



## **QM-C-7.1/Coupler/00011/A (Rev.-01)** **Inspection Plan (Check Sheet)**

**ITEM :** Investment casting /Forging Components for Upgraded High Tensile Centre Buffer Coupler

: Lock

**Spec. No.:** WD-70-BD-10 (Rev.3) or latest

**Drg. No. & Alt.:** SK-62724, Alt. 28 (Item-8)

Firm's Name :

Date (period) of Inspection :

Contract Details :

a. Contract no. and date :

b. Order placing authority :

c. Specification No. :

d. Drawing No. :

e. Quantity on order :

f. Earlier Passed Qty. :

g. Quantity offered for inspection on date:

h. Consignee

**SANJAI  
JAUHRI**

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DN: cn=SANJAI JAUHRI, c=IN,  
st=UTTAR PRADESH, o=MINISTRY  
OF RAILWAYS, ou=MINISTRY OF  
RAILWAYS,  
serialNumber=BFSABACB62843589  
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Quality Control Manager of  
M/s.

Inspecting Official of RDSO



**SUMMARY OF RESULTS OF INVESTMENT CASTING/FORGING CBC COMPONENTS Gr.-E/Class-L (LH) (LOCK)**

**Specification No. WD-70-BD-10 (REV.3) or latest  
Drawing No. SK-62724 Alt.- 28**

(Lot Size – 200 Nos.)

SN	Parameters	Specified value	Observation	
			Max.	Min.
1	Visual & Operation Check (Sample size 10%)	No cracks, hot tears, cold shuts & weld cracks and surface condition by SCRATA & marking as per drawing components should operate freely in assembled condition		
2	Dimensional (Sample size 10%)	By Go-No Go gauges (As per RDSO Drawing listed at Sn. 11)		
3	Physical Properties	Gr. E ( Minimum ) / X4 of ASTM A668/A668M-2a		
	i) Tensile Strength	825 N/mm <sup>2</sup>		
	ii) YS	690 N/mm <sup>2</sup>		
	iii) Elongation	14%		
	iv) RA	30%		
4	Chemical composition	C-0.28 -0.33, Mn-0.60 -0.90, P-0.03 (Max.), S-0.03 (Max.), Si-0.40-0.60, Cr – 0.50 – 0.80, Al-0.020-0.050, Ni- 0.50-0.60, Mo- 0.15-0.25		
5	Microstructure of Lock	Fine Tempered- Martensite		
6	Hardness	241-311 BHN		
7	Impact Test (ASTM A 370)	Energy = 3.50 kg-m (Min.), at -40 <sup>o</sup> C		
8	Nil Ductility Test (ASTM E 604 or E 208)	Value at - 57 <sup>o</sup> C or lower		
9	Heat treatment	Record to be checked		
10	Weight variation	+5% to -3% of the drawing value (100% weight variation to be checked by firm internally and same is to be cross verified randomly. The copy of the same should be attached with check sheet )		
11	Gauging of Coupler and its components	As per Annexure-1 of Specification No. WD-70-BD-10 (Rev.3) or latest		

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**1. Visual, Operation & marking : Sample size – 10% or min 10 nos.**

	Specified	Observed value											
		1	2	3	4	5	6	7	8	9	10		
<b>Surface defect</b>	No cracks, hot tears, cold shuts & weld cracks and surface condition												
<b>Marking</b>	As per respective drawing												
<b>Operation</b>	Components should operate freely in assembled condition												

**2. Dimensions: Sample size – 10% or min 10 nos.**

Specified	Observed value												
	1	2	3	4	5	6	7	8	9	10			
As per respective drawing and with gauges as listed by RDSO at S.No. 11 of check sheet.													

**3. Physical Test : Sample size – one per lot from Test Coupon**

Physical Properties	GRADE E (Min)	Observed value											
		1	2	3	4	5	6	7	8	9	10		
<b>UTS</b>	825 N/mm <sup>2</sup>												
<b>YS</b>	690 N/mm <sup>2</sup>												
<b>Elongation</b>	14%												
<b>RA</b>	30%												

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#### 4. Chemical Composition : Sample size – three per lot from Lug/Test Coupon

Heat No.											
Qty. Cast											
Qty. Offered											
Qty. Passed											
Qty. Balance											

Chemical Analysis	Specified value	Observed value									
		Heat									
	GRADE-E	1	2	3	4	5	6	7	8	9	10
C	0.28 -0.33										
Mn	0.60 -0.90										
P	0.03 (Max.)										
S	0.03 (Max.)										
Si	0.40-0.60										
Cr	0.50 – 0.80										
Al	0.020-0.050										
Ni	0.50-0.60										
Mo	0.15-0.25										

#### 5. Microstructure of Lock : Sample size – three per lot from Lug/ Test Coupon

Specified	Observed	1	2	3	4	5	6	7	8	9	10
Fine tempered Martensite	OK/ NOT OK										

#### 6. Hardness : Sample size – 5% or min 5 nos

Grade	Specified value	Observed value									
		BHN No.	1	2	3	4	5	6	7	8	9
Grade E (Except Knuckles)	241-311										

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**As quench Hardness:**

Record of As quenched Hardness to be verified as per clause 7.2.3 of Specification	OK / NOT OK	
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**7. Impact Test :** Sample size – one per lot from CBC component  
(Testing should be done as per ASTM A-370)

Specified	Observed value
3.50 Kg-m (34.33 J) (min) at -40 <sup>0</sup> C	

**8. Nil Ductility (ASTM E-604 or E-208) :** Sample size – one per lot from CBC component

Specified	Observation
Value at - 57 <sup>0</sup> C or lower	

**9. Heat Treatment :**

Record of heat treatment to be verified as per clause 5.3.8 of Specification	OK / NOT OK	
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**10. Variation of Weight : 10% of lot**

Specified value	Observed value
Within +5% to -3% of the drawing value (100% weight variation to be checked by firm internally and same is to be cross verified randomly. The copy of the same should be attached with this check sheet )	

**11. Gauge check : As per RDSO Drawing (Sample size – 10% or min 10 nos )**

COMPONENTS	Parameters	Gauge No.	Observation
LOCK	LOCK CONTOUR GUARD ARM SIDE	56-RC	
	LOCK CONTOUR-KNUCKLE SIDE	57-RC	
	LOCK TOGGLE	58-RC	
	LOCK PARALLEL AND THICKNESS	59-RC	
	LOCK SLOT	60-RC	
	LOCK TOGGLE ARM WIDTH-GO & NO GO	61-RC	

**12. Details of in-process inspection conducted by inspectors during this Purchase Inspection (At least one or two in-process inspection shall be done) :**

Name of process inspection	Remarks (Give in details)
	<p style="text-align: center;">             Digitally signed by SANJAI JAUHRI            DN: cn=SANJAI JAUHRI, o=IN,            st=UTTAR PRADESH, ou=MINISTRY            OF RAILWAYS, ou=MINISTRY OF            RAILWAYS,            serialNumber=BF5ABACB62843589            C066D112792FE235F60B99103726            CF556BCABF D2762F0F D4            Date: 2023.10.23 14:01:47 +05'30'         </p>

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Inspecting Official of RDSO