TESTING REQUIREMENTS FOR ONE TIME ACCEPTANCE (VALIDATION) TEST FOR MANUAL TONG (HT-65) AS PER API 7K, 5TH EDITION

Rev	Reason of Change	Date	Made By	Reviewed By	Approved By	Status
0	--	17.08.2015	ND	USR	SD	RELEASED

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1.0 SCOPE

This procedure covers the engineering test requirements per API 7K, 5th Edition, for HT-65 MANUAL TONG.

2.0 REFERECNCE STANDARD

The testing of the Manual Tong is carried out as per requirements mentioned under clause 9.13 of API 7K, 5th Edition.

3.0 QUALITY CONTROL TEST REQUIREMENTS

3.1 MATERIAL TEST

3.1.1 Chemical Analysis:

The material should conform to the chemical requirements as stated in the pre- Machining (casting) drawings of the respective components. An MTC shall be supplied by the vendor for the same.

3.1.2 Physical Analysis:

The material for the respective components shall be tested to determine and conform to the requirements for the materials as stated in the respective drawings. The material shall be tested for the following

- Tensile Test
- Impact test – For impact testing requirements refer Table.1
- % Elongation in length
- % Reduction in area
- Hardness

NOTE: ***All above testing to be carried out as per ASTM A 370***

3.1.3 Non Destructive Tests:

The NDE tests shall be carried out as per the requirements mentioned in the drawings for respective components.

3.1.4 Function Test:

3.1.4.1 Fix the mandrel in the testing equipment.

3.1.4.2 Connect the hydraulic power supply source with the testing equipment cylinder.

3.1.4.3 Clamp the hanger assembly of the manual tong with the testing equipment.

3.1.4.4 Grip the mandrel in the tong.

3.1.4.5 Apply pressure equal to 327 PSI. This should yield a torque of 65,000 Ft-lbs. Hold for 5 minutes.

3.1.4.6 Repeat the above test for 23 more cycles.

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3.1.5 Proof Load Test

3.1.2.1 Mount the test equipment with mandrel on the test fixture and ensure secure placement.

3.1.2.2 After proper gripping of the mandrel is ensured apply pressure equal to 490 PSI. This should yield a torque of 97,500 PSI.

3.1.2.3 Release the pressure after 5 minutes.

3.1.2.4 Remove the tong from the testing fixture.

3.1.2.5 All critical loads bearing area shall be subjected to MPI as per SSE/QAD/MT-1/97. The critical load bearing areas are defined in Fig. 1, 2, 3 and 4.

3.1.6 Acceptance criteria

3.1.6.1 There should be no slippage when load is applied on the mandrel for the specified time duration

3.1.6.2 The tong shall pass the MPI as per the acceptance criteria in the above mentioned procedure.

NOTE:

1) The pressure to be applied for tests has been calculated for the following. Any change in the below mentioned will have an effect on the test pressure.

Parameter	***Value***
Rated Load	*65,000 Ft.-LBS*
Effective Arm Length	47.5"
Cylinder Radius	4.00"

2) Pressure calculated and mentioned in the procedure theoretically yields the required Torque. The same should be verified by a Torque Gauge.

3) Function Test and the Proof Load test to be carried out prior to painting.

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Table 1

SL#	COMPONENT DESCRIPTION/MATERIAL GRADE	MINIMUM IMPACT REQUIREMENT (J)	AVERAGE IMPACT REQUIREMENT OF 3 TESTS (J)
1	CMS 01 (Gr. 120-110)	32	42
2	Hinge Pins	12	15
Impact test to be carried out at -20°C			

Pictures for Critical Load Bearing Areas

Figure 1

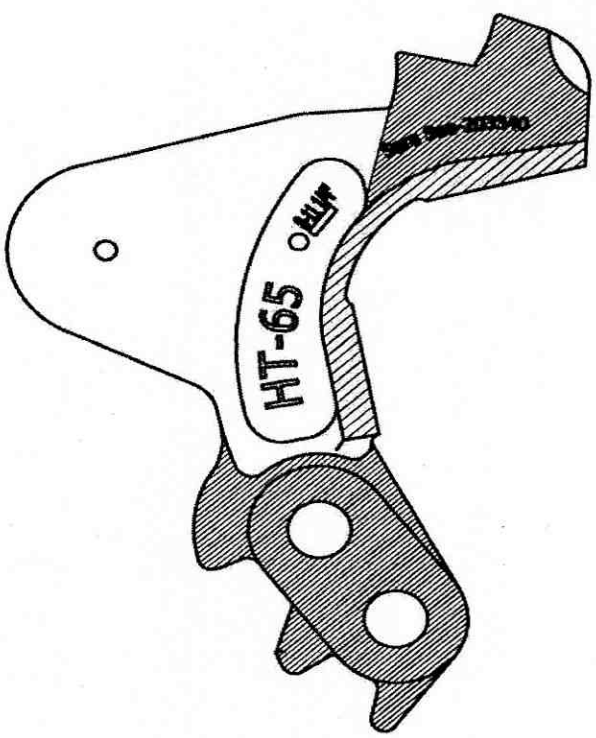

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Figure 2

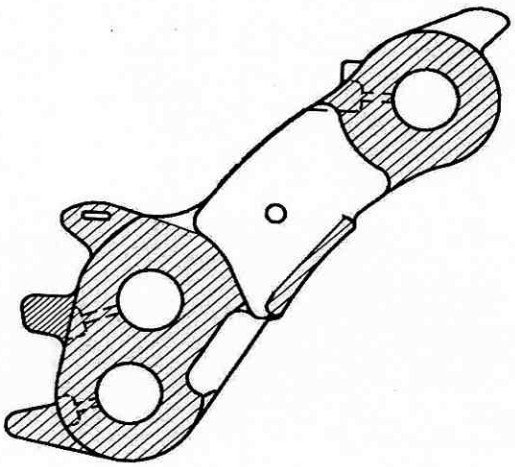


Figure 3

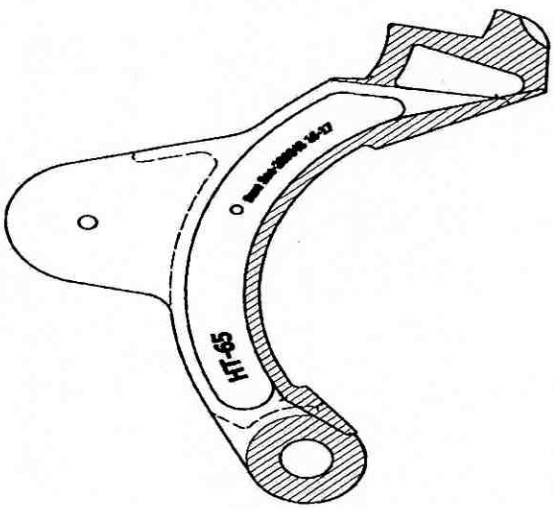
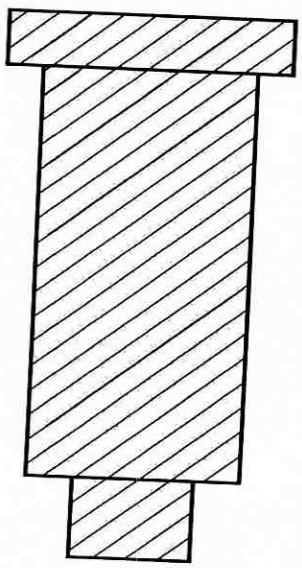


Figure 4



The shaded areas in the above shown figures will be the critical load bearing areas

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