate retainer (39) to cover hole in ball carrier assembly (32) and install screws (31).

   D. Install bearing (26), input quadrant (23), spacer (22) and output quadrant (21) on ball carrier (32).

E. On 65-42354-3, -4, -5, -7, -10 assys, install guide (20).

F. Install screws (19) and lockwire per Fig. 501.

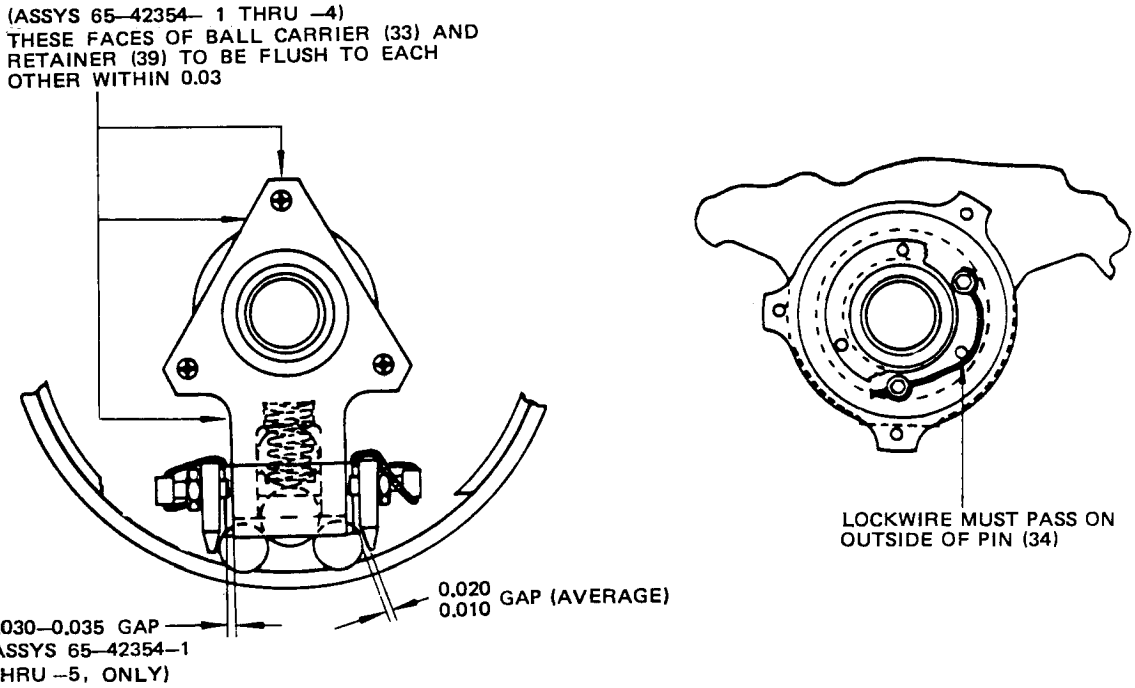
G. Install spacer (18) on ball race (40).

H. Install coupling on ball race (40) as follows:

(1) On 65-42354-1 and -2 units, install spring (13) and coupling (12).

(2) On all other units, install spring (13), disk assembly (14) and coupling (12).

I. Insert shaft (11) through hub of ball race (40) until teeth on shaft engage with teeth on coupling (12).



ALL DIMENSIONS ARE IN INCHES

Adjustment and Lockwiring Details
Figure 501

J. Install washer (10) and nut (9).Tighten nut until end of shaft (11) protrudes 0.04 inch beyond face of nut.

K. Install pin (8) so that end is flush with, to 0.03 inch below, surface of nut flat. Single point stake on edge of hole.

L. Apply two coats of BMS 10-11, type 1, primer to shim (5).

M. Install unlock mechanism and adjust for primary backlash as follows:

(1) Install shims (5) on each side of unlock plates (4), screws (3), washers (2) and nuts (1).

CAUTION: DO NOT ROTATE QUADRANT (21) RELATIVE TO BALL RACE (40) BEFORE PERFORMING THE NEXT STEPS, OR PARTS WILL DEFLECT AND GIVE INCORRECT MEASUREMENTS.

