

Component Maintenance Manual

Main Brake Assembly Aircraft Wheel and Brake, LLC Part No. 30-244

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TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision A of CM30-244 (dated November 09, 2000)

Revision A, Dated November 09, 2000

REVISION A CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

All Sections/All Pages		Initial Release (DCN 0341-45)
As Follows:		Rev A (DCN 0343-06):
Record of Rev.	pg. RR-1	Update page to reflect Rev. A
Effective Pages	pg. LEP-1&2	Update applicable effective dates to reflect Rev. A
D&O	pg. 3	Table 1, (REMOVE) "MIL-H-5606" fluid reference
Testing	pg. 1001	Table 1, (REMOVE) "MIL-H-5606" fluid reference
	pg. 1002	Para. 1.C.(3), (ADD) "(0.065cc)" reference
	pg. 1003	Para. 1.E.(2) (b) <u>1</u> , (ADD) "(0.065cc)" reference
	pg. 1004	Para. 1.E.(3) (a) <u>1</u> , (ADD) "(0.065cc)" reference
	pg. 1005	Table 1002, Insufficient running clearance: (ADD) Stator Disc reference
Disassembly	pg. 3001	Para. 1.B. (ADD) Reference to 50-155 Install Dwg.
	pg. 3002	Para. 1.C.(2), (NOW) "...double countersunk..." (WAS) "...single countersunk..."
Inspection		Following additions will add pages 5009 and 5010 to section:
	pg. 5002	(ADD) new para. 1.B. Maintenance Schedule
	pg. 5003	(NOW) para. 1.C. General Inspection Procedure (WAS) para. 1.B.
	pg. 5004	(ADD) warning re: penetrant fluid. (ADD) para 2.A.(6)
		re-order para.'s 2.A(2) thru 2.A.(5)
	pg. 5005	(ADD) new Figure 5001, Heat Damage Test, (ADD) Table 5003
	pg. 5008	(NOW) Figure 5002 (WAS) Figure 5001 (NOW) Figure 5003 (WAS) Figure 5002
		(NOW) Figure 5004 (WAS) Figure 5003 (NOW) Figure 5005 (WAS) Figure 5004
Repair		Following additions will (REVISE) page 6012 to having text (WAS) blank
	pg. 6002	Table 6001 (ADD) Draw Flattening Fixture, Spacer Tool, Support, HeliCoil tools
	pg. 6010	Para 2.G.(2) (NOW) 2-inch plate (WAS) 1-inch plate.
		(ADD) reference to Special Tools
	pg. 6011	Para 2.H.(4) (ADD) reference to Special Tools.
		Figure 6005 (REVISE) to better define procedure.
	pg. 6012	(ADD) Para 2.I. Insert Repair. (ADD) Figures 6006 & 6007
Assembly	pg. 7001	Para.'s 2 A.(2) , (3) & (19) (REMOVE) "MIL-H-5606" fluid reference
	thru pg. 7004	Figure 7001 (REVISED) to show intent
Special Tools...	pg. 9001	Table 9001 (ADD) Draw Flattening Fixture, Spacer Tool, Support, HeliCoil tools
	pg. 9003	Table 9002, (REMOVE) "MIL-H-5606" fluid reference
	pg. 9004	Para. 1.. (ADD) Black & Decker to Vendor List
	pg. 9005	(ADD) page 9005 (ADD) Figure 9001 and 9002
IPL	pg. 10005	Para. 4 Detailed Parts List (ADD) military P/N's to applicable hardware.
	pg. 10007	
Storage	pg. 15001	Para. 1.A.(1) (ADD) "Drain oil...."

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision B of CM30-244 (dated January 10, 2001)

Revision B, Dated January 10, 2001

REVISION B CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

Rev B (DCN 0343-74):

Record of Rev.

pg. RR-1 Update page to reflect Rev. B

Effective Pages

pg. LEP-1&2 Update applicable effective dates to reflect Rev. B

D&O

pg. 1

First paragraph:

(NOW) " MIL-H-83282 or MIL-PRF-83282 hydraulic "

(WAS) " MIL-H-5606 or MIL-H-83282 hydraulic "

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision C of CM30-244 (dated October 01, 2001)

Revision C, Dated October 01, 2001

REVISION C CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:		Rev C (DCN 0347-71):
Record of Rev.	pg. RR-1	Update page to reflect Rev. C
Effective Pages	pg. LEP-1&2	Update applicable effective dates to reflect Rev. C
Testing	pg. 1009	Test Data Sheet: (NOW) "E. Pressure Test" (WAS) "F. Pressure Test"
Inspection	pg. 5002	Table 5002, Scheduled Interval: (ADD) "(165)" to O-rings (ADD) "wiper (50)...Replace" under Every Heat Sink Change. (ADD) "...penetrant inspect..." for Torque Tube (105)
	pg. 5002	Table 5002, Unscheduled Interval: (NOW) "Overheating such that at least one of the three fusible plugs release in the mating main wheel assembly." (WAS) "Overheating due to: 1. RTO (Rejected Takeoff) 2. Wheel Assembly fuse plugs releasing 3. Zero degree flap landing" (ADD) "(165)" to O-rings. (ADD) "wiper (50)...Replace"
	pg. 5003	paragraph 1.C.: (NOW) "...in accordance with this paragraph." (WAS) "...in accordance with this paragraph, 1.B."
	pg. 5003	paragraph 1.C.(6): (ADD) "...wiper (50)..."
	pg. 5004	paragraph 2.A.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
	pg. 5005	paragraph 2.B.(1) & 2.B.(2): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
	pg. 5005	paragraph 2.C.: (NOW) "... (Refer to Figure 5002)" (WAS) "... (Refer to Figure 5001)"
	pg. 5005	paragraph 2.C.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
	pg. 5006	paragraph 2.C.(3): (NOW) "... (Refer to Figure 5002)" (WAS) "... (Refer to Figure 5001)"

<u>Section/Page No.</u>	<u>Description Of Change</u>
Inspection	
pg. 5006	paragraph 2.D.: (NOW) "... (Refer to Figure 5003)" (WAS) "... (Refer to Figure 5002)"
pg. 5006	paragraph 2.D.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
pg. 5006	paragraph 2.D.(3): (NOW) "...shown in Figure 5003," (WAS) "...shown in Figure 5002,"
pg. 5006	paragraph 2.D.(4): (ADD) "...or penetrant inspect per ASTM E1417 or MIL-STD-6866..."
pg. 5007	paragraph 2.E.: (NOW) "...See Figure 5004." (WAS) "...See Figure 5003."
pg. 5007	paragraph 2.E.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
pg. 5007	paragraph 2.E.(3): (NOW) "...shown in Figure 5004," (WAS) "...shown in Figure 5003,"
pg. 5007	paragraph 2.E.(4): (ADD) "...or penetrant inspect per ASTM E1417 or MIL-STD-6866..."
pg. 5007	paragraph 2.F.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
pg. 5007	paragraph 2.H.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
pg. 5010	(NOW) "I. Inspect Rotors....See Figure 5005." (WAS) "I. Inspect Rotors....See Figure 5004."
pg. 5010	paragraph 2.I.(1): (NOW) "...per paragraph 1.C." (WAS) "...per paragraph 1.B."
Repair	
pg. 6001	Table 6001: (NOW) "63-J-1566-A" (WAS) "63-J-24A" (NOW) "563-DS-44" (WAS) "563-DS-138" (NOW) "824-1K-7" (WAS) "820-1K-6" (ADD) for "824-1K-7"... "Modified Per Figure 9006"
pg. 6002	(ADD) "Cold Straightening Fixture Per Figure 9002 and 9003 SPECIAL TOOLS..." For Spacer Tool – Retract Subassembly: (NOW) "Per Figure 9004..." (WAS) "Per Figure 9002..."
pg. 6005	For Support– Retract Subassembly: (NOW) "Per Figure 9005..." (WAS) "Per Figure 9003..." paragraph 2.D.: (NOW) "Polish out small nicks and scratches to a surface finish of 16 microinches RMS. Replace pistons if outside diameter is worn to Ø1.371 inches (34.823 mm) at any location." (WAS) "Polish out corrosion pits, small nicks and scratches not exceeding .003 inches max. (.0762 mm) deep."

Section/Page No.	Description Of Change
Repair pg. 6007	paragraph 2.E.(3): (NOW) "...Cold straighten or draw flatten...per paragraph 2.G. of REPAIR." (WAS) "...Cold straighten or draw flatten...per paragraph 2.G. or 2.H. of REPAIR."
pg. 6007	paragraph 2.E.(3): (ADD) <u>NOTE:</u> When using Milford rivet machine, the rollset tool must first be modified per Figure 9006."
pg. 6010	paragraph 2.G.: (NOW) "Straightening Procedure For Stator Disc (IPL, 1-90) and Pressure Plate (IPL, 1-65)" (WAS) "Draw Flattening Procedure For Stator Disc Assembly (IPL, 1-85) and Pressure Plate Assembly (IPL, 1-60)" (ADD) <u>CAUTION:</u> STRAIGHTENING OF THE ROTOR DISCS (80) ARE NOT PERMITTED." (ADD) <u>NOTE:</u> The following methods are not a guarantee of sustaining disc straightness conditions through continued service." (NOW) "Stator discs and pressure plates which do not meet the straightness requirements of this manual may be straightened in accordance with either of the following procedures." (WAS) "Stator discs and pressure plates which do not meet the flatness requirements of this manual may be straightened in accordance with the following procedure."
pg. 6010	paragraph 2.G.: (NOW) "(1 Draw Flattening" procedures "(a) through (f)" (WAS) "G. Draw Flattening" procedures "(1) through (6)"
pg. 6010	paragraph 2.G.(1) (a): (NOW) "(a) Remove wear pads (70) (refer to 2.E., Wear Pad Replacement)." (WAS) "(1) Remove wear pads from assembly."
pg. 6011	(ADD) paragraph "2.G.(2) Cold Straightening (refer to Figure 6005)"
pg. 6011	(ADD) "Figure 6005"
pg. 6012	paragraph 2.H. (4): (NOW) "Refer to Figure 6006." (WAS) "Refer to Figure 6005."
pg. 6012	(NOW) "Figure 6006" (WAS) "Figure 6005"
pg. 6012	Figure 6006: (REVISED) to add figure callouts to spacer tool and support
pg. 6013	paragraph 2.I. (1): (NOW) "Refer to Figure 6007." (WAS) "Refer to Figure 6006."
pg. 6013	(NOW) "Figure 6007" (WAS) "Figure 6006"
pg. 6013	Figure 6007: (REVISED) to add "END OF COIL" reference.
pg. 6013	paragraph 2.I. (2): (NOW) "Refer to Figure 6008." (WAS) "Refer to Figure 6007."
pg. 6013	(NOW) "Figure 6008" (WAS) "Figure 6007"

<u>Section/Page No.</u>	<u>Description Of Change</u>
Assembly pg. 7004 pg. 7005 pg. 8001	(NOW) paragraph "2.B.(5)" (WAS) "2.B.(7)" (ADD) paragraph "2.C. Brake Lining Conditioning Procedure" Table 8001, Fig and Dimension Reference: (NOW) for Torque Tube Assy (100) "5002" (WAS) "5001" (NOW) for Stator Disc Assy (85) "5003" (WAS) "5002" (NOW) for Pressure Plate Assy (60) "5004" (WAS) "5003" (NOW) for Rotor Disc (80) "5005" (WAS) "5004"
Special Tools pg. 9002	Table 9001: (NOW) "63-J-1566-A" (WAS) "63-J-24A" (NOW) "563-DS-44" (WAS) "563-DS-138" (NOW) "824-1K-7" (WAS) "820-1K-6" (ADD) for "824-1K-7"... Modified Per Figure 9006" (ADD) "Cold Straightening Fixture Per Figure 9002 and 9003 SPECIAL TOOLS..."
pg. 9004	For Spacer Tool – Retract Subassembly: (NOW) "Per Figure 9004..." (WAS) "Per Figure 9002..." For Support– Retract Subassembly: (NOW) "Per Figure 9005..." (WAS) "Per Figure 9003..." paragraph 1.C.: (ADD) for Milford Fastening Systems, "www.milfordrivet.com" (ADD) "National Rivet & Manufacturing Co., alternate for riveter..." (ADD) for Black & Decker Co., "www.emhart.com"
pg. 9005	(NOW) "Draw Flattening and Cold Straightening Fixtures, Figures 9001 thru 9003" (WAS) "Draw Flattening Fixture, Figure 9001"
pg. 9006	(NOW) "Retract Subassembly Tools, Figures 9004 and 9005" (WAS) "Retract Subassembly Tools, Figure 9001"
pg. 9006	Figures 9004 and 9005:
pg. 9006	(ADD) Figure 9004 and Figure 9005 headings (ADD) "Milford Rollset Modification, Figure 9006"

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision D of CM30-244 (dated July 19, 2002)

Revision D, Dated July 19, 2002

REVISION D CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

Rev D (DCN 0352-09):

Record of Rev. pg. RR-1

Update page to reflect Rev. D

Effective Pages pg. LEP-1
pg. LEP-2

Update applicable effective dates to reflect Rev. D

Detailed Parts pg. 10005
List

(NOW)

50	107-02700		WIPER		6
50A	107-02701		WIPER WITH SCARF CUT (OPT - ALTERNATE FOR ITEM 50)		6

(WAS)

50	107-02700		SCRAPER		6
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TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision E of CM30-244 (dated October 10, 2003)

Revision E, Dated October 10, 2003

REVISION E CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

Rev E (DCN 0358-02):

Record of Rev pg. RR-1

Update page to reflect Rev. E

List of Effective pg. LEP-1 &-2
Pages

Update applicable effective dates to reflect Rev. E

Description and pg. 1
Operation

Paragraph 1:
(now) "wiper" (was) "scraper ring"

pg. 2

Figure 1, item callouts:
(now) 55 (was) 45
(now) 50 (was) 55
(now) 45 (was) 50

pg. 3

Key to Figure 1:
(now) 45. O-Ring (was) 45. Insulator
(now) 50. Wiper (was) 50. O-Ring
(now) 55. Insulator (was) 55. Scraper

pg. 3

Table 1:
(add) "or MIL-PRF-83282" to Hydraulic Fluid parameter
(add) "or MIL-PRF-83282" to Seal Compatibility parameter

Testing and pg. 1001
Fault Isolation

Table 1001:
(add) "**NOTE:** Unless otherwise stated, equivalent substitutes may be used for items listed."
(add) "or MIL-PRF-83282 ¹" to Hydraulic Fluid
(add) "¹ **CAUTION:** THE USE OF HYDRAULIC FLUIDS IS LIMITED TO THOSE SPECIFIED IN TABLE 1001. THE HYDRAULIC FLUIDS SPECIFIED ARE COMPATIBLE AND INTERCHANGEABLE."

Section/Page No.	Description Of Change
Testing and Fault Isolation	Paragraph 1.B.: (now) "A test data sheet is given at the end of this section for reference." (was) "Prior to testing, make photocopies of the test data sheet provided at the end of this section. One photocopy of the data sheet is required for each brake assembly to be tested."
pg. 1002 pg. 1003	Paragraph 1. C. (3): (now) "wiper" (was) "scraper" Paragraph E (1) (e): (now) "<u>1</u> No fluid flow is cause for more examination. Refer to Table 1002, Brake Assembly Troubleshooting." (was) "<u>1</u> No flow is cause rejection."
pg. 1003	Paragraph E (2): (now) "<u>(b)</u> Subject the brake to 3 cylces of 600 ±20 psig (41,37 ±1.38 bar) to zero [0] psig (0 bar)." (was) "<u>(b)</u> Subject the brake to 3 cylces of 620 ±20 psig (42,75 ±1.38 bar) to zero [0] psig (0 bar)."
pg. 1003	Paragraph E (2) (b): (remove) "<u>1</u> Any leakage greater than 1 drop (0.065cc) is cause for rejection."
pg. 1004	Paragraph E (2) (b): (now) "<u>1</u> Check retracts" (was) "<u>2</u> Check retracts" (now) "<u>a</u> ...There shall be no binding of the retract studs (115)." (was) "<u>a</u> ...Any binding of the retract studs (115) is cause for rejection."
pg. 1004	Paragraph E (2) (b): (now) "<u>2</u> Check pistons" (was) "<u>3</u> Check pistons" (now) "<u>a</u> ...There shall be no binding of the pistons (40)." (was) "<u>a</u> ...Any binding of pistons (40) is cause for rejection."
pg. 1004	Paragraph E (2) (b): (now) "<u>3</u> Release the hydraulic pressure." (was) "<u>4</u> Release the hydraulic pressure." (now) "<u>a</u> ...The pressure plate assembly (60) should retract at all retract locations." (was) "<u>a</u> ...Failure of pressure plate (60) retraction is cause for rejection."
pg. 1004	Paragraph E (2): (now) "<u>(c)</u> After successful completion of test, compress pistons back into brake cylinder by..." (was) "<u>5</u> Compress pistons back into brake cylinder by..."

Section/Page No.	Description Of Change
Testing and Fault Isolation	Paragraph E (2): (now) “<u>(d)</u> Test failure is cause for more examination. Refer to Table 1002, Brake Assembly Troubleshooting.” (was) “<u>(c)</u> Record all results on the test data sheet.”
pg. 1004	Paragraph E (3): (now) “<u>(a)</u> Pressurize cylinders to <u>600</u> ±20 psig (41,37 ±1.38 bar).... (was) “<u>(a)</u> Pressurize cylinders to <u>620</u> ±20 psig” (42,75 ±1.38 bar)....
pg. 1004	Paragraph E (3) (a): (now) “<u>1</u> There shall be no leakage of the brake assembly.” (was) “<u>1</u> Any leakage greater than 1 drop (0.065cc) is cause for rejection.”
pg. 1004	Paragraph E (3) (a): (now) “<u>2</u> Release the hydraulic pressure.” (was) “<u>2</u> Release the hydraulic pressure and compress pistons (40) into brake cylinder (35) by hand using the pressure plate assembly (60). This is to verify piston retraction without binding, and to verify running clearance.”
pg. 1004	Paragraph E (3) (a): (now) “<u>2 a</u> The pressure plate should retract at all retract locations.” (was) “<u>2 a</u> Built in running clearance is .013 in. nominal (.330 mm). Minimum running clearance should be .004 in. (.102 mm). Failure of pressure plate (60) to retract (no running clearance), may be re-tested per (3) (a). Failure to pass second test is cause for rejection.”
pg. 1004	Paragraph E (3) (a): (add) “<u>b</u> With the brake resting on the torque tube assembly (100), verify that the rotating disc (80) near the pressure plate assembly (60) can be easily rotated by hand.”
pg. 1004	Paragraph E (3) (b): (add) “<u>After successful completion of test....</u>”
pg. 1005	Paragraph E (3): (remove) “(d) <u>Record all test results on the test data sheet.</u>”
pg. 1005	Paragraph E (3): (now) “(d) <u>Install flat washer (180) and...</u>” (was) “(e) <u>Install flat washer (180) and...</u>”
pg. 1005	Paragraph E (3): (add) “(e) <u>Test failure is cause for more examination.</u> Refer to Table 1002, Brake Assembly Troubleshooting.”

