



QM-C-7.1/COUPLER/0008/A,C,I
Inspection Plan(Check Sheet)

Item: High tensile transition CBC coupler & its components for
Locomotives (Coupler Body, Knuckle &yoke)

Specn. : 56-BD-07

Amd.: 01 or (Latest)

Drg. No. & Alt.: SKDL-3430
(SK-62724, Alt. 26 or Latest, Item-18, SK-62724, Alt. 26 or Latest, Item-2 &
SK-62724, Alt.26 or Latest, Item-3)

Firm's Name:

Date (period) of Inspection:

Contract Details:

- Contract no. and date.
- Order placing authority.
- Specification no.
- Drawing no.

Quantity on order

Quantity offered for inspection on date

Consignee

Quality Control Manager of M/s

Inspecting Official of RDSO



Summary of Result
Lot Size – 200 Nos.

SN	Parameters	Specified Value	Observation	
			Max.	Min.
1	Visual & Operational Check (Sample size 10%)	No cracks, hot tears, cold shuts & weld cracks and surface condition by SCRATA & Marking as per Drg. Components should operate freely in assembled condition		
2	Dimensional (size size 10%)	By go-no go gauges (As per RDSO Drawing listed at Sn. 12)		
3	Physical Properties	Gr. E (Minimum)		
	i) Tensile Strength	84.35 Kg/mm ² / 827.47 N/mm ²		
	ii) YS	70.30 Kg/mm ² /689.64 N/mm ²		
	ii) Elongation	14%		
	iii) RA	30%		
4	(i) Proof Static tension test	Max. permanent set in mm For knuckle at 181.5t - 0.76 For Coupler body at 317.5t - 0.76 Min. Ultimate Load For knuckle 295t For Coupler body 408t		
	(ii) Proof static test of yoke	Max. permanent set in mm. At 340.2t 0.76 Min. Ultimate 408t		
5	Chemical composition	C-(0.28-0.33), Mn-(0.8-1.1), P-(0.03) Max., S-(0.03) Max., Si-(0.4-0.60), Cr- (0.50-0.80), Ni-(0.50-0.60), Mo-(0.15-0.25)		
6	Microstructure of Knuckle	Fine tempered, Martensite.		
7	Hardness	Except Knuckle 241-311 BHN For Knuckle 261-291 BHN		
8	Destructive test	No blow holes ,slag inclusion, shrinkage etc.		
9	Heat treatment	Record to be checked.		
10	Weight variation	+5% to -3%		
11	Radiographic test (Sample size 5%)	ASTM E446 level II. Location of radiography test should be as per annexure-II of specification 56-BD-07		

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1. Visual, Operation & Marking: Sample size-5% or min 10 nos.

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

2. Dimensions: Sample size-5% 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 Sno.12 of check sheet.											

3. Physical Test : Sample size- one from each heat.

Mechanical Properties	Grade E (Min)	Observed Value									
		1	2	3	4	5	6	7	8	9	10
UTS	827.147 N/ mm ² or 84.35 Kg/mm ²										
YS	689.64 N/ mm ² or 70.30 Kg/mm ²										
Elongation	14%										
RA	30%										

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4. **(i) Proof Static test (Permanent set in mm):** Sample size- One per lot.

One in 6 months.

	At 181.5 t		At 317.5t		# Min.Ultimate	
	Specified	Observed	Specified	Observed	Specified	Observed
*Knuckle	0.76		-		295 t	
TTCoupler body	-		0.76		408 t	

* Based on testing with dummy knuckle fixture.

(ii) Proof Static test (Permanent set in mm): Sample size- One per lot.

One in 6 months.

Material of yoke-	At 340.20t		# Min. Ultimate	
	Specified	Observed	Specified	Observed
Grade E steel	0.76		408t	

5. **Chemical Composition:** Sample size- one from each heat.

Heat No.	
Body Sl. No.	
Qty. Cast	
Qty. Offered	
Qty. Passed	
Qty. Balanced	

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Chemical Analysis	Specified Value (Observed Value										
	Grade E	Heat	1	2	3	4	5	6	7	8	9	10
C %	0.28- 0.33											
Mn %	0.8-1.1											
P %	0.03 Max.											
S %	0.03 Max.											
Si %	0.40- 0.60											
Cr %	0.50- 0.80											
Ni %	0.50- 0.60											
Mo %	0.15- 0.25											

6. **Microstructure of knuckle:** Sample size : One from each heat.

Specified	Observed	
Fine tempered Martensite	Ok/Not OK	

7. **Hardness :** Sample size-5% or min 5 nos.

Grade	Specified Value	Observed Value										
	BHN No.	1	2	3	4	5	6	7	8	9	10	
Grade E (Except knuckle)	241-311											
Grade E (For knuckle)	261-291											

Testing should be done as per ASTM A 370.

8. **Destructive Test :** 2% should be subjected to destructive test as per annexure II (sheet 1,2,&3) of amendment 1 of Jan 04.

Specified Value	Observation	
	1	2
No Blow holes, slag inclusion and shrinkage etc. after sectioning.		

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9. Heat treatment:

Record of heat treatment to be verified as per clause 3.6. of Specn.	OK / NOT OK	
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10. Variation of Weight: One component per P.O.

Specified Value	Observation
Within +5% to -3%	

11. Radiographic test (Sample size 5%)- ASTME446 Level II. Location of radiography test should be as per annexure-II of specification 56-BD-97.

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12. Gauge Check: As per RDSO Drawing. (Sample size-5% or min 10 nos.)

	Parameters	Gauge No. WD-84073-S-	Observation
COUPLER HEAD	10A Contour Gauge	1-RC	
	Bottom anticreep Vertical Location	2-RC	
	Bottom anticreep Horizontal Location	3-RC	
	Top anticreep Vertical Location	4-RC	
	Pivot Lug	5-RC	
	Pin Protector	6-RC	
	Pulling Lug (Knuckle side)	7-RC	
	Pivot Pin	8-RC	
	Lock chamber	9-RC	
	Lock hole	10-RC	
	Rotary Lug	11-RC	
	Shank end pinhole	12-RC	
	Coupler Shank	Shank height	15-RC
Shank butt width		17-RC	
Pin hole shank wail thickness		18-RC	
Butt rear wall thickness		19-RC	
Pivot pin hole		20-RC	
Shank height with Wear Plate		21-RC	
Shank Length (Non transition)		22-RC	
Shank butt end contour		23-RC	
Spherical butt and pin hole		24-RC	
Shank butt height		25-RC	
COUPLER PARTS	Knuckle Bottom Pulling Lug	41-RC	
	Knuckle Movable Point	42-RC	
	Knuckle Hub	43-RC	
	Knuckle Tail Height	44-RC	
	Knuckle Top Pulling Lug	45-RC	
	Knuckle Tail Shelf	46-RC	
	Knuckle Pin Hole	47-RC	
	Knuckle Length	48-RC	
	Lock Contour guard arm side	56-RC	
	Lock Contour Knuckle Side	57-RC	
	Lock Toggle	58-RC	
	Lock Parallel & thickness	59-RC	
	Lock slot	60-RC	
	Lock Toggle arm width-GO & NO GO	61-RC	
	Knuckle Thrower Contour (Composite)	66-RC	
	Knuckle Thrower Trunion	67-RC	
	Lock lift assembly	76-RC	
	Composite Gauge for connector	77-RC	
	Composite Gauge for Hook	78-RC	
	Composite Gauge for Toggle	79-RC	
Knuckle Pivot Pin Diameter & Length	96-RC		

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Yoke pin	Diameter & length	YP-1	
Yoke pin Support	Composite	YPS-1	
	Flange thickness	YPS-2	
Yoke	Mouth opening	Y-1	
	Concentricity	Y-2	
	Head height	Y-3	
	Strap thickness	Y-4	
	Strap width	Y-5	
	Strap out side width	Y-6	
	Pocket height	Y-7	
	Pocket length	Y-8	
	Back height	Y-9	
	Head width (out side)	Y-10	
Yoke pin hole	Y-11		

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