#131359

ERL MAINTENANCE SUPPORT SDN BHD

(Company No. 498574-T)

E-MAS

Effective Railway Operations; Reliable System Maintenance

ROLLING STOCK DEPARTMENT

IN-HOUSE TECHNICAL INSTRUCTION

WHEEL CHANGE PROCESS GUIDELINE

R00.OMR.M91120.BT.0007.B

Release

	Name	Dept./Position	Date	Signature
Released:	Norazman	RST HOD	26.05.16	
Checked:	Mohamad	RST QEMR	26-05-16	
Author:	Mohd Nurul	RST Tech. Exec.	26.05.16	

Amendments or additions to this procedure must be indicated with a vertical black line in the adjacent left margin.

Change Record and Configuration Control

Revision	Date	Modification	Name
B	26-May-16	Updated to new RST Technical Instruction template & updated EDMS reference numbers. All the contents are remain unchanged	Mohd Nurul
A	3-Mar-08	New - to supersede the existing procedures, (DOCS ref. no. R00.OMR.M91120.PG.0004.A) in order to comply with the current company requirement and overall contains also has been revised.	Mohd Zainullah

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1 Purpose

This technical instruction is to supersede the existing procedure, Workflow for Wheel Change – Bogies/Wheelsets Assembly Replacement, R00.OMR.M91120.PG.0004.A, in order to comply with the current company requirement. Overall contains of previous procedure have been revised.

Purpose of this technical instruction is to provide guideline on how the wheel change process shall be carried out in RST Department.

2 Scope, Distribution & Access

This technical instruction is applicable all RST personnel who are involve directly or indirectly to the wheel change process. The distribution and access shall be available for all RST personnel and could be viewed and retrieved via EDMS and RST Portal [http://express50/ E-MAS_Portal/RST.html]. The hardcopy of this procedure is available in RST foreman room for reference. The full access for editing this document is only granted to RST MGT.

3 Wheel Change Process

The wheel disc shall be changed when its beyond the operational limit as stated in O&M Manual, Maintenance for Power and Trailer Wheelset Diameter 850 – DESIRO ET 425 M R00_RSE_91121_XR_3011_D_MM_trailer wheelset (c.22_055_5iss_engl).pdf, Section 6.3 Operatioanl Limits.

In order to facilitate the wheel change, the wheelset assembly shall be removed from the train. This could be accomplished by;

- Remove the wheelset assembly without the bogie or
- Remove the complete bogie assembly from the train.

The method of removal is depending on the current requirement or necessity.

3.1 Bogie Assembly Removal and Installation

If bogie assembly to be removed, the removal and installation shall be carried out in accordance with O&M Manual, Bogie Frame, R00_RSE_91122_NZ_3001_B_COM_bogie_frame.doc and other supporting documents as outlined herewith.

To facilitate for bogie assembly removal and installation, the train has to be lifted and this could be carried out at Track 11 or Track 12. Operating the lifting jack at both tracks shall be carried out in accordance with O&M manual as follows;

i. Track 11 - O&M manual Lifting Jack Type B (20 T), [D00.DWE.M81212.NZ.0001.B].

ii. Track 12 - O&M manual Underfloor Lifting Line, [D00.DWE.M81310.NZ.0001.B].

The bogie assembly shall be removed and installed as outlined in the checklists that are available in RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.* as follows;

i. For Bogie Removal - Bogie Removal Checklist, refer to Attachment 1

ii. For Bogie Installation - Bogie Installation Checklist, refer to Attachment 2

The checklist must be stamped by the technicians and concurred by respective supervisor or inspectors upon completion of the tasks. The completed checklist subsequently must be kept into the designated folder for record.

3.1.1 Removal Wheelset Assembly From Bogie

To remove the wheelset, all connections securing the wheelset assembly to the bogie shall be disconnected. The bogie frame without wheelsets, shall be hoisted and supported on wooden blocks at the center of the longitudinal frame on both sides.

Cleaning of the bogie frame is to be carried out in the wash bay using the warm water/detergent high-pressure jet mixture spray. **Adequate PPE** is required i.e raincoat, goggles and gloves.

Adequate insulation of plugs and traction motor bearings is to be carried out prior to washing in order to prevent water entry to these areas. Directly aiming or spraying high water jet towards the traction motor bearings and plugs is to be strictly avoided.