Section/Page No.	Description Of Change
Testing and Fault Isolation	pg. 1005 Paragraph E: (remove) "(3) <u>Sign and date the test data sheet.</u> " pg. 1005 & Table 1002, 4 places: (now) "wiper" (was) "scraper" pg. 1006 pg. 1007
	Test Data Sheet: (remove) "A. Weight of Brake Assembly:.....lb/kg Maximum Weight: 27.70 lb (12.56kg)." (now) "A. Quality of Workmanship:" (was) "B. Quality of Workmanship:" (now) "B. Pretest Checks" (was) "C. Pretest Checks"
	pg. 1009 Test Data Sheet, paragraph C: (now) "600 ±20 psig (41,37 ±1.38 bar)...." (was) "620 ±20 psig (42,75 ±1.38 bar)...." (remove) "Leakage Amount _____ Accept _____ Reject _____" (add) "Pressure Plate Retraction: Accept _____ Reject _____"
	pg. 1009 Test Data Sheet, paragraph D: (now) "600 ±20 psig (41,37 ±1.38 bar)..." (was) "620 ±20 psig (42,75 ±1.38 bar)..." (now) "Leakage Yes _____ No _____" (was) "Leakage Amount _____ Accept _____ Reject _____" (now) "Pressure Plate Retraction:..." (was) "Piston Retraction:..." (now) "Rotating Disc Rotation:..." (was) "Running Clearance:..."
Disassembly	pg. 3003 Paragraph 1. C. (9), 2 places: (now) "wipers" (was) "scraper rings"
Cleaning	pg. 4002 Paragraph 2. D. (1): 2 places: (now) "wipers" (was) "scraper rings"
Inspection/ Check	pg. 5002 Table 5002: (now) "(75A)" (was) "(75)" (now) "(95A)" (was) "(95)" pg. 5003 Paragraph 1. C. (6): (now) "(75A)" (was) "(75)" (now) "(95A)" (was) "(95)"
Repair	pg. 6007 Paragraph 2. E. (1): (now) "(75A)" (was) "(75)" (now) "(95A)" (was) "(95)" pg. 6007 Paragraph 2. E. (3) (a): (now) "(75A)" (was) "(75)" pg. 6007 Paragraph 2. E. (3) (b): (now) "(95A)" (was) "(95)" pg. 6007 Paragraph 2. E. (3) (c): (now) "(75A)" (was) "(75)"

Section/Page No.	Description Of Change
Repair pg. 6013	Paragraph I. (2): (now) “(2) Refer to Figure 6008 and install inserts into retract base (160) to depth shown. Break off tang.” (was) “(2) Refer to Figure 6008 and install inserts into retract base (160) such that insert is two to five threads below surface as shown. Break off tang.”
Assembly pg. 7001	Table 7001: (now) <u>NOTE:</u> Unless otherwise stated, equivalent substitutes may be used...”
pg. 7001	(was) <u>NOTE:</u> Equivalent substitutes may be used...” Table 7001: (add) “or MIL-PRF-83282 ¹” to Hydraulic Fluid (add) “²” flag to MIL-T-83483 callout (add) “¹ <u>CAUTION:</u> THE USE OF HYDRAULIC FLUIDS IS LIMITED TO THOSE SPECIFIED IN TABLE 7001. THE HYDRAULIC FLUIDS SPECIFIED ARE COMPATIBLE AND INTERCHANGEABLE.” (add) “² <u>CAUTION:</u> DO NOT MIX ANTI-SEIZE COMPOUNDS. THIS CAN RESULT IN IMPROPER TORQUE SETTINGS AND COULD RESULT IN FAILURE OF THE BOLT. THE USE OF ANTI-SEIZE COMPOUND IS LIMITED TO THAT SPECIFIED IN TABLE 7001.”
pg. 7001	Paragraph 2. A.: (now) “(2) Lubricate O-rings (45) with hydraulic fluid...” (was) “(2) Lubricate O-rings (50) with MIL-H-83282 hydraulic fluid...” (now) “(3) Lubricate wipers (50) with hydraulic fluid...” (was) “(3) Lubricate scraper (55) with MIL-H-83282 hydraulic fluid...”
pg. 7003	Paragraph 2. A. (14): (now) “...anti-seize...” (was) “anti-sieze...” (remove) “Apply anti-seize to nuts.”
pg. 7004	Paragraph 2. A.: (now) “(19) Coat O-ring (165) with hydraulic fluid...” (was) “(19) Coat O-ring (165) with MIL-H-83282 hydraulic fluid...”
pg. 7004	Paragraph 2. B. (2): (now) “...anti-seize...” (was) “anti-sieze...”
Special Tools, Fixtures,...	Table 9002: (add) “or MIL-PRF-83282” to Hydraulic Fluid

<u>Section/Page No.</u>	<u>Description Of Change</u>
Illustrated Parts List pg. 10004	IPL Figure 1 Main Brake Assembly: (add) in 2 places "75A" to "75" callouts (add) in 2 places "95A" to "95" callouts
pg. 10005	Detailed Parts List: For line item 60, Assembly, Plate, Pressure: (add) for line Item 75, Rivet: "SUPSD BY Item 75A" (add) line Item "75A, 105-08701, Rivet, SUPSDS Item 75, Qty 24" For line Item 85 Assembly, Disc, Stator: (now) to line item 90, Disc, Rotor: Qty "1" (was) Qty "2" (add) for line Item 95, Rivet: "SUPSD BY Item 95A" (add) line Item "95A, 105-02401, Rivet, SUPSDS Item 95, Qty 24" For line item 100, Assembly, Tube, Torque: (add) for line Item 75, Rivet: "SUPSD BY Item 75A" (add) line Item "75A, 105-08701, Rivet, SUPSDS Item 75, Qty 24"
pg. 10006	IPL Figure 1 Main Brake Assembly: (add) in 2 places "75A" to "75" callouts (add) in 2 places "95A" to "95" callouts

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision F of CM30-244 (dated September 16, 2004)

Revision F, Dated September 16, 2004

REVISION F CONTAINS ALL PAGES OF THE MANUAL. Pages that have been added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

Rev F (DCN 0363-01):

Record of Rev. pg. RR-1

Update page to reflect Rev. F

Effective Pages pg. LEP-2

Update applicable effective pages to reflect Rev. F

Detailed Parts pg. 10005
List

(NOW)

FIG. ITEM	PART NUMBER		NOMENCLATURE		UNITS PER ASSY
50	107-02700		WIPER – For extreme temperatures or dusty conditions		6
50A	107-03700		WIPER – For reduced drag and ease of installation (OPT – ALTERNATE FOR ITEM 50)		6

(WAS)

50	107-02700		WIPER		6
50A	107-02701		WIPER WITH SCARF CUT (OPT - ALTERNATE FOR ITEM 50)		6

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision G of CM30-244 (dated July 17, 2008)

Revision G, Dated July 17, 2008

REVISION G CONTAINS ALL PAGES OF THE MANUAL. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

DCN 0380-91

Record of Rev./pg. RR-1

Update page to reflect latest revision

Effective Pages/pg. LEP-2

Update applicable effective pages to reflect latest revision

Introduction

pg INTRO-1

(UPDATE) contact information

Inspection/Check

pg 5008

(NOW) Figure 5002: identify rivets as -75A (WAS) -75.

pg 5009

(NOW) Figure 5003: identify rivets as -95A (WAS) -95.

Repair

pg 6008

(NOW) Figure 6002: identify rivet as (75A) (WAS) (75).

(NOW) Figure 6003: identify rivet as (95A) (WAS) (95).

pg 6009

(ADD) CAUTION to restrict rivet splitting.

(ADD) paragraph 2. E. (5) (b).

(REVISE) Figure 6004 to show revised rivet criteria

Detailed Parts List

pg 10004

(ADD) Item 50A to IPL graphics

pg 10005

(ADD) BOM for 199-575 and 199-575A overhaul kits

pg 10006

(ADD) Item 50A to IPL graphics

pg 10007

Specification for item 190, Fitting, Inlet

(NOW) AS1038J0404 (WAS) AN833-4J

(ADD) notes describing overhaul kits

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision H of CM30-244 (dated February 24, 2010)

Revision H, Dated February 24, 2010

REVISION H CONTAINS ALL PAGES OF THE MANUAL. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

DCN 0388-35

Record of Rev./pg. RR-1

Update to reflect latest revision

Effective Pages/pg. LEP-2

Update to reflect latest revision

Description & Operation
pg 1

Para 2.:
(ADD) If brakes are locked by frozen water, apply and release brake pedals several times. Applying repeated brake pressure may be helpful in breaking the ice bond.

Inspection/Check
pg 5003

Para C.(1) (a):
(NOW) Visually inspect for bent bolts (5 and 20). Scrap all bent bolts. Magnetic particle inspect each bolt for cracks in accordance with ASTM E1444 or equivalent. Use crack definition in MIL-STD-1907. Scrap all bolts with cracks.
(WAS) Inspect for bent, or cracked bolts (5 and 20). Inspect for evidence of cracks especially in the radius under the bolt head and in the threaded area adjacent to the bolt shank using magnetic particle inspection in accordance with ASTM E1444 or equivalent.

pg 5004

Para 2.A.(5):
(NOW) Use fluorescent penetrant inspection in accordance with ASTM E1417 or MIL-STD-6866, Type I, Method A, Sensitivity Level 2, to inspect brake cylinder for cracks. Use crack definition in MIL-STD-1907. No cracks are permitted.
(WAS) Use fluorescent penetrant inspection in accordance with ASTM E1417 or MIL-STD-6866, Type I, Method A, Sensitivity Level 2, to inspect brake cylinder for cracks or structural damage. Any cracks are cause for replacement.

<u>Section/Page No.</u>	<u>Description Of Change</u>
Inspection/Check pg 5006	Para C.(4): (NOW) Inspect the torque tube for cracks. Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866 Type I, Method A, Sensitivity Level 2). Use crack definition in MIL-STD-1907. No cracks are permitted. (WAS) Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866) torque tube for cracks around bolt holes and rivet holes. Any evidence of cracks requires replacement.
pg 5006	Para D.(4): (NOW) Inspect the stator disc for cracks. Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866 Type I, Method A, Sensitivity Level 2). Use crack definition in MIL-STD-1907. No cracks are permitted. (WAS) Visually inspect and magnetic particle inspect stator disc per ASTM E1444 or penetrant inspect per ASTM E1417 or MIL-STD-6866 for cracks. Any evidence of cracks requires replacement.
pg 5007	Para E.(4): (NOW) Inspect the pressure plate for cracks. Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866 Type I, Method A, Sensitivity Level 2). Use crack definition in MIL-STD-1907. No cracks are permitted. (WAS) Visually inspect and magnetic particle inspect per ASTM E1444 or penetrant inspect per ASTM E1417 or MIL-STD-6866 for cracks around rivet holes. Any evidence of cracks requires replacement.

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision J of CM30-244 (dated October 15, 2011)

This revision contains all pages of the manual. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

DCN 0394-56

Title Page./T-1

(ADD) proprietary and export statements.

Record of Rev./RR-1

Update to reflect latest revision.

Effective Pages/
LEP-1 & LEP-2

Update to reflect latest revision.

Introduction/INTRO-1

Update proprietary statement.
(ADD) export statement.

Illustrated Parts List/
10005 and 10006

Clarify quantity callouts in overhaul kits.

10006

(ADD) 166-28300 nameplate provided in overhaul kits.
Clarify notes section.

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision K of CM30-244 (dated February 28, 2014)

This revision contains all pages of the manual. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:

ECO-0032713

Record of Rev./RR-1

Update to reflect latest revision.

Effective Pages/
LEP-1 & LEP-2

Update to reflect latest revision.

Disassembly
3003

Para. 1.C.
(ADD) (8) Remove the six piston insulators (55).
(RENUMBER) remaining steps (9) thru (14).

Inspection / Check
5005

Para. 2.B.(2)
(NOW) ...insulators (IPL, 1-55) (WAS) insulators (IPL, 1-45).

Assembly
7002

Para. 2.A.(4)
(ADD) Install a piston insulator (55) into the pocket of each piston.

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision L of CM30-244 (dated October 29, 2014)

This revision contains all pages of the manual. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:	ECO-0044680
Record of Rev./RR-1	Update to reflect latest revision.
Effective Pages/ LEP-1 & LEP-2	Update to reflect latest revision.
Assembly/ 7005	Para. 2.C. (NOW)

C. Brake Lining Procedure

To provide optimum service life of the brake lining material, it is necessary to properly condition (glaze) the linings per the following procedure:

NOTE: If the brakes are used exclusively for low speed (below 25 knots ground speed) applications, then periodic conditioning is recommended to optimize service life.

- (1) Perform two (2) consecutive full stop braking applications (with flaps up and no reverse pitch of the propeller) at the following ground speeds per the following aircraft weights:
 - (a) For aircraft take-off weight up to 8700 lbs: 40-45 knots at one of the following:
 - 6.0 ft/sec² deceleration
 - 380-480 ft stop distance
 - 11.0-13.0 second stop time
 - (b) For aircraft take-off weight from 8701 to 9800 lbs: 37-42 knots at one of the following:
 - 6.0 ft/sec² deceleration
 - 330-420 ft stop distance
 - 10.0-12.0 second stop time
 - (c) For aircraft take-off weight over 9800 lbs: 33-40 knots at one of the following:
 - 6.0 ft/sec² deceleration
 - 230-380 ft stop distance
 - 9.0-11.0 second stop time
- NOTE:** Do not allow or permit the brake to cool substantially between stops.
- (2) After, back to back conditioning stops, allow the brakes to cool for ten to fifteen minutes.
- (3) Apply the brakes and check for restraint at high static throttle.

NOTE: This step is to be done **ONLY** after steps 1 and 2 are completed and not in and of itself. New brakes may pass this step right from the onset, however, conditioning is still mandatory to ensure optimum service life.

 - (a) If the brakes hold, the conditioning is complete.
 - (b) If brakes cannot hold aircraft during static run-up, allow brakes to cool completely and repeat steps (1) through (3).

<u>Section/Page No.</u>	<u>Description Of Change</u>
-------------------------	------------------------------

Assembly/
7005

Para. 2.C.
(WAS)

C. Brake Lining Conditioning Procedure

To provide optimum service life of the brake lining material, it is necessary to properly condition (glaze) the linings per the following procedure.

NOTE: If the brakes are used exclusively for low speed (below 25 knots) applications, then periodic conditioning is recommended to optimize service life.

- (1) Perform two (2) consecutive full stop braking applications from 30 to 35 knots.

NOTE: Do not allow or permit the brake to cool substantially between the stops.

- (2) Allow the brakes to cool for ten to fifteen minutes.
- (3) Apply the brakes and check for restraint at high static throttle.
 - (a) If brakes hold, conditioning is complete.
 - (b) If brakes cannot hold aircraft during static run-up, allow brakes to cool completely and repeat steps (1) through (3).

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision M of CM30-244 (dated June 30, 2015)

This revision contains all pages of the manual. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:	ECO-0054543
Record of Rev./RR-1	Update to reflect latest revision.
Effective Pages/ LEP-1 & LEP-2	Update to reflect latest revision.
Testing/ 1004	Step (3) (c) (NOW) Re-Install bleeder and torque to 35 to 38 in.-lb. (4.0 to 4.3 N-m). (WAS) Re-install bleeder and torque to 18 to 20 in.-lb. (2.03 to 2.26 N-m).
Assembly/ 7004	Step (21) (NOW) Install bleeder (175) into bleeder seat (170) and after testing, torque to 35 to 38 in.-lb. (4.0 to 4.3 N-m). (WAS) Install bleeder (175) into bleeder seat (170) and after testing, torque to 18 to 20 in.-lb. (2.03 to 2.26 N-m).
Fits and Clearances/ 8002	Table 8002 (NOW) Bleeder (175), 35 to 38 in.-lb. dry torque (4.0 to 4.3 N-m) (WAS) Bleeder (175), 18 to 20 in.-lb. dry torque (2.03 to 2.26 N-m)

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision N of CM30-244 (dated October 23, 2015)

This revision contains all pages of the manual. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows:	ECO-0059804
Record of Rev./RR-1	Update to reflect latest revision.
Service Bulletin List/ SB-1	Add SB7110, Rev NC and Rev A.
Effective Pages/ LEP-1 & LEP-2	Update to reflect latest revision. Amend LEP-2 date to June 30, 2015.

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Attached to this transmittal letter is Revision P of CM30-244 (dated May 25, 2020)

This revision contains all pages of the manual. Pages that added or revised are outlined below together with the highlights of the revision.

Please retain all **REVISION HIGHLIGHTS** pages, inserting them into the manual for future reference.

REVISION HIGHLIGHTS

Section/Page No.

Description Of Change

As Follows: ECO-0115040

Title Page./T-1 Updated proprietary and export statements.

Record of Rev./RR-1 Update to reflect latest revision.

Effective Pages/
LEP-1 & LEP-2 Update to reflect latest revision.

D&O pg. 2 Figure 1 graphics updated.

Testing pg.1006 Table 1002
(NOW) Torque tube (105 or 105A)
(WAS) Torque tube (105)

Inspection / Check pg. 5002 Table 5002
(NOW) Torque tube (105 or 105A)
(WAS) Torque tube (105)

Repair pg. 5008 Figure 5002 graphics updated
pg. 6007 Section E, Note (3)
(NOW) The torque tube (105 or 105A)
(WAS) The torque tube (105)
pg. 6008 Figure 6002 graphics updated
pg. 6010 Section F
(NOW) Torque Tube (IPL, 1-105 or 1-105A)
(WAS) Torque Tube (IPL, 1-105)

Fits and Clearances/
8002 Table 8002
(NOW) MIL-T-83483 anti-seize on threads
(WAS) MIL-T-83488 anti-seize on threads

Illustrated Parts
List pg. 10004 & 10006 IPL Figure 1 Main Brake Assembly:
(add) "105A" to "105" callouts

pg. 10007 Detailed Parts List:
For line item 100, Assembly, TUBE, TORQUE:
(add) for line Item 105, TUBE, TORQUE: "SUPSD BY
Item 105A" Qty NP"
(add) line Item "105A, 065-24000, TUBE, TORQUE,
SUPSDS Item 105, Qty 1"

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST
FOR MAIN BRAKE ASSEMBLY PART NO. 30-244.

Revision R, Dated 2023-01-31

<u>Section/Page No.</u>	<u>Description Of Change</u>
All Follows:	Per ECO-0134266
All Sections/All Pages	Page Header (NOW) Aircraft Wheel and Brake, By Kaman logo (WAS) Parker logo
Title Page/T-1	(NOW) Aircraft Wheel and Brake proprietary rights statement and logo (WAS) Parker proprietary rights statement and logo
Record of Revisions/RR-1	Updated to reflect current revision
Service Bulletin List	(NOW) Aircraft Wheel and Brake, LLC (WAS) Parker Hannifin
List of Effective Pages/LEP-1	Updated to reflect current revision
Introduction/ Pg INTRO-1	(NOW) Aircraft Wheel and Brake, LLC name and contact info (WAS) Parker Hannifin name and contact info (NOW) 1. General, per current AWB standard (WAS) 1. General, per Parker standard (DELETE) Data rights and export statement
Pg INTRO-2	(NOW) 1. Manual Use, per current AWB standard (WAS) 1. Manual Use, per Parker standard (ADD) Section 5. and 6.
Description and Operation Pg 3	(NOW) MIL-PRF-83483 or MIL-T-83483 (WAS) MIL-T-83483
Disassembly/Pg 3001	(NOW) Aircraft Wheel and Brake, LLC (WAS) Parker Hannifin
Inspection and Check Pg 5004	(NOW) Aircraft Wheel and Brake, LLC (WAS) Parker Hannifin
Repair/Pg 6001,6003, & 6005	(NOW) MIL-C-5541, Class 1A or MIL-DTL-5541, Type I or Type II, Class 1A. (WAS) MIL-C-5541, Class 1A

TO: HOLDERS OF CM30-244 COMPONENT MAINTENANCE MANUAL WITH ILLUSTRATED PARTS LIST FOR
MAIN BRAKE ASSEMBLY PART NO. 30-244.

Revision R, Dated 2023-01-31

<u>Section/Page No.</u>	<u>Description Of Change</u>
Assembly/Pg 7001, 7002, 7003, 7004	(NOW) MIL-PRF-83483 or MIL-T-83483 (WAS) MIL-T-83483
Pg 7003	(NOW) Aircraft Wheel and Brake, LLC (WAS) Parker Hannifin
Fits and Clearances/ Pg 8002	(NOW) MIL-PRF-83483 or MIL-T-83483 (WAS) MIL-T-83483
Special Equipment and Consumables/Pg 9001	(NOW) Aircraft Wheel and Brake, LLC (WAS) Parker Hannifin
Pg 9003	(NOW) MIL-C-5541, Class 1A or MIL-DTL-5541, Type I or Type II, Class 1A. (WAS) MIL-C-5541, Class 1A
Illustrated parts list/ Pg 10001, 10002	(NOW) Aircraft Wheel and Brake, LLC (WAS) Parker Hannifin

RECORD OF REVISIONS

Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision letter, date inserted and initial.

REV.	DATE ISSUED	DATE INSERTED	BY	REV.	DATE ISSUED	DATE INSERTED	BY
NC	08-01-2000	08-01-2000	PHC				
A	11-09-2000	11-09-2000	PHC				
B	01-10-2001	01-10-2001	PHC				
C	10-01-2001	10-01-2001	PHC				
D	07-19-2002	07-19-2002	PHC				
E	10-10-2003	10-10-2003	PHC				
F	09-16-2004	09-16-2004	PHC				
G	07-17-2008	07-17-2008	PHC				
H	02-24-2010	02-24-2010	PHC				
J	10-15-2011	10-15-2011	PHC				
K	02-28-2014	02-28-2014	PHC				
L	10-29-2014	10-29-2014	PHC				
M	06-30-2015	06-30-2015	PHC				
N	10-23-2015	10-23-2015	PHC				
P	05-25-2020	05-25-2020	JAS				
R	2023-01-31	2023-01-31	JAS				

SERVICE BULLETIN LIST

Aircraft Wheel and Brake, LLC Service Bulletins are issued in order to provide general information on product line concerns. The bulletin listings contained herein identify subject matter directly related to the support and function of the Main Brake Assembly and components.

SERVICE BULLETIN NUMBER	SUBJECT	REV	DATE INCORPORATED
SB7110	P/N 30-244 BRAKE ASSEMBLY – INCREASED BLEEDER TORQUE VALUE	NC	06-30-2015 at Rev M
SB7110	P/N 30-244 BRAKE ASSEMBLY – INCREASED BLEEDER TORQUE VALUE	A	No Effect

LIST OF EFFECTIVE PAGES

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				3003	2023-01-31
				3004	Blank
Service Bulletin List	SB-1	2023-01-31	Cleaning	4001	2023-01-31
				4002	2023-01-31
List of Effective Pages	LEP-1	2023-01-31	Inspection And Check	5001	2023-01-31
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				5003	2023-01-31
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				6003	2023-01-31
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	1006	2023-01-31		6009	2023-01-31
	1007	2023-01-31		6010	2023-01-31
	1008	Blank		6011	2023-01-31
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	7006	Blank
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REPAIR.....	6001
ASSEMBLY	7001
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INSTALLATION.....	(Not Applicable)
SERVICING	(Not Applicable)
STORAGE (Including Transportation)	15001
REWORK (Service Bulletin Accomplishment Procedures)	(Not Applicable)

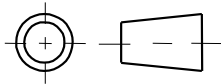
INTRODUCTION

1. General

 **SAFETY WARNING:** ALL TORQUE AND SPECIFIC LIMITS OR VALUES CONTAINED HEREIN MUST BE STRICTLY OBSERVED. IGNORING OF TORQUE LIMITS AND OTHER SPECIFIC VALUES GIVEN BY THIS MANUAL CAN CAUSE PROPERTY DAMAGE, PERSONAL INJURY, OR DEATH.

This manual is published for the guidance of personnel responsible for the overhaul and/or general maintenance of the Aircraft Wheel and Brake, LLC Assembly covered in this publication.

THIRD ANGLE PROJECTION



Third angle projection is used in this manual. All weights and measurements are in U.S. English units with metric units in parentheses.

The manual for the aircraft shall take precedence for the component's interface connections with the functional features as used in the aircraft. This manual may also describe functional features that may or may not be used when installed as a component of a system in the aircraft.

The manufacturer recommends that you ask for the latest revision of the manual before continuing with overhaul or maintenance operations. Ask the Technical Services Department of Aircraft Wheel and Brake, LLC (AWB) for the latest revision.

Substitutions of critical parts or changes of processes or materials are not permitted without the written approval of the manufacturer.

