



SCHWEIZER SERVICE INFORMATION NOTICE

NOTICE NO. N-181
DATE 9 APRIL 1982
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MANDATORY

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SUBJECT: INSPECTION, REPLACEMENT AND NEW TORQUE REQUIREMENT -
PN 269A5104 MAIN TRANSMISSION RING GEAR, PN 269A5194
RING GEAR CARRIER ASSEMBLY AND ATTACH HARDWARE

MODELS AFFECTED:

All Model 269A, TH-55A, 269A-1 and 269B Helicopters equipped with
PN 269A5175-9, -13 or -17 Main Transmission Assembly *

Model 269C Helicopter Serial No. 0001 through 1074 equipped with
PN 269A5175-7, -11 or -15 Main Transmission Assembly *

All PN 269A5175-7, -9, -11, -13, -15 and -17 Main Transmission
Assemblies in Spares Inventory *

*Above Main Transmission Assemblies identified with letter "W"
below and adjacent to Serial Number on transmission ID plate have
complied with this Notice.

TIME OF COMPLIANCE:

Shall be accomplished within next 25 hours of helicopter operation, if
blackening of main transmission oil is noted at daily check of oil level;
otherwise shall be accomplished within next 100 hours of helicopter
operation, or at next disassembly and/or overhaul of the above affected
main transmission assemblies, whichever is sooner.

Shall be accomplished prior to installation of above affected spares main
transmission assemblies on helicopter.

PREFACE:

The information given in this Service Information Notice lists a procedure
for a one-time inspection of the attach hardware securing the subject ring
gear and ring gear carrier assemblies. Disassembly for inspection for
possible fretting and cracking at the ring gear/carrier interface is
required. Rework procedures and criteria for removal of fretting and
cracks are included.

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Instructions are also provided for replacing existing washers under the ring gear bolt heads with new MS9320-12 flat washers, and for retorquing the attach bolts to 365 to 390 inch-pounds at reassembly of the ring gear and carrier.

It is to be noted that the above affected PN 269A5175 main transmission configurations identified with the letter "W" adjacent to Serial Number on the transmission ID plate are NOT affected by this Notice.

REFERENCE

269 Series - Basic HMI, Reissued 1 April 1980
269 Series - HMI Appendix B, Reissued 1 April 1980
269 Series - HMI Appendix C, Part I, Component Overhaul Manual,
Reissued 15 December 1981

PARTS LIST

<u>Nomenclature</u>	<u>Part Number</u>	<u>Qty</u>	<u>Mfr</u>
Washer	MS9320-12	14	Commercial
Lockwasher	MS20995N32	AR	Commercial
**Bolt	NAS1306-5H	AR	Commercial
**Bolt	NAS1306-4H	AR	Commercial

**As Required

TOOLS AND EQUIPMENT

Dial indicator

Torque wrench - 0 to 500 inch-pounds

Machine lathe with soft (aluminum) chuck

MATERIALS

Abrasive paper silicone carbide	320 to 400 grade	P-P-101	Commercial
Emery cloth	100 grit or finer		Commercial
India stone			Commercial
Chemical treatment for aluminum alloy	MIL-C-5541	Iridite 14-2 Al coat	Richardson Co. Allied-Kelite Products Div. Des Plaines, IL
Dye penetrant kit	"Spotcheck"		Peabody Testing-Magnaflex Los Angeles, CA
	or		
	"Tracer-Tech"		Uresco Inc. Downey, CA
	or		
	Equivalent kit conforming to MIL-I-25135		
Fluorescent penetrant	Uresco P-303A		Uresco, Inc. Downey, CA
	or		
	Turco WP167		Turco Products Wilmington, CA
	or		
	Equivalent kit conforming to MIL-I-25135		

PROCEDURE

CAUTION

When removing and disassembling main rotor transmission assembly, comply with precautions and instructions in Basic HMI (Section 10) and HMI Appendix C (Part 1), including marking and retaining original parts for reassembly.

NOTE

PN 269A5175 main transmissions identified with letter "W" adjacent to Serial No. on transmission plate are NOT affected by this Notice. (See Models Affected, Page 1 of this Notice.)

