

2024/Track-I/8(1)/HPRC

1965597/2024/Track-I Tightening of the bolt of clamps to be secured with anti-loosening features to avoid loosening of clamp during passing of trains. During a service period of 30 days, the clamp should not become loose by more than 20% of the initial tightening torque.

F. Compact design, lightweight with less maintenance & mountable directly on IR fishplates

G. Should have a long life i.e. minimum 8-10 years.

**4. Trial Scheme Overview:** HPRC clamps being safety item, so "Trial Scheme & Monitoring Proforma" was approved from Railway Board. Trials to be conducted Phase wise, viz. Phase-A for Speed potential upto 50kmph & Phase-B for Speed potential upto 100kmph.

This report is prepared based on the performance reports received from nominated Railways. The 'Trial Scheme & monitoring proforma' is attached as [Appendix-A](#) in the report. Phase-A field trials conducted by nominated Zonal Railways as per approved trial scheme. Details of these HPRC clamps used for trials are tabulated under Table- B.

**Table-B (HPRC Clamps drawing attached at Appendix-C)**

S N	HPRC clamp	Represented by Indian Firm	Version of HPRC	Compatibility with IR fishplates
1	<b>Robel Clamp</b>  OEM - M/s Robel GmbH, Germany	M/s Premier India Agencies, Visakhapatnam	Robel 68.05 ver. 13 (Short version) for 60kg fishplate	1. RDSO/T- 3714 (60kg) 2. RDSO/T- 5916
			Robel 68.05 ver. 06 (Long version) for 52kg fishplate	3. RDSO/T- 3714 (52kg) 4. RDSO/T- 5915
2	<b>Codiun Clamp</b>  OEM - M/s Codiun Ltd., UK	M/s Wontech Engg. Pvt. Ltd, Hyderabad	1. Codiun Clamp MK 8 for 60kg & 52kg fishplate (Except Joggled Fishplate RT - 5848)	1. RDSO/T- 3714 (52kg & 60kg) 2. RDSO/T- 5850 to RDSO/T- 5851 3. RDSO/T- 5915 4. RDSO/T- 5916 5. RDSO/T- 5551 6. RDSO/T- 5849
			2. Codiun Clamp MK 2 T- 5848 for Joggled fishplates of 52kg (RDSO/ T-5848)	7. RDSO/T- 5848

Signature Not  
Verified

Digitally signed by  
AMI CHAND  
Date: 2026.06.12  
17:06:03+05'30  
Reason: IREPS-CRIS  
Location: New Delhi

## 5. FIELD TRIALS & MONITORING OF HPRC CLAMPS WITH IR FISHPLATES:

**Robel clamps:** Robel Clamp 68.05 ver. 06 (long version) is compatible with 52 kg fishplates and ver. 13 (short version) with 60 kg fishplates.

Details as under:

IR fishplate types		Compatible Robel clamps	Tightening torque	Clamping force (per clamp)
Fishplates (Normal)				
RDSO/T-3714	52kg	Robel 68.05 ver. 06	580 Nm	15.22 kN
	60kg	Robel 68.05 ver. 13	580 Nm	19.41 kN
RDSO/T-5915	52kg	Robel 68.05 ver. 06	580 Nm	15.22 kN
RDSO/T-5916	60kg	Robel 68.05 ver. 13	580 Nm	19.41 kN



**Fig. R-1:** Robel Clamp-68.05, ver. 06      **Fig. R-2:** Robel Clamp-68.05, ver. 13

**Codiun clamps:** Codiun clamp MK-8 is compatible for all desired fishplates for 52kg & 60kg rail sections, except Joggled fishplate for 52 kg rail section (drawing No. RDSO/T-5848). So, the OEM developed MK-2 T-5848 compatible with RDSO/T-5848. Details are as under:

IR fishplate types	Compatible Codiun clamps	Tightening torque	Clamping force
Fishplates (Normal)			
RDSO/T-3714, 52kg & 60kg	Codiun MK-8	400Nm	75.9kN
RDSO/T-5850 to RDSO/T-5851 (52kg & 60kg)			
RDSO/T-5915, 52kg			
RDSO/T-5916, 60kg			

2024/Track-I/8(1)/HPRC

1965597/2024/T

Joggled fishplates	Compatible Codiun clamps	Tightening torque	Clamping force
RDSO/5551, 52kg	Codiun MK-8	400 Nm	75.9 kN
RDSO/T-5849, 60kg			
RDSO/T-5848, 52kg	Codiun MK-2-T/5848, <i>Newly designed for IR Joggled fishplate-RDSO/T-5848</i>	400 Nm	75.9 kN

**Fig. C-1:** Codiun clamp MK-8**Fig. C-2:** Codiun clamp MK-2-T/5848

For conducting field trials of shortlisted HPRC clamps, three Zonal Railways were nominated for each type of HPRC clamps. Details of procured quantity by nominated Zonal Railways are tabulated as **Table-C**.

**Table-C**

SN	Nominated Zonal Railways	HPRC Clamp	Total clamps procured for trials
1	<b>WR</b> (Nodal Railway)	Robel 68.05 ver. 06	10
		Robel 68.05 ver. 13	18
	<b>NR</b>	Robel 68.05 ver. 06	08
		Robel 68.05 ver. 13	18
	<b>NCR</b>	Robel 68.05 ver. 06	18
		Robel 68.05 ver. 13	48
	<b>Total clamps= 120 nos.</b>		Ver. 06 = <b>36 nos.</b> & Ver. 13 = <b>84 nos.</b>
2	<b>SCR</b> (Nodal Railway)	Codiun MK 8	32
		Codiun MK 2 T-5848	04 (For RDSO/T-5848)
	<b>SECR</b>	Codiun MK 8	32
		Codiun MK 2 T-5848	04 (For RDSO/T-5848)
	<b>ECR</b>	Codiun MK 8	32
		Codiun MK 2 T-5848	04 (For RDSO/T-5848)
	<b>Total clamps=108 nos.</b>		MK 8= <b>96 nos.</b> & MK 2 = <b>12 nos.</b>

**Field Trials: Phase-A**

SN	Speed	Test location	Trial period	Monitoring Parameter
1.	30kmph	Loop line track	7 days	Torque of bolts in N-m will be monitored after passing of every
2.	30kmph	Main line track	3 days	

Signature Not Verified  
Digitally signed by AMI CHAND 2.  
Date: 2026.06.12 17:06:03 +05'30'  
Reason: IREPS-CRIS  
Location: New Delhi

2024/Track-I/8(1)/HPRC

1965597/2024/Track-I/8(1)/HPRC	50kmph		7 days	train. Torque shall be measured by dial type Torque Wrench
--------------------------------	--------	--	--------	---------------------------------------------------------------

**Note:** Zonal Railways advised to deploy 24hrs stationary watchmen for these field trials

## 6. FEEDBACK FROM NOMINATED ZONAL RAILWAYS & PERFORMANCE REPORT OF HPRC CLAMPS:

WR, NR & NCR are nominated for field trial of Robel Clamp and SCR, SECR & ECR for Codiun clamps to assess the efficacy and suitability of HPRC clamps for IR network as detailed under:

ROBEL CLAMPS: FIELD TRIALS				
SN	Trial Railway	Division	SSE (P. Way)/ADEN	Nos.
1.	Western	ADI & RTM	RTM, JAO, NMH	07 nos. (04 joints)*
2.	Northern	DLI & UMB	RJP, FDB	06 nos. (03 joints)
3.	North Central	PRYJ	ALJN, CHURK, CHUNAR	08 nos. (04 joints)
CODIUN CLAMPS: FIELD TRIALS				
SN	Trial Railway	Division	SSE (P. Way)/ADEN	Nos.
1.	South Central	HYB & SC	MED, GT & LPI	30 nos. (15 joints)
2.	South Central East	BSP	RIG, CPH, KRBA, BSP, KGB, PND, APR, SDL, BJRI, MDGR, HGR, BRJN & UMR	26 nos. (13 joints)
3.	East Central	SEE & DDU	SEE & CDMR(DDU)	8 nos. (04 joints)

\*On one location under jurisdiction of SSE/P.Way/JAO on RTM division (WR) has conducted trials with single clamp of Robel ver 06 (long version).

## 7. SUMMARY OF EVALUATION:

After field trials concerned SSEs of nominated Zonal Railways have submitted performance feedback of Robel & Codiun Clamps. Summary details as below-

**ROBEL CLAMPS:** Trials have been done on 21 clamps at 11 locations. Summary of the performance report of field trials from WR, NCR & NR are tabulated as Table-1.