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www.clevelandwheelsandbrakes.com

2. Data rights and export statement

(Deleted)

INTRODUCTION

3. TSO Notice

This assembly carries a “TSO C26c” marking for FAR Part 23 usage, which identifies it as having been fully tested in the laboratory and qualified to applicable FAA (Federal Aviation Administration) requirements and specifications. Substitutions of critical parts or changes of processes or materials are not permitted without the written approval of the manufacturer.

4. Manual use

This manual is divided into various section blocks such as Testing and Fault Isolation, Disassembly, Inspection / Check, Repair, etc. Refer to the Table of Contents for the location of the applicable section.

5. Warnings, cautions, and notes

These adjuncts to the text shall be used to highlight or emphasize important points when necessary. Refer to the descriptions of these statements that follow:

- A “**SAFETY WARNING**” flagged by this symbol , calls attention to possible serious or life threatening situations if procedures are not followed.
- A “**WARNING**” calls attention to use of materials, processes, methods, procedures, or limits which must be followed precisely to avoid injury to persons.
- A “**CAUTION**” calls attention to methods and procedures, which must be followed to avoid damage to equipment.
- A “**NOTE**” calls attention to an essential operating or maintenance procedure, condition, or statement, which must be highlighted.

6. Replacement parts



SAFETY WARNING: AIRCRAFT WHEEL AND BRAKE, LLC (AWB) DOES NOT WARRANT OR ASSUME THE RISK OF THE USE OF REPLACEMENT PARTS NOT AUTHORIZED FOR USE BY AWB. OPERATORS WHO USE REPLACEMENT PARTS NOT AUTHORIZED BY AWB DO SO AT THEIR OWN RISK AND TAKE FULL RESPONSIBILITY FOR ALL PROPERTY DAMAGE, PERSONAL INJURY OR DEATH CAUSED BY SUCH REPLACEMENTS.

Use only the approved parts that are listed in the illustrated parts list of this manual.

DESCRIPTION AND OPERATION

1. Main Brake Description

The main brake assembly is a piston actuated, hydraulically operated, internal 3 rotor disc unit that is designed to be compatible with MIL-H-83282 and MIL-PRF-83282 hydraulic fluid. The brake assembly is a non-handed unit and can be used on the opposite side of the aircraft by simply switching the fittings on top of the brake cylinder to the opposite port.

Each brake assembly is composed of the following: One brake cylinder, one pressure plate assembly with replaceable steel wear pads, three rotating discs (rotors) with sintered friction material on a steel core, two stationary discs (stators) with replaceable steel wear pads, one torque tube assembly with replaceable steel wear pads, a set of six 1/4-28 high strength nuts and bolts to clamp the brake cylinder to the torque tube, and a set of six 3/8-24 high strength nuts and bolts to fasten the brake to the aircraft.

Each of the six piston bores contains an O-ring to prevent leakage of hydraulic fluid past the pistons, and a wiper to prevent contaminants from reaching the hydraulic fluid.

A piston insulator slides into the pocket of each piston in order to shield the brake fluid from the heat generated during braking.

2. Main Brake Operation

Braking action begins to occur when hydraulic pressure is applied to the brake, via the pilot's or co-pilot's master cylinders. As the hydraulic pressure reaches the brake it forces the pistons outward against the pressure plate assembly (with wear pads) which compresses the brake stack (the rotors and stationary discs (stators)) against the torque tube assembly (with wear pads). This generated frictional force is transferred to the wheel/tire through the rotors; which have drive slots to engage the main wheel, and thus slows the aircraft.

If brakes are locked by frozen water, apply and release brake pedals several times. Applying repeated brake pressure may be helpful in breaking the ice bond.

3. Main Brake Handling Procedures

Strictly observe the torque values specified in this manual. Do not overtighten any bolt, nut, or fitting. Handle and maintain the brake cylinder properly to protect the paint and surface finishes.

DESCRIPTION AND OPERATION

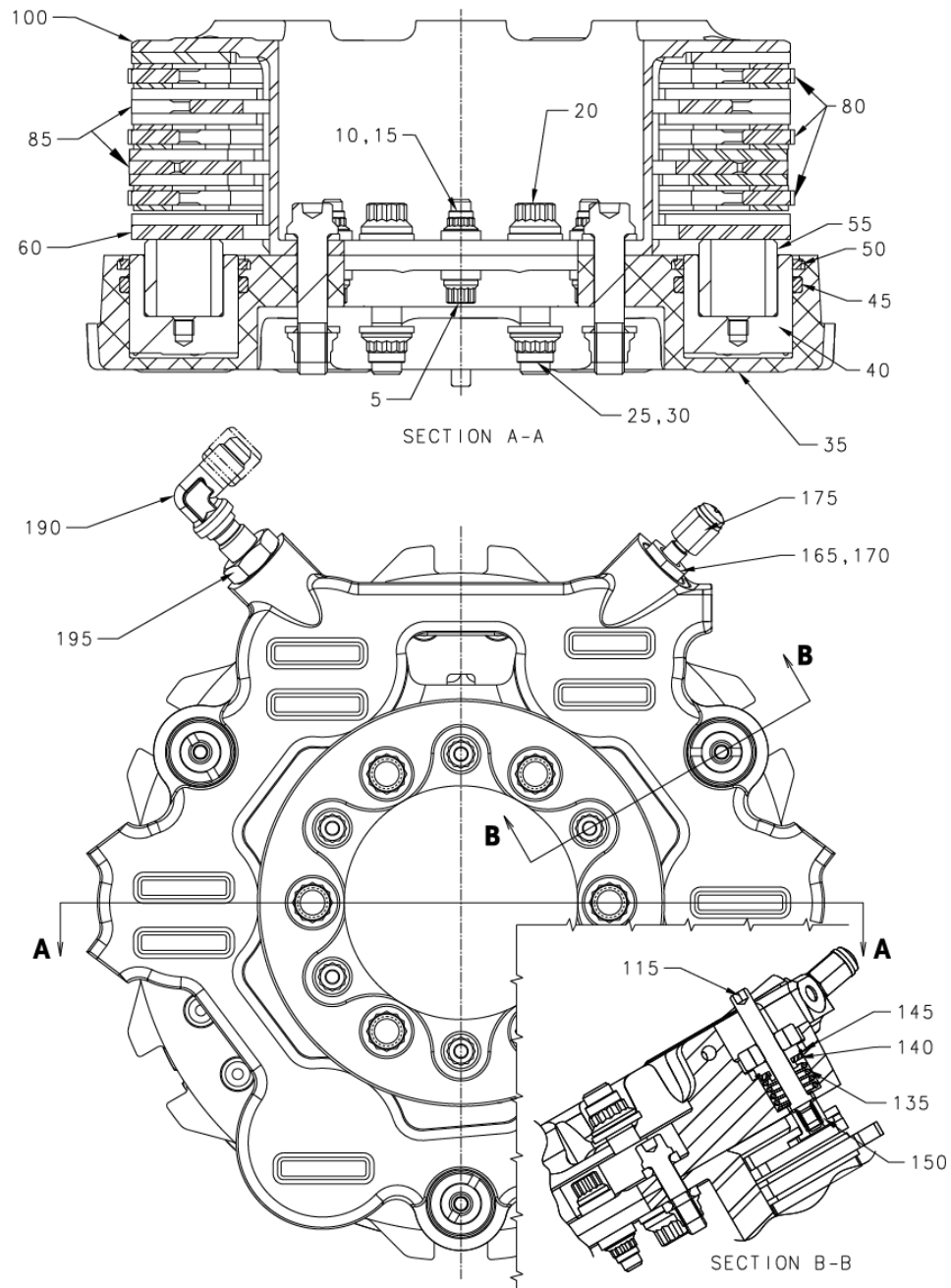


Figure 1 30-244 Main Brake Assembly

DESCRIPTION AND OPERATION

Key to Figure 1

5. Bolt, External Wrenching (1/4-28)	85. Assembly, Disc, Stator
10. Washer, Double Countersunk	100. Assembly, Tube, Torque
15. Nut, Self-Locking (1/4-28)	115. Stud
20. Bolt, External Wrenching (3/8-24)	135. Spring
25. Washer, Single Countersunk	140. Ring, Retaining
30. Nut, Self-Locking (3/8-24)	145. Washer, Plain
35. Cylinder, Brake	150. Assembly, Retract Base
40. Piston	165. O-Ring
45. O-ring	170. Seat, Bleeder
50. Wiper	175. Bleeder
55. Insulator	190. Fitting, Inlet
60. Pressure Plate Assembly	195. Nut, Fitting
80. Disc, Rotor	

Table 1
Leading Particulars

PARAMETER	SPECIFICATION
Hydraulic Fluid	MIL-H-83282 or MIL-PRF-83282
Operating Pressure	1000 psig (68.95 bar) maximum
Assembly Weight	27.70 lbs. (12.56 kg) Maximum Guaranteed
Brake Bolt Nut Torque	Torque 95-105 in-lb (10.73-11.86 N-m) with MIL-PRF-83483 or MIL-T-83483 Anti-seize
Brake Cylinder Material	Aluminum Alloy Forging
Seals	Compatible with MIL-H-83282 and MIL-PRF-83282 Hydraulic Fluid
Brake Cylinder Coatings	Surface Pretreatment: MIL-A-8625, Type II, Class 1 Primer Coating: MIL-P-85582, Type I, Class C2 or MIL-PRF-85582C, Type I, Class C2 Finish Coating: MIL-C-85285B, Type I, Color No. 17925 per FED-STD-595 (Untinted White)

TESTING

1. General

This section contains test procedures that can be used both as troubleshooting measures and means to test overhauled brake assemblies.

A. Test Equipment and Materials. Refer to Table 1001.

NOTE: Unless otherwise stated, equivalent substitutes may be used for items listed.

Table 1001
Testing Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Fluid, Hydraulic	MIL-H-83282 ¹ or MIL-PRF-83282 ¹	Commercial Source
N/A	Powered Hydraulic Test Stand	0 to 1000 psig capacity ± 40 psi gage increment (0 to 68.95 bar) ± 2.76 bar gage increment	Commercial Source
N/A	Hydraulic Filter	10 micron	Commercial Source
N/A	Pressure Regulator	0 to 1000 psig (0 to 68.95 bar)	Commercial Source
N/A	Pressure Gage	0 to 1000 psig (0 to 68.95 bar)	Commercial Source
N/A	Tubing	Ø0.156 in. I.D. (Ø3.96 mm)	Commercial Source
N/A	Hydraulic Hose	1000 psig minimum (68.95 bar)	Commercial Source

¹ **CAUTION:** THE USE OF HYDRAULIC FLUIDS IS LIMITED TO THOSE SPECIFIED IN TABLE 1001. THE HYDRAULIC FLUIDS SPECIFIED ARE COMPATIBLE AND INTERCHANGEABLE.

B. Preparation for Testing

A test data sheet is given at the end of this section for reference.

C. Pretest Check

Refer to IPL Figure 1 for identification of brake assembly components.

Perform the following inspections and checks to qualify the brake assembly for testing. Do not perform testing on any brake assembly that exhibits visible signs of damage.

- (1) Examine exposed cylinder (35) surfaces for breaks, cracks, or other visible damage.

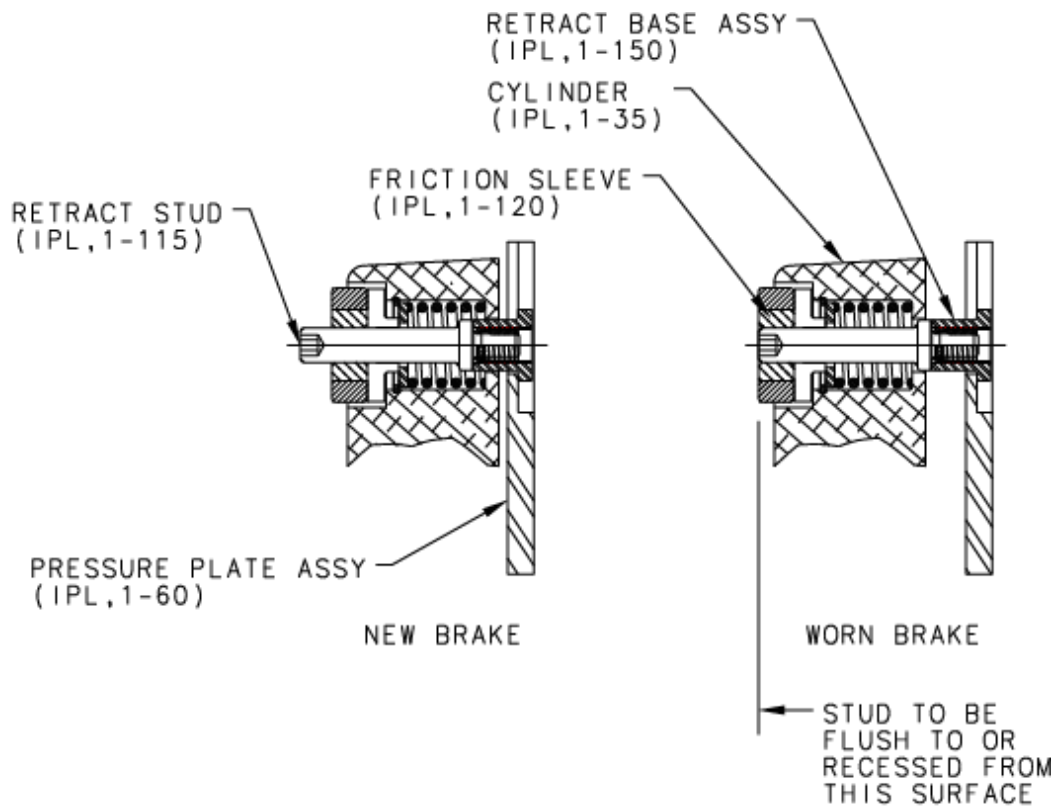
TESTING

- (2) Examine hydraulic fittings for deformation, pitting, damage to threads or scoring that would affect sealing.
- (3) Examine brake assembly for signs of leakage from piston seals: O-ring (45) and wiper (50), inlet fitting (190), and bleeder fitting (175). Measurable leakage is defined as more than one drop (0.065cc).

D. Brake Wear Check (Refer to Figure 1001)

Refer to IPL Figure 1 for identification of brake assembly components.

A brake wear check can be accomplished by parking the brake and checking the retract studs (115) on the retract subassembly (110). If the stud is flush or recessed below the friction sleeve (120), then the brake should be disassembled and detailed inspection of the individual wear components should be performed per INSPECTION / CHECK section.



Brake Wear Check
Figure 1001

TESTING

E. Procedure

Refer to IPL Figure 1 for identification of brake assembly components.

A hydraulic test stand (consisting of a hydraulic pump, filter, regulator, automatic cyler, and applicable pressure gages) is required to conduct performance testing. The required test equipment is listed in Table 1001. If the brake assembly meets the pretest check requirements of paragraph 1.C., test the brake assembly in accordance with the following performance test procedures.

SAFETY WARNING:  BRAKE ASSEMBLIES BEING PRESSURE TESTED HAVE AN EXPLOSIVE POTENTIAL. USE SHATTER RESISTANT ENCLOSURE DURING PRESSURE TESTING. PERSONNEL MUST FOLLOW ALL SAFETY PRECAUTIONS AND WEAR PROTECTIVE CLOTHING AND SAFETY GLASSES. FAILURE TO COMPLY CAN RESULT IN DEATH OR PERSONAL INJURY.

CAUTION: EXERCISE CARE TO PREVENT BRAKE FLUID FROM CONTACTING THE BRAKE FRICTION SURFACES.

(1) Setup

- (a) Mount brake assembly on test fixture.
- (b) The 7/16-20 UNF inlet fitting (190) may be used to serve as a test fitting. Check all fittings for tightness and torque to specifications where required.
- (c) Connect the hydraulic supply line to the brake and check all fittings for tightness.
- (d) Remove the bleeder screw (185) and flat washer (180) and place an appropriate length of tubing over bleeder (175).
- (e) Loosen bleeder and bleed the brake per the Aircraft Manual.
 - 1 No fluid flow is cause for more examination. Refer to Table 1002, Brake Assembly Troubleshooting.

(2) Piston Actuation and Flow Through Test

- (a) Connect the brake assembly on the test stand.
- (b) Subject the brake to 3 cycles of 600 ±20 psig (41,37 ±1.38 bar) to zero [0] psig (0 bar).

TESTING

- 1 Check retracts.
 - a Retracts should move when stack is compressed. There shall be no binding of the retract studs (115).
- 2 Check pistons.
 - a There shall be no binding of the pistons (40).
- 3 Release the hydraulic pressure.
 - a The pressure plate (60) should retract at all retract locations.
- (c) After successful completion of test, compress pistons back into brake cylinder by hand using the pressure plate assembly (60).
- (d) Test failure is cause for more examination. Refer to Table 1002, Brake Assembly Troubleshooting.
- (3) Pressure Test
 - (a) Pressurize cylinders to 600 $\pm$ 20 psig (41,37 $\pm$ 1.38 bar). Hold pressure for a minimum of two [2] minutes.
 - 1 There shall be no leakage of the brake assembly.
 - 2 Release the hydraulic pressure.
 - a The pressure plate should retract at all retract locations.
 - b With the brake resting on the torque tube assembly (100), verify that the rotating disc (80) near the pressure plate assembly (60) can be easily rotated by hand.
 - (b) After successful completion of test, check for zero pressure to the brake and disconnect the hydraulic supply line. Remove bleeder (175) and drain the test fluid.
 - (c) Re-install bleeder and torque to 35 to 38 in-lb (4.0 to 4.3 N-m).

TESTING

CAUTION: TORQUEING OF BLEEDER SCREW (185) IN EXCESS OF 12 IN-LB (1.36 N-M) MAY DAMAGE THE BLEEDER (175).

- (d) Install flat washer (180) and bleeder screw (185) into bleeder (175) and tighten snug to prevent leakage.
- (e) Test failure is cause for more examination. Refer to Table 1002, Brake Assembly Troubleshooting.

F. Troubleshooting

Refer to IPL Figure 1 for identification of brake assembly components except where noted.

Table 1002 (Sheet 1 of 2)
Brake Assembly Troubleshooting

TROUBLE	PROBABLE CAUSE	CORRECTION
Hydraulic fluid leaking from brake assembly	Defective hydraulic connection	Tighten connection or replace fitting
	Worn or damaged O-rings (45) and wipers (50)	Replace O-rings and wipers
	Pistons (40) damaged	Check pistons per para. 2.B. of <u>INSPECTION/CHECK</u> and replace as necessary
	Piston bores of brake cylinder (35) damaged	Check brake cylinder per para. 2.A. of <u>INSPECTION/CHECK</u> and replace as necessary
Hydraulic fluid leaking from bleeder seat (170)	Worn or damaged O-ring (165)	Replace O-ring
Hydraulic fluid leaking from bleeder (175)	Damaged bleeder	Replace bleeder
Insufficient running clearance	Pressure plate assy (60) or stator disc assy (85) excessively dished	Check per para. 2.D. or 2.E. of <u>INSPECTION/CHECK</u> and replace as necessary
Brake not releasing correctly	Obstruction in hydraulic line or fluid passage	Remove obstruction
	Pistons (40) sticking	Replace O-ring (45) and/or wiper (50)
	Locked or jammed piston (40)	Check pistons per para. 2.B. of <u>INSPECTION/CHECK</u> and replace as necessary

TESTING

Table 1002 (Sheet 2 of 2)
Brake Assembly Troubleshooting

TROUBLE	PROBABLE CAUSE	CORRECTION
Brake not engaging correctly	Air in brake	Bleed brake per 1.E.(1) steps (a) thru (d)
	Obstruction in hydraulic line or fluid passage	Remove obstruction
	Pistons (40) sticking	Replace O-ring (45) and/or wiper (50)
	Pistons (40) damaged	Check per para. 2.B. of <u>INSPECTION/CHECK</u> and replace as necessary
	Brake cylinder (35) damaged	Check per para. 2.A. of <u>INSPECTION/CHECK</u> and replace as necessary
	Torque tube (105 or 105A) damaged	Check per para. 2.C. of <u>INSPECTION/CHECK</u> and replace as necessary
	Pressure plate assy (60) not sliding freely on torque tube	Check per para. 2.E. of <u>INSPECTION/CHECK</u> and replace as necessary
	Rotors (80) not sliding freely on wheel rotor keys	Check per para. 2.I. of <u>INSPECTION/CHECK</u> and replace as necessary
	Stator disc assy's (85) not sliding freely on torque tube	Check per para. 2.D. of <u>INSPECTION/CHECK</u> and replace as necessary
Maximum pedal effort does not decelerate aircraft properly	Torque tube assy (100) wear pads (70) worn beyond minimum limits	Check per para. 2.C. of <u>INSPECTION/CHECK</u> and replace as necessary
	Pressure plate assy (60) wear pads (70) worn beyond minimum limits	Check per para. 2.E. of <u>INSPECTION/CHECK</u> and replace as necessary
	Rotors (80) friction material worn beyond minimum limits	Check per para. 2.I. of <u>INSPECTION/CHECK</u> and replace as necessary
	Stator disc assy's (85) wear pads (70) worn beyond minimum limits	Check per para. 2.D. of <u>INSPECTION/CHECK</u> and replace as necessary

TEST DATA SHEET (Sheet 1 Of 2)

Work Order No. _____ Date _____ Brake Serial No. _____

A. Quality of Workmanship: Accept _____ Reject _____

Comments: _____

B. Pretest Checks

(1) Brake cylinder condition	Accept _____	Reject _____
(2) Brake assembly hardware condition	Accept _____	Reject _____
(3) Check for leakage from fittings	Accept _____	Reject _____
(4) Check for leakage from piston seals	Accept _____	Reject _____

Comments: _____

TEST DATA SHEET (Sheet 2 Of 2)

C. Piston Actuation and Flow Through Test

Pressure Applied: _____ psig/bar Required: 600 ±20 psig (41,37 ±1.38 bar) to
0 psig (0 bar)

Number of Cycles: _____ Required: 3 cycles

Retracts Operation: **Accept** _____ **Reject** _____

Piston Retraction: **Accept** _____ **Reject** _____

Pressure Plate Retraction: **Accept** **Reject** _____

Comments: _____

D. Pressure Test

Pressure Applied: _____ psig/bar Required: 600 ±20 psig 41,37 ±1.38 bar)

Time: _____ Required: Two [2] minutes minimum

Leakage: **No** _____ **Yes** _____

Pressure Applied: _____ psig/bar Required: 0 psig (0 bar)

Pressure Plate Retraction: **Accept** _____ **Reject** _____

Rotating Disc Rotation: **Accept** _____ **Reject** _____

Comments: _____

Tester: _____

Date: _____

Inspector: _____

Date: _____

DISASSEMBLY

1. General

To service the brake assembly, it will be necessary to remove it from the aircraft.