(2) With one plate (4) contacting the adjacent ball (30), measure the gap between the other plate and its adjacent ball. Adjust the thickness of the shims (5) approximately equally to get a gap of 0.005-0.030 inch on one side, with the balls centered in the race. With the measured gap divided equally on each side, make sure that a 0.309-0.311 inch diameter rig pin can be inserted through the quadrants (21, 24) without dislodging either ball.

NOTE: Rig pin F70207-8 or -11, included in the F70207-107 and -108 kits, can be used to do the check.

(3) Hold the ball race assembly (40) and apply torque to the input quadrant (24) to rotate the ball carrier assembly (32, 32A) to 3 more locations on the ball race, approximately 90 degrees apart. Measure the gap at each location per step (2). Make sure that the average of the four measurements is 0.010-0.020 inch (Fig. 501).

N. Adjust secondary backlash as follows:

(1) On assys 65-42354-1 thru -5, install nuts (7) on screws (6) and thread screws into plates (4) finger-tight, but not touching ball carrier (33).

(2) With one ball (30) in contact with adjacent plate (4), adjust screw (6) in this plate to obtain a gap of 0.030 to 0.035 inch between end of screw and ball carrier (33) (Fig. 501). Tighten nut (7) and install lockwire.

(3) Repeat step (2) to adjust other screw (6).

3. Materials

A. Grease -- MIL-G-23827 (Ref 20-60-03)

B. Primer -- BMS 10-11, type 1 (Ref 20-60-02)

C. Corrosion Preventive Compound -- MIL-L-6085 (Ref 20-60-03)

TESTING

1. Equipment

   A. Autothrottle Clutch Assembly Test Jig F72808-1

   B. Cable, 3/32 diameter, for loading input quadrant

2. Clutch Run-In (Fig. 1101)

   NOTE: This clutch run-in must be accomplished before performing functional test on clutch. Purpose of run-in is to eliminate drag due to machining marks and localized buildup of dry lubricant, by burnishing gear teeth and dry-lubed surfaces.

   A. Mount clutch in test jig.

   B. Apply gradually increasing torque to shaft (11) with ball race (40) held stationary.

   C. Increase torque until teeth on shaft (11) slip on teeth of coupling (12), allowing shaft (11) to rotate at approximately 2 rpm.

   D. Continue slippage until shaft (11) has rotated approximately 10 revolutions.

      NOTE: Clutch teeth should completely engage and disengage throughout this period causing the coupling (12) to reciprocate on shaft (42) to burnish the splines.

   E. Repeat steps B. thru D. with direction of applied torque reversed.

3. Functional Test

   NOTE: This test must not be conducted before run-in is completed.

   A. With clutch unit still mounted in test jig, apply a gradually increasing torque to shaft (11) with ball race (40) held stationary.

   B. Increase torque until slip occurs between shaft (11) and coupling (12). Slip should occur when applied torque is 90 to 210 lb-in.

   C. Repeat steps A. and B. with direction of applied torque reversed.

   D. Before proceeding with each of the tests below, remove backlash by applying specified test load to input quadrant (24), and moving input quadrant approximately 20 degrees in direction of applied load. Do not move quadrant in direction away from applied load (Fig. 701).

   E. Attach a short length of 3/32-inch diameter cable to input quadrant (24).

F. With shaft (11) held fixed, apply a load of 5.5 pounds to cable attached to input quadrant (24). The input quadrant (24) shall not rotate for a period of 10 to 20 seconds.

G. Repeat step F, taking readings at six equal intervals 60 degrees apart.

H. Repeat steps F and G with the direction of applied load reversed.

I. With shaft (11) held fixed, apply a load of 7.0 pounds to cable attached to input quadrant (24). Rotate input quadrant approximately 20 degrees in direction of applied load and release. Check that input quadrant rotates. During rotation, maintain a constant speed through 120 degrees without causing backlash.