**Table-1**

Robel Clamps					
Duration (Days) (Loop/Main line)	Total clamps installed for trials	Data available for no. of clamps under the duration	Drawing no. of IR fishplates	Satisfactory Performance	
				Nos.	%
7(L/L)	21	09	RT-5915	09	100%
		12	RT-5916	12	100%
3(M/L)	19	07*	RT-5915	07	100%

Signature Not Verified  
Digitally signed by AMI CHAND  
Date: 2026.06.12 17:06:03+05'30  
Reason: IREPS-CRIS  
Location: New Delhi

2024/Track-I/8(1)/HPRC

1965597/2024/Track-I		12	RT-5916	12	100%
7(M/L)	19	07	RT-5915	07	100%
		12	RT-5916	10**	<b>83%</b>

\* Field trials of two clamps not conducted on M/L track due to non-availability of track for 52 kg section at ALJN (NCR).

\*\* On trial for 50 kmph speed, the outer fishplate displaced about 55 mm on one location at DHG on ADI Division(WR).

### **7.1 Salient points & observations-Robel :**

1. Due to non-availability of RT-3714 (52 & 60 kg), some nominated Rlys i.e. WR, NCR & NR could not conduct field trials on these fishplates.

As RT-3714 have the profile similar to RT-5915 for 52kg and RT-5916 for 60kg, hence the results of RT-5915 and RT-5916 are considered acceptable & applicable for RT-3714 also.

2. At 01 location (at KM 1325/36 under SSE/ALJN) fishplate shifting was observed on the 1<sup>st</sup> day @ 50 kmph. However, the specified torque was intact, hence the clamps were re-tightened in position and trials completed successfully without any further issue. Hence, it is considered as 'Satisfactory'.
3. At a curve location of 2<sup>o</sup> curve ( KM 208/6-8 under SSE/CHURK/NCR) the clamp has performed satisfactorily with no shifting /movement.
4. \*\*On one location under jurisdiction of SSE/P.Way/DHG on ADI Division(WR), these clamps performed properly for initial 10 days. However, at the conclusion of 07 days trial @ 50 kmph speed, outer fishplate displaced about 55 mm w.r.t. inner fishplate towards traffic direction, even though torque was intact. Since more shifting is reported, it is considered as 'Unsatisfactory'.

The details of the performance report on field trials of Robel clamps have been compiled under "SUMMARIZED OBSERVATION OF ZONAL RAILWAYS" as ANNEXURE-II.

**CODIUN CLAMPS:** Trials have been done on 64 clamps at 32 locations. Summary of the performance report of field trials from SCR, SECR & ECR are tabulated as Table-2.

**Table-2**

<b>Codiun Clamps</b>					
<b>Duration in days (Loop line/Main line )</b>	<b>Total no. of clamps installed for trials</b>	<b>Data available for no. of clamps under the duration</b>	<b>Drawing no. of IR fishplates</b>	<b>Satisfactory Performance</b>	
				Nos.	%
<b>7(L/L)</b>	<b>64 Clamps</b>	-	RT-3714 (52 kg)	-	-
		06	RT-3714 (60 kg)	06	100%
		06	RT-5915	06	100%
		28	RT-5916	28	100%
		04	RT-5850	04	100%
		-	RT-5851	-	-
		08	RT-5551	08	100%

## 2024/Track-I/8(1)/HPRC

1965597/2024/Track-I

		06	RT-5848	06	100%
		06	RT-5849	06	100%
<b>3(M/L)</b>	<b>64 Clamps</b>	-	RT-3714 (52 kg)	-	-
		06	RT-3714 (60 kg)	06	100%
		06	RT-5915	04\$	67%
		28	RT-5916	28	100%
		-	RT-5850	-	-
		04	RT-5851	04	100%
		04	RT-5551	04	100%
		06	RT-5848	04\$	67%
		10	RT-5849	10	100%
		-	RT-3714 (52 kg)	-	-
		06	RT-3714 (60 kg)	06	100%
<b>7(M/L)</b>	<b>64 Clamps</b>	06	RT-5915	04\$	67%
		28	RT-5916	28*	100%
		-	RT-5850	-	-
		04	RT-5851	04	100%
		04	RT-5551	04	100%
		06	RT-5848	04	67%
		10	RT-5849	10	100%

\$Shifting of fishplate and HPRC clamps on 2.1<sup>0</sup> curve in Sonpur/ECR are reported

### 7.2 Salient points & observations-Codiun:

1. At a curve location of 3<sup>0</sup> curve (KM 240/28 under SSE/P.WAY/GT/SCR) the clamp has performed satisfactorily with no shifting /movement.
2. At a curve location of 2<sup>0</sup> curve (KM 909/16 under SSE/P.WAY/SDL/SECR) the clamp has performed satisfactorily with no shifting /movement.
3. At 01 locations of 2.1<sup>0</sup> curve under SSE/P.Way/SEE/ECR, shifting of fishplate and HPRC clamps reported for fishplate RT-5915 (1000 mm long FP) & RT-5848 (686 mm long Joggled FP).

At 50 kmph speed, shifting of fishplate RT-5915 (Outer side-40 mm, inner side-12 mm along the traffic direction) & both HPRC shifting (5 & 25 mm) is reported. Due to more shifting, it is considered as **'Unsatisfactory'**.

At other location under the same SSE/P.Way/SEE/ECR, minor shifting (upto 07 mm) of fishplates (& not clamps) is also reported @ 30 kmph speed during trail in Loop lines (straight track).

4. \*Loosening of clamp reported at 01 location (i.e. 02 Codiun clamps with RT-5916 at KM 818/02 under SSE/P.Way/PND/BSP Division/SECR) after passing of 3 days trials @ speed of 50 kmph. This clamp was re-tightened by a torque wrench and the trial completed successfully without any further issue. Hence, this location trial is considered as 'Satisfactory' for speed potential of 50kmph due to successful completion of trial after re-tightening the clamps.

The details of the performance report on field trials of Codiun clamps, has been compiled under "SUMMARIZED OBSERVATION OF ZONAL RAILWAYS" as **ANNEXURE-II.**

HPRC clamp wise performance is tabulated with details of location and



**8. PRECAUTION TO BE TAKEN WHILE USING HPRC CLAMPS:** Based on the field trials of HPRC clamps, the following to be considered:

1. The user officials of the respective Zonal Railways need to be well conversant with the HPRC clamps system for effectiveness of the system during use. The respective executing officials to be more vigilant till enough experience & confidence is attained for these systems.
2. Installation of these HPRC clamps be done as per the detailed instructions manual of respective OEMs. These are attached at Appendix-E. On installation, stipulated tightening torque to be always applied with calibrated torque wrench of requisite capacity. Torque wrench shall be calibrated regularly as per the OEM specification.
3. Trials have been conducted for a maximum speed of 50 kmph. Based on the feedback & performance, fishplated joint with HPRC clamps shall be allowed for 45 kmph speed in this initial phase of adoption.
4. On installation of HPRC clamps (Robel or Codiun clamp) on the running track after passing the first train, the fishplates to be gently hammered with a keyman hammer. This will ensure proper fixing of the clamps with proper gripping & avoid creep/movement of fishplate.
5. For opening of the outer nut (concave) of Codiun clamps, an additional spanner to be used to grip the inner nut (Convex) to avoid opening of both nuts simultaneously.
6. For using HPRC clamps with existing Joggled fishplates, AT-weld should be midway of sleeper spacing, otherwise both HPRC clamps at either end may not accommodate. To overcome this limitation, length of Joggled fishplate is being considered for increase.

## 9. RECOMMENDATIONS:

1. Speed potential on fishplated joints with HPRC clamps prescribed as 50kmph in [Para 1507](#) of IRPWM-2024. However, based on the field trials @ 50kmph speed & corresponding remarks/experiences on HPRC clamps performance, by nominated Zonal Railways, the tested HPRC Clamps i.e. Robel clamps (Ver. 13) and Codiun clamps (MK-8 & MK-2 T 5848) be used at track restoration sites & worksites with respective compatible fishplates @ 45kmph permissible speed for initial 12 months.
2. Daily monitoring by keymen to be done during their daily patrol. If creep is observed while using the HPRC clamps on track, the safeguard of the joint to be done accordingly.
3. At each joint, minimum 02 clamps are to be used to ensure minimum clamping force of 30 kN for each rail joint. Ver. 06 of Robel clamps, which is a long length version is not being recommended for field usage due to more weight and no relative advantage.