NOTE: Refer to TESTING section to establish the condition of the component or most probable cause of detected malfunction(s) to determine extent of disassembly required.

A. Disassembly Equipment and Materials (Refer to Table 3001)

Table 3001
Disassembly Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Socket Set	Hex Head, Inch	Commercial Source
N/A	Wrench Set	Hex Head, Open End, Inch	Commercial Source
N/A	Ratchet	1/2 in. Square Drive	Commercial Source
199-18	Preformed Packing Extraction Tool Set	N/A	Aircraft Wheel and Brake, LLC
N/A	Internal Snap Ring Pliers	N/A	Commercial Source
N/A	Wrench	5/32 in. Hex Head	Commercial Source

B. Remove Brake Assembly

Refer to 50-155 Wheel and Brake Installation drawing and IPL Figure 1 for identification of brake assembly components.

SAFETY WARNING:  **INSURE AIRCRAFT IS SECURE AND STABLE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.**

- (1) Jack and support aircraft per aircraft maintenance manual. Perform any additional preliminary functions to prep aircraft prior to equipment removal.
- (2) Remove the air valve assembly from the main wheel assembly.

CAUTION: **AIR VALVE REMOVAL IS REQUIRED TO INSURE TIRE DEFLATION.**

- (3) Support wheel/tire and remove and retain applicable axle mounting hardware.
- (4) Remove wheel/tire from axle as a unit and place on a clean flat surface.

DISASSEMBLY

- (5) After the main wheel and tire have been removed, disconnect brakes from hydraulic lines and cap open lines and fittings.
- (6) Remove and retain the six nuts (30), bolts (20), and washers (25) which fasten the brake assembly to the aircraft strut.
- (7) Slide the brake assembly off of the axle and place it on a clean flat surface.

C. Disassemble Brake Assembly

Refer to IPL Figure 1 for identification of brake assembly components.

SAFETY WARNING:  FOLLOW ALL SAFETY PRECAUTIONS AND WEAR PROTECTIVE CLOTHING AND SAFETY GLASSES WHEN WORKING WITH THE BRAKE ASSEMBLY AND HYDRAULIC FLUIDS. FAILURE TO COMPLY CAN RESULT IN PERSONAL INJURY OR DEATH.

CAUTION: EXERCISE CARE TO PREVENT BRAKE FLUID FROM CONTACTING THE BRAKE FRICTION SURFACES.

CAUTION: DISPOSE OF ALL USED HYDRAULIC FLUID PER LOCAL REGULATIONS.

NOTE: It is recommended that all O-rings (45 and 165) be replaced at each overhaul regardless of condition.

- (1) Remove bleeder (175) and drain the hydraulic fluid into an approved container.
- (2) Remove the six 1/4 -28 self-locking nuts (15), bolts (5), and double countersunk washers (10) from the brake assembly.
- (3) With the brake assembly stack now unrestrained, remove the torque tube assembly (100), rotors (80), and stator disc assemblies (85), from the stack.
- (4) The following steps are required prior to removing the pressure plate assembly (60).
 - (a) With a 5/32 in. hex head wrench, unthread the retract stud (115) from the retract base subassembly (110) and remove retract stud from the brake. Repeat for the other two retract studs.

NOTE: The retract base subassembly is a single unit. The retract spacer (130) is secured on the stud (115) by way of the friction sleeve (120) and sleeve retainer (125) which are a press fit onto the retract stud.

DISASSEMBLY

- (5) Slide the retract base assembly (150) from it's pocket on the pressure plate assembly. Repeat for the other two retract base assemblies.
- (6) The pressure plate assembly (60) may now be removed from the brake stack.

SAFETY WARNING:  **THE RETRACT SPRING (135) IS UNDER INSTALLED LOAD. USE CARE WHEN REMOVING THE RETAINING RING (145). PARTS MAY FLY OUT AND CAUSE INJURY, POSSIBLE DAMAGE, OR LOSS OF PARTS.**

- (7) With internal snap ring pliers, carefully remove the three snap rings (145) from the brake cylinder retract bore and remove the plain washer (140) and spring (135). Inspect spring (135). Repeat for the other two retracts.

NOTE: The insulators (55) are powdered stainless steel and clearance fit into the pistons.

- (8) Remove the six piston insulators (55).

CAUTION: PULL OUT PISTONS WITH CARE. DO NOT COCK THE PISTONS WHEN PULLING THEM OUT. DO NOT USE HYDRAULIC OR PNEUMATIC PRESSURE TO REMOVE PISTONS.

- (9) Remove the six pistons (40) by threading an applicable bolt/rod into the 1/4-28-2B hole. Holding the bolt/rod, pull the pistons out.
- (10) Inspect wipers (50) for damage or wear. Replace if necessary. Wipers must be removed if the brake housing is to be penetrant inspected.
- (11) Remove and discard O-rings (45) from the piston bores.
- (12) Remove inlet fitting (190).
- (13) Remove the bleeder seat (170). Remove and discard O-ring (165).
- (14) Drain any remaining hydraulic fluid from the brake cylinder (35).

CLEANING**1. General****A. Cleaning Equipment and Materials** (Refer to Table 4001)

NOTE: Equivalent substitutes may be used for items listed.

Table 4001
Cleaning Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Air Supply, Compressed Dry Filtered	30 psig maximum (2.07 bar)	N/A
N/A	Clean Cloths	N/A	Commercial Source
N/A	Brushes	Non-abrasive, Non-metallic Bristle	Commercial Source
N/A	Solvent, Stoddard, Type 1 (Mineral Spirits, White Spirits, Naphtha)	P-D-680	Commercial Source
N/A	Isopropyl Alcohol	N/A	Commercial Source

2. Cleaning Procedures

Refer to IPL Figure 1 for identification of brake assembly components.

WARNING: **CLEANING SOLVENTS CAN BE TOXIC AND VOLATILE. USE ONLY IN WELL-VENTILATED AREAS. AVOID PHYSICAL CONTACT WITH SOLVENT AND DO NOT INHALE VAPORS. KEEP SOLVENT CONTAINERS COVERED WHEN NOT IN USE. OBSERVE FIRE PRECAUTIONS.**

A. Cleaning Non-Aluminum Metallic Components

- (1) Non-Aluminum components, such as the torque tube assembly (100), pressure plate assembly (60), and the stator disc assemblies (85) can be washed with Type 1 Stoddard Solvent (per P-D-680) using a non-abrasive, non-metallic bristle brush to remove stubborn deposits.
- (2) Dry all metal parts thoroughly after cleaning, using low-pressure compressed air, 30 psig maximum (2.07 bar). Wipe dried parts with clean cloths.

CLEANING

B. Cleaning Rotors (IPL 1-80)

CAUTION: DO NOT USE CLEANING SOLUTIONS ON FRICTION MATERIAL SURFACES.

- (1) Clean rotors with compressed air and a stiff bristle brush.

C. Cleaning Aluminum Components

- (1) Aluminum components, such as the brake cylinder (35), and pistons (40), can be washed with Type 1 Stoddard Solvent (per P-D-680) using a non-abrasive, non-metallic bristle cleaning brush to remove stubborn deposits.
- (2) Dry parts thoroughly after cleaning, using low pressure compressed air, 30 psig maximum (2.07 bar). Wipe dried parts with clean cloths.

D. Cleaning Rubber Components

- (1) Clean the O-rings and wipers with isopropyl alcohol. Wipe dry with clean cloths.

NOTE: It is recommended that all O-rings (45 and 165), and wipers (50) be replaced at each overhaul regardless of condition:

INSPECTION / CHECK**1. General**

In order to facilitate inspection of components, parts must be cleaned prior to inspection. Refer to CLEANING section for applicable instructions. Refer to the illustrations in this section for important areas and areas of greatest wear. Where indicated, refer to FITS AND CLEARANCES section to find if the part can be used, repaired, or replaced.

A. Inspection/Check Equipment and Materials (Refer to Table 5001)

NOTE: Equivalent substitutes may be used for items listed.

Table 5001
Inspection/Check Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Magnetic Particle Inspection Kit	ASTM E1444	Commercial Source
N/A	Fluorescent Penetrant Inspection Kit	MIL-STD-6866 or ASTM E1417, Type 1, Method A, Sensitivity Level 2	Commercial Source
N/A	Inspection Surface Plate	N/A	Commercial Source
N/A	Magnifier	X10 Magnification	Commercial Source
N/A	Vernier Dial Calipers	0 to 6.00 in. (0 to 150 mm)	Commercial Source
N/A	Micrometers	0 to 2.00 in. (0 to 50 mm)	Commercial Source

INSPECTION / CHECK

B. Maintenance Schedule (Refer to Table 5002)

Refer to IPL Figure 1 for identification of brake assembly components.

NOTE: The heat sink is defined as the rotating discs (80), pressure plate assy (60), stationary disc assy (85), and torque tube wear pads (70).

Table 5002
Scheduled Maintenance

SCHEDULED INTERVAL	ITEM	MAINTENANCE TASK
Every heat sink change	All components	a. General inspection per para. 1.C. b. Detailed inspection per para. 2 as applicable
	O-Rings (45, 165)	Replace
	Wiper (50)	Replace
	Wear Pads (70) and Rivets (75A, 95A)	Replace
At the 5 th (fifth) heat sink change and every 3 rd (third) heat sink change thereafter	Brake Cylinder (35)	a. Visual inspection per para. 2.A. b. Penetrant inspect per para. 2.A.
	Torque Tube (105 or 105A)	a. Visual inspection per para. 2.C. b. Magnetic particle or penetrant inspect per para. 2.C.
	Stator Disc (90)	a. Visual inspection per para. 2.D. b. Magnetic particle or penetrant inspect per para. 2.D.
	Pressure Plate (65)	a. Visual inspection per para. 2.E. b. Magnetic particle or penetrant inspect per para. 2.E.

UNSCHEDULED INTERVAL	ITEM	MAINTENANCE TASK
Overheating such that at least one of the three fusible plugs release in the mating Main Wheel Assembly	All components	a. General inspection per para. 1.C. b. Detailed inspection per para. 2 as applicable
	Brake Cylinder (35)	Hardness test per para. 2.A.(3).
	O-Rings (45, 165)	Replace
	Wiper (50)	Replace

INSPECTION / CHECK

C. General Inspection Procedure

Refer to IPL Figure 1 for identification of brake assembly components.

Items that do not require special detailed examination are to be given a general inspection in accordance with this paragraph. Refer to paragraph 2. Detailed Inspection Procedures for items that require specific examination.

- (1) Visually examine the following items for damage or looseness: bolts (5 and 20), washers (10 and 25), nuts (15 and 30), inlet fitting (190), and bleeder seat (170). Replace all parts with stripped or scored threads or obvious damage. Additionally:

CAUTION: NO REWORKING OF BOLTS IS PERMITTED. ANY STRIPPING OF PLATING FOR INSPECTION PURPOSES IS PROHIBITED.

- (a) Visually inspect for bent bolts (5 and 20). Scrap all bent bolts. Magnetic particle inspect each bolt for cracks in accordance with ASTM E1444 or equivalent. Use crack definition in MIL-STD-1907. Scrap all bolts with cracks.

NOTE: If **any** of the bolts are damaged, replace **all** of the bolts.

- (b) Inspect nuts (15 and 30) for damaged threads and for loss of self-locking feature. If nut can be turned by hand onto the bolts, past the top of the nut, then self-locking feature is destroyed.

NOTE: If **any** of the nuts are damaged, replace **all** of the nuts.

- (2) Visually examine all components of the brake assembly for wear, scoring, cracks, chips, nicks, burrs, pitting, corrosion, flaws, and other obvious signs of damage. Replace or repair all parts showing evidence of these defects.
- (3) Visually examine all components of the brake assembly with threaded features. Replace all parts with stripped or scored threads or obvious damage.
- (4) Check all parts with sealing surfaces and grooves for distortion, damage, burrs, or corrosion which might damage packings and rings during installation and/or operation or which might permit leakage. Replace part if sealing surfaces and grooves are damaged.
- (5) Check individual parts as indicated in paragraph 2. Detailed Inspections. Repair or replace any parts that do not meet **INSPECTION / CHECK** requirements.
- (6) The following items are to be replaced at each overhaul regardless of condition: All rotors (80), O-rings (45 and 165), wiper (50), wear pads (70), and rivets (75A and 95A).

INSPECTION / CHECK

2. Detailed Inspections

WARNING: PENETRANT FLUID CAN BE TOXIC AND VOLATILE. USE ONLY IN WELL-VENTILATED AREAS. AVOID PHYSICAL CONTACT WITH FLUID AND DO NOT INHALE VAPORS. KEEP FLUID CONTAINERS COVERED WHEN NOT IN USE. OBSERVE FIRE PRECAUTIONS.

A. Inspect Brake Cylinder (IPL, 1-35)

Repair per paragraph 2.A. of REPAIR, or replace.

Aircraft Wheel and Brake, LLC recommends a thorough visual and fluorescent penetrant inspection of the brake cylinder in accordance with ASTM E1417 or MIL-STD-6866 (Type I, Method A, Sensitivity Level 2) at the following intervals:

First inspection:	At the 5 th (fifth) brake heat sink change
Additional inspections:	Every 3 rd (third) brake heat sink change thereafter

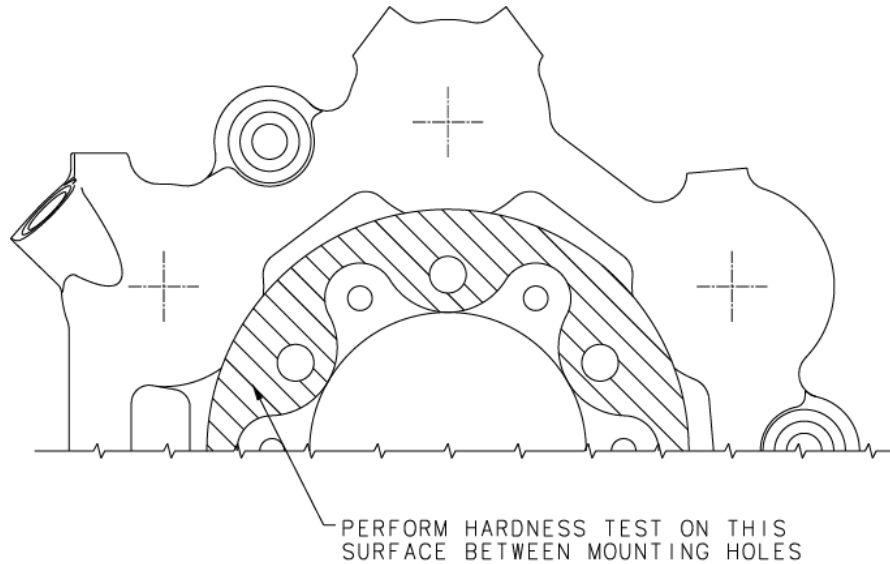
NOTE: Paint must be removed from the brake cylinder to conduct an accurate method for the fluorescent penetrant inspection. Refer to paragraph 2.B. of REPAIR for paint removal instructions.

- (1) Visually inspect the brake cylinder per paragraph 1.C.
- (2) Visually examine inlet and bleeder port threads for damage. Replace any cylinder with stripped or scored threads or threads showing any obvious damage.
- (3) Visually examine the sealing surfaces of the cylinder piston bores for nicks, scratches, wear, corrosion or other damage. (Aircraft Wheel and Brake, LLC recommends the use of a 10-power magnifier for the visual examination). Replace severely corroded cylinders.
- (4) Visually inspect for missing surface paint caused by erosion, wear, inspection or surface repair.
- (5) Use fluorescent penetrant inspection in accordance with ASTM E1417 or MIL-STD-6866, Type I, Method A, Sensitivity Level 2, to inspect brake cylinder for cracks. Use crack definition in MIL-STD-1907. No cracks are permitted.
- (6) In the event of overheating (see Table 5002, Unscheduled Interval) a hardness must be performed per the following procedure. Refer to Figure 5001 and Table 5003 for locations and acceptance values.

NOTE: Paint must be removed from surfaces prior to being tested.

- (a) Perform a hardness test in the area shown in Figure 5001. Obtain a minimum of three hardness readings, equally spaced between mounting holes. If any reading is below BHN 125 as specified in Table 5003, replace the brake cylinder.

INSPECTION / CHECK



Heat Damage Test – Brake Cylinder
Figure 5001

ITEM	BRINELL TEST
BALL DIAMETER	10 mm
TEST LOAD	500 kg.
MINIMUM NUMBER OF READINGS (EQUALLY SPACED)	3
ACCEPTABLE MINIMUM AVERAGE HARDNESS	125

Hardness Test Readings
Table 5003

B. Inspect Pistons (IPL, 1-40)

Repair per paragraph 2.D. of REPAIR, or replace.

- (1) Visually inspect the pistons per paragraph 1.C.
- (2) Visually inspect the insulators (IPL, 1-55) per paragraph 1.C. Replace damaged insulators.

C. Inspect Torque Tube Assembly (IPL, 1-100) (Refer to Figure 5002)

Repair per paragraph 2.F. of REPAIR, or replace.

- (1) Visually inspect the torque tube assembly per paragraph 1.C.

INSPECTION / CHECK

- (2) Inspect for loose, cracked, or worn wear pads (IPL, 1-70). Check dimension A. If thickness is beyond the limit specified in FITS AND CLEARANCES, Table 8001, replace the wear pad. Replace loose, damaged or worn wear pads in accordance with paragraph 2.E. of REPAIR.

NOTE: Replace wear pads and rivets at each heat sink change.

- (3) If wear pads are being replaced, inspect the torque tube for flatness and parallelism as required in figure 5002. If constraints exceed the limit, replace the torque tube.
- (4) Inspect the torque tube for cracks. Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866 Type I, Method A, Sensitivity Level 2). Use crack definition in MIL-STD-1907. No cracks are permitted.
- (5) Inspect torque tube key width on six [6] drive keys. Width of keys must not exceed dimension B per FITS AND CLEARANCES, Table 8001. Replace torque tube if any key is does not meet the requirements or is damaged.

D. Inspect Stator Disc Assembly (IPL, 1-85). See Figure 5003.
Repair per paragraph 2.F. of REPAIR, or replace.

- (1) Visually inspect the stator disc assembly per paragraph 1.C.
- (2) Inspect for loose, cracked, or worn wear pads (IPL, 1-70). Check dimension A. If thickness is beyond the limit specified in FITS AND CLEARANCES, Table 8001, replace the wear pad. Replace loose, damaged or worn wear pads in accordance with paragraph 2.E. of REPAIR. Replace wear pads at each lining change.

NOTE: Replace wear pads and rivets at each heat sink change.

- (3) Inspect the stator disc for straightness on wear pad mating surface if wear pads are being replaced. If straightness exceeds the limits shown in Figure 5003, stator may be draw flattened per paragraph 2.G., of REPAIR, or replace the stator disc.
- (4) Inspect the stator disc for cracks. Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866 Type I, Method A, Sensitivity Level 2). Use crack definition in MIL-STD-1907. No cracks are permitted.
- (5) Inspect the stator slot width on six [6] drive slots (the slots which engage the torque tube) for wear or damage. Width of slots must not exceed dimension B per FITS AND CLEARANCES, Table 8001. Replace stator disc if any slot is found to exceed the limit or is damaged.

INSPECTION / CHECK

E. Inspect Pressure Plate Assembly (IPL, 1-60). See Figure 5004.

Repair per paragraph 2.F. of REPAIR, or replace.

- (1) Visually inspect the pressure plate assembly per paragraph 1.C.
- (2) Inspect for loose, cracked, or worn wear pads (IPL, 1-70). Check dimension A. If thickness is beyond the limit specified in FITS AND CLEARANCES, Table 8001, replace the wear pad. Replace loose, damaged or worn wear pads in accordance with paragraph 2.E. of REPAIR.

NOTE: Replace wear pads and rivets at each heat sink change.

- (3) Inspect the pressure plate for straightness on wear pad mating surface if wear pads are being replaced. If straightness exceeds the limits shown in Figure 5004, the pressure plate may be draw flattened per paragraph 2.G., of REPAIR, or replace the pressure plate.
- (4) Inspect the pressure plate for cracks. Visually inspect and magnetic particle inspect (per ASTM E1444) or penetrant inspect (per ASTM E1417 or MIL-STD-6866 Type I, Method A, Sensitivity Level 2). Use crack definition in MIL-STD-1907. No cracks are permitted.
- (5) Inspect the pressure plate drive slot width on six [6] drive slots (the slots which engage the torque tube) for wear or damage. Width of slots must not exceed dimension B per FITS AND CLEARANCES, Table 8001. Replace pressure plate if any slot is found to exceed the limit or is damaged.

F. Inspect Retract Subassembly (IPL, 1-110)

Repair per paragraph 2.H. of REPAIR, or replace.

- (1) Visually inspect the retract subassembly components per paragraph 1.C. Replace any retract assembly that shows evidence of being damaged .