3.1.2 Bogie Build-Up

Lift bogie frame and align frame to seat onto the wheelset assembly. Adjustment of the axle gearbox has to be carried out using a lifting device placed below the gearbox (preferably using a crocodile jack). This is to facilitate the gearbox torque arm (dog bone) to be positioned vertically and to secure to the bogie and the gearbox.

Both the upper and lower attachment of the torque arm to the bogie and gearbox respectively are secured to a torque load value of 430 Nm. The bogie will require to be raised on the bogie stand in order to torque load the lower torque arm attachment.

The entire required task should be carried out and checked in accordance with Bogie Build-Up Checklist, available in RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.*. Refer to Attachment 3.

Upon completion of the task, the technician and respective supervisor or inspector shall stamp the checklist.

3.2 Wheelsets Assembly Removal And Installation

If only the wheelsets assembly to be removed from the train, the removal and installation shall be carried out in accordance with;

- O&M Manual, Bogie Frame, R00_RSE_91122_NZ_3001_B_COM_bogie_frame.doc
- Wheelset Assembly Removal & Installation Checklist, which is available in RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.*. Refer to Attachment 4.

The checklist must be stamped by the technicians and concurred by respective supervisor or inspectors upon completion of the tasks. The completed checklist subsequently must be kept into the designated folder for record.

3.3 Kelsan's Flange Lubricators

After the installation of bogies or wheelset completed, all the flange lubricator must be inspected and re-aligned in accordance with KELSAN Flange Lube Manual Rev E June 2005, R00.SUP.M91126.PG.1001.*.

3.4 Train Leveling

The train also required for carbody-bogie adjustment in order to ensure the train safety and stability. The adjustment must be carried out in accordance with Train Leveling Guideline, R00.OMR.M91125.BT.1001.*.

3.5 Test Track

The movement of train to the test track at shunting speed is to be carefully monitored from the inside with at least one person stationed at one bogie in order to hear and sense for abnormal conditions.

The testing of train movement at test track is to be carried out gradually up to the maximum attainable speed at test track. The number of movements at test track is shall be at least two cycles. If the testing at test track is satisfactory, the train will then be tested at the revenue line.

4 Dismantle & Reassemble Of Wheelset

4.1.1 Dismantle of Wheelset Assembly

Remove primary suspensions, axle speed sensors and earthing brush connections inclusive of axle box front cover, which provides the attachment for the sensors and earthing brushes. Also remove the end cap that secures the bearing and accommodates the wheel speed sensor/earthing brush mechanism

Use lifting device for the removal of Cylindrical Roller Unit (CRU) box assembly. The removal and installation of the bearing inner rings shall be carried out in accordance with Dismounting & Mounting Wheel-Set Inner Ring, R00.OMR.M91120.BT.0005.*.

4.1.2 Pressing-Out Wheel Disc

Wheels disc "Pressing-Out" is to be carried out in accordance with O&M Manual, Hydraulic Wheel Press, D00.DWE.85161.NZ.0001.B.

4.1.3 Pressing-In Wheel Disc

Wheels "Pressing-In" is to be carried out in accordance with O&M Manual, Hydraulic Wheel Press, D00.DWE.85161.NZ.0001.B. The minimum Pressing-In pressure is not less than **679 KN** and that the maximum "Pressing-In" pressure does not exceed **1350 KN**.

Prior "pressing-in" the wheel disc, the brake disc shall be checked & installed in accordance with O&M Manual, Wheel-mounted brake disk R 650 S, R00_RSE_91131_XR_4002_B_COM_brakedisk_SABWABCO.

The wheel pressing-in profile is to be printed showing both the left and the right side pressing-in performance. This will be reflected in the printout of the Wheels Pressing-In Performance. This "Pressing-In" record is then to be stored into the "Wheel Press Record" folder kept in the Foreman's room.

4.1.4 Re-assemble of Wheelset

The wheelset shall be reassemble in accordance with Axle Built-Up Checklist, which is available in RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.*. Refer to Attachment 5.

Appendices

Appendix 1 - O&M Manual, Maintenance for Power and Trailer Wheelset Diameter 850 – DESIRO ET 425M R00_RSE_91121_XR_3011_D_MM_trailer wheelset (c.22_055_5iss_engl).pdf,

Appendix 2 - O&M Manual, Bogie Frame, R00_RSE_91122_NZ_3001_B_COM_bogie_frame.doc

Appendix 3 - O&M Manual, Lifting Jack Type B (20 T), D00.DWE.M81212.NZ.0001.B.