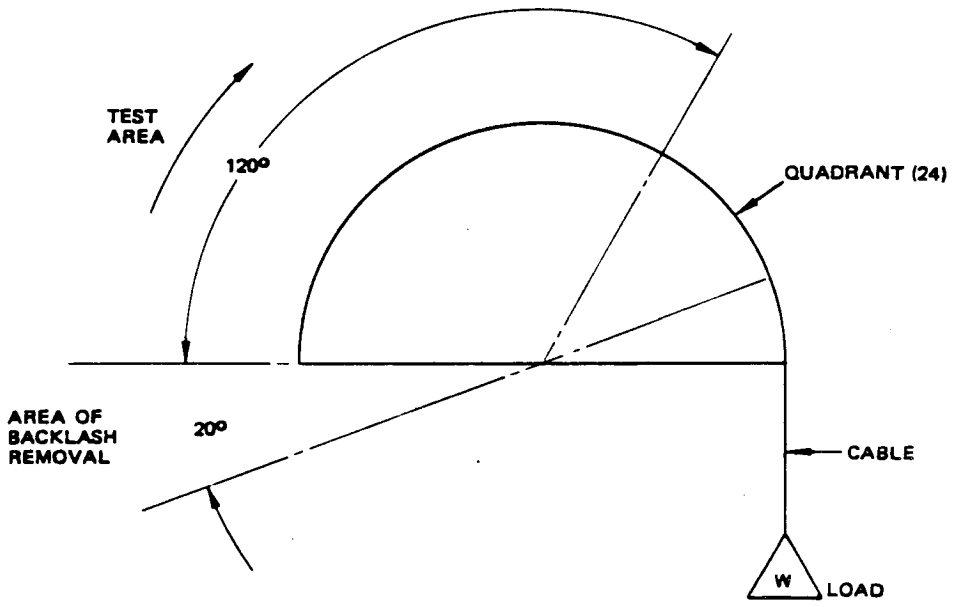
J. Rotate unit in fixture 60 degrees and repeat step I. This test shall be accomplished six times, 60 degrees apart.

K. Repeat steps I and J with the direction of applied load reversed. If input quadrant load does not meet above requirements, adjust clutch assembly as follows:

(1) On 65-42354-1 thru -4 assemblies add or remove washers (27A and 27B) in order to obtain required tension in spring (27).

(2) On all other assemblies use adjustment nut (27C) to obtain required tension in spring (27).

L. On assys 65-42354-5 and on -- After functional test, apply putty BMS 8-45 (EC125A, any color) (Ref 20-60-04) to one half of length of exposed threads of adjustment nut (27C).



Functional Test Diagram
Figure 701

SPECIAL TOOLS, FIXTURES AND EQUIPMENT

NOTE: Listed items are recommended. Equivalent substitutes may be used.