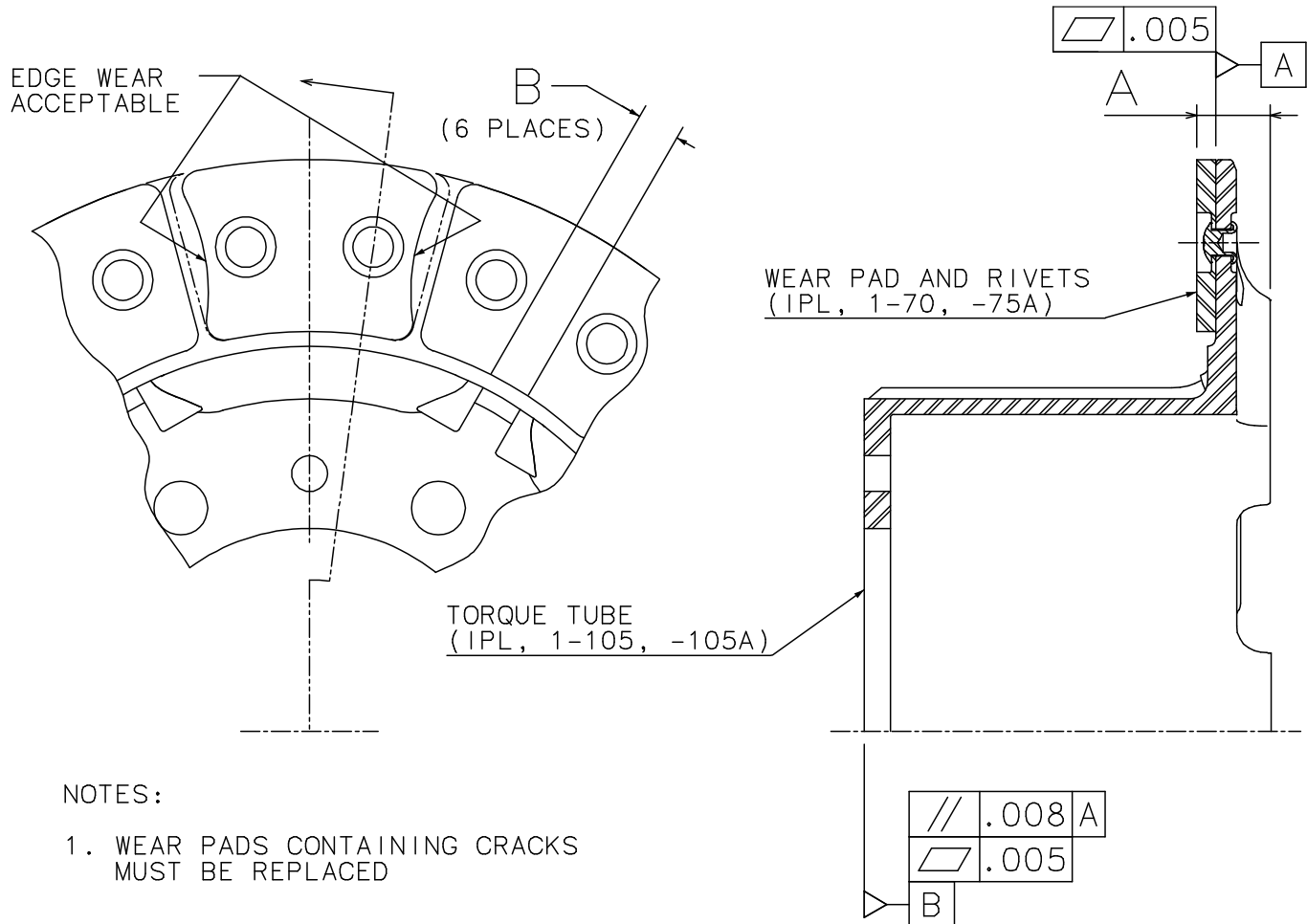
G. Inspect Retaining Ring (IPL, 1-145)

- (1) Replace ring if it becomes bent or twisted during removal.

H. Inspect Retract Base Assembly (IPL, 1-150)

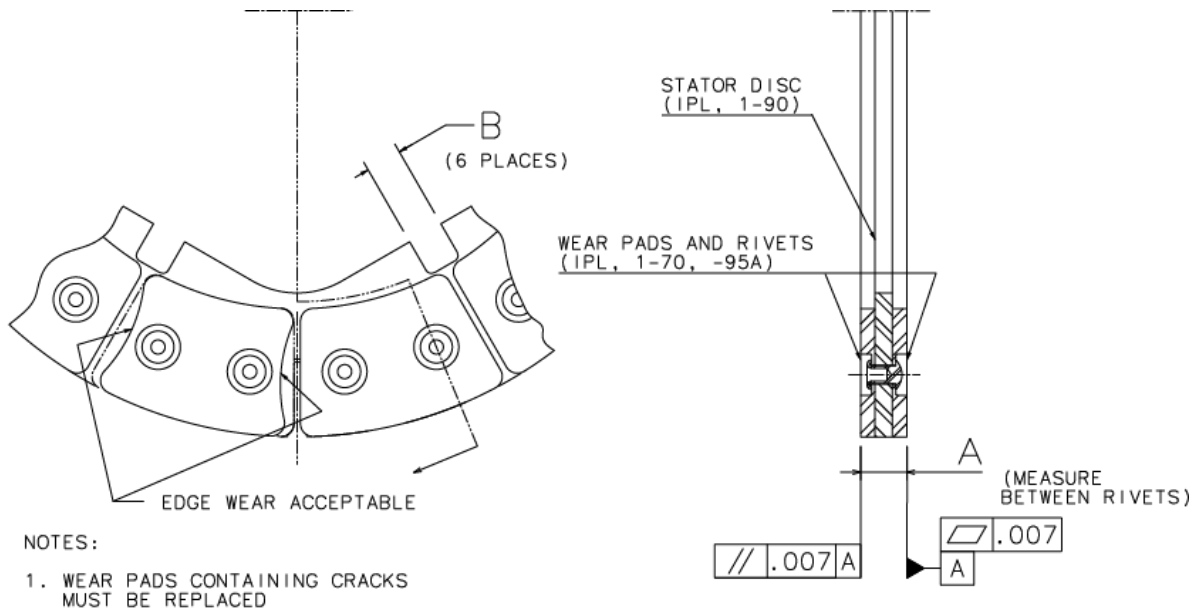
- (1) Visually inspect the pistons per paragraph 1.C. Replace damaged retract base assemblies.

INSPECTION / CHECK

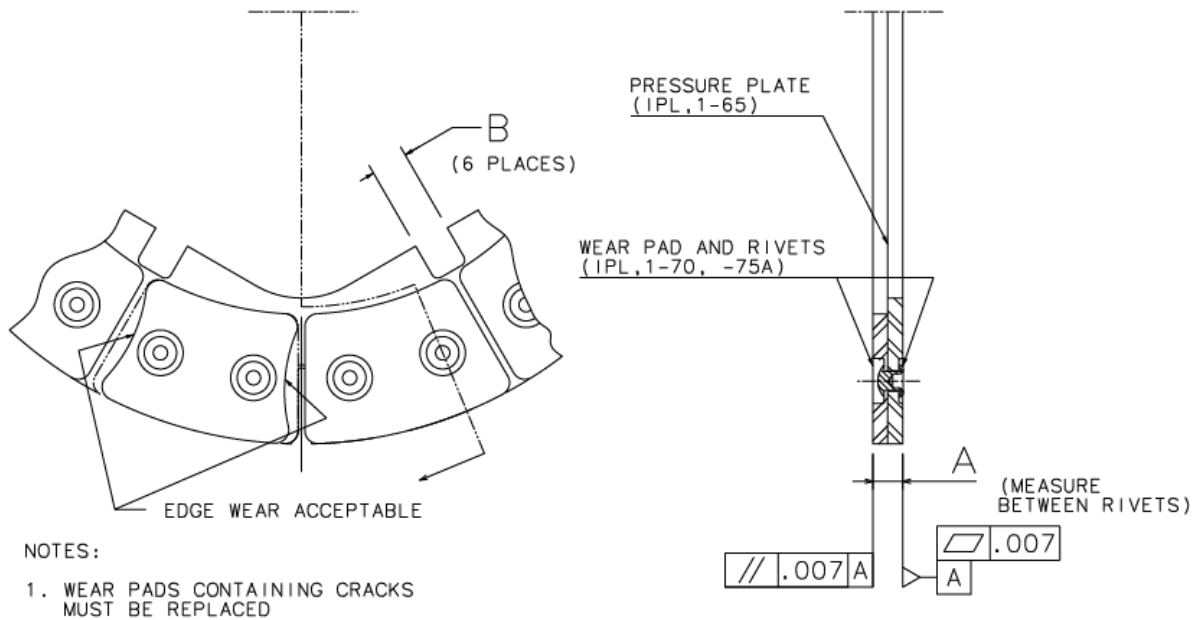


Torque Tube Assembly and
Wear Pad Inspection Limits
Figure 5002

INSPECTION / CHECK



Stator Disc Assembly and Wear Pad Inspection Limits
Figure 5003



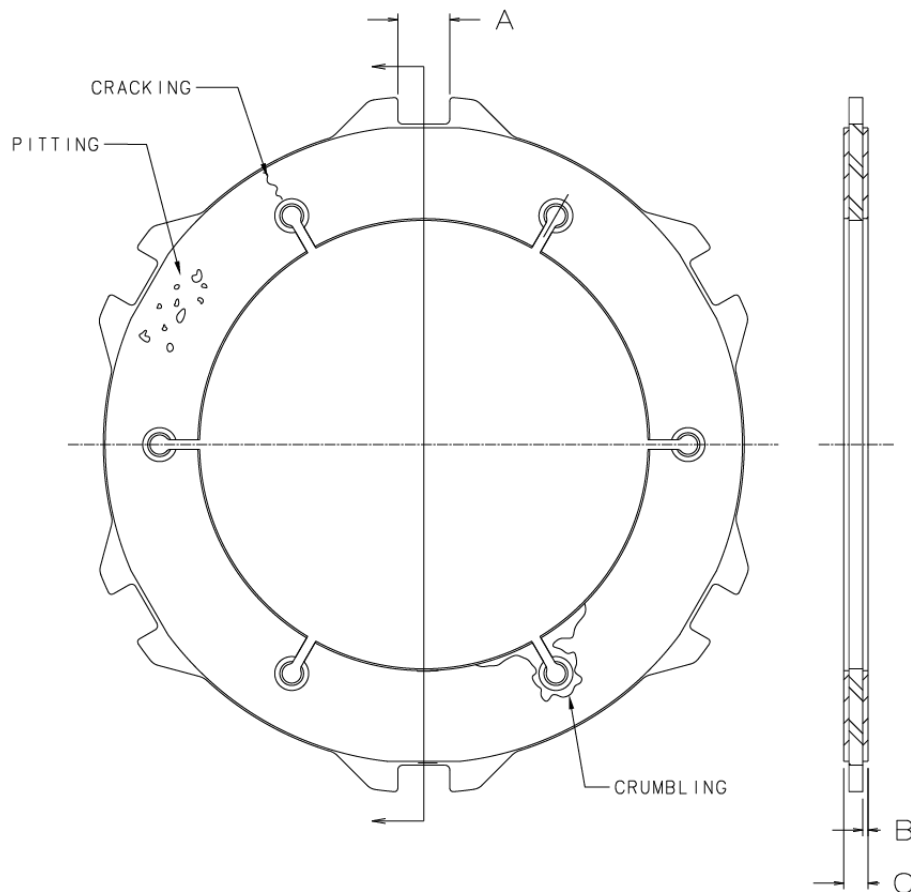
Pressure Plate Assembly and Wear Pad Inspection Limits
Figure 5004

INSPECTION / CHECK

I. Inspect Rotors (IPL, 1-80). See Figure 5005.

NOTE: Replace rotors at each overhaul regardless of condition.

- (1) Visually inspect the rotor disc per paragraph 1.C.
- (2) Inspect for cracks and lining material pitting, crumbling and edge chipping. Check lining material thickness dimensions, B and C. If thickness is beyond the limit specified in FITS AND CLEARANCES, Table 8001, replace the rotor disc. Replace damaged or worn discs.
- (3) Inspect drive slot width on six [6] wheel engagement drive slots for wear or damage. Width of slots must not exceed dimension A per FITS AND CLEARANCES, Table 8001. Replace rotor disc if any slot is found to exceed the limit or is damaged.



Rotor Disc Inspection Limits
Figure 5005

REPAIR

1. General

Certify that a component is serviceable per INSPECTION/CHECK section prior to attempting repair. Disassemble the brake assembly only to the level necessary to do the repairs or replace components. Repairs are limited to the replacement of parts and to the repairs specified in this section. No attempt should be made to repair cracked, severely corroded or badly damaged parts.

A. Repair Equipment and Materials. Refer to Table 6001.

NOTE: Equivalent substitutes may be used for items listed.

Table 6001 (Sheet 1 of 2)
Repair Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
Model 305	Rivet Machine	N/A	Milford Fastening Systems
57-082	Hopper Barrel	N/A	Milford Fastening Systems
AR-4015-9	Rivet Guide	N/A	Milford Fastening Systems
313-720-9	Slide Parts	N/A	Milford Fastening Systems
63-J-1566-A	Jaws	N/A	Milford Fastening Systems
563-DS-44	Driver	N/A	Milford Fastening Systems
824-1K-7	Roll Set	Modified Per Figure 9006	Milford Fastening Systems
N/A	Vise Jaws	Soft Brass or Hard Rubber	Commercial Source
N/A	Drill Bit	Ø0.187 in. (Ø5 mm)	Commercial Source
N/A	Drift Punch	Ø0.187 in. (Ø5 mm)	Commercial Source
N/A	Hand File	Flat	Commercial Source
N/A	Inside Micrometers	0 to 2.00 in. (0 to 50 mm)	Commercial Source
N/A	Aluminum Oxide Cloth	400 Grit or Finer Wet or Dry	Commercial Source
N/A	Oven	1500°F capacity (815°C)	Commercial Source
N/A	Plastic Media Type V (Acrylic)	MIL-P-85891	U.S. Technology Corp.
N/A	Plastic Media Stripping Equipment	N/A	Commercial Source
N/A	Corrosion Preventative Alodine 1200 or Equiv.	MIL-C-5541, Class 1A or MIL-DTL-5541, Type I or Type II, Class 1A	Commercial Source

REPAIR

Table 6001 (Sheet 2 of 2)
Repair Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Paint Application Equipment	N/A	Commercial Source
44-GN-36 Components A and B	Primer Coating	MIL-PRF-85582C Type I, Class C2	Deft Chemical Coatings
44-GN-24 Components A and B	Primer Coating Alternate Product	MIL-P-85582B Type I, Class C2	Deft Chemical Coatings
03-W-127A Components A and B	Finish Coating	MIL-C-85285B, Type I No. 17925 (FED-STD-595) Untinted White	Deft Chemical Coatings
Various for Application Type	Galvanizing Compound	MIL-P-26915 Type I, Class A	ZRC Products Company
N/A	Draw Flattening Fixture	Per Figure 9001 SPECIAL TOOLS.....	Outside Manufacture
N/A	Cold Straightening Fixture	Per Figure 9002 and 9003 SPECIAL TOOLS...	Outside Manufacture
N/A	Spacer Tool – Retract Subassembly	Per Figure 9004 SPECIAL TOOLS.....	Outside Manufacture
N/A	Support – Retract Subassembly	Per Figure 9005 SPECIAL TOOLS.....	Outside Manufacture
1227-6	Heli-Coil Extracting Tool	MIL-T-21309	Black & Decker Company
7552-3	Heli-Coil Installation Tool	MIL-T-21309	Black & Decker Company
3695-3	Heli-Coil Tang Removal Tool	MIL-T-21309	Black & Decker Company

B. Items that need only a general repair (in accordance with this paragraph) are not included in this section. This section includes only those items that require special repair procedures. No attempt should be made to repair cracked, severely corroded or badly damaged parts.

- (1) Simple repair will be limited to polishing minor burrs, nicks, scoring, and scratches in non-sealing surface areas with 400 grit or finer (wet or dry) aluminum oxide cloth in accordance with the limits specified in paragraph 2. Repair Procedures.
- (2) Use 400 grit or finer, wet or dry aluminum oxide cloth to remove all corrosion and surface damage in accordance with the limits specified in paragraph 2. Repair Procedures.

REPAIR

- (3) Clean all repaired parts in accordance with instructions given in CLEANING.
- (4) Treat all repaired areas in accordance with their respective repair procedures.

2. Repair Procedures

CAUTION: REPAIRS CAN BE MADE ONLY TO THOSE SURFACES SPECIFIED IN PARAGRAPH 1.B AND THOSE SPECIFIED IN PARAGRAPH 2. REPAIR MUST NOT AFFECT SEALING CHARACTERISTICS OF SEALING SURFACES.

CAUTION: DO NOT USE ABRASIVES CONTAINING IRON SUCH AS STEEL WOOL, IRON OXIDE, BRASS OR STEEL WIRE. IRON OR COPPER PARTICLES WHICH BECOME EMBEDDED IN THE ALUMINUM COMPONENTS WILL ACCELERATE CORROSION.

A. Repair Procedure For Brake Cylinder (IPL, 1-35).

- (1) Blend out burrs, nicks, and scratches less than .030 inches (.762 mm) deep on the outside of the brake cylinder using hand filing techniques to relieve any sharp corners that may cause stress concentrations. Blend out tool marks.
- (2) Polish out small nicks and scratches, .003 inches max. deep (.0762 mm) on machined surfaces.
- (3) Polish out small nicks and scratches not exceeding .003 inches max. (.0762 mm) deep in piston bores.
- (4) Clean part per CLEANING section and treat repaired areas with corrosion preventative (Alodine 1200 or equivalent) per MIL-C-5541, Class 1A or MIL-DTL-5541, Type I or Type II, Class 1A.
- (5) Mask applicable areas and apply primer and topcoat to the repaired areas on the outside of the brake cylinder per paragraph 2.C.

REPAIR

B. Paint Removal Procedure For Brake Cylinder (IPL, 1-35).

This procedure is necessary when performing the fluorescent penetrant inspection of the brake cylinder subassembly.

WARNING: STRIPPING SOLVENTS CAN BE TOXIC AND VOLATILE. USE ONLY IN WELL-VENTILATED AREAS. AVOID PHYSICAL CONTACT WITH SOLVENTS AND DO NOT INHALE VAPORS. KEEP SOLVENT CONTAINERS COVERED WHEN NOT IN USE. OBSERVE FIRE PRECAUTIONS.

CAUTION: REFER TO THE APPLICABLE MANUFACTURER'S INSTRUCTIONS FOR DISPOSAL OF CHEMICAL STRIPPING SOLUTIONS OR PLASTIC STRIPPING MEDIA.

NOTE: Chemical stripping agents are commercially available and may be used only if plastic media stripping equipment is not available. For best results, always refer to the applicable chemical manufacturer's instructions for application and use.

- (1) Degrease brake cylinder per CLEANING section.
- (2) Strip paint from the brake cylinder (IPL, 1-35) using plastic media.

NOTE: For best results, always refer to the applicable plastic media manufacturer's instructions for application and use.

- (3) Clean part per CLEANING section prior to penetrant inspection.

REPAIR

C. Repaint Procedure For Brake Cylinder (IPL, 1-35)

Refer to Figure 6001 and repaint brake cylinder in accordance to the following procedure.

CAUTION: REFER TO THE APPLICABLE PAINT MANUFACTURER'S INSTRUCTIONS FOR DISPOSAL OF PRIMER AND TOPCOAT MEDIA.

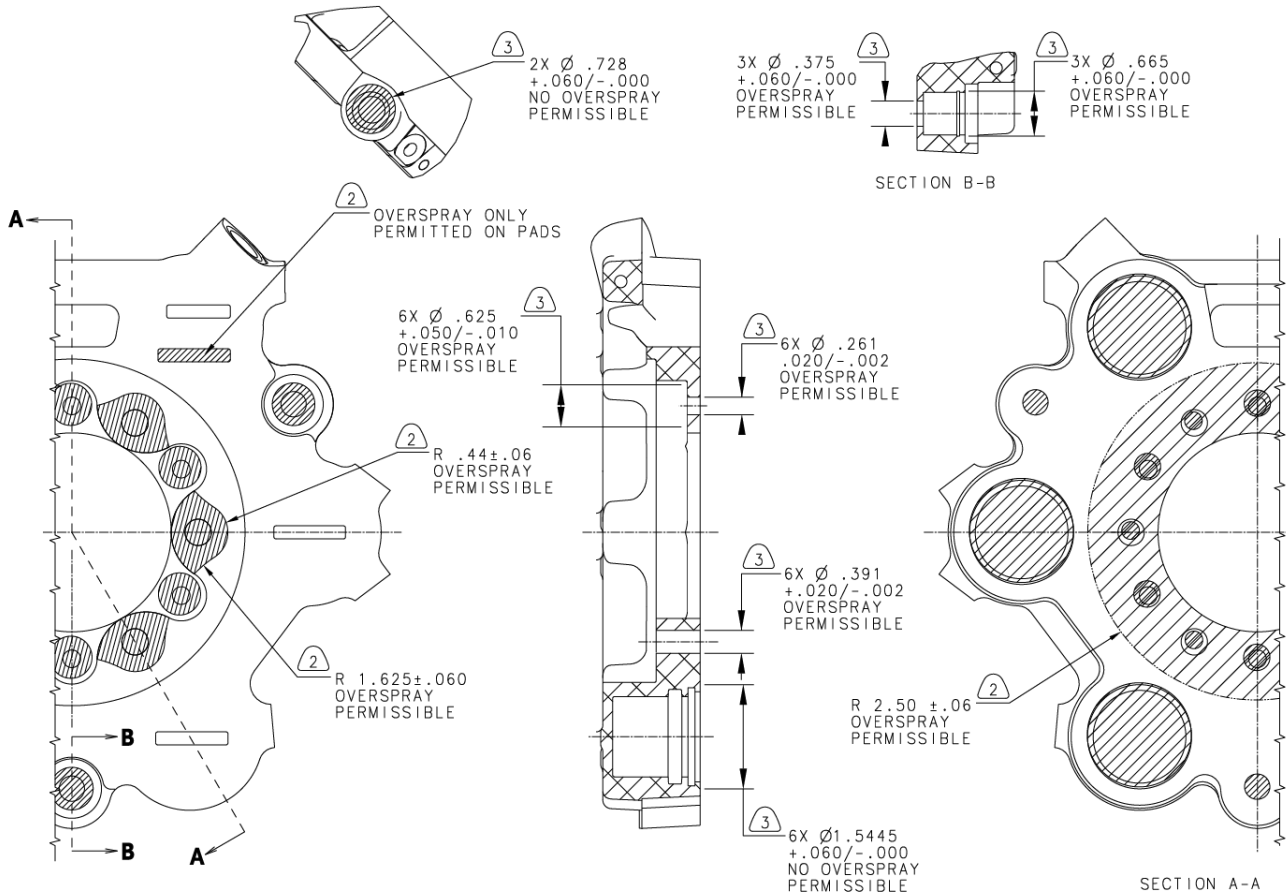
NOTE: To achieve best results, always refer to the applicable paint manufacturer's instructions for application and use.

- (1) Mask and apply primer to brake cylinder. The dry film thickness of the primer shall be .0006 to .0009 inches (.0152 to .0229 mm).
- (2) Mask and apply topcoat to brake cylinder. The total dry film thickness (including primer and topcoat) shall be .0026 to .0032 inches (.066 to .081 mm).

D. Repair Procedure For Pistons (IPL, 1-40)

- (1) Polish out small nicks and scratches to a surface finish of 16 microinches RMS. Replace pistons if outside diameter is worn to $\varnothing 1.371$ inches (34,823 mm) at any location.
- (2) Clean part per CLEANING section and treat repaired areas with corrosion preventative (Alodine 1200 or equivalent per MIL-C-5541, Class 1A or MIL-DTL-5541, Type I or Type II, Class 1A).

REPAIR



NOTES: UNLESS OTHERWISE INDICATED

1. PRIME PER MIL-PRF-85582, TYPE I, CLASS C2
ALTERNATE PRIME PER MIL-P-85582, TYPE I, CLASS C2
TOPCOAT PER MIL-C-85285, TYPE I, NO. 17925
(FED-STD-595) UNTINTED WHITE

2 PRIMER ONLY IN AREAS INDICATED

3 NO PRIMER OR TOPCOAT IN AREAS INDICATED

Brake Cylinder Masking Instructions
Figure 6001

REPAIR

- E. Wear Pad Replacement For Torque Tube Assembly (IPL, 1-100), Stator Disc Assembly (IPL, 1-85) and Pressure Plate Assembly (IPL, 1-60). Refer to IPL, Figure 1.

SAFETY WARNING:  **USE PROTECTIVE GOGGLES OR GLASSES WHEN REMOVING RIVETS TO AVOID INJURY TO EYES. AVOID GRABBING SHARP EDGES OF RIVETS WITH HANDS.**

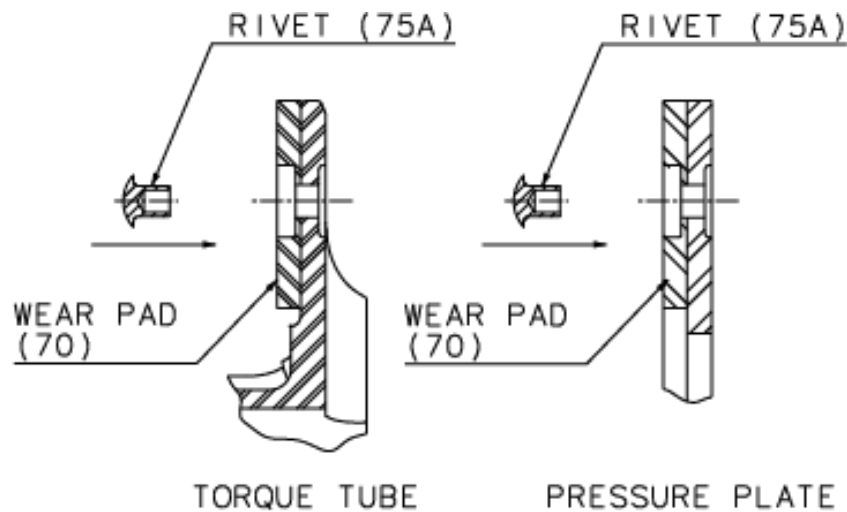
CAUTION: DO NOT ENLARGE THE RIVET HOLES IN THE TORQUE TUBE, STATOR DISC OR PRESSURE PLATE. IF THE RIVET HOLE EXCEEDS Ø .204 (5.182 MM.), THE TORQUE TUBE, STATOR DISC, OR PRESSURE PLATE MUST BE REPLACED.

- (1) Using a Ø 0.187 in. (5mm) drill bit, drill out the shop head of the rivets (75A and 95A) and punch the rivets from the respective assembly. Discard rivets.
- (2) Remove and discard wear pads (70). Remove any burrs around rivet hole areas.
- (3) The torque tube (105 or 105A), stator disc (90), and pressure plate (65) should now be checked for continued service per paragraph 2.C., 2.D., and 2.E., respectively, of INSPECTION/CHECK and perform any repair for per paragraph 2.F., of REPAIR. Cold straighten or draw flatten stator and/or pressure plate per paragraph 2.G. of REPAIR.

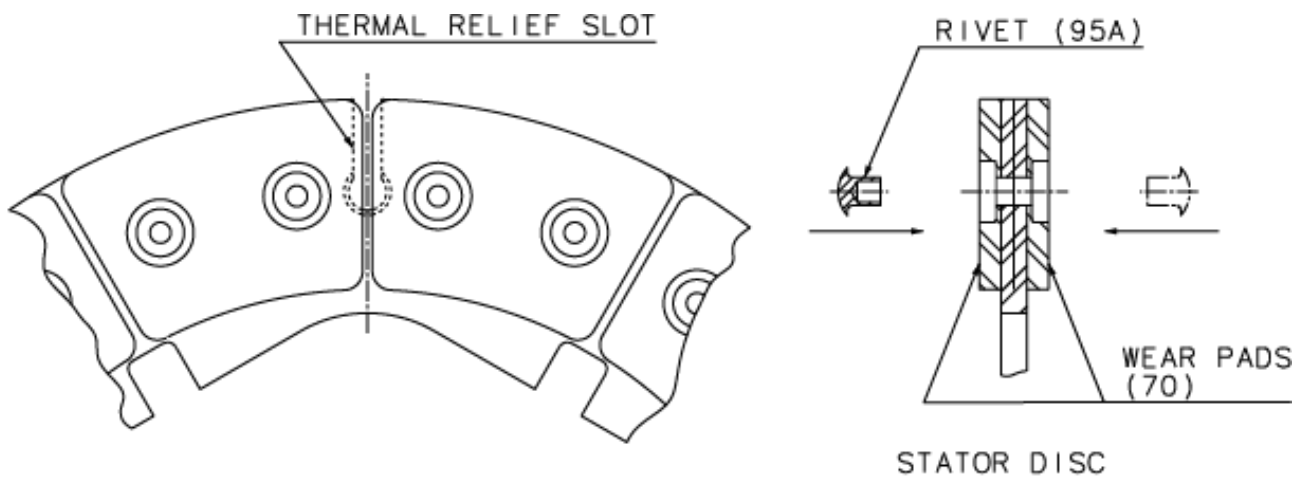
NOTE: When using the Milford rivet machine, the rollset tool must first be modified per Figure 9006.

- (a) After torque tube is judged serviceable, refer to Figure 6002 and locate the wear pads over the rivet holes on the torque tube and insert with rivets (75A).
 - 1 From the shop head of the rivet using a Milford model 305 or equivalent rivet machine with applicable attachments (driver, jaw, rollset, etc.).
- (b) After stator disc is judged serviceable, refer to Figure 6003 and locate the wear pads over the rivet holes on both sides of the stator disc and insert with rivets (95A).
 - 1 Form the shop head of the rivet using a Milford model 305 or equivalent rivet machine with applicable attachments (driver, jaw, rollset, etc.).
- (c) After pressure plate is judged serviceable, refer to Figure 6002 and locate the wear pads over the rivet holes on the pressure plate and insert with rivets (75A).
 - 1 Form the shop head of the rivet using a Milford model 305 or equivalent rivet machine with applicable attachments (driver, jaw, rollset, etc.).

REPAIR



Torque Tube and
Pressure Plate Wear Pad Installation
Figure 6002



NOTES:

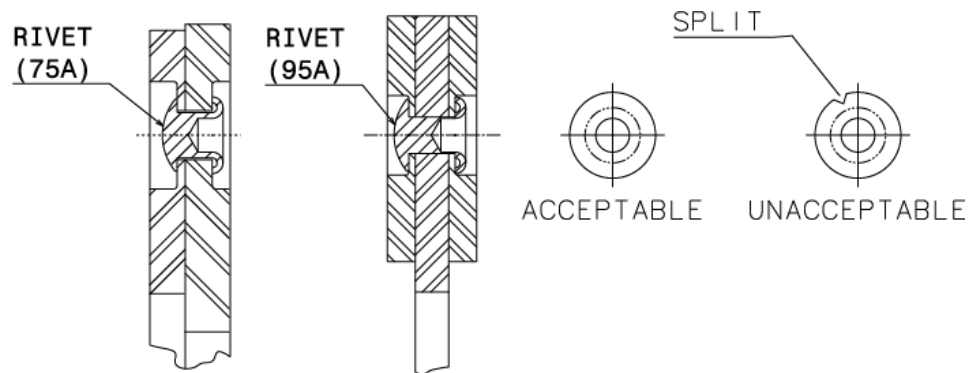
1. WEAR PADS MUST BE ORIENTED AS SHOWN:
WEAR PADS MUST NOT BRIDGE THE THERMAL
RELIEF SLOTS.
2. RIVETS MAY BE INSTALLED FROM EITHER SIDE.

Stator Disc Wear Pad Installation
Figure 6003

REPAIR

CAUTION: THERE SHALL BE NO SPLITS RESULTING FROM THE CLINCHING OPERATION.

- (4) Refer to Figure 6004 and verify rivet installation requirements for torque tube, stator disc and pressure plate assemblies.
- (5) All parts assembled by riveting shall be fitted tightly together, and no perceptible movement shall be allowed between them.
 - (a) Parts shall not be distorted by splitting, bulging, buckling, or other characteristics which result from poor assembly procedure.
 - (b) Rivets shall not extend above the surface. The manufactured head and clinched end shall be uniform and full seated.



Rivet Installation Requirements
Figure 6004

REPAIR

F. Repair Procedure For Torque Tube (IPL, 1-105 or 1-105A), Stator Disc (IPL, 1-90), and Pressure Plate (IPL, 1-65)

- (1) Polish out small nicks and scratches, .003 in. max. (.0762 mm) deep provided that repaired area meets the minimum requirements of the Fits and Clearances section of this manual.
- (2) Clean part per CLEANING section and treat repaired areas with corrosion preventative (Galvanizing compound per MIL-P-26915, Type I, Class A) in accordance with the following procedure.

CAUTION: REFER TO THE APPLICABLE PAINT MANUFACTURER'S INSTRUCTIONS FOR DISPOSAL OF COMPOUND MEDIA.

NOTE: To achieve best results, always refer to the applicable coating manufacturer's instructions for application and use.

- (a) Apply galvanizing to all repaired areas of torque tube. The dry film thickness of the coating shall be .0015 inches min. to .0030 inches max. (.0381 to .0762 mm).

G. Straightening Procedure For Stator Disc (IPL, 1-90) and Pressure Plate (IPL, 1-65)

CAUTION: STRAIGHTENING OF THE ROTOR DISCS (80) ARE NOT PERMITTED.

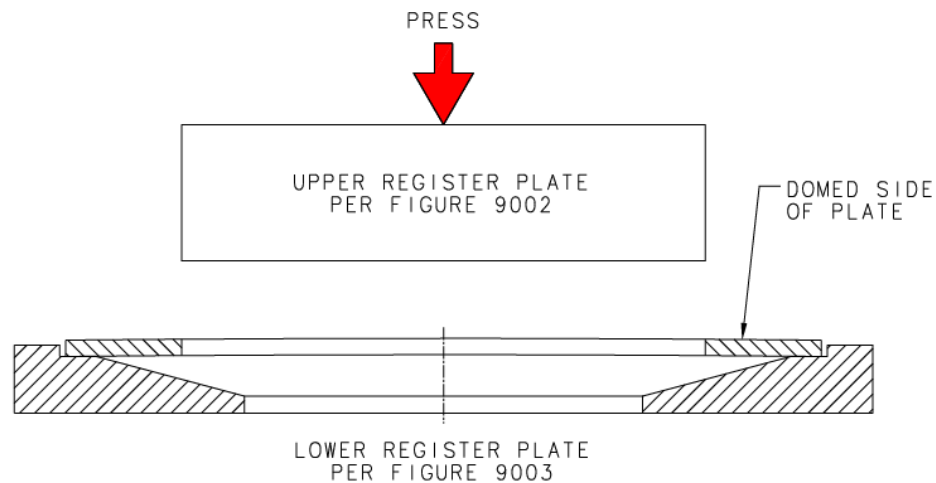
NOTE: The following methods are not a guarantee of sustaining disc straightness conditions through continued service.

Stator discs and pressure plates which do not meet the straightness requirements of this manual may be straightened in accordance with either of the following procedures.

- (1) Draw Flattening
 - (a) Remove wear pads (70) (refer to 2.E., Wear Pad Replacement).
 - (b) Stack plates back-to-back between two 2-inch (50.8mm) thick steel plates (refer to Figure 9001, SPECIAL TOOLS...section) with long bolts through center of stack and steel plates.
 - (c) Place in an oven and heat slowly to a temperature range of 1100° to 1150°F (593° to 621°C) and hold that temperature range for one hour.
 - (d) Remove from oven and retighten bolts.

REPAIR

- (e) Place in an oven and heat slowly to a temperature range of 1100° to 1150°F (593° to 621°C) and hold that temperature range for three hours.
 - (f) Remove from oven and air cool at room temperature; then remove bolts and separate parts.
- (2) Cold Straightening (refer to Figure 6005)
- NOTE:** This procedure will only work on discs that exhibit a dished condition, in which the dishing is in the same direction, and will not reverse the effects of a warped disc.
- (a) Remove wear pads (70) (refer to 2.E., Wear Pad Replacement).
 - (b) Fabricate upper and lower register plates (refer to Figures 6005).
 - (c) Mount upper and lower register plates in a press.
 - (d) Place dished plate or disc in lower register plate with domed side up.
 - (e) Apply sufficient pressure with press to straighten plate or disc.



Straightening Plates (65) and Discs (90)
Figure 6005

REPAIR

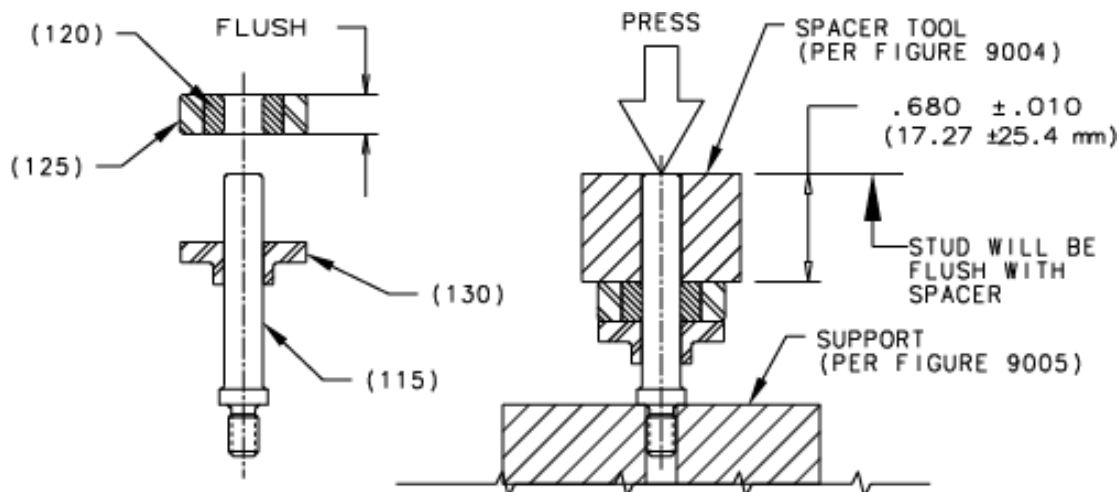
H. Repair Procedure For Retract Subassembly (IPL, 1-110). Refer to IPL, Figure 1.

- (1) During the overhaul procedure, the three retract subassemblies must be repaired before returning the brake to service.

SAFETY WARNING:  DO NOT ATTEMPT TO REMOVE CORROSION FROM THE SPACER (130) OR SLEEVE RETAINER (125) BY SANDING. THESE PARTS HAVE BEEN CADMIUM PLATED, AND INHALATION OF CADMIUM DUST CAN BE HAZARDOUS TO YOUR HEALTH.

- (2) Discard any severely corroded parts.
- (3) If the friction sleeve (120) can be moved on the stud (115) by a force of thirty pounds or less, replace the friction sleeve.
- (4) Refer to Figure 6006. If the friction sleeve (120) is not flush with the sleeve retainer (125), use a vice or an arbor press to install the friction sleeve flush into the sleeve retainer. Follow up by using the tools shown in Figure 6006 to reset the spacer (130), friction sleeve (120), and sleeve retainer (125) onto the stud (115) to dimension shown. Return retract subassembly to service.

NOTE: Stud will be flush with the spacer tool when the reset dimension is achieved.



Retract Reset Requirements
Figure 6006

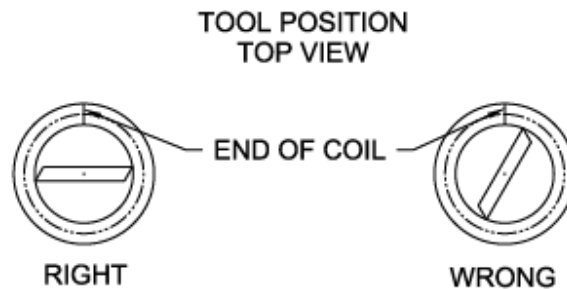
REPAIR

I. Insert Repair (IPL, 1-155)

Do not replace inserts unless damaged. Replace damaged inserts in accordance to the following procedure.

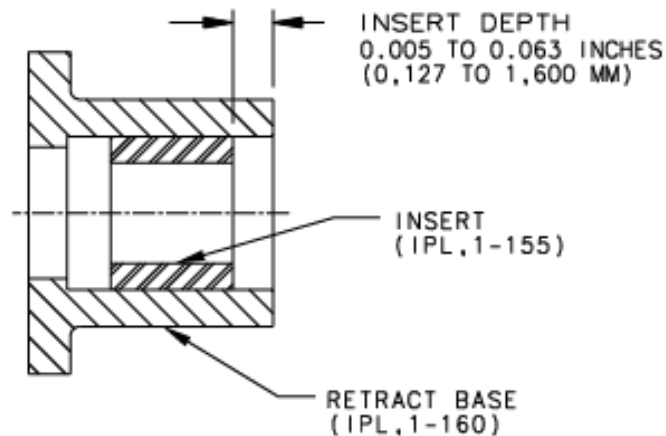
SAFETY WARNING:  **USE PROTECTIVE GOGGLES OR GLASSES WHEN STRIKING ANY TOOL.**

- (1) Refer to Figure 6007 and remove damaged inserts by applying the HeliCoil extracting tool to the insert, striking the head of the tool a light blow and turning it counterclockwise, maintaining steady downward pressure



HeliCoil Extracting Tool
Figure 6007

- (2) Refer to Figure 6008 and install inserts into retract base (160) to depth shown. Break off tang.



HeliCoil Installation
Figure 6008

ASSEMBLY**1. General**

Use these procedures to assemble the brake assembly.

A. Assembly Equipment and Materials. Refer to Table 7001.

NOTE: Unless otherwise stated, equivalent substitutes may be used for items listed.

Table 7001
Assembly Equipment and Materials List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Fluid, Hydraulic	MIL-H-83282 ¹ or MIL-PRF-83282 ¹	Commercial Source
51094 Moly-50	Anti-Seize Compound	MIL-PRF-83483 or MIL-T- 83483 ²	FEL-PRO Chemical
N/A	Socket Set	Hex Head, Inch	Commercial Source
N/A	Wrench Set	Hex Head, Open End, Inch	Commercial Source
N/A	Ratchet	1/2 in. Square Drive	Commercial Source
N/A	Torque Wrench	0 to 100 in-lb capacity (0 to 11 N-m)	Commercial Source
N/A	Internal Snap Ring Pliers	N/A	Commercial Source
N/A	Wrench	5/32 in. Hex Head	Commercial Source

¹ **CAUTION:** THE USE OF HYDRAULIC FLUIDS IS LIMITED TO THOSE SPECIFIED IN TABLE 7001. THE HYDRAULIC FLUIDS SPECIFIED ARE COMPATIBLE AND INTERCHANGEABLE.

² **CAUTION:** DO NOT MIX ANTI-SEIZE COMPOUNDS. THIS CAN RESULT IN IMPROPER TORQUE SETTINGS AND COULD RESULT IN FAILURE OF THE BOLT. THE USE OF ANTI-SEIZE COMPOUND IS LIMITED TO THAT SPECIFIED IN TABLE 7001.

2. Assembly Procedures**A. Assemble Main Brake Assembly** (Refer to IPL, Figure 1)

- (1) Place the brake cylinder (35) on a clean, flat work surface with piston bores facing up.
- (2) Lubricate O-rings (45) with hydraulic fluid, and install in the inner most groove of the cylinder piston bore.
- (3) Lubricate wipers (50) with hydraulic fluid, and install in the outer most groove of the cylinder piston bore.

ASSEMBLY

CAUTION: WHEN INSTALLING THE PISTONS (40) INTO THE BRAKE CYLINDER (35), BE CAREFUL NOT TO MISALIGN OR COCK THE PISTON. THIS MAY CAUSE DAMAGE TO INNER SURFACES WHICH IS CAUSE FOR REPAIR OR REPLACEMENT OF THE CYLINDER (35).