## 2024/Track-I/8(1)/HPRC

1965597/2024/Track-I/8(1)/HPRC These clamps will not be used on vulnerable locations mentioned in [Para-307\(3\) to 307\(5\)](#) of IRPWM-2024 as under:

- On banks having height 5 m or more.
- On bridges (having length of waterway as 100 m or more) and on its approaches upto 100 m length.
- The use of HPRC clamps is to be kept limited to 2<sup>o</sup> curve track, as the field trial has been conducted upto this curvature.

After getting experience of using these HPRC clamps for 12 months, further applicability on such locations shall be reviewed.

5. To further improve upon the design & performance of HPRC & Fish plates , quarterly performance report of these HPRC clamps be sent to RDSO as per monitoring proforma for initial 12 months period of usage duly forwarded by JAG official of zone .
6. Compatibility of HPRC clamps (Robel & Codiun) & corresponding Fish plates -

<b>Robel Clamps</b>			
<b>S N</b>	<b>Drawing no. &amp; Fishplates types</b>	<b>Compatible HPRC Clamps</b>	<b>Applying tightening torque</b>
1	RT-5916, Normal fishplate for 60kg rail	Robel 68.05 Ver. 13 (Short version)	580N-m
2	RT-3714, Normal fishplate for 60kg rail	Robel 68.05 Ver. 13 (Short version)	580N-m
<b>Codiun Clamps</b>			
<b>S N</b>	<b>Drawing no. &amp; Fishplates types</b>	<b>Compatible HPRC Clamps</b>	<b>Applying tightening torque</b>
1	RT-3714, Normal fishplate for 52kg rail	Codiun MK-8	400N-m
2	RT-3714, Normal fishplate for 60kg rail	Codiun MK-8	400N-m
3	RT-5850 to RT-5851, Normal fishplate for 52kg & 60kg rails	Codiun MK-8	400N-m
4		Codiun MK-8	400N-m
5	RT-5915, Normal fishplate for 52kg rail	Codiun MK-8	400N-m
6	RT-5916, Normal fishplate for 60kg rail	Codiun MK-8	400N-m
7	RT-5551, Joggled fishplate for 52kg rail	Codiun MK-8	400N-m



2024/Track-I/8(1)/HPRC

1965597/2024/Track-I

8	<i>RT-5848, Joggled fishplate for 52kg rail</i>	<i>Codiun MK-2 T-5848</i>	<i>400N-m</i>
9	<i>RT-5849, Joggled fishplate for 60kg rail</i>	<i>Codiun MK-8</i>	<i>400N-m</i>

ANNEXURE-I

Robel Clamps: Summary of Performance Report of Field Trials on Zonal Railways

Western Railway								
Div.	ADEN& SSE	Section	FP Drg. No. & Robel Clamp Ver.	Speed (kmph) Loop/Ma in line	Location/ Chainage	Period (Days)	Performance	Remarks
RTM	East/ RTM & RTM	GDA-RTM (MRN Yd)	RT-5916 (1000mm) & Ver. 13	30 L/L	643/20	7	Satisfactory	
				30 M/L (UP)	648/03	3		
				50 M/L (UP)		7		
	NMH & JAO	DHWS Yd & NLI Yd	RT-5915 (1000mm) & Ver. 06	30 L/L	370/41	7	Satisfactory	Single Robel clamp-ver. 06 has been used
				30 M/L (D/N)	362/02	3		Trial of RT-3714 cannot be conducted due to non-availability.
				50 M/L (D/N)		7		
ADI	DHG & DHG	SUK Yard	RT-5916 & Ver. 13	30 L/L	651/23	7	Satisfactory	Contact of Robel clamp in fishplate is slight lower to centre of fishplate
				30 M/L(DN)	651/40	3	Satisfactory	
		50 M/L(DN)			7	Un-Satisfactory (Concerned official informed that shifting of fishplate was measured at end of the trials (7 <sup>th</sup> day. The major shifting of fishplate is reported.)	Outer fishplate displaced about 55 mm w.r.t. inner fishplate towards traffic direction, even torque was intact	
	VG & VG	Jaksi Yard	RT-5915 & Ver.06	30 L/L	54/7A-8A	7	Satisfactory	
				30 M/L	49/4	3		
				50 M/L		7		