1. F72808-1 -- Autothrottle Clutch Assembly Test Jig

2. F70207-8 or -11 -- Rig Pin (0.309-0.311 inch diameter) (included in F70207-107 and -108 Rigging Pin Kits)

ILLUSTRATED PARTS LIST

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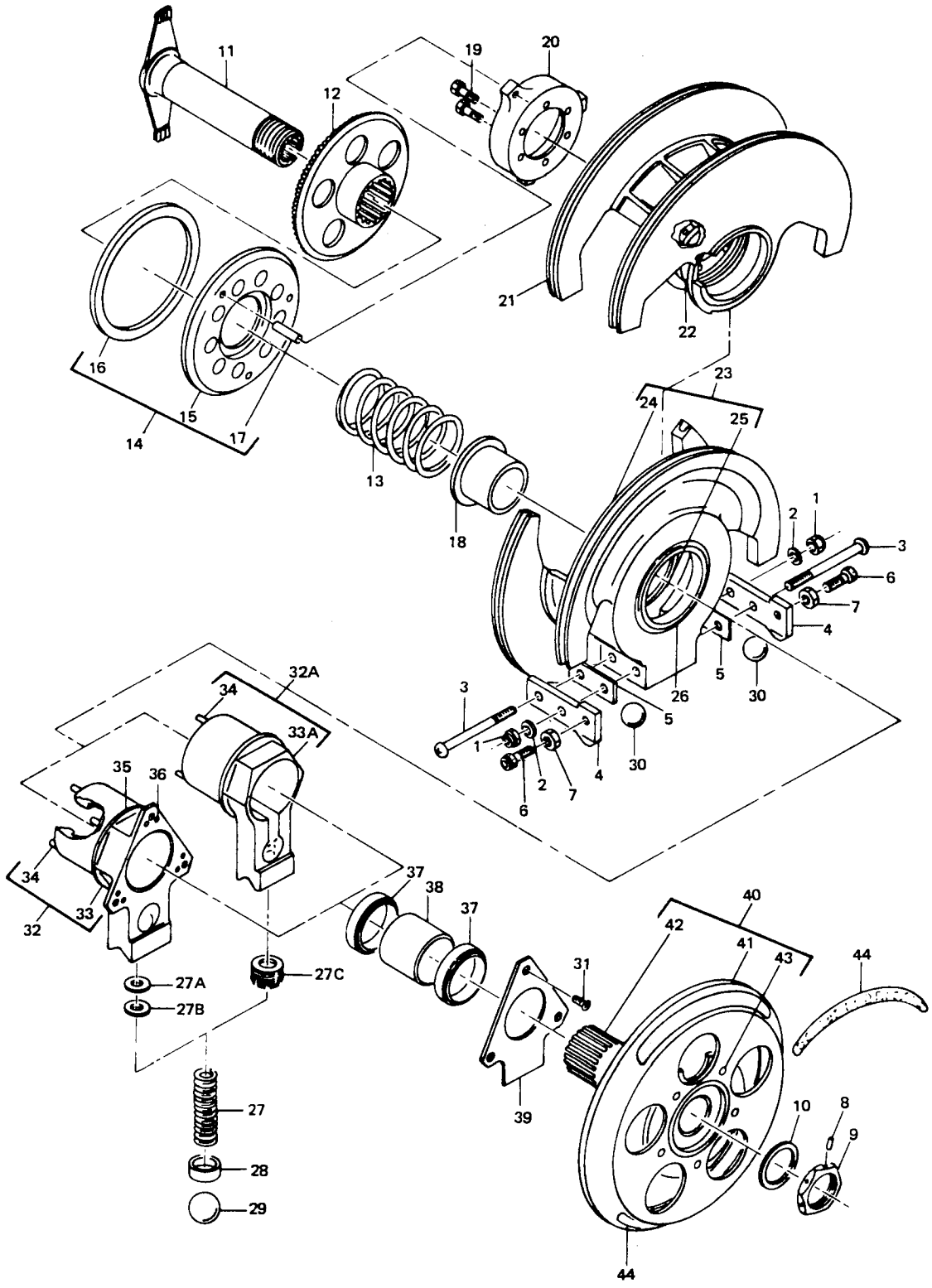

Autothrottle Clutch Assembly
Figure 1101

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
	65-42354-1		CLUTCH ASSY, AUTO THROTTLE	A	RF
	65-42354-2		CLUTCH ASSY, AUTO THROTTLE	B	RF
	65-42354-3		CLUTCH ASSY, AUTO THROTTLE	C	RF
	65-42354-4		CLUTCH ASSY, AUTO THROTTLE	D	RF
	65-42354-5		CLUTCH ASSY, AUTO THROTTLE	E	RF
	65-42354-7		CLUTCH ASSY, AUTO THROTTLE (SB 22-40, 22-1008)	F	RF
	65-42354-10		CLUTCH ASSY, AUTO THROTTLE (SB 22-1053)	G	RF
1	NAS679A3W		. NUT (REPLD BY BACN10JC3)		2
1	BACN10JC3		. NUT (REPLS NAS679A3W)		2
2	AN960D10		. WASHER		2
3	NAS623-330		. SCREW		2
4	69-33380-1		. PLATE, UNLOCK	A-D	2
4	69-52937-1		. PLATE, UNLOCK	EFG	2
5	66-21882-1		. SHIM		2
6	MS24678-11		. SCREW (PRE SB 22-40)	A-E	2
6	NAS1351-3-10		. SCREW (OPT TO MS24678-11)	B-E	2
7	AN315-3R		. NUT (PRE SB 22-40)	A-E	2
8	MS16562-1		. PIN, SPRING		1
9	66-22132-1		. NUT		1
10	69-33172-4		. WASHER		1
11	65-42141-1		. SHAFT	ABC	1
11	65-42141-3		. SHAFT	D-G	1
12	65-40525-1		. COUPLING		1
13	69-33524-1		. SPRING	AB	1
13	69-36989-1		. SPRING	C-G	1
14	69-36987-1		. DISK ASSY	C-G	1
15	69-36987-2		. . DISK		1
16	66-23653-1		. . RING, FRICTION		1
17	NAS607-2-6P		. . PIN		3
18	69-33172-2		. SPACER	A-F	1
18	69-33172-6		. SPACER	G	1
19	MS24677-14		. SCREW		2
20	69-36988-1		. GUIDE	C-G	1
21	65-40529-1		. QUADRANT, OUTPUT		1
22	69-33172-3		. SPACER		1
23	65-40528-1		. QUADRANT ASSY, INPUT		1
24	65-40528-2		. . QUADRANT		1
25	BACB10A31DD		. . BEARING		1
26	BACB10A31DD		. BEARING		1
27	69-34102-1		. SPRING	A	1
27	69-36965-1		. SPRING	BCD	1
27	69-52122-1		. SPRING	EFG	1

FIG. & ITEM NO.	PART NO.	AIRLINE PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USE CODE	QTY PER ASSY
1101-					
27A	NAS620-416		. WASHER	A-D	AR
27B	NAS620-416L		. WASHER	A-D	AR
27C	69-52932-1		. NUT	EF	1
27C	69-52932-2		. NUT	G	1
28	66-21859-1		. SEAT, BALL	A-D	1
28	69-52931-1		. SEAT, BALL	EF	1
29	BACB10TCP40A		. BALL		1
30	BACB10TCP32A		. BALL	A-D	2
30	65-42354-6		. BALL	EFG	2
30	BACB10T1-34A		. BALL (OPT TO 65-42354-6)	EFG	2
31	NAS514P632-6		. SCREW	A-D	3
32	69-34108-1		. BALL CARRIER ASSY	A-D	1
32A	65-65274-1		. BALL CARRIER ASSY	EF	1
32A	65-65274-3		. BALL CARRIER ASSY	G	1
33	69-34108-2		. . BALL CARRIER (USED ON 69-34108-1)		1
33A	65-65274-2		. . BALL CARRIER (USED ON 65-65274-1)		1
33A	65-65274-4		. . BALL CARRIER (USED ON 65-65274-3)		1
34	MS16555-627		. . PIN		3
35	NAS698A06L		. NUTPLATE (REPLD BY BACN10JP06C)	A-D	3
35	BACN10JP06C		. NUTPLATE (REPLS NAS698A06L)	A-D	3
36	MS20426D		. RIVET	A-D	6
37	MB541ZZ		. BEARING, V38443		2
37	BACB10AS17		. BEARING (OPT TO MB541ZZ)		2
38	69-33172-1		. SPACER	A-F	1
38	69-33172-5		. SPACER	G	1
39	66-21799-1		. RETAINER, BEARING	A-D	1
40	65-40524-4		. BALL RACE ASSY		1
41	65-40524-5		. . BALL RACE		1
42	65-40524-6		. . SHAFT		1
43	AN427M5		. . RIVET		5
44	BAC27DCT42		. MARKER, FOIL (PRE SB 22-40)	E	2
44	BAC27DCT178		. MARKER, FOIL (POST SB 22-40, 22-1008)	F	2
44	BAC27DCT178		. MARKER, FOIL	G	2
44	BAC27DCT179		. MARKER, FOIL (POST SB 22-40)	F	2

VENDORS

V38443 MARLIN ROCKWELL CO., DIVISION OF TRW INC., 402 CHANDLER ST., JAMESTOWN, NEW YORK 14701