Appendix 4 - O&M Manual, Underfloor Lifting Line, D00.DWE.M81310.NZ.0001.B

Appendix 5 - KELSAN Flange Lube Manual Rev E June 2005, R00.OMR.M91126.PG.0005.A.

Appendix 6 - Train Leveling Guideline, R00.OMR.M91125.BT.1001.*.

Appendix 7 - O&M Manual, Wheel-mounted brake disk R 650 S, R00_RSE_91131_XR_4002_B_COM_brakedisk_SABWABCO.

Appendix 8 - O&M Manual, Hydraulic Wheel Press, D00.DWE.85161.NZ.0001.B.

Attachments

Attachment 1 - Bogie Removal Checklist, RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.B

Attachment 2 - Bogie Installation Checklist, RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.B

Attachment 3 - Bogie Built-Up Checklist, RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.B

Attachment 4 - Wheelset Assembly Removal & Installation Checklist, RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.B

Attachment 5 - Axle Built-Up Checklist, RST Heavy Maintenance Checklist, R00.OMR.M14100.PT.1007.B

Rolling Stock Department

Bogie Removal Checklist

Train No. :		Work Order No.:	HM
Date: :		Mileage (KM):	

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Reason for removal:.....

Reference Manual: R00_RSE_91122_NZ_3001_B_COM_bogie_frame.doc

	Work Description	Bogie 1	Bogie 2	Bogie 3	Bogie 4	Bogie 5
		S/N:	S/N:	S/N:	S/N:	S/N:
1	Remove all yaw dampers.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
2	Ensure EP Panel isolation cock for brake cylinder is isolated. Disconnect all brake connections to brake cylinders and blank off all connections.	*Stamp*	*Stamp*		*Stamp*	*Stamp*
3	Isolate traction motor coolant supply line and disconnect qty. 2 traction coolant hoses to motor. Blank off all removed connections.	*Stamp*	*Stamp*		*Stamp*	*Stamp*
4	Raise body stand to support train body for the affected bogie.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
5	For end motor bogie, disconnect qty. 4 attachment bolts at bogie link assembly bogie to carbody.	*Stamp*				*Stamp*
6	For Jacob Motor / Trailer bogie remove qty. 2 bolts connecting bogie torque arm (dog bone) to carbody.		*Stamp*	*Stamp*	*Stamp*	

	Work Description	Bogie 1	Bogie 2	Bogie 3	Bogie 4	Bogie 5
7	For Jacob Motor / Trailer bogie remove qty.2 bolts securing lateral damper to carbody		Stamp	Stamp	Stamp	
8	Isolate air suspension air supply and release all air pressure from air suspensions. Disconnect leveling valve & overheight valve linkage adjustment from bogie.	Stamp	Stamp	Stamp	Stamp	Stamp
9	Remove qty. 4 bolts on each air suspension attaching to carbody. Disconnect leveling valve leakage & over height cable.	Stamp	Stamp	Stamp	Stamp	Stamp
10	Disconnect earthing cables attachment from bogie to carbody at the bogie side & traction motor to carbody (qty 2).	Stamp	Stamp	Stamp	Stamp	Stamp
11	Lower bogie ensuring that no obstruction while bogie is lowered.	Stamp	Stamp	Stamp	Stamp	Stamp
12	After bogie is lowered ensure the primary vertical damper lower attachments bolts are loosened to relieve dampers of stress and damage to rubber bushings.	Stamp	Stamp	Stamp	Stamp	Stamp

Remarks:

Authorised Person (Inspector & above) :

I hereby confirm the work is done according to existing work processes and therefore declare that this unit is fit for service.

Stamp: **Date:**

Rolling Stock Department

Bogie Installation Checklist

Train No.	:	**Work Order No.:**	**HM**
Date:	:	**Mileage (KM):**	

E-MAS
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Reference Manual: R00_RSE_91122_NZ_3001_B_COM_bogie_frame.doc