- a. Remove installed main transmission assembly (Section 19, Basic HMI).
- b. Remove exterior hardware, oil pump assembly, and oil pump drive retainer assembly from main transmission (Part 1, HMI Appendix C).
- c. Separate main transmission upper and lower housings, and remove pinion shaft and bearing assembly.
- d. Disassemble ring gear and carrier assembly, per Part 1 of HMI Appendix C.
- e. Clean and inspect PN 269A5104 ring gear per HMI Appendix C inspection criteria; pay particular attention to ring gear mounting surface for evidence of fretting or pitting.
 1. Any aluminum adhering to surface, or minor fretting or pitting may be removed from gear mounting surface by polishing out with abrasive paper or flat India stone. If any fretting or pitting remains after polishing, remove by stoning to maximum depth of 0.005 inch. The "dished out" area shall not exceed 0.250 inch diameter. Blend all edges to remove sharp corners. An "orange peel" appearance on polished surface is acceptable.
 2. Replace ring gear with new ring gear, if fretting or pitting repair exceeds above criteria. Contact HHI Warranty and Repair Department before disposing of ring gear.
- f. Clean and inspect PN 269A5194 ring gear carrier per HMI Appendix C inspection criteria; pay particular attention to carrier mounting surface for evidence of fretting or pitting. Also dye penetrant or fluorescent penetrant inspect carrier for cracks; pay particular attention to area around holes on mounting surface.

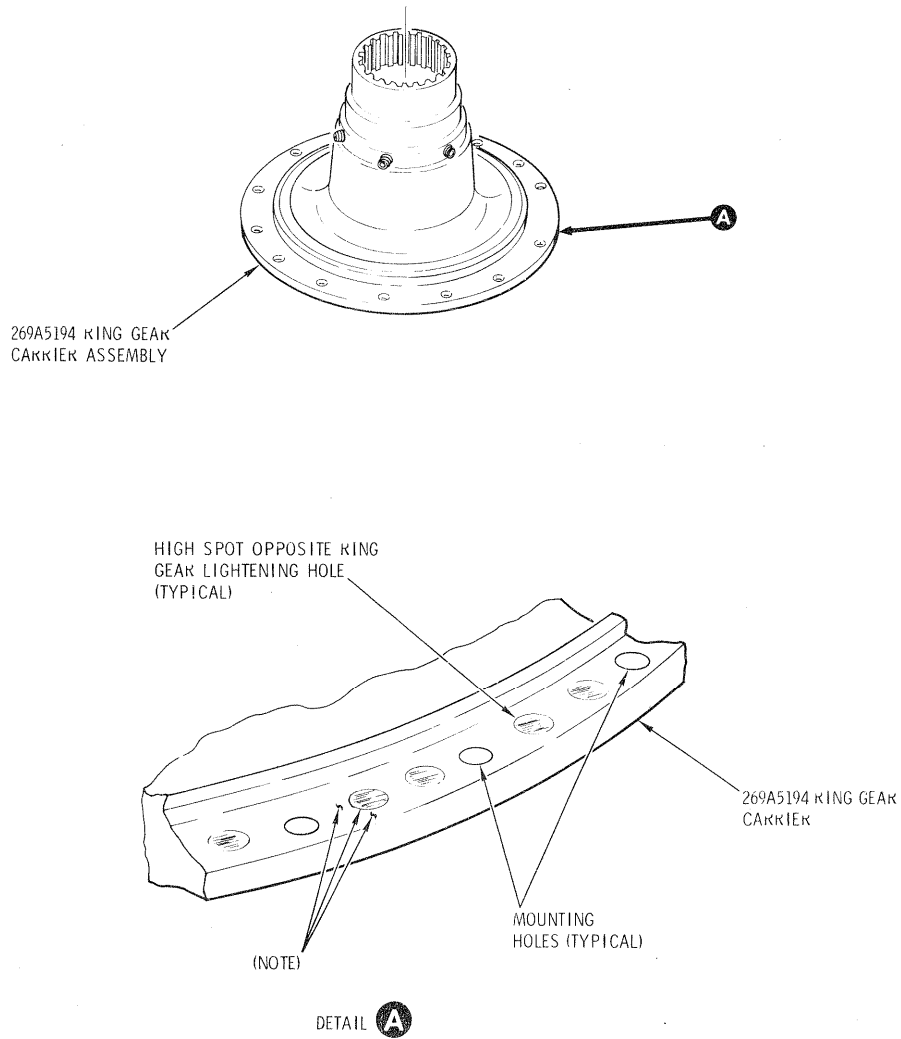
NOTE

Cracks extending into bolt hole in excess of 0.060 inch will be dispositioned under HHI direction, as will cracks more than 0.350 inch in length, or where more than one crack is found at any hole.

To establish maximum acceptable wear without machining, if no fretting, cracking or pitting exists, run dial indicator over high spots opposite lightening holes in carrier mounting surface as shown in Figure 1. A maximum of 0.002 inch differential is acceptable.

Dye penetrant or fluorescent penetrant inspect all ring gear attach bolts for cracks, if fretting, pitting or cracking of ring gear carrier is noted; or install new NAS1306-5H attach bolts at reassembly of ring gear and carrier.

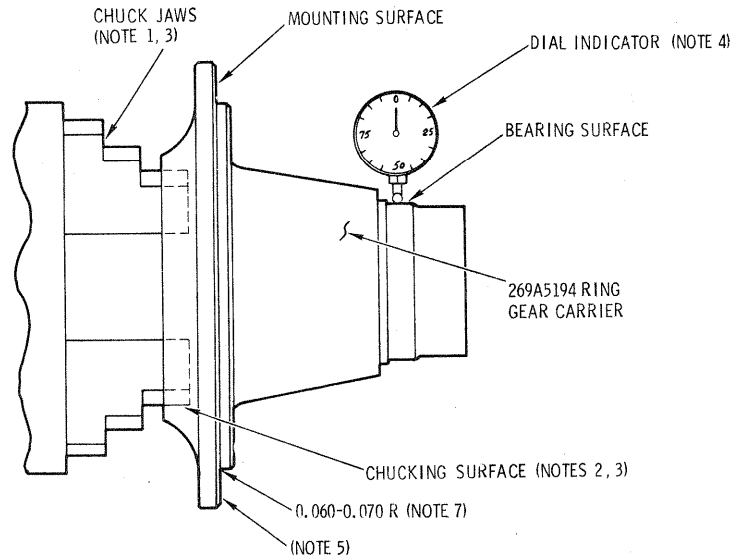
1. Remove fretting, pitting or cracking on carrier by machine boring as shown in Figure 2. Use dial indicator to true piece and upper bearing journal to 0.0005 inch or less. Maximum material removal from mounting surface is 0.015 inch depth.
 2. Cracking less than 0.060 inch depth and 0.350 inch length may be stoned or ground out after machining. Maximum width at any point of crack removal shall not exceed 0.125 inch, nor more than 0.350 inch in length, nor 0.060 inch in depth. All corners resulting from crack removal shall be radiused to remove sharp edges. (See Figure 3.)
 3. Contact HHI if ring gear carrier PN 269A5194 exhibits fretting or cracking in excess of above criteria.
- g. Repeat dye penetrant or fluorescent penetrant inspection of ring gear carrier to ensure that no defects remain.
- h. Polish all attach holes, using silicone carbide abrasive paper and a circular motion. Complete removal of bolt thread imprint is not required.



NOTE:
RUN DIAL INDICATOR OVER HIGH SPOTS AND ADJACENT AREAS. MAXIMUM DIFFERENTIAL OF 0.002 INCH IS ACCEPTABLE.

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Figure 1. Ring gear carrier - maximum acceptable wear



NOTES:

1. CHUCK JAWS SHALL BE SOFT (ALUMINUM) AND DRESSED TO ENSURE CONCENTRICITY.
2. CHUCKING SURFACE IS LOWER BEARING JOURNAL.
3. CLEAN JOURNAL AND CHUCK TO PREVENT CLAMP UP ON ANY BONDING AGENT.
4. USE DIAL INDICATOR AND TRUE CARRIER AT UPPER BEARING JOURNAL TO 0.0005 INCH TIR OR LESS.
5. MAXIMUM STOCK REMOVAL FROM MOUNTING SURFACE IS 0.015 INCH DEPTH.
6. CHECK TIR PERIODICALLY DURING MACHINING.
7. BLEND RADIUS AT ROOT OF MOUNTING SURFACE WITH INDIA STONE OR EMERY CLOTH.

88-555A

Figure 2. Ring gear carrier - machining to remove cracks, fretting, wear

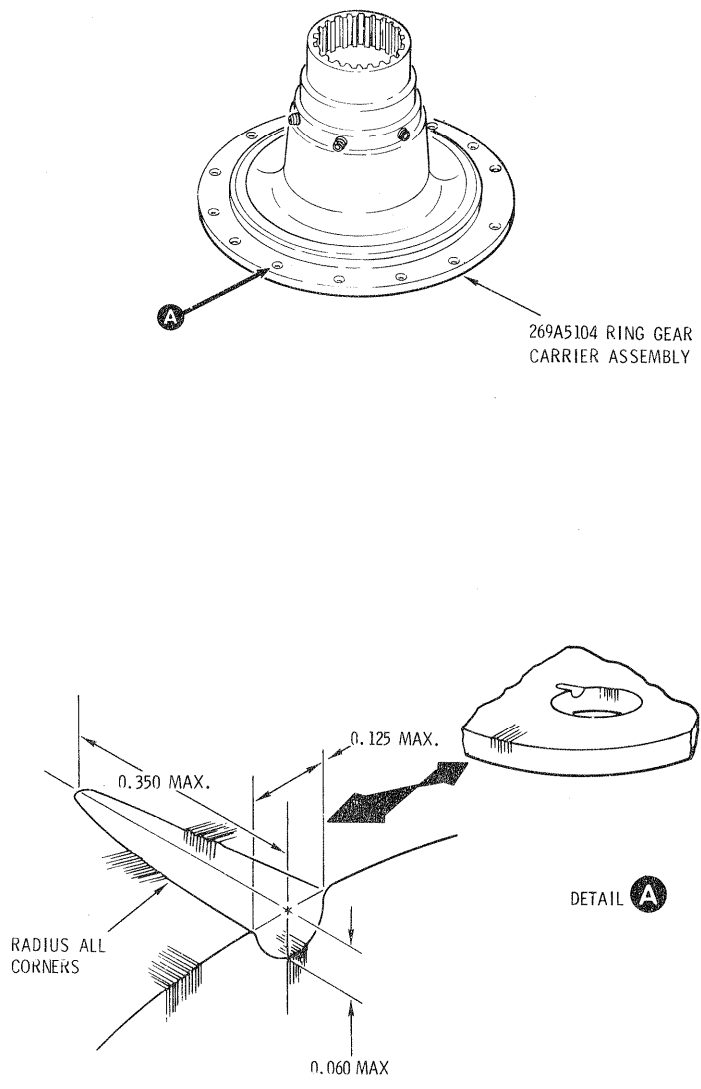


Figure 3. Ring gear carrier crack removal criteria

i. Before assembling ring gear and carrier, place ring gear on carrier without attach bolts (see Figure 4) to determine perpendicularity of ring gear to upper bearing surface. Mount dial indicator on ring gear and rotate gear with indicator resting on upper bearing journal as shown. Maximum runout shall not exceed 0.002 TIR.

j. Touch up all machined and polished aluminum surfaces with Iridite or equivalent, per Section 2 of Basic HMI.

NOTE

Before reassembly, invert ring gear on work bench and install NAS1306-5H bolts (with MS9320-12 washer) fingertight in ring gear (see Figure 5). Measure distance between washer and bolt head as shown and label Dimension A. Also measure thickness of ring gear carrier mounting flange and label Dimension B. Dimension A must be at least 0.020 inch less than Dimension B to preclude bolt bottoming out in ring gear. Install shorter NAS1306-4H bolt at any hole where Dimension A is not less than Dimension B by 0.020 inch or more.

Thoroughly clean all lubricants from bolt threads and from ID of ring gear attach holes, to avoid preloading of bolts when retorquing.