- (4) With the tapped hole in piston (40) facing upward, press each piston into the brake cylinder (35). Install a piston insulator (55) into the pocket of each piston.
- (5) Drop retract springs (135), into the three [3] retract bores of the cylinder (35).
- (6) Place the plain washer (140) on top of the springs and compress while inserting the snap ring (145) into each bore.
- (7) Place the brake built up to this point to the side.
- (8) Place the torque tube assembly (100) on a clean, flat work surface with wear pads facing up.
- (9) Install and align the following components onto the torque tube assembly maintaining the following sequence: the first rotor disc (80), the first stator disc assembly (85), the second rotor disc, the second stator disc assembly, and the third rotor disc.

NOTE: The tanged outer drive slots of the stator disc assembly should slide onto and engage the drive lugs of the torque tube assembly.

- (10) Place the built up stack to the side.
- (11) Slide the three [3] retract base assemblies (150) into their pockets on the pressure plate assembly (60).
- (12) Attach the pressure plate assembly (60) to the brake per the following procedure:
 - (a) Place the pressure plate assembly with the wear pads facing up onto the built up brake cylinder.

NOTE: The retract base assemblies previously installed on the pressure plate assembly should align with the retract bores on the cylinder.

- (b) Prior to installing the retract subassembly (110), lubricate the threads on the stud (115) with anti-seize compound, per MIL-PRF-83483 or MIL-T-83483. Turn the unit over and install the retract subassembly (110) into the retract bore of the brake cylinder. Thread the stud (115) of the retract subassembly into the retract base assembly (150). With a 5/32-in. hex head wrench, torque to between 30 to 40 in-lb (3.39 to 4.52 N-m).

ASSEMBLY

- (13) Install the pressure plate assembly (60) onto the torque tube assembly (100).

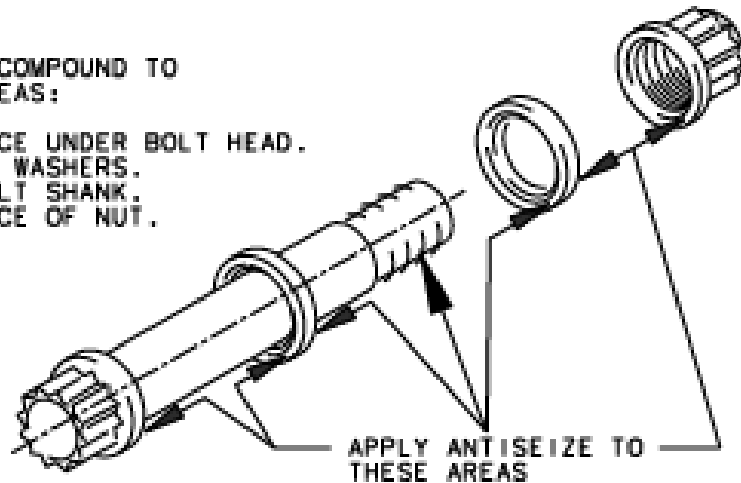
NOTE: The inner drive slots of the pressure plate assembly should slide onto and engage the drive keys of the torque tube assembly.

- (14) Prior to installing brake attachment hardware, lubricate bolt (5) and nut (15) threads and bearing surfaces of bolt heads, washers (10) and nuts with anti-seize compound, per MIL-PRF-83483 or MIL-T-83483. Refer to Figure 7001.
- (15) Support the brake and install the six bolts (5), with one washer (10) installed on each bolt, through the mounting holes oriented as shown (ref. IPL Figure 1 of CM30-244).
- (16) Install remaining washers (10), and nuts (15) onto the bolts (5). Torque in a criss-cross pattern to between 95 to 105 in-lb (10.73 to 11.86 N-m).

NOTE :

1. APPLY ANTISEIZE COMPOUND TO THE FOLLOWING AREAS:

- A. CONTACT SURFACE UNDER BOLT HEAD.
- B. BOTH FACES OF WASHERS.
- C. THREADS ON BOLT SHANK.
- D. CONTACT SURFACE OF NUT.



Lubricating Attachment and Mounting Hardware
Figure 7001

ASSEMBLY

- (17) Install and align as required inlet fitting (190).
- (18) Install nut (195) onto fitting (190) and torque nut to 65 to 70 in-lb (7.34 to 7.91 N-m).
- (19) Coat O-ring (165) with hydraulic fluid and install on bleeder seat (170).
- (20) Install bleeder seat (170) into brake cylinder (35) and torque to 65 to 70 in-lb (7.34 to 7.91 N-m).
- (21) Install bleeder (175) into bleeder seat (170) and after testing, torque to 35 to 38 in-lb (4.0 to 4.3 N-m).

CAUTION: TORQUEING OF BLEEDER SCREW (185) IN EXCESS OF 12 IN-LB (1.36 N-M) MAY DAMAGE THE BLEEDER (175).

- (22) Install flat washer (180) and bleeder screw (185) into bleeder (175) and tighten snug to prevent leakage.

B. Mount brake assembly onto aircraft.

- (1) Install the brake assembly onto the axle.
- (2) Prior to installing brake strut mounting hardware, lubricate bolt (20) and nut (30) threads and bearing surfaces of bolt heads, washers (25) and nuts with anti-seize compound, per MIL-PRF-83483 or MIL-T-83483. Refer to Figure 7001.

CAUTION: WASHERS (25) ARE SINGLE COUNTERSUNK. COUNTERSUNK SIDE OF WASHER MUST INTERFACE WITH BOLT HEAD.

- (3) Attach brake assembly to aircraft strut by installing the six 3/8-24 size bolts (20) with one washer (25) installed on each bolt, through the mounting holes oriented as shown (ref Aircraft Wheel and Brake, LLC Drawing 50-155). Install remaining washers (25) and nuts (30). Torque in a criss-cross pattern to between 350 to 360 in-lb (39.54 to 40.67 N-m).
- (4) Reconnect hydraulic pressure source; perform any additional post installation functions to complete aircraft readiness per aircraft maintenance manual; and bleed brakes per aircraft maintenance manual.
- (5) Test brake assembly per TESTING, paragraph E. Failure of the brake assembly to meet the acceptance parameters of TESTING, paragraph E, will be cause for rejection of the assembly. It is permissible to perform this test off-aircraft on an individual brake assembly with the use of a hydraulic test stand.

ASSEMBLY

C. Brake Lining Procedure

To provide optimum service life of the brake lining material, it is necessary to properly condition (glaze) the linings per the following procedure:

NOTE: If the brakes are used exclusively for low speed (below 25 knots ground speed) applications, then periodic conditioning is recommended to optimize service life.

- (1) Perform two (2) consecutive full stop braking applications (with flaps up and no reverse pitch of the propeller) at the following ground speeds per the following aircraft weights:
 - (a) For aircraft take-off weight up to 8700 lbs: 40-45 knots at one of the following:
 - 6.0 ft/sec² deceleration
 - 380-480 ft stop distance
 - 11.0-13.0 second stop time
 - (b) For aircraft take-off weight from 8701 to 9800 lbs: 37-42 knots at one of the following:
 - 6.0 ft/sec² deceleration
 - 330-420 ft stop distance
 - 10.0-12.0 second stop time
 - (c) For aircraft take-off weight over 9800 lbs: 33-40 knots at one of the following:
 - 6.0 ft/sec² deceleration
 - 230-380 ft stop distance
 - 9.0-11.0 second stop time

NOTE: Do not allow or permit the brake to cool substantially between stops.

- (2) After, back to back conditioning stops, allow the brakes to cool for ten to fifteen minutes.
- (3) Apply the brakes and check for restraint at high static throttle.

NOTE: This step is to be done **ONLY** after steps 1 and 2 are completed and not in and of itself. New brakes may pass this step right from the onset, however, conditioning is still mandatory to ensure optimum service life.

- (a) If the brakes hold, the conditioning is complete.
- (b) If brakes cannot hold aircraft during static run-up, allow brakes to cool completely and repeat steps (1) through (3).

FITS AND CLEARANCES

1. General

A. Assembly Wear Limits (Refer to IPL, Figure 1)

Table 8001 gives the in-service wear limits for the component parts of the brake assembly. You must replace all components that are not within specified limits. Refer to the appropriate paragraphs in INSPECTION / CHECK for more data.

Table 8001
Assembly In-Service Wear Limits

PART NAME (IPL, ITEM NO.)	FIG AND DIMENSION REFERENCE	WORN AREA DESCRIPTION	WORN DIMENSION inches (mm)
Torque Tube Assy (100)	5002, A	Wear Pad Thickness (including torque tube)	.510 inches minimum (12.95 mm)
	5002, B	Drive Key Width	.302 inches minimum (7.67 mm)
Stator Disc Assy (85)	5003, A	Wear Pad Thickness	.377 inches minimum (9.58 mm)
	5003, B	Engagement Slot Width	.364 inches maximum (9.24 mm)
Pressure Plate Assy (60)	5004, A	Wear Pad Thickness (including pressure plate)	.287 inches minimum (7.29 mm)
	5004, B	Engagement Slot Width	.364 inches maximum (9.24 mm)
Rotor Disc (80)	5005, A	Drive Tang Slot Width	.687 inches maximum (17.40 mm)
	5005, B	Lining Material Thickness (single side)	.007 inches minimum (0.17 mm)
	5005, C	Rotor Thickness (overall)	.201 inches minimum (5.11 mm)

FITS AND CLEARANCES**B. Assembly Torque Values** (Refer to IPL, Figure 1)

Table 8002 provides the assembly torque values for the component parts of the brake assembly.

Table 8002
Assembly Hardware Torque Values

PART NAME (IPL, ITEM NO.)	TORQUE LIMITS in-lb or ft-lb (N-m)
Retract Subassembly (110)	30 to 40 in-lb (3.39 to 4.52 N-m) use MIL-PRF-83483 or MIL-T-83483 anti-seize on threads
Bolts (5) 1/4-28 size	95 to 105 in-lb (10.73-11.86 N-m) use MIL-PRF-83483 or MIL-T-83483 anti-seize on threads
Bolts (20) 3/8-24 size	350 to 360 in-lb (39.5 – 40.7 N-m) use MIL-PRF-83483 or MIL-T-83483 anti-seize on threads
Nut (195)	65 to 70 in-lb dry torque (7.34 to 7.91 N-m)
Bleeder Seat (170)	65 to 70 in-lb dry torque (7.34 to 7.91 N-m)
Bleeder (175)	35 to 38 in-lb dry torque (4.0 to 4.3 N-m)
Bleeder Screw (185)	Tighten snug dry torque not to exceed 12 in-lb (1.36 N-m)

SPECIAL TOOLS, FIXTURES, EQUIPMENT AND CONSUMABLES

1. General

This section identifies the special tools, fixtures, equipment and consumables necessary to repair, maintain, and do tests on the main brake assembly. Special tools necessary to perform the requirements of this manual are shown in Table 9001. The materials (consumables list) necessary are shown in Table 9002.

NOTE: Equivalent substitutes may be used for items listed.

A. Special Tools, Fixtures and Equipment

Table 9001 (Sheet 1 of 2)
Special Tools, Fixtures and Equipment

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Powered Hydraulic Test Stand	0 to 1000 psig capacity ± 40 psi gage increment (0 to 68.95 bar) ± 2.76 bar gage increment	Commercial Source
N/A	Pressure Regulator	0 to 1000 psig (0 to 68.95 bar)	Commercial Source
N/A	Pressure Gage	0 to 1000 psig (0 to 68.95 bar)	Commercial Source
N/A	Tubing	Ø0.156 in. (Ø3.96 mm)	Commercial Source
N/A	Hydraulic Hose	1000 psig minimum (68.95 bar)	Commercial Source
N/A	Socket Set	Hex Head, Inch	Commercial Source
N/A	Wrench Set	Hex Head, Open End, Inch	Commercial Source
N/A	Ratchet	1/2 in. Square Drive	Commercial Source
199-18	Preformed Packing Extraction Tool Set	N/A	Aircraft Wheel and Brake, LLC Avon, OH 44011 U.S.A. www.kaman.com/cleveland
N/A	Internal Snap Ring Pliers	N/A	Commercial Source
N/A	Wrench	5/32 in. Hex Head	Commercial Source
N/A	Inspection Surface Plate	N/A	Commercial Source
N/A	Magnifier	X10 Magnification	Commercial Source

SPECIAL TOOLS, FIXTURES, EQUIPMENT AND CONSUMABLES

Table 9001 (Sheet 2 of 2)
Special Tools, Fixtures and Equipment

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
Model 305	Rivet Machine	N/A	Milford Fastening Systems
57-082	Hopper Barrel	N/A	Milford Fastening Systems
AR-4015-9	Rivet Guide	N/A	Milford Fastening Systems
313-720-9	Slide Parts	N/A	Milford Fastening Systems
63-J-1566-A	Jaws	N/A	Milford Fastening Systems
563-DS-44	Driver	N/A	Milford Fastening Systems
824-1K-7	Roll Set	Modified Per Figure 9006	Milford Fastening Systems
N/A	Drill Bit	Ø0.187 in. (Ø5 mm)	Commercial Source
N/A	Drift Punch	Ø0.187 in. (Ø5 mm)	Commercial Source
N/A	Hand File	Flat	Commercial Source
N/A	Oven	1500°F capacity (815°C)	Commercial Source
N/A	Plastic Media Stripping Equipment	N/A	Commercial Source
N/A	Paint Application Equipment	N/A	Commercial Source
N/A	Torque Wrench	0 to 100 in-lb capacity (0 to 11 N-m)	Commercial Source
N/A	Vise Jaws	Soft Brass or Hard Rubber	Commercial Source
N/A	Draw Flattening Fixture	Per Figure 9001 SPECIAL TOOLS.....	Outside Manufacture
N/A	Cold Straightening Fixture	Per Figure 9002 and 9003 SPECIAL TOOLS...	Outside Manufacture
N/A	Spacer Tool – Retract Subassembly	Per Figure 9004 SPECIAL TOOLS...	Outside Manufacture
N/A	Support – Retract Subassembly	Per Figure 9005 SPECIAL TOOLS...	Outside Manufacture
1227-6	Heli-Coil Extracting Tool	MIL-T-21309	Black & Decker Company
7552-3	Heli-Coil Installation Tool	MIL-T-21309	Black & Decker Company
3695-3	Heli-Coil Tang Removal Tool	MIL-T-21309	Black & Decker Company

SPECIAL TOOLS, FIXTURES, EQUIPMENT AND CONSUMABLES

B. Consumables List

Table 9002 (Sheet 1 of 2)
Consumables List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
N/A	Fluid, Hydraulic	MIL-H-83282 or MIL-PRF-83282	Commercial Source
N/A	Hydraulic Filter	10 micron	Commercial Source
N/A	Air Supply, Compressed Dry Filtered	30 psig maximum (2.07 bar)	N/A
N/A	Clean Cloths	N/A	Commercial Source
N/A	Brushes	Non-abrasive, Non-metallic bristle	Commercial Source
N/A	Solvent, Stoddard Type 1	P-D-680	Commercial Source
N/A	Isopropyl Alcohol	N/A	Commercial Source
N/A	Magnetic Particle Inspection Kit	ASTM E1444	Commercial Source
N/A	Fluorescent Penetrant Inspection Kit	MIL-STD-6866 or ASTM E1417, Type 1, Method A, Sensitivity Level 2	Commercial Source
N/A	Aluminum Oxide Cloth	400 Grit or Finer Wet or Dry	Commercial Source
N/A	Plastic Media Type V (Acrylic)	MIL-P-85891	U.S. Technology Corp.
N/A	Corrosion Preventative Alodine 1200 or Equiv.	MIL-C-5541, Class 1A or MIL-DTL-5541, Type I or Type II, Class 1A	Commercial Source
44-GN-36 Components A and B	Primer Coating	MIL-PRF-85582C Type I, Class C2	Deft Chemical Coatings
44-GN-24 Components A and B	Primer Coating Alternate Product	MIL-P-85582B Type I, Class C2	Deft Chemical Coatings

SPECIAL TOOLS, FIXTURES, EQUIPMENT AND CONSUMABLES

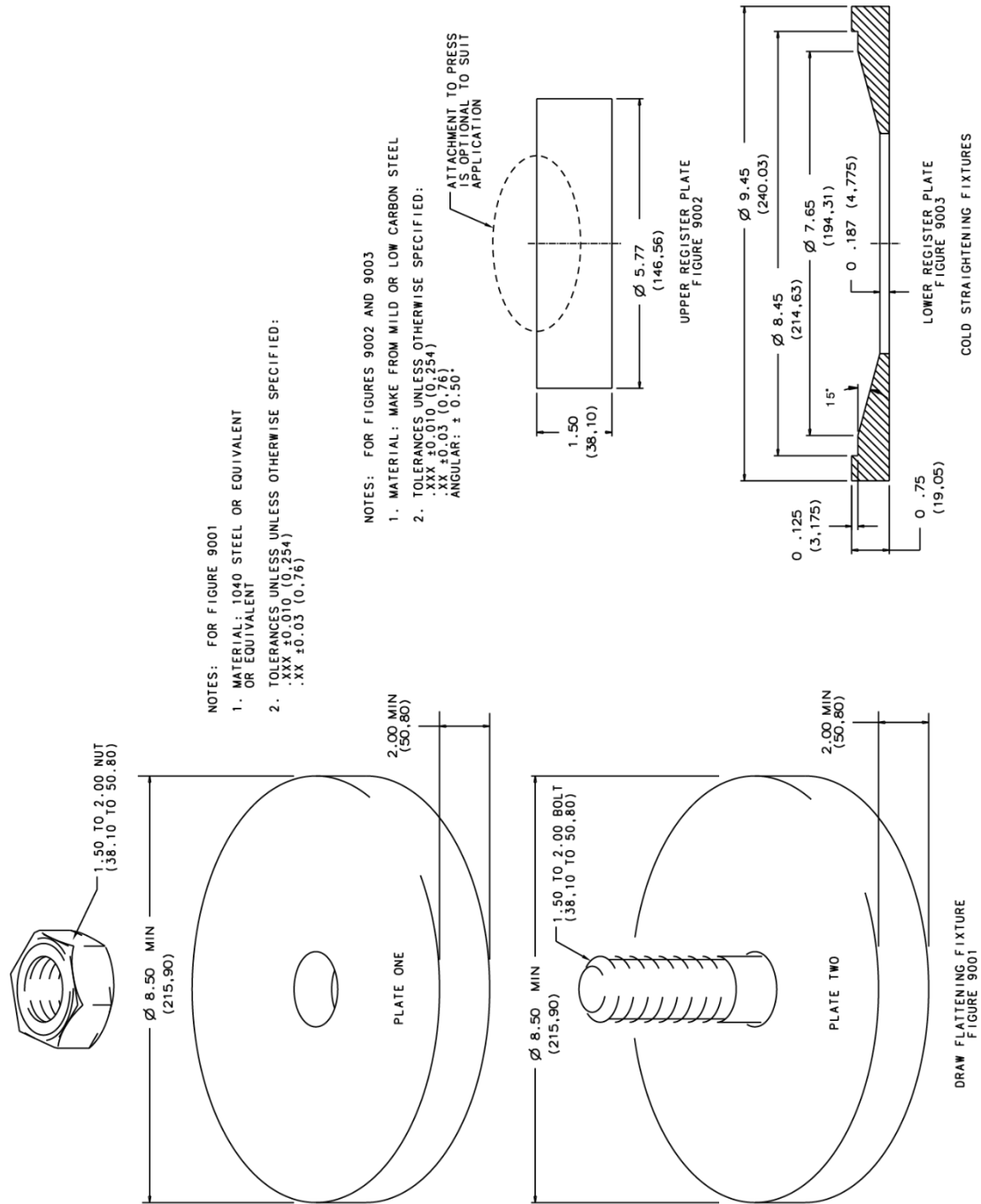
Table 9002 (Sheet 2 of 2)
Consumables List

PART NUMBER	NOMENCLATURE	SPECIFICATION	SOURCE OF SUPPLY
03-W-127A Components A and B	Finish Coating	MIL-C-85285B, Type I No. 17925 (FED-STD-595) Untinted White	Deft Chemical Coatings
Various for Application Type	Galvanizing Compound	MIL-P-26915 Type I, Class A	ZRC Products Company

C. List of Manufacturers and Vendors

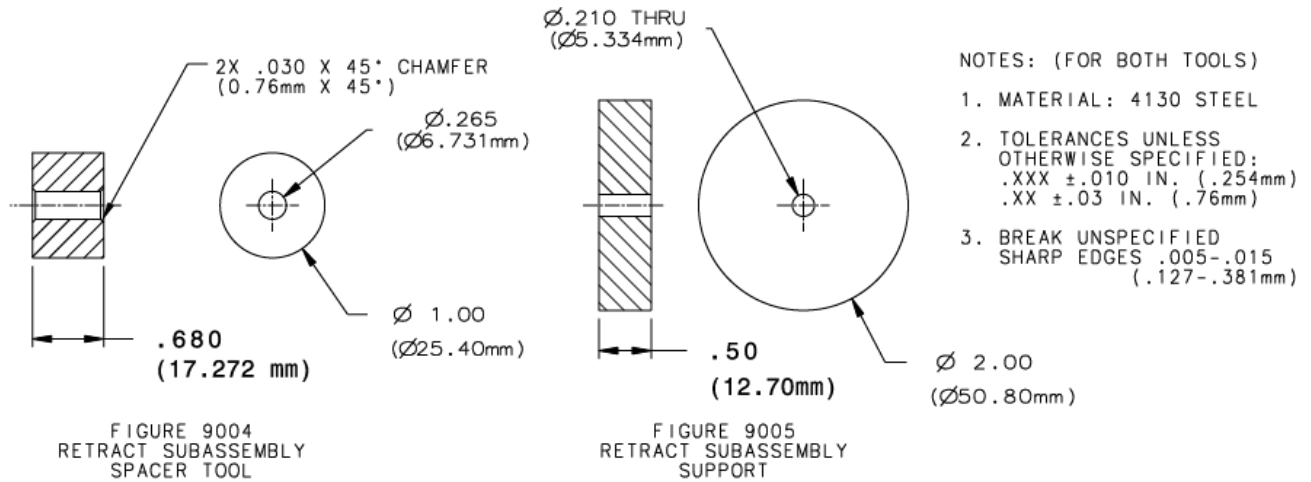
<u>Name</u>	<u>Internet Address</u>	<u>Address</u>
Aircraft Wheel and Brake, LLC	www.kaman.com/cleveland	1160 Center Rd Avon, OH 44011 U.S.A.
Milford Fastening Systems	www.milfordrivet.com	857 Bridgeport Ave. Milford, CT 06460 U.S.A.
Alternate Riveter: National Rivet & Mfg Co. Note: contact National for rivet tooling requirements	www.nationalrivet.com	21 E. Jefferson St. Waupun, WI 53963 U.S.A.
U.S. Technology Corporation		220-T 7 th Street S.E. Canton, OH 44702 U.S.A.
Deft Chemical Coatings	www.deftfinishes.com	17451 Von Karman Ave. Irvine, CA 92714 U.S.A.
ZRC Products Company		23-T Newport Ave. Quincy, MA 02171-9975 U.S.A.
Black & Decker Company Emhart Industrial Division (Heli-Coil)	www.emhart.com	Shelter Rock Lane Danbury, CT 06810 U.S.A.

SPECIAL TOOLS, FIXTURES, EQUIPMENT AND CONSUMABLES

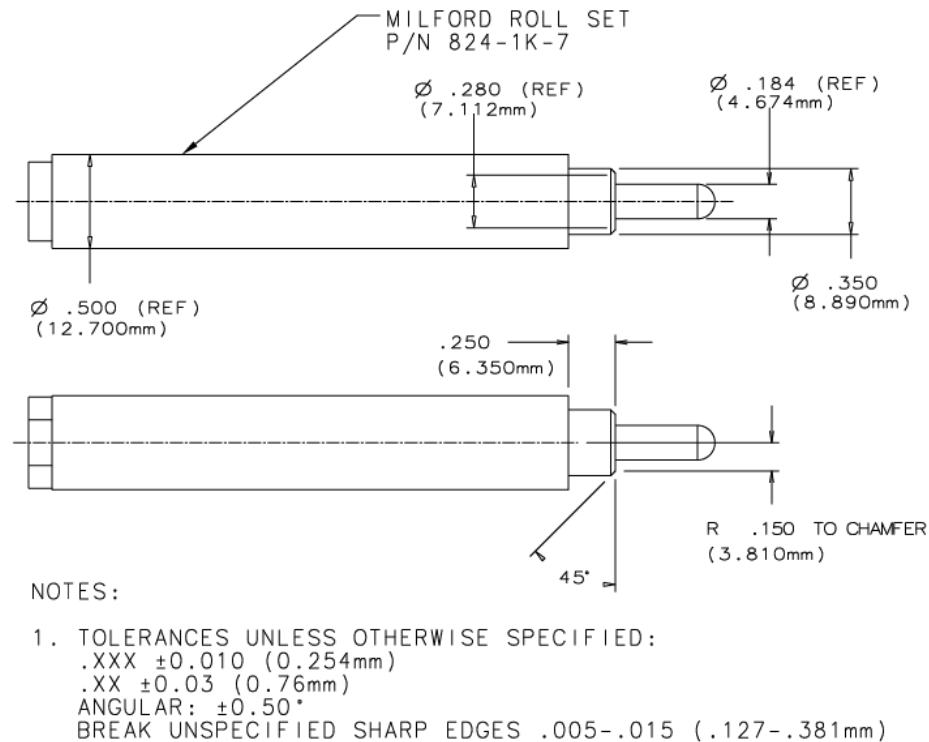


Draw Flattening and Cold Straightening Fixtures
Figures 9001 thru 9003

SPECIAL TOOLS, FIXTURES, EQUIPMENT AND CONSUMABLES



Retract Subassembly Tools
Figures 9004 and 9005



Milford Rollset Modification
Figure 9006

ILLUSTRATED PARTS LIST

1. General

The illustrated parts list describes and illustrates the detail parts of the Main Brake Assembly.

All parts of the equipment are listed, except parts which lose their identities by being permanently fastened to other parts of assemblies and are not subject to disassembly.

A. Explanation of Columns

- (1) Figure/Item column: The figure and item numbers key the parts breakdown list to the applicable illustration. The first number represents the figure number of the illustration. The item numbers are arranged in sequence and generally reflect the order of disassembly.
- (2) Part Number column: This column contains the assigned Aircraft Wheel and Brake, LLC part number for the individual item.
- (3) Airline Stock Number column: This column contains the Airline Stock Number when applicable.
- (4) Nomenclature column: This column identifies the parts being listed by noun name followed by modifiers when applicable. The indenture system used in the parts list shows the relationship of the parts to their subassemblies and to the assembly:

1 2 3 4
Assembly
Attaching Parts for Assembly
 Detailed Parts for Assembly
 Subassembly
 Attaching Parts for Subassembly
 Detailed Parts for Subassembly

- (5) Effectivity column: An effectivity code shows the difference in parts within various configurations. The effectivity code is used for more than one configuration of the basic part number. Effectivity codes only apply to the figure in which they are used.
- (6) Units Per Assembly column: This column indicates the total number required per assembly or per subassembly as applicable. These abbreviations may appear in the Units Per Assembly column:

AR..... As Required (for bulk items)	RFReference
NP..... Item is Nonprocurable	(item listed for reference only)
(listed for reference only)	

ILLUSTRATED PARTS LIST

B. Part Numbering System

Aircraft Wheel and Brake, LLC has assigned a part number to all purchased and government standard off-the-shelf parts. They are defined and used as follows:

When a purchased part is listed, the assigned Aircraft Wheel and Brake, LLC part number shall be used in the part number column. If required by contract or if the original manufacturer of a purchased part has FAA manufacturing approval then; the original manufacturer's part number along with the manufacturer's federal supply code will be shown in parentheses following the part nomenclature. The federal supply code will be preceded by the letter "V".

Unless otherwise specified by contract, all government standard off-the-shelf parts (such as MS, AN, NAS, etc.) will be identified by the assigned Aircraft Wheel and Brake, LLC part number which will be used in the part number column.

C. Parts Replacement Data

The interchangeability relationship between parts is identified in the Nomenclature column of the parts list. A list of the terms used to show interchangeability and their definition is as follows:

<u>Term</u>	<u>Abbreviation</u>	<u>Definition</u>
Optional	OPT	This part is optional to and interchangeable with other parts in the same item number variant group or other item number if designated.
Superseded by	SUPSD BY	The part in the part number column is replaced by and is not interchangeable with the item number shown in the notation.
Supersedes	SUPSDS	The part in the part number column replaces and is not interchangeable with the item number shown in the notation.
Replaced by	REPLD BY	The part in the part number column is replaced by and interchangeable with the item number shown in the notation.
Replaces	REPLS	The part in the part number column replaces and is interchangeable with the item number shown in the notation.
Vendor	V	Federal Supply Code for vendors.

ILLUSTRATED PARTS LIST

D. Items Not Illustrated

Items not illustrated are indicated by a dash (-) ahead of the item number in the Figure/Item number column.

E. Alpha Variant Item Numbers

Alpha variants A through Z (except I and O) are assigned to existing numbers when necessary to show:

- (1) Added items
- (2) Modification or configuration differences
- (3) Optional parts

Alpha variant item numbers are not shown on the exploded view when the appearance and location of the alpha variant item is the same as the basic item.

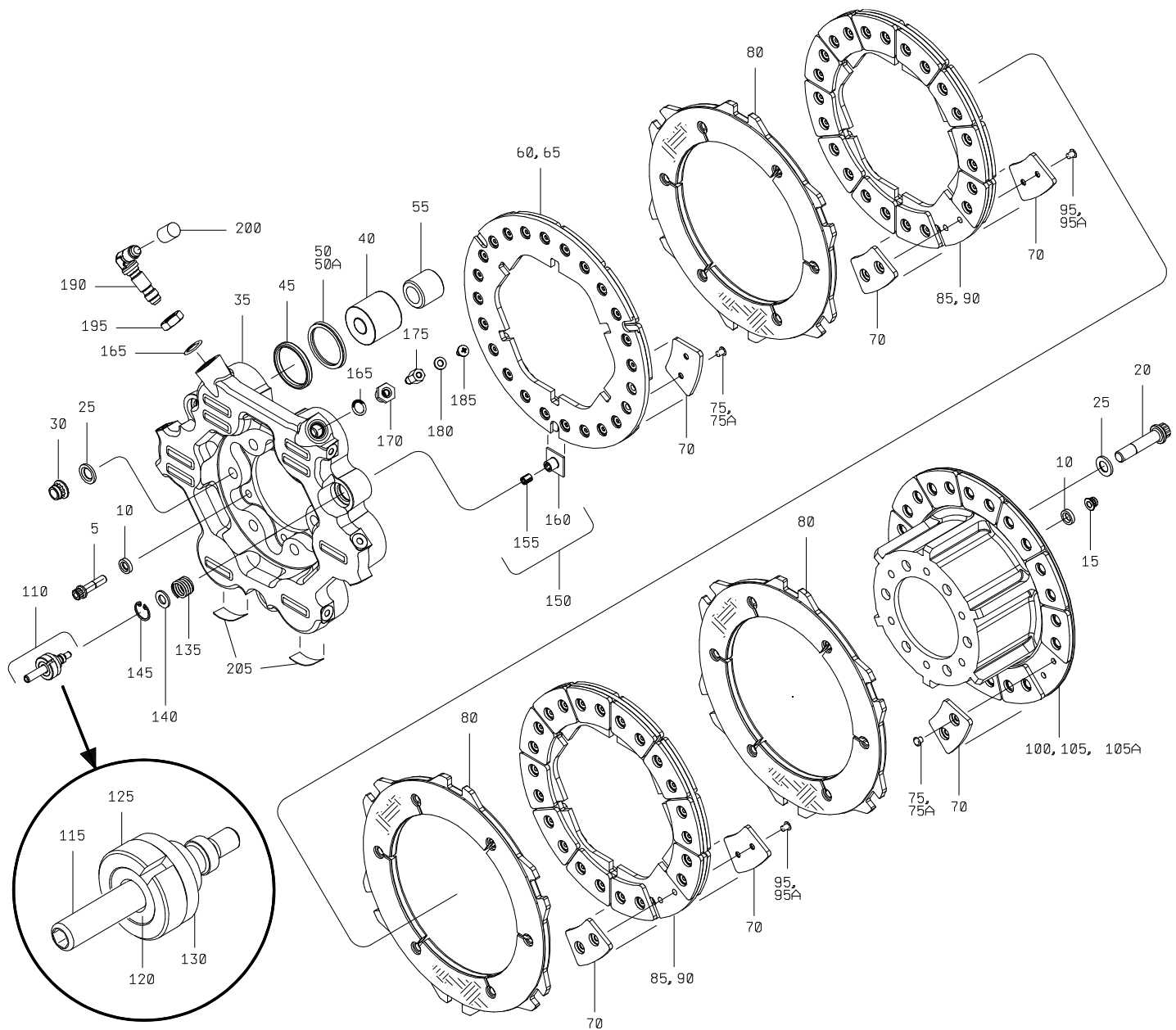
2. Optional Vendor Index

Not applicable

3. Federal Supply Code for Manufacturers

Not applicable.

ILLUSTRATED PARTS LIST



**Main Brake Assembly
IPL Figure 1**

ILLUSTRATED PARTS LIST

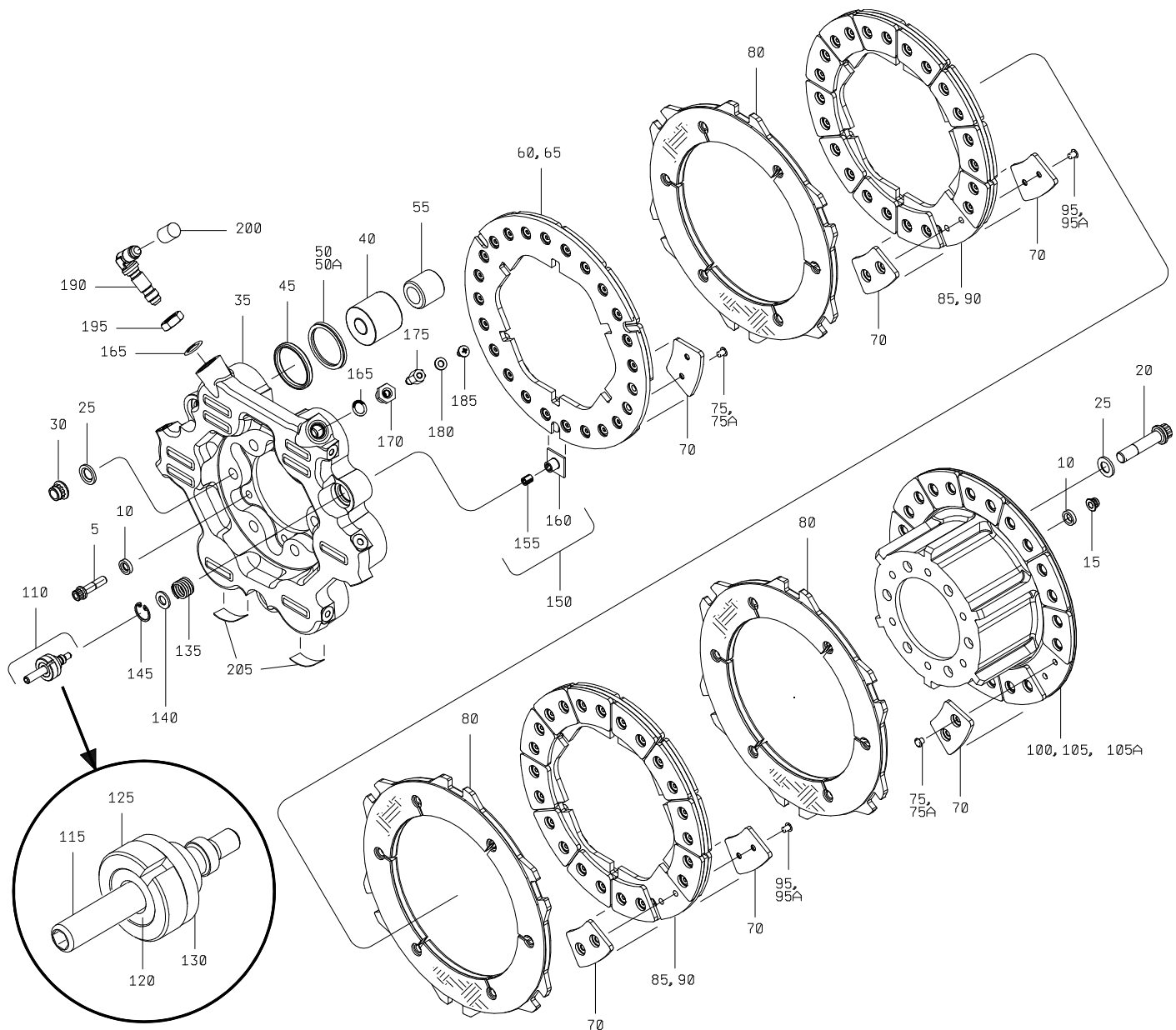
4. Detailed Parts List – Main Brake Assembly (sheet 1 of 2)

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFF CODE	UNITS PER ASSY.	199-575 (2) (3) (4)	199-575A (2) (3) (4)
1 - 1	30-244		MAIN BRAKE ASSEMBLY		RF		
			BRAKE ATTACHING PARTS				
5	103-19100		BOLT, EXTERNAL WRENCHING (MS21250-04008)		6		
10	095-14600		WASHER, DOUBLE C'SUNK (MS14155-4)		12		
15	094-17700		NUT, SELF-LOCKING (NAS1804-4N)		6		

			STRUT MOUNTING PARTS				
20	103-26400		BOLT, EXTERNAL WRENCHING (MS21250-06018)		6		
25	095-03100		WASHER, SINGLE C'SUNK (MS20002C6)		12		
30	094-15800		NUT, SELF-LOCKING (NAS1804-6N)		6		

35	061-17000		. CYLINDER		1		
40	062-11100		. PISTON		6		
55	088-03800		. INSULATOR		6		
45	101-02500		. O-RING (MS28775-220)		6	6	6
50	107-02700		. WIPER – For extreme temperatures or dusty conditions		6	6	
50A	107-03700		WIPER – For reduced drag and ease of installation (OPT – ALTERNATE FOR ITEM 50)		6		6
60	073-10100		. ASSEMBLY, PLATE, PRESSURE		1		
65	063-08400		. . PLATE, PRESSURE		1		
70	109-03000		. . PAD, WEAR		12	12	12
75	105-08700		. . RIVET, SUPSD BY Item 75A		NP		
75A	105-08701		. . RIVET, SUPSDS Item 75		24	(3)	(3)
80	159-07400		. DISC, ROTOR		3	3	3
85	242-01800		. ASSEMBLY, DISC, STATOR		2		
90	232-03500		. . DISC, STATOR		1		
70	109-03000		. . PAD, WEAR		24	48	48
95	105-02400		. . RIVET, SUPSD BY Item 95A		NP		
95A	105-02401		. . RIVET, SUPSDS Item 95		24	(3)	(3)

ILLUSTRATED PARTS LIST



**Main Brake Assembly
IPL Figure 1**

ILLUSTRATED PARTS LIST

4. Detailed Parts List – Main Brake Assembly (sheet 2 of 2)

FIG. ITEM	PART NUMBER	AIRLINE STOCK NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	EFF CODE	UNITS PER ASSY.	199-575 (2) (3) (4)	199-575A (2) (3) (4)
100	075-20600		. ASSEMBLY, TUBE, TORQUE		1		
105	065-20400		. . TUBE, TORQUE SUPSD BY Item 105A		NP		
105A	065-24000		. . TUBE, TORQUE SUPSDS Item 105		1		
70	109-03000		. . PAD, WEAR		12	12	12
75	105-08700		. . RIVET, SUPSD BY Item 75A		NP		
75A	105-08701		. . RIVET, SUPSDS Item 75		24	(3)	(3)
110	111-11500		. SUBASSEMBLY, RETRACT		3		
115	139-33700		. . STUD		3		
120	139-12000		. . SLEEVE, FRICTION		3		
125	139-11900		. . RETAINER, SLEEVE		3		
130	067-15000		. . SPACER, RETRACT		3		
135	082-14300		. SPRING		3		
140	095-13600		. WASHER, PLAIN (MS20002-5)		3		
145	155-07800		. RING, RETAINING		3		
150	111-11400		. ASSEMBLY, BASE, RETRACT		3		
155	230-05500 ⁽¹⁾		. . INSERT (MS21209F1-15L)		3		
160	139-33800		. . BASE, RETRACT		3		
165	101-00700		. O-RING (MS28775-012)		2	2	2
170	081-00200		. SEAT, BLEEDER		1		
175	079-00900		. BLEEDER		1		
180	095-01100		. WASHER, FLAT		1	1	1
185	102-32700		. SCREW, BLEEDER		1		
190	104-09600		. FITTING, INLET (AS1038J0404)		1		
195	094-05400		. NUT, FITTING (AN924-4J)		1		
200	215-00800		. CAP, SHIPPING		1		
205	166-21600		. NAMEPLATE		1		
---	166-28300		. NAMEPLATE (For overhaul kit)		---	1	1

(1) Do not remove unless damaged.

(2) Each overhaul kit contains the minimum recommended replacement parts for one 30-244 brake assembly. Additional replacement parts may be necessitated by the results of the inspection requirements in the manual.

(3) Each brake assembly uses forty-eight P/N 105-02401 and forty-eight P/N 105-08701 rivets. Each overhaul kit provides fifty-five P/N 105-02401 and fifty-five P/N 105-08701 rivets thereby allowing for rivet attrition during assembly.

(4) 199-575 contains the 107-02700 wiper. 199-575A contains the 107-03700 wiper.

STORAGE

1. Procedures

A. Storage

Brake assemblies which are not to be immediately installed on the aircraft must be properly stored. Acceptable storage conditions are listed below.

CAUTION: BRAKES STORED IN CARDBOARD BOXES, WHICH HAVE BECOME WET OR HAVE BEEN EXPOSED TO HIGH HUMIDITY, CAN BECOME CORRODED.

CAUTION: STORAGE LIFE OF RUBBER COMPONENTS ASSEMBLED IN BRAKES OR STORED AS SPARE PARTS IS 4 YEARS FROM CURE DATE. RUBBER COMPONENTS KEPT LONGER THAN 4 YEARS ARE NOT SERVICEABLE AND MUST BE REPLACED DUE TO AGE AND ATMOSPHERIC DETERIORATION. STORAGE LIFE MAY BE SHORTENED BY EXPOSURE TO SUNLIGHT, EXTREME TEMPERATURES, HUMIDITY, OZONE, CONTAMINATION OF FLUIDS, SEVERE OPERATING CONDITIONS, ETC.

- (1) Drain oil from brake assembly and install the shipping cap (IPL,1-200) on brake inlet fitting (IPL, 1-190) and tighten snug to prevent contaminants from entering.
- (2) Normal storage environmental temperatures of 10° to 25°C (50° to 77°F) are desired. If this temperature range cannot be maintained, temperatures as high as 51.7°C (125°F) and as low as -28.9°C (-20°F) can be tolerated for shorter periods. Total time above 37.8°C (100°F) shall not exceed three months.

B. Preparation for Shipment

- (1) Install the shipping cap (IPL, 1-200) on brake inlet fitting (IPL, 1-190) and tighten snug to prevent contaminants from entering.
- (2) Wipe all excess oil and foreign material from exposed surfaces of the brake assembly with a clean shop towel.