	Work Description	Bogie 1	Bogie 2	Bogie 3	Bogie 4	Bogie 5
		S/N:	**S/N:**	**S/N:**	**S/N:**	**S/N:**
1	Raise bogie into position ensuring no obstructions and that : - Sec. Suspension alignment is appropriate to facilitate installation of attachment bolts - For EMB ensure alignment of bogie link assembly attachment holes - For JMB/JTB ensure bogie torque	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
2	Grease & secure Sec. Suspension attachment bolts qty. 08 for EMB and qty. 16 for JMB/JTB.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
3	For EMB grease,secure & torque load qty.4 bogie link assembly attachment bolts to 350 Nm i.a.w R00-RSE-91120-XL- 3036 B - Bogie Link Assembly End Bogie - Drawing No. G04 75077137. Apply white paint witness marking.	*Stamp*				*Stamp*
4	For JMB/JTB grease, secure and torque load qty.2 bolts attaching bogie torque arm (dog bone) to carbody and torque load to 350 Nm i.a.w R00-RSE-91120-XL- 3036 B - Bogie Link Assembly End Bogie - Drawing No. G04 75077137. Apply white paint witness marking		*Stamp*	*Stamp*	*Stamp*	
5	Lower body stand.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
6	Torque Sec. Suspension attachment bolts qty. 08 for EMB and qty. 16 for JMB/JTB to torque value of 260 Nm i.a.w R00-RSE-91010-XL-2153-A - Air Spring Assembley Drawing No.1 DD0216000153. Apply white paint witness marking.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*

	Work Description	Bogie 1	Bogie 2	Bogie 3	Bogie 4	Bogie 5
7	Grease, secure & torque lateral horizontal damper to 70 Nm i.a.w R00-RSE--91120-XL- 3021-A - Shock Absorber Arrangement. Drawing No. G04 75077106. Apply white paint witness marking.	Stamp	Stamp	Stamp	Stamp	Stamp
8	Remove all blanks & re-connect all brake hoses to brake cylinders. Mark connections with white paint witness marking.	Stamp	Stamp		Stamp	Stamp
9	Remove all blanks and re-connect qty.2 traction motor coolant hoses. Mark connections with white paint witness marking & normalise traction motor coolant supply line isolation valves qty.2.	Stamp	Stamp		Stamp	Stamp
10	Attach & secure all disconnected earthing cables between bogie to carbody including traction motor to carbody earthing cables.	Stamp	Stamp	Stamp	Stamp	Stamp
11	Re-tightenen & torque load primary vertical damper lower attachment bolts to a torque of 70 Nm i.a.w R00-RSE-91123-XR-3020-B Page 31 of 35.	Stamp	Stamp	Stamp	Stamp	Stamp
12	Re-fit yaw dampers ensuring that attachment bolts are greased & torque loaded to 330 Nm for steel bracket attachment & 170 Nm for aluminium bracket attachment i.a.w R00-RSE-91120-XL-3022-A - Shock Absorber Arrangement - Drawing No. G04 75077134.	Stamp	Stamp	Stamp	Stamp	Stamp
13	Re-connect leveling valve & overheight valve adjustment linkages.	Stamp	Stamp	Stamp	Stamp	Stamp

REMARKS:

Authorised Person (Inspector & above) :

Certified that the above stated items under column 'installation' have been inspected, red inspection markings applied to all torque loaded bolts & nuts and train fit to move out from track 12.

I hereby confirm the work is done according to existing work processes and therefore declare that this unit is fit for service.

Stamp: **Date:**

Rolling Stock Department

Bogie Build-Up Checklist

Train No.	:	**Work Order No.:**	**HM**
Date:	:	**Mileage (KM):**	

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Reference Procedure: R00.OMR.M91120.BT.0007.A

	Work Description		Bogie 1	Bogie 2	Bogie 3	Bogie 4	Bogie 5
		Bogie S/N:					
		Axle S/N:	#1	#3	#5	#7	#9
			#2	#4	#6	#8	#10
1	Secured all 8 units/bogie primary suspensions (conical spring) to CRU box assemblies & torque loaded to 200 Nm i.a.w R00-RSE-91120-XF-3017-A-G02 75056651.		*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
2	Install primary dampers, mounted between bogie frame and CRU box assemblies. **Reminder!** Tighten the mouting bolts at CRU box assemblies only when the carbody is fully lowered on bogie, as it will cause damage to the rubber sleeves.		*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
3	Torque arm (dog bone) securing bogie to gearbox & gearbox to torque arm torque loaded to 430 Nm. Ensure torque arm is fitted with the side of greater curvature facing towards the gearbox i.a.w R00-RSE-92083-YU-0001 - A Sectional Drawing 32-1193-30 & R00-RSE-92083 Pg.4-22 Assembly Procedures Para 4.3.14 Item 2 & 3. Torque load attachment pin to 300 Nm i.a.w R00-RSE-92083 Pg.2-9 Para 2.5.3		*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
4	Check & adjust the tilting rod to; 1. End Bogie: 488mm (R00_RSE_91120_XL_3029_A_75077135) 2. Jacob Bogie: 440mm (R00_RSE_91120_XL_3028_A_75077136)		*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
5	Ensure gearbox & wheel speed sensors are secured i.e quantity 2 each bogie		*Stamp*	*Stamp*		*Stamp*	*Stamp*