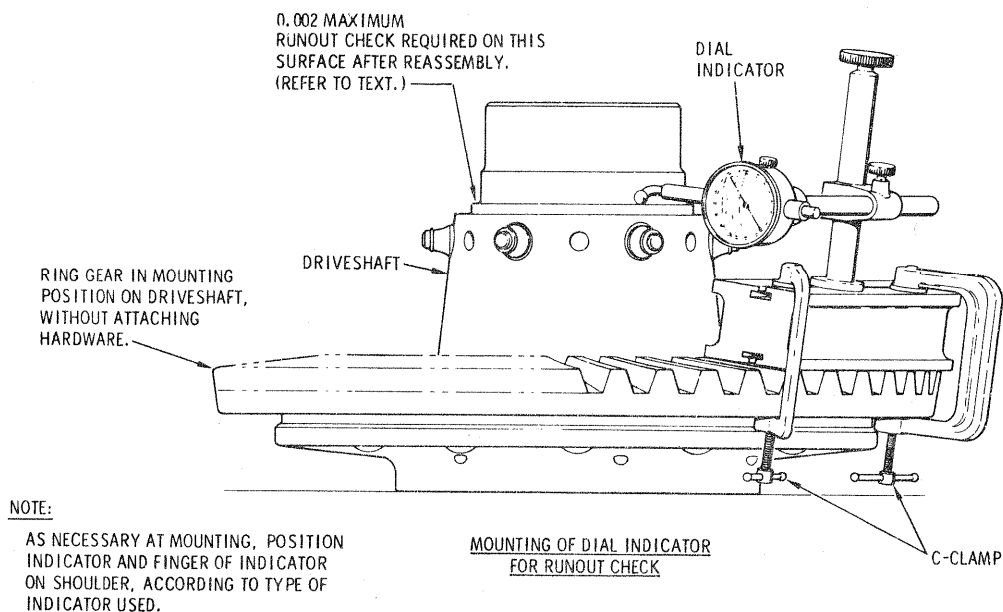
k. Reassemble ring gear and carrier assemblies per HMI Appendix C, except as follows: Install new MS9320-12 flat washer under bolt head (14 places) and dry torque ring gear bolts to 365 to 390 inch-pounds torque. Lockwire bolts in sets of two.

l. Reassemble remaining main transmission components, per HMI Appendix C.

m. Reinstall oil pump drive retainer assembly, oil pump assembly and exterior hardware, per HMI Appendix C.

n. Perform final check of transmission, per HMI Appendix C.

o. Add letter "W" below and adjacent to Serial Number on transmission ID plate to indicate compliance with this Notice; use electric pencil or equivalent (see Figure 6).



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Figure 4. Checking mounting surface to upper bearing alignment

- p. As applicable, install main transmission assembly (Section 10, Basic HMI).
- q. Service installed main transmission (Section 2, Basic HMI).
- r. Record compliance with this Service Information Notice in Compliance Record of helicopter Log Book.
- s. As applicable, record installation of new PN 269A5193 carrier (part of 269A5194 ring gear carrier assembly) in Component Record of helicopter Log Book. The PN 269A5193 carrier has a finite life of 6000 hours.

WEIGHT AND BALANCE DATA

Weight and balance not affected.

The resultant alteration to the affected helicopters described by the inspection and rework procedures of this Notice has been shown to comply with the applicable Federal Aviation Regulations and is FAA Approved.

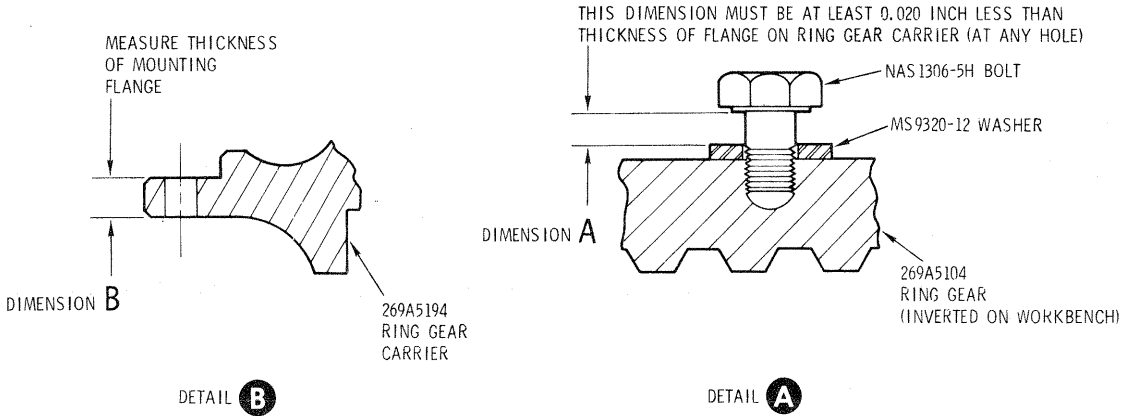
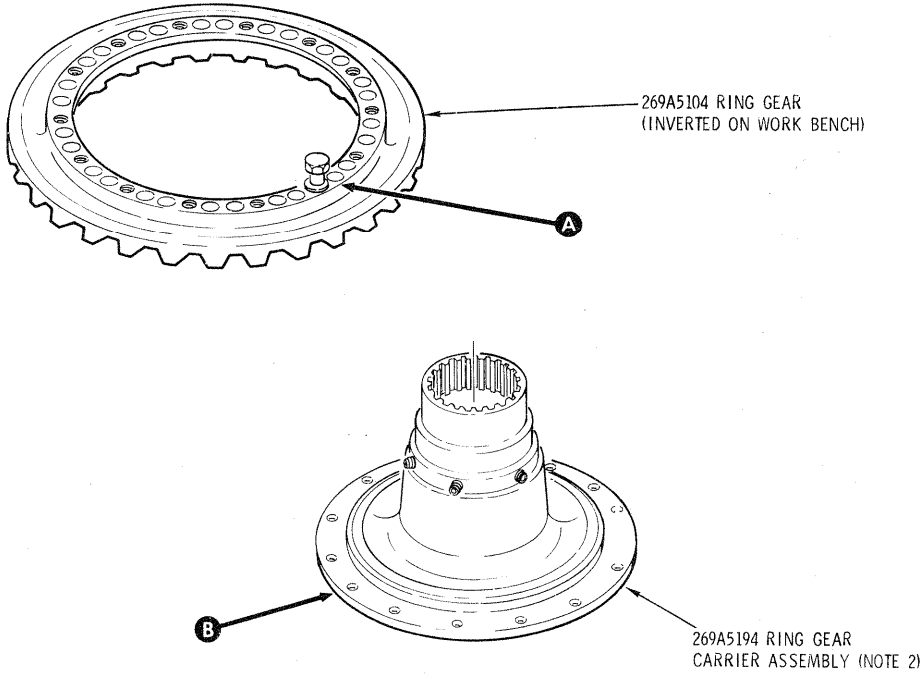
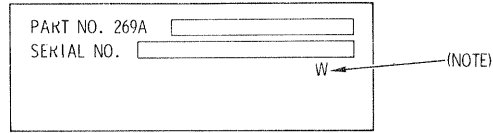


Figure 5. Inspection and replacement - ring gear, ring gear carrier, attach hardware

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NOTE:

ETCH LETTER "W" BELOW AND ADJACENT
TO SERIAL NO. AS SHOWN, USING ELECTRIC
PENCIL OR EQUIVALENT.

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Figure 6. Main transmission identification plate

REFERENCE SHEET

SERVICE INFORMATION NOTICES AND LETTERS

Action Reference: When performing maintenance, inspection or replacement of main transmission ring gear and 269A5194 ring gear carrier assembly, refer to Notice No. 181 for inspection criteria, new attach hardware and increased torque requirements.

HMI Reference: Insert this sheet in HMI Appendix C, Part I, Section 1, page 1-1.

This reference sheet shall be kept as a part of the HMI until the data is incorporated at the next scheduled revision of HMI Appendix C. (Refer to Service Information Summary, HMI Appendix C, Part I, page i.)

REFERENCE SHEET

SERVICE INFORMATION NOTICES AND LETTERS

Action Reference: When performing maintenance, inspection or replacement of main transmission ring gear and 269A5194 ring gear carrier, refer to Notice No. N-181 for inspection criteria, new attach hardware and new torque requirements.

HMI Reference: Insert this sheet in HMI Basic HMI, Section 10, page 10-4B.

This reference sheet shall be kept as a part of the HMI until the data is incorporated at the next scheduled revision of the Basic HMI. (Refer to Service Information Summary, Basic HMI, page xxiv.)

