

QUALITY ASSURANCE PROVISIONS (QAP)

(PRODUCT ASSURANCE PAM 702-155)

1. COMMAND AGENCY: U. S. ARMY TANK AUTOMOTIVE RESEARCH, DEVELOPMENT & ENGINEERING CENTER, WARREN, MI 48397-6000
2. THESE QAPS FORM PART OF DRAWING / SPECIFICATION **10898039 TAB** AS SPECIFIED IN THE CONTRACT. INSPECTION SHALL BE CONDUCTED AS SPECIFIED HEREIN AND IN ACCORDANCE WITH REFERENCED DOCUMENTS. THIS INCLUDES GENERAL QUALITY ASSURANCE PROVISIONS (STA FORM 458), WHICH FORMS A PART OF THIS QAP.

3.

PART I - LIST OF APPLICABLE DOCUMENTS

DRAWINGS

10879855 FIXTURE

STANDARDS

MIL-STD-130 IDENTIFICATION MARKING OF US MILITARY PROPERTY

SPECIFICATIONS

MILS-46172 STEEL FORGINGS

ASTM E1444 STANDARD PRACTICE FOR MAGNETIC PARTICLE EXAMINATION

PART II - INSPECTION REQUIREMENTS

TABLE I - CLASSIFICATION OF QUALITY CONFORMANCE CHARACTERISTICS

<u>CLASS</u>	<u>CHARACTERISTIC</u>	<u>INSPECTION METHOD</u>
<u>CRITICAL</u>	NONE	
<u>MAJOR</u>	<u>AQL 1.0% DEFECTIVE</u>	
101	INDICATED SURFACE SQUARE WITH AXIS OF THREAD AND MUST BE FLAT TO CONCAVE	GAGE 10879855
102	.005 POSITIONAL TOLERANCE OF (6) SLOTS TO DATUMS -A- AND -B-	DIAL INDICATOR WITH STAND, V-BLOCK, SURFACE PLATE OR CMM

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REVISIONS

4. RELEASE NUMBER	BRI - U4355								
5. DATE	3-20-02								
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REVISION STATUS OF SHEETS	6. REVISION	C	C	C	C				
	7. SHEET	1	2	3	4				
	6. REVISION								
	7. SHEET								

8. QAP FOR: NUT, SPROCKET SHAFT, FINAL DRIVE				9. CODE 19207			
10. SUBMITTED BY: BARNES & REINECKE, INC.				11. QAP NO. 10898039			
12. DATE 11-1-63	13. APPROVED <i>[Signature]</i>	14. RELEASE NO. ----	15. PAGE NO. 1	16. NO. OF PAGES 4			

QUALITY ASSURANCE PROVISIONS (QAP) (CONTINUATION SHEET)

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PART II - INSPECTION REQUIREMENTS

TABLE I - CLASSIFICATION OF QUALITY CONFORMANCE CHARACTERISTICS (CONTINUED)

<u>CLASS</u>	<u>CHARACTERISTIC</u>	<u>INSPECTION METHOD</u>
MINOR	<u>AQL 2.5% DEFECTIVE</u>	
201	2.625-12N-2B THREAD BORE PITCH DIA. 2.5709 + .0081 MINOR DIA. 2.5348 + .0100	GO THREAD PLUG GAGE NO GO THREAD PLUG GAGE
202	SURFACE TEXTURE "125"	COMPARATOR BLOCKS
203	IDENTIFICATION MARKING (MIL-STD-130)	VISUAL
204	WORKMANSHIP	VISUAL AND TACTILE

TABLE II - SPECIAL SAMPLING INSPECTION

1. **PREPRODUCTION INSPECTION.** PRIOR TO INITIAL PRODUCTION APPROVAL, SAMPLE FORGINGS THAT REPRESENT THE PRODUCTION PROCESSES TO BE USED FOR PRODUCTION FORGINGS SHALL BE SUBJECTED TO EXAMINATION AND TESTS BY THE CONTRACTOR. PREPRODUCTION APPROVAL INSPECTION SHALL INCLUDE VISUAL EXAMINATION, MEASUREMENT FOR DIMENSIONS AND TOLERANCES, CHEMICAL ANALYSIS AND NONDESTRUCTIVE TESTS FOR SOUNDNESS TO DETERMINE CONFORMANCE TO ALL REQUIREMENTS OF DRAWING 10898039 AND MIL-S-46172. NONDESTRUCTIVE TESTS FOR SOUNDNESS SHALL BE BY MAGNETIC PARTICLE INSPECTION AS SPECIFIED IN PART IV, PARA. 1.

1.1 **MANUFACTURING PROCESS CHANGE.** WHENEVER A CHANGE IS MADE IN THE MANUFACTURING PROCEDURE USED IN PRODUCTION, WHICH MAY AFFECT FIT, FUNCTION, OR SERVICE LIFE OF THE ITEM, THE GOVERNMENT REPRESENTATIVE WILL BE NOTIFIED PRIOR TO THE CHANGE AND ONE OF THE FIRST FIRST ITEMS PRODUCED UNDER THE NEW PROCESS SHALL BE GIVEN A COMPLETE INSPECTION AS SPECIFIED IN PARAGRAPH 1.

1.2 **FAILURE.** FAILURE OF THE PREPRODUCTION SAMPLE TO MEET THE SPECIFIED REQUIREMENTS SHALL BE CAUSE FOR REJECTION. THE CONTRACTOR SHALL PROVIDE OBJECTIVE EVIDENCE TO THE GOVERNMENT WITHIN 20 DAYS AFTER FAILURE, OF EFFECTIVE CORRECTIVE ACTION TAKEN IN PREVENTING RECURRENCE OF FAILURES AND PARAGRAPH 1 SHALL APPLY UNTIL ACCEPTABLE ITEMS ARE PRODUCED.

2. **INITIAL PRODUCTION INSPECTION.** ONE (1) OF THE FIRST ITEMS PRODUCED SHALL BE SELECTED AT RANDOM AND SUBJECTED TO EXAMINATIONS AND TESTS BY THE CONTRACTOR. THE ITEM SHALL BE PRODUCED UNDER MANUFACTURING METHODS TO BE USED IN PRODUCTION. INITIAL PRODUCTION INSPECTION SHALL BE ACCOMPLISHED TO DETERMINE CONFORMANCE TO ALL REQUIREMENTS OF DRAWING 10898039.

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PART II - INSPECTION REQUIREMENTS (CONTINUED)

TABLE II - SPECIAL SAMPLING INSPECTION (CONTINUED)

1.1 **MANUFACTURING PROCESS CHANGE.** WHENEVER A CHANGE IS MADE IN THE MANUFACTURING PROCEDURE USED IN PRODUCTION, ONE (1) OF THE FIRST ITEMS PRODUCED UNDER THE NEW PROCESS SHALL BE GIVEN A COMPLETE INSPECTION AS SPECIFIED IN PARAGRAPH 2.

1.2 **FAILURE.** FAILURE OF THE ITEM TO MEET INITIAL PRODUCTION APPROVAL REQUIREMENTS SHALL BE CAUSE FOR REJECTION AND PARAGRAPH 2 SHALL APPLY UNTIL ACCEPTABLE ITEMS ARE PRODUCED.

3. **PRODUCTION QUALITY CONTROL (FORGING MATERIAL).** THE CONTRACTOR SHALL SELECT FORGINGS AT RANDOM AT THE RATE OF ONE (1) OF EACH TEN FORGINGS PRODUCED. THE SELECTED FORGINGS SHALL BE IDENTIFIED AS TO PRODUCTION PERIOD AND SUBJECTED TO THE FOLLOWING INSPECTION:

NUMBER	CHARACTERISTIC	INSPECTION METHOD
301	MAGNETIC PARTICLE INSPECTION (ASTM E1444)	VISUAL (REF. PART IV, PARA. 1)

3.1 **FAILURE.** FAILURE OF ANY ONE (1) TEST SAMPLE SHALL BE CAUSE FOR REJECTION OF THE ENTIRE REPRESENTATIVE PRODUCTION LOT. ITEMS PRODUCED SUBSEQUENT TO FAILURE OF A TEST SAMPLE SHALL NOT BE SUBMITTED FOR ACCEPTANCE UNTIL OBJECTIVE EVIDENCE HAS BEEN SUBMITTED TO THE GOVERNMENT THAT CORRECTIVE ACTION HAS ELIMINATED THE CAUSE OF THE FAILURE. ACCEPTANCE OF PRODUCTION LOTS SUBSEQUENT TO TEST FAILURE SHALL NOT RESUME UNTIL THREE (3) CONSECUTIVELY PRODUCED SAMPLES SUCCESSFULLY MEET TEST REQUIREMENTS SPECIFIED IN PARAGRAPH 3.

PART III - CERTIFICATION REQUIREMENTS

NUMBER	CHARACTERISTIC	CERTIFICATION METHOD
401	MATERIAL (MIL-S-46172) - CHEMICAL SOUNDNESS - SOUNDNESS REQUIREMENTS	CERTIFIED MATERIAL REPORT
402	CONTRACTOR'S MAGNETIC INSPECTOR	CERTIFIED MAGNETIC INSPECTOR

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PART IV - TEST METHODS AND PROCEDURES

1. **MAGNETIC PARTICLE INSPECTION**. THE FORGINGS SHALL BE SUBJECTED TO MAGNETIC PARTICLE INSPECTION OVER ITS ENTIRE AREA IN ACCORDANCE WITH ASTM E1444, UTILIZING A GOVERNMENT APPROVED PROCEDURE PRIOR TO COMMENCING OF THE PRODUCTION PARTS. METHOD TO BE USED IS OPTIONAL. PROCEDURE SHALL INCLUDE ESTABLISHMENT OF ACCEPTANCE STANDARDS THAT DETERMINE THE NATURE AND MAXIMUM SEVERITY OF THE DEFECTS THAT WILL BE ACCEPTED IN PRODUCTION OF PARTS. NO CRACKS ARE ACCEPTABLE. PARTS THAT ARE DETERMINED TO BE UNSATISFACTORY, SHALL BE CAUSE FOR REJECTION. SURFACE DEFECTS MAY BE REMOVED WITHIN DIMENSIONAL LIMITS OF THE DRAWING. SUCCESSFUL COMPLETION OF THE TEST IS REQUIRED BEFORE THE ITEMS ARE SUBMITTED TO GOVERNMENT FOR ACCEPTANCE.

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