		Bogie 1	Bogie 2	Bogie 3	Bogie 4	Bogie 5
6	Install traction motor to bogie frame, i.a.w Drawing R00-RSE-91120-XL-3014-A. 2 pcs bolts with bush torque load 110Nm & 8 pcs bolts without bush torque load 330Nm.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
7	Secured & torque both axles traction motor & gearbox couplings to 32 Nm, i.a.w Drawing R00-RSE-91120-XL-3014-A-G87 75056700	*Stamp*	*Stamp*		*Stamp*	*Stamp*
8	Assemble and mount brake caliper. See Section 8-3, R00_RSE_91131_XR_4004_C_COM_calliper_SABWABCO.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*
9	All torque loaded bolts are marked with **white** witness mark by Technician & **red** witness mark by Inspector, after inspection.	*Stamp*	*Stamp*	*Stamp*	*Stamp*	*Stamp*

This checklist also should be attached together with;

1. Wheelset Assembly Removal & Installation Checklist of all the relevent axle. ☐ **YES** ☐ **NO**
2. Axle Build-Up Checklist of all the relevent axle. ☐ **YES** ☐ **NO**

REMARKS:

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Authorised Person (Inspector & above) :

Certified that the above stated items under column 'installation' have been inspected, red inspection markings applied to all torque loaded bolts & nuts and train fit to move out from track 12.

I hereby confirm the work is done according to existing work processes and therefore declare that this unit is fit for service.

Stamp: **Date:**

Attachment 4

Rolling Stock Deparment

Wheelset Assembly Removal & Installation Checklist

HM

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Train No.: _____ **Bogie S/N.:** _____ **Work Order No. :** _____

Date: _____ **Position:** _____ **Mileage (KM) :** _____

Reference Procedure: Wheel Change Process Guideline, [R00.OMR.M91120.BT.0007.*].

REMOVAL

Axle S/N Removed:

	Work Descriptions	Done by (Stamp)
1	Remove Yaw Dampers.	
2	Remove Primary Damper Lower Attachments Bolts.	
3	Isolate Secondary Suspension Air Supply Cock & Release Secondary Suspension Pressure.	
4	Remove Leveling Valve & Overheight Cable Attachment To Bogie.	
5	Disconnect Axle Speed Sensors For Bogie 1,2,4 & 5 / ATP Speed For Bogie 3.	
6	Disconnect Earthing Cable Attachment To Axle Boxes.	
7	Remove Brake Pads From Brake Pad Holders.	
8	Remove Flange Lubricator Stick Applicators (For Bogies No 2, 3 & 4 only).	
9	Remove Traction Motor & Axle Gearbox Coupling Half Bolts.	
10	Remove Gearbox Attachment Pin.	
11	Disconnect Gearbox Speed Sensor Cable Clamp & Unplug Socket Connection.	
12	Remove Torque Arm Lower Attachment to Gearbox.	
13	Clear Off Gearbox From Torque Arm.	
14	Support Car Of Effected Bogie On Body Stand.	
15	Lower Effected Bogie Hoist To Facilitate Lowering Of Wheelset Assembly From The Bogie.	
16	Remove Primary Suspensions From Axle Bearing Boxes.	

REMARKS:

INSTALLATION

NOTE: Inspector stamp column MUST be stamped by a deferent person who stamps on the technician column.

Axle S/N Installed:

	Work Descriptions	Technician Stamp	Inspector Stamp
1	Clean & transfer primary suspensions & shims to replacement wheelsets assembly. Torque load primary suspension attachment bolts to **200Nm**.		
2	Transfer gearbox speed sensor to replacement gearbox. Apply Loctite 518 to speed sensor contact surface & Loctite I243 to screws prior to tightening.		
3	Raise the effected bogie hoist to facilitate installation of the wheelset into position		
4	Secure Gearbox Onto Torque Arm. Apply Loctite L243 To Lower Attachment Bolts & Torque Load To **400Nm**. Apply Witness Marking.		
5	Insert Gearbox Attaching Pin & Torque Load To **300Nm**. Apply Witness Marking.		
6	Secure Primary Damper Lower Attachment Bolts To Axle Bearing Box & Torque Load To **70Nm** at Top and **100Nm** at Bottom. Apply Witness Marking.		
7	Secure Traction Motor & Gearbox Coupling Half. Bolts to be treated with Straburag Grease NBU 30 Or Volex Grease. Replace All Nuts & Torque Load To **32Nm**. Apply Witness Marking.		
8	Ensure brake pads are installed to all brake.		
9	After lowering body stand refit yaw dampers. Torque load to **330Nm** for steel bracket attachment & **170Nm** for aluminium bracket attachment. Apply witness marking.		
10	Install Axle Speed Sensors For Bogies No. 1, 2, 4 & 5 / ATP Speed Sensors For Bogie No. 3		
11	Refit earthing cables to axle boxes.		
12	Refit leveling valve & overheight cable to bogie attachment.		
13	Install flange stick Applicator & Adjust i.a.w Kelsan Operating Manual Revision E. Ensure That Stick Lubricators Are Fitted & Secured.		
14	If new wheels are Fitted, ensure 18 mm Shims Are Removed From Under Secondary Suspension.		

Authorised Person (Inspector & above) :

Certified that the above stated items under column 'installation' have been inspected, red inspection markings applied to all torque loaded bolts & nuts and train fit to move out from track 12.

I hereby confirm the work is done according to existing work processes and therefore declare that this unit is fit for service.

Stamp: **Date:**

Attachment 5

Rolling Stock Department

Axle Build-Up Checklist

HM

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Axle S/N: _____ **Work Order No.:** _____

Date: _____

Reason of Axle Build Up:

- ☐ WCP/Axle bearing replacement
- ☐ Axle bearing regrease
- ☐ Others (please specify):……
- ☐ Gearbox overhaul
- ☐ Brake disc change

Reference Procedure: Wheel Change Process Guideline, R00.OMR.M91120.BT.0007.*

NOTE: Inspector stamp column MUST be stamped by a deferent person who stamps on the technician column.

No.	Work Description	Technician's Stamp	Inspector's Stamp
1	All 8 bolts and nuts securing a pair of brake disk to one wheel @ 4 pairs of brake disk to 4 wheels of a powered bogie are in the correct position i.e bolthead at clamping block side. Ensure belleville washers are correctly positioned prior to installation of mounting bolts and nuts. Bolts tightened to a torque load of 50 Nm i.a.w R00-RSE-91131-NZ-4001 SAB WABCO Pg. 7-6 Fig. 7.6 & Pg. 7-7 Item 11.		
2	All axle collars & sleeves fitted and hydraulically pressed in the correct position i.a.w R00-RSE-91120-XL-3018-8 Drawing G02 75056606 & Operation & Maint. Manual - Hydraulic Bearing Removal Equipment D00-DWE-85242-NZ-0001-A.		
3	Replaced Axle Bearing	☐ YES ☐ NO	
4	All bearings cleaned & regreased with Shell Gadus S5 V42P (previous name: Narita HV) Grease. Total quantity of grease applied to a pair of bearings in a single CRU box assembly is **210 grams** i.a.w R00-RSE-91121-XR-3020-A SKF 1040173 Pg. 17 of 19 Item No. 7.6		
5	CRU assembly secured with either earthing assembly OR wheel speed sensor assembly & torque loaded to **200 Nm** i.a.w R00-RSE-91121-XF-3021-A-Wheelset Bearing SKF Drawing 1040173 Radsatzlager.		
6	Earthing assembly & wheel speed sensor assembly covers secured to a torque load of 100 Nm i.a.w R00-RSE-91121-XF-3021-A-Wheelset Bearing SKF Drawing 1040173 Radsatzlager.		
7	Change gearbox oil (Shell Spirax S2 A 90, approx. 6L). Secured & torque the refill & drain plug to **200 Nm**. Torque refill plug only after inspector's inspection. Torque overflow bore to **30 Nm**. Apply witness marking.		
8	Change gearbox couplings oil i.a.w Installation & Maintenance Gear Coupling 150-1 KWN 31039 Pg. 3 of 13 & R00-RSE-92083-NZ-0001 Operating Instructions Pg. 2-17 Para 2.6.4.		
9	All torque loaded bolts marked with white witness mark by Technician & red witness marks by Inspector after inspection.		

REMARKS:

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Authorised Person (Inspector & above) :

I hereby confirm the work is done according to existing work processes and therefore declare that this unit is fit for service.

Stamp:

Date: