5 COUPLER & BUFFING GEAR

Version: 1.1



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Amendment and Revisions

Version	Date	Corrections	Remarks
1.1	JULY 2022	REVISED MANUAL	

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5.1 Introduction

The connection between two adjacent vehicles within a train set is done by a “coupler system” consisting of the coupler itself and a draw and buffing gear. The center buffer couplers used on ac LHB coaches are tight lock center buffer couplers of AAR type H. They can be coupled with AAR type “E” center buffer couplers fitted on locomotives.

The center buffer coupler combines the draw and buffing gear in one. It can transmit both the tensile and compressive forces. Further, the tight lock coupler by its special design hinders the climbing of the vehicles in case of an accident.

The AAR type H coupler is a CBC, enabling automatic coupling in straight lines, and also (with some limitations) in the transition between straight lines and a curve with maximum vertical & horizontal gathering range of ±90 mm & ±110 mm respectively only.”

The “Coupler System” allows a vertical angle of deflection of 4 to 7 deg. and horizontal angle of deflection of 10 to 18 deg. on either side of the coupler center line.

During coupling, the “opened” knuckle will be turned in the coupled position by the shape of the adjacent coupler. In this position, a lock moves down in a position, so that the knuckle is fixed in the coupled position. During uncoupling, the lock moves to the top by a turning movement of a lever on the coupler head, and the knuckle becomes free. The uncoupling is done by using the uncoupling facility consisting mainly of a rod system. Referring to a single vehicle, uncoupling is only possible from one side of the coach (only from the right side when looking at the end wall of the coach).

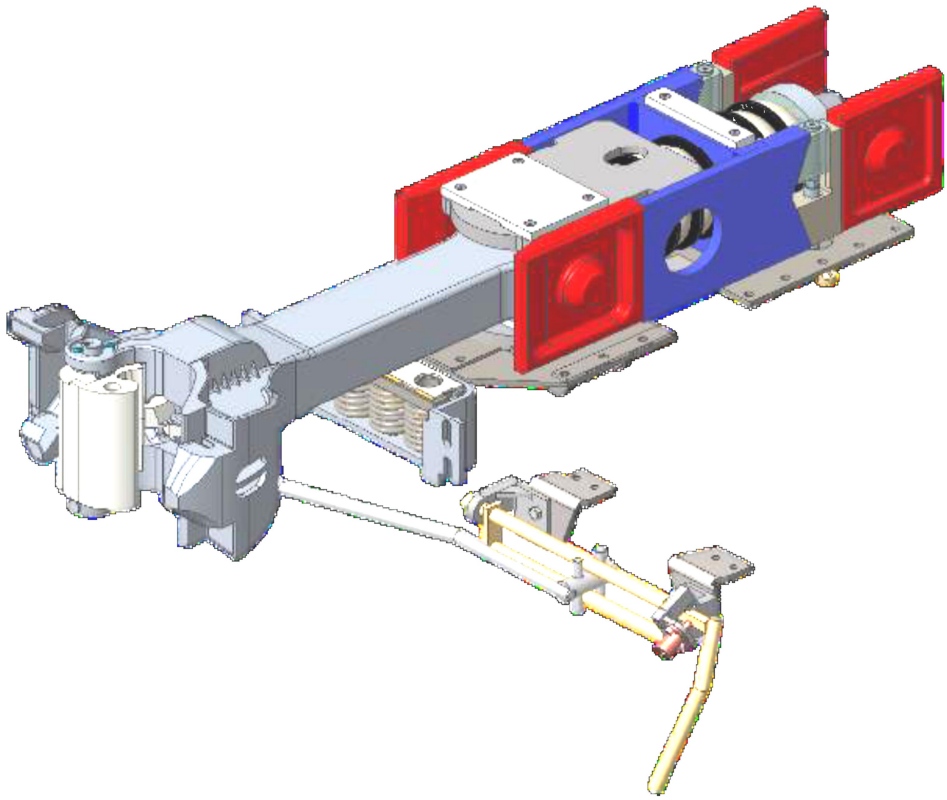


Figure: 5.1 Coupler Assemblies

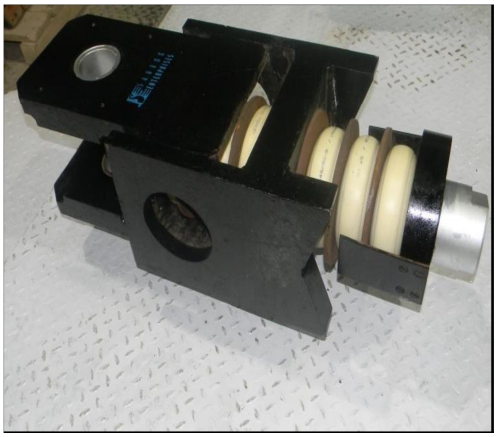
Types of CBC Couplers:

1. M/s Faiveley, M/s Escorts, M/s Sanrok, M/s Frontier and M/s Voith etc. has coupler with integral shank and balanced draft gear (BDG) design:

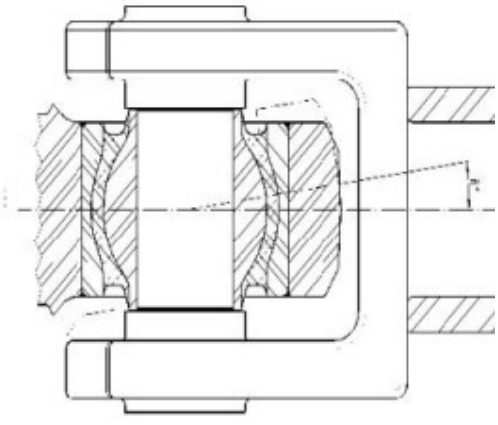
- BDG has comprised of two separate elastomeric pads stack i.e. buff mode &
- tensile/draft mode.
- In buff mode, buff side pad stack is compressed while the draft side pad stack expands.
- In tensile/draft mode, the draft side pad stack is compressed while the buff side pad
  stack expands.
- The connection between draft gear and coupler head through the main pin.
- Articulation of coupler heads through the main pin.
- Currently, couplers as per CBC spec RDSO/2011/CG-03 Rev.01 & Rev.03 are in regular service.



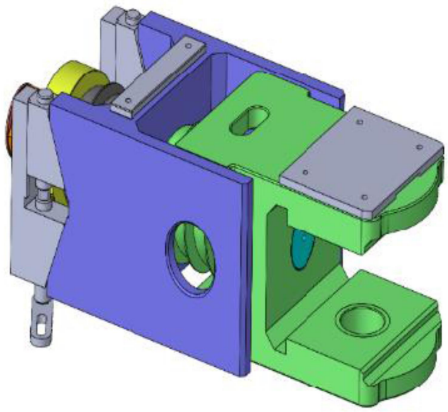
AAR-H type coupler head



Balanced draft gear



Articulation in Coupler & BDG

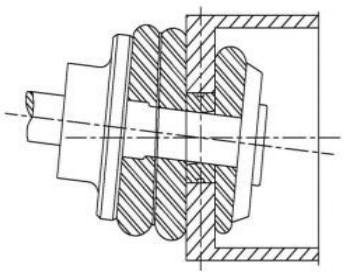


BDG

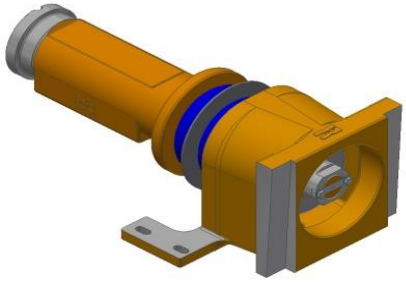
2. M/s Dellner and M/s Faiveley Coupler

- It has also balanced type draft gear i.e. BDG having two separate elastomeric pads stack i.e. buff mode & tensile/draft mode.

- Coupler head and draft gear (i.e. draw bar) is joined through muff coupling.
- Articulation of coupler head through elastomeric pads.
- Better riding behaviour experienced than other conventional BDG type coupler.



Articulation in muff coupling coupler



Draft gear in muff coupling draft gear

5.2 Description of the Components

Main components of the coupler system are:

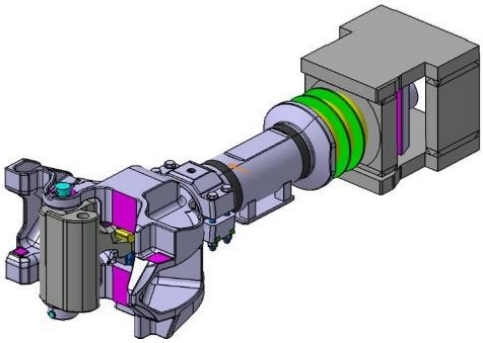
- Tight lock coupler head (AAR type H) with draw bar
- Supporting device
- Draft Gear
- Manual uncoupling device.

5.2.1 Tight Lock Coupler Head Type "H"

Coupler head is a standard AAR „H" type tight lock coupler head with an uncoupling device that can be operated from outside the track. The coupler head and shank in integral type design is casted in single piece while in muff coupling type design, coupler head is casted separately. Coupler head has various parts like knuckle, lock, knuckle thrower and rotary lock lifter assembly etc, which are assembled in the coupler head to enable coupling and uncoupling operation.



Integral shank type coupler head



Muff coupling type coupler head

Coupler Head Parts

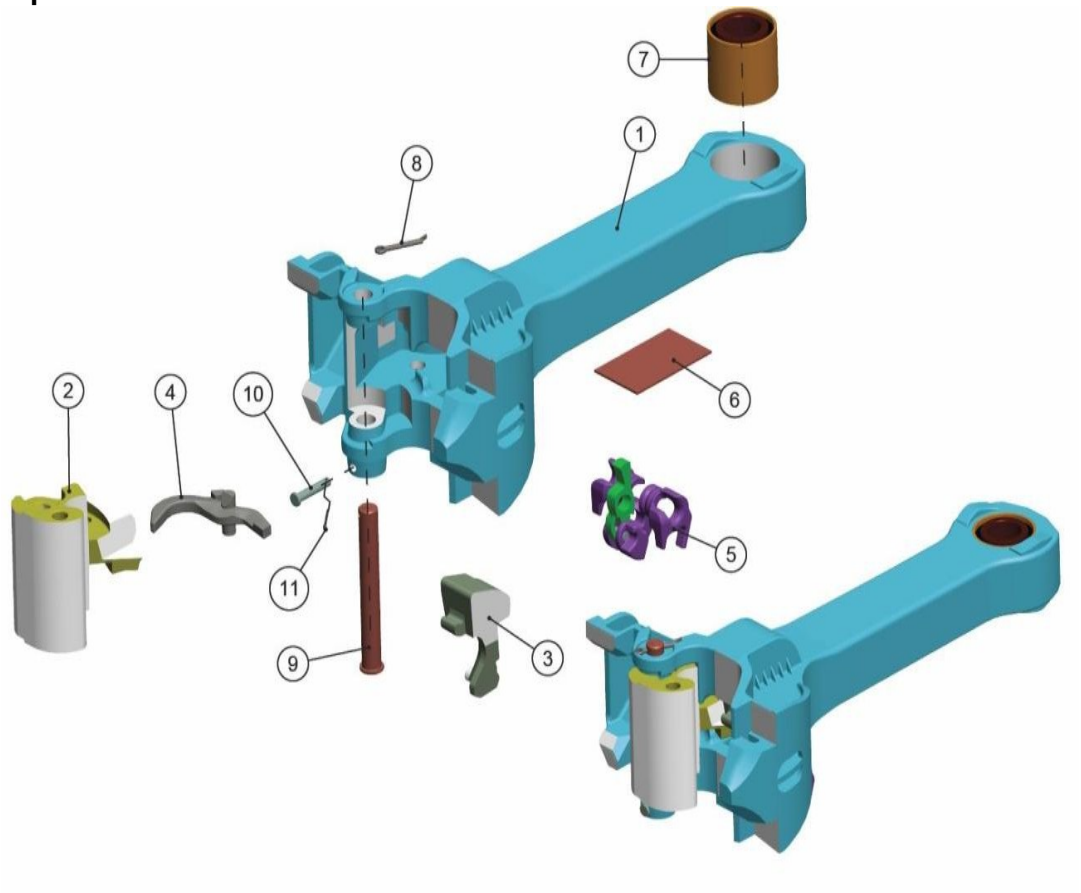


Figure: 5.2 Coupler Head Parts

Item	description	Item	description
1.	Main Body	8.	Split pin for knuckle pin
2.	Knuckle	9.	Knuckle pin
3.	Lock	10.	Support pin for knuckle pin
4.	Knuckle Thrower	11.	Spilt pin
5.	Rotary Lock Lift Assy.	12.	Tertiary lock pin arrangement (hidden)
6.	Wear Plate		
7.	Silent block		

5.2.2 Supporting Device

The Supporting device comprises of four preloaded compression springs. The device is placed on a platform and bolted to the car structure. The coupler head rests on the top wear plate of the Supporting device and this device supports the coupler weight.

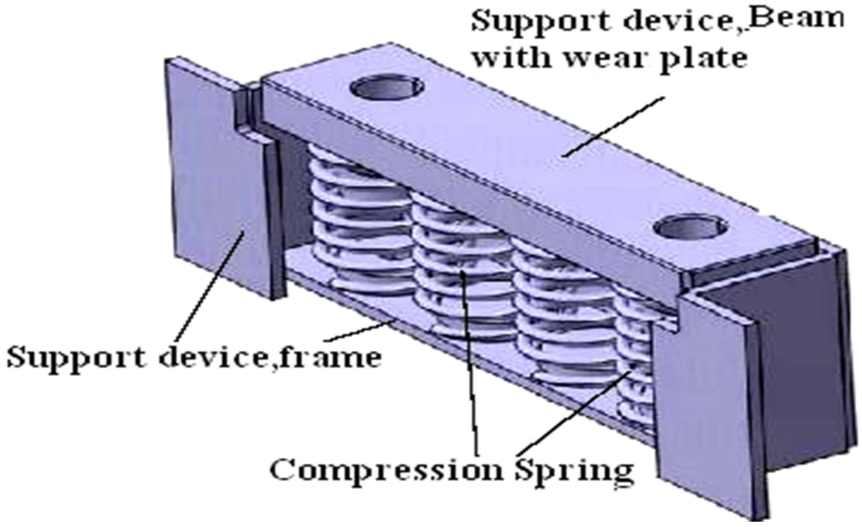


Figure: 5.3 Supporting Device

5.2.3 Draft Gear

The draft gear is a double acting device for energy absorption. The device is designed to fit into the draft gear pocket of the coach and absorbs the dynamic energy in both draw and buff modes. The max tensile stroke and buff stroke is 58 mm and 90 mm (max).

Note: Front stoppers and Rear stoppers are welded in the draft gear pocket of coach

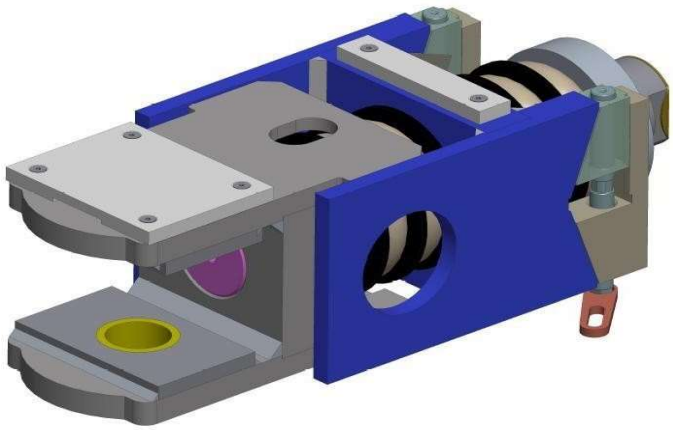


Figure: 5.4 Draft Gear

5.2.4 Type of the Draft Gear:

Balanced type draft gear:

Balanced type draft gear is fixed between the front and rear stopper of under frame pocket and there is no relative movement between the draft gear H-Housing and these stoppers. Front fork of BDG movement takes place w.r.t. H-Housing in buff and tensile mode. Thus buffing and tensile(draft) impacts are absorbed by draft gear.

Movement (travel) of draft gear depends on impact force. Draft gear is designed up

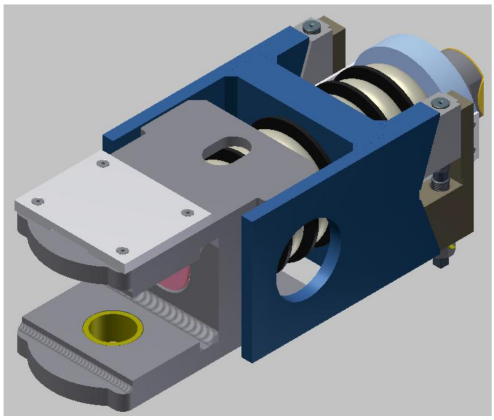
to maximum travel of 90 mm in buff mode while 58 mm in draft mode.

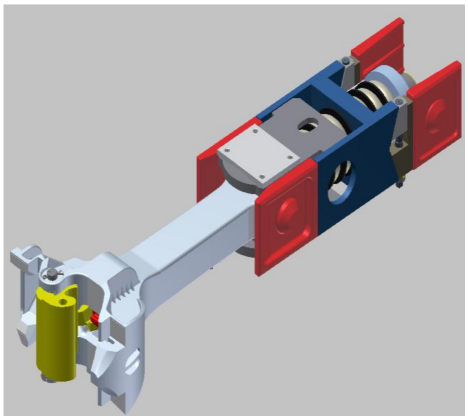
5.2.5 General Overhauling of Coupler & Balanced Draft Gear)

(Overhauling shall be done as per OEM maintenance manual)

BDG major components

- Stack of 5-2 elastomeric pads in compression and 3-1 in tensile mode which vary from make to make
- PA-6 bushes for smooth sliding of intermediate plates & pads over Main bolt.
- Fabricated Front Fork & H Housing.
- High toughness forged Main bolt.
- Rear stopper/end plate & main/round nut.
- Adjustable wedges to tighten the BDG assembly with coach under frame.
- H Housing (blue color) which is tight fitted with coach under frame (red color) between front & rear stoppers with the help of special design wedge key.





5.2.6 Manual Uncoupling Device

The manual uncoupling device is a combination of levers and rod. The manual uncoupling device is mounted on one side, near end-wall of coach, connecting the uncoupling mechanism on coupler head through the sliding rod. Lock pin arrangement given is unlocked first then handle of the uncoupling device is unlocked, lifted and then rotated in the clockwise direction for uncoupling. After coupling, locking of the handle has to be ensured to prevent unauthorized uncoupling. Thereafter, locking of Lock pin arrangement given is to be ensured.

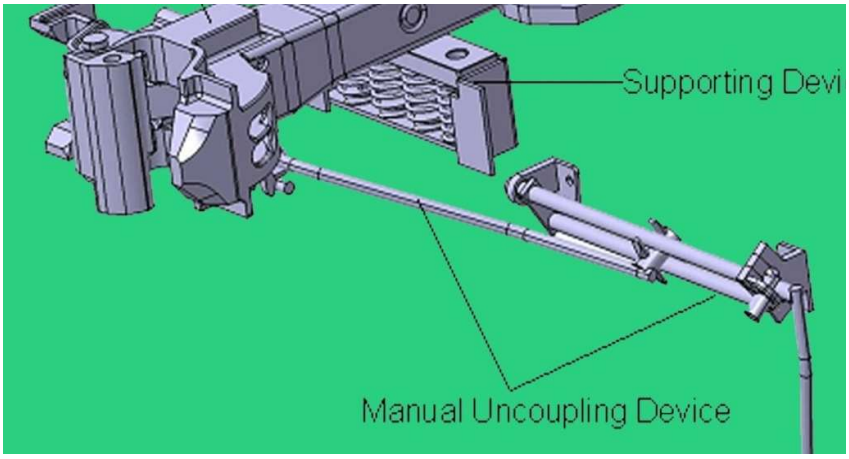


Figure 5.5 Manual uncoupling devices

5.2.7 Mounting Plates

Front carrier plate and Rear carrier plate are fastened to the under frame after mounting draft gear in the UIC pocket of coach. Front carrier plate has a hole (Ø 110 mm) for inserting the central pin(Ø 80 mm). A locking plate is fitted by sliding in between the central pin and front carrier plate to prevent central pin from falling off. This arrangement facilitates fitment and removal of coupler head without removing the front carrier plate. It is very important to use only high tensile bolts (Grade 10.9) for fastening these mounting plates.

5.3 General Technical Data:

Material	AAR specification M 201 Grade 'E'
Compressive strength (yield)	2000kN
Tensile strength (yield)	1000kN
Coupler length	1030 mm (from pivot to coupling line)
Torsional strength	135 kN-m (min. for integral type shank)
Weight of coupler Head	230 kg (approx.)
Weight of coupler Assy.	600 kg (approx.)
Vertical gathering range (max.)	±90 mm
Horizontal gathering range (max.)	±110 mm
Curve negotiation	175 m (radius)
Vertical articulation of coupler	± 4-7 (in degree)
Horizontal articulation of coupler	± 10-18 (in degree)
Travel of draft gear(buff/compression)	90 mm (max)
Travel of draft gear (draft/ tensile)	58 mm (max)
Draft gear capacity (Dynamic)	35kJ min.(RDSO/2011/CG 03(Rev.01)) 20kJ min .& not exceeding 35 kJ (Rev.03)
Pre compression/preload	Suitably pre-compressed(CG-03 (Rev.01)) 10kN-20 kN (CG-03(Rev.03))

5.4 Coupling and Uncoupling Procedure

To facilitate the safe operation of building up trains and coupling of coaches by the tight lock couplers, it is absolutely necessary to follow the instructions given below.
"H"-Type coupler for the IR - Coaches has the following gathering range:
Horizontal: ± 110 mm
Vertical: ± 90 mm

5.4.1 Coupling Procedure

The coupling procedure is described as follows

- Bring the vehicles near to each other at a slow speed (approx. 2 - 3 km/h) and stop the
- vehicles at approximately 1-meter distance of each other.
- Check alignment and position of coupler centers. If required, pull the couplers manually towards each other and make sure that they are within the gathering range as given above (para 5.3).
- At least, five coaches of the rake to be braked first."
- Now push the vehicle slowly (approx. 3km/h) for coupling with the adjacent braked coaches.
- Check position of clear tell-tale sign/recess for proper coupling (location of the tell-tale is shown in figure below) –

- Make sure, that the handle of manual uncoupling device is locked after coupling.
- locking of tertiary locking pin arrangement given has to be ensured after coupling

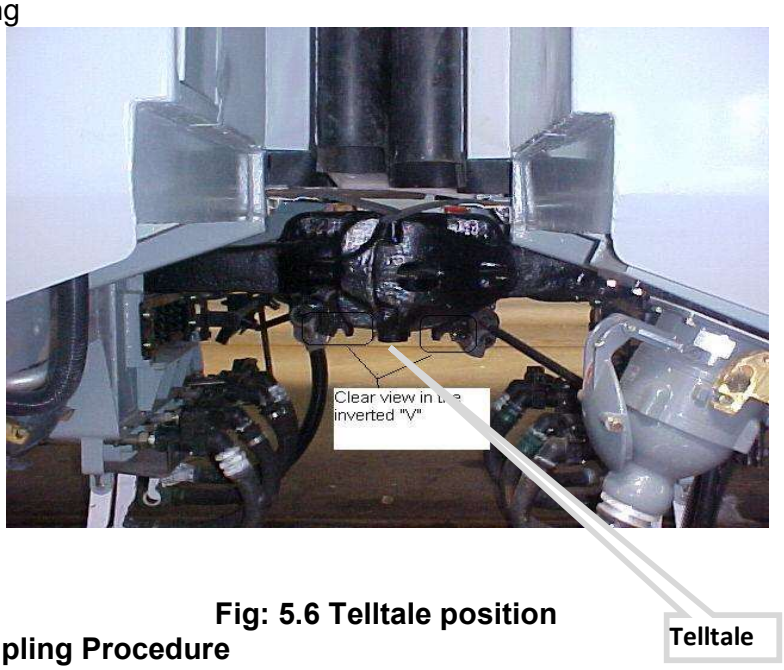


Fig: 5.6 Telltale position

5.4.2 Uncoupling Procedure

"Un-locking of tertiary locking pin arrangement given has to be ensured first". Then, Unlock the handle by rotating locking screw with the special key. Lift and turn the handle in clockwise direction to a horizontal position (minimum 90°) and eased it back and pull the coaches apart, if not uncoupled then hold uncoupling device to a horizontal position. Before uncoupling make sure that the couplers are not subjected to any tensile load and the uncoupling lever is fairly free to turn. A common practice for this uncoupling operation is also to push the vehicles together (with one vehicle applied with parking brake) to avoid excessive binding in the system.

5.5 Parts List for the Tight Lock Coupler Head

Item no.	Description	Qty.
1	Coupler Head main body	1
2	Knuckle	1
3	Lock	1
4	Knuckle Thrower	1
5	Rotary Lock Lifter Assy.	1
6	Knuckle main pin	1
7	Support pin for knuckle main pin	1
8	Split pin for Knuckle main pin	1
9	Split pin for Support pin of knuckle main pin	1
10	Spherolastic bearing (silent block) etc.	1
11	Wear plate	1
12	Tertiary locking pin arrangement	1

5.6 Coupler Mounting and Dismounting

5.6.1 Preparation of the vehicle

The dimension of draft gear pocket on coach has to conform to 510 mm that shown

in the arrangement drawings. Mounting procedure/sequence to be followed for installation of coupler on the vehicle is described below.

5.6.2 Mounting of the draft gear

a) Balanced Draft Gear and Wedge lock (fully closed) to be placed on Hydraulic trolley, if required wooden block of suitable thickness can be used for supporting BDG.
b) Raise the trolley until the BDG is inserted in pocket and align the BDG w.r.t. draft gear pocket so that it is equi-distance from either side.
c) Tightened the wedge lock in zig zig manner upto 400-450N-m torque.
d) Place the front and rear carrier plate on hydraulic trolley and raise till it touches draft gear pocket.
e) Align the holes of both carrier plates with pocket/underframe and to be bolted diagonally with M-16 nut and bolt upto 180-200N-m torque. Wedge locking key to be secured with either M-16 bolt as per requirement.

Note: refer OEM manual for specific details.

5.6.3 Mounting of the coupler head

The coupler head is to be placed on a hydraulic lifting trolley or on the forklift and inserted into the draft gear from front end of coach, to connect the coupler head linkage to the draft gear by means of the central pin. The central pin has to be inserted through the hole in front carrier plate from the bottom side of under frame of the coach (Alternately, front carrier plate may be fitted after mounting of coupler head). The position of central pin has to be secured by sliding the locking plate in between central pin and front carrier plate. Locking plate is secured by two M16 bolts/nuts. The bolts are to be tightened to the 200 Nm torque and to be locked with spring dowel/split pin.

5.6.4 Mounting of the supporting device

Holding the coupler head in lifted position (above horizontal), the supporting device is positioned on the vehicle platform below shank of coupler head before letting the coupler head to rest on the supporting device. The supporting device is then fastened using four bolts M20x 50 mm. The bolts are to be tightened to the 510 Nm torque value. Use of thread locking agent is recommended. Apply grease on the wear plate of supporting device.

5.6.5 Mounting of the Manual Uncoupling Device

To complete the coupler mounting, manual uncoupling device is to be fitted. Mounting brackets (2 types) are mounted on the vehicle structure and the manual uncoupling device is fastened to these mounting brackets. Uncoupling lever has to be connected to the coupler head before fastening the device to mounting brackets.

5.6.6 Final check of coupler installation

- After completion of coupler installation the following functional checks are to be executed: -
- Proper fastening and securing of all bolt connections to recommended torque.
- Free movement of the coupler head in horizontal and vertical direction.
- Free movement of the lever system of the manual uncoupling device and its proper locking by locking screw.
- Functional check of the uncoupling device on coupler head by operating manual uncoupling device
- Coupling and uncoupling test.

5.6.7 Dismounting of Coupler Head

a) Unscrew M-16 bolt of support bracket outer and pull rotary bar handle from support bracket inner and remove the uncoupling hook/sliding rod from rotary lock lifter assy.
b) Hang/secure the Coupler head by an overhead crane/ hydraulic trolley or fork lifter and remove the supporting device.
c) After Un-tightening both M 16 Nut and bolts of stiffener plate, remove it from front carrier plate.
d) Insert the M-16 bolt duly welded on a T shaped rod in central/main pin and tight slightly and pull carefully to withdraw it. In case feeling difficulty shake the coupler head.
e) Now coupler head is free from Draft gear front fork and remove it gently by the overhead crane/ hydraulic trolley through which it is hanged /secured.

Note: In SS-III, front carrier plate to be removed directly instead of following step (b &c).

5.6.8 Dismounting Draft Gear

a) Remove the coupler head from the coach under frame
b) Place the hydraulic trolley beneath the draft gear, Un-tighten all M 16 Nut and bolts of the front and rear carrier plate. Wooden block as per convenience may be used for support.
c) Still draft gear is not loose but be careful, Un-tighten both LH-RH bolt of Wedge lock. This will loosen the Draft Gear and it will come down slowly, if required, gently hammered this bolt.
d) The Balanced Draft Gear rests on the hydraulic trolley, lower down the hydraulic trolley and removes the Balanced Draft Gear

Procedure for replacement of draft gear assembly

a) Rear carrier plate & Balanced Draft Gear along with Wedge lock (fully closed) to be placed on Hydraulic trolley, if required wooden block of suitable thickness can be used for supporting BDG.
b) Raise the trolley until the BDG is inserted in pocket and align the BDG w.r.t. draft gear pocket so that it is equi-distance from either side.
c) Tightened the wedge lock in zig zig manner upto 400-450N-m torque. At least two M-16 bolt (diagonally) of rear carrier plate to be tightened loosely.
d) Align the holes of carrier plate with pocket/under frame and bolted diagonally with M-16 nut and bolt up to 180-200N-m torque. Wedge locking key to be secured with either M-16 bolt as per requirement.
e) Fit the supporting device with torque 500-550N-m, if dismounted.
f) Fit the coupler main body duly hanged/secured in crane/fork lifter into front fork of BDG and insert main/yoke pin, if required shake the coupler head and after fitment, remove the crane/fork lifter.
g) Fit the front carrier plate with torqueing all M-16 bolt with 180-200N-m.
h) (f) Refit the uncoupling hook/sliding rod in rotary lock lifter assy. and insert into rotary bar handle/uncoupling handle. Then support bracket outer to be tightened with torque 180-200N-m.
i) Check coupler head for proper coupling-uncoupling.

Note: New Nylock nut and bolts with washer should be used. See, OEM's manual for Specific requirement.

Tools Required

1) Hydraulic trolley/crane with min. 500/1000 kg capacity.
2) Torque wrench set- 200-300,400-600 N-m etc.

3) Fitters Hammers (500/1000 grams)
4) Screw drivers.
5) Central pin puller
(See, OEM's manual for specific requirement)

5.7 Periodic Maintenance & Overhauling

The following schedules shall be followed for Coupler assembly -

Position of coupler	Frequency
Coupled (in rake formation	DA/Each trip/Weekly
Coupled (in rake formation)	DB/Monthly
Uncoupled	DC/ Six Monthly
Uncoupled (Single coach)	18 months (SS –I)
Dismounted (Head only) from coach and disassembled	36 months (SS –II)
Dismounted from coach and disassembled	6years (SS – III)

Maintenance Schedules and Action

Interval	Maintenance
D1/Trip/Weekly Schedule	• Visual inspection of coupler head for damage • Inspection of knuckle for damage. • Checking of coupler operating mechanism & lock pin arrangement given for damage/ loose bolts etc. • Greasing of glide/operating rod of coupler operating mechanism (once in 3 months) • Checking of telltale recess, for ensuring proper coupling. • Inspection of coupler carrier/supporting device and its springs for cracks and breakage. • "Inspection of loose/broken/missing nuts and bolts(M-16) and wear for coupler pin support front carrier plate and draft gear rear support/carrier plate".
D2/Monthly Schedule	All items of D1 • Visual check for external damage, condition of wear plate on shank. Replace wear plate if necessary. • Apply grease on wear plate. • Check condition of wear plate. Replace wear plate if necessary • Visual check for external damage, loose bolts etc. • Apply grease on the slide and slide rods.

D3/Six Monthly Schedule	All items of D2 sch. Coat bare steel areas of coupler head body and knuckle with Molykote D321R (or equivalent) dry spray. CAUTION: Do not spray on the knuckle locking surface and internal parts like lock etc Check gap between coupler head and knuckle with Jaw gap gauge (NO-GO). If wear out is not acceptable replace knuckle etc., as advised in the maintenance manual. • Check by profile gauge (GO). • Conduct anti-creep check • Check wear on slide, slide rods and bearings. Replace if wear is excessive
Shop Schedule–I (18 Months)	The following shall be attended during shop schedules – SS1 • Inspection of coupler assembly by gauges: - a) Checking of knuckle contour by contour maintenance gauge. b) Checking of contour by contour condemning limit gauge. c) Checking of distortion of aligning wing pocket and guard arm by aligning wing limit gauge and guard arm distortion gauge. d) Checking of vertical height of aligning wing pocket and guard arm by vertical height aligning wing pocket and guard arm gauge. e) Wear of aligning wing pocket and guard arm to be checked by vertical height condemning limit aligning wing pocket and guard arm gauge. f) Checking of knuckle nose wear and stretch limit by knuckle nose wear and stretch limit gauge. • Visual inspection of tilting of coupler assembly, take corrective action and adjust height of Supporting device which should be kept at 187+_ 2 mm. This should be checked with gauge. • Checking of rotary assembly for excess gap and taking corrective action. • Visual inspection of gap between front fork and front carrier plate. • Checking for defective spheroelastic silent block and take corrective action. • Visual inspection of rusting of rusting on front carrier plate. Take corrective action if rusting is observed. • Inspection of anti-creep protection • Measurement of coupler height 1105 mm from rail level-Reference point – Vertical centre of knuckle or centre of shank. • Checking of proper locking • Cleaning of coupler head and its sub-assemblies for any rust and dust for its smooth functioning.

	• Checking of functional operation of coupler • Checking of operation of coupler operating mechanism • MPI of Knuckle & coupler head (as per RDSO letter No. MC/BLB/CBC dt. 03.06.2021 & 18.08.2021)
Shop Schedule–II (36 Months)	In addition to item of Schedule – I, Inspection of spherolastic bearing (silent block) has to be done for any damage and replacement in SS-II.
Shop Schedule-III (72 Months)	All items of Shop Schedule – II All parts of CBC and allied accessories to be dismantled and overhauled as per OEM's manual. • Visual inspection be made for cracks, damages, distortions etc. • Checking wear of toggle, lock lift lever etc. • Checking of wear of coupler shank wear plate. • Checking for wear of lock of knuckle, pivot pin of knuckle and knuckle support pin. • Damage of draft gear rubber pads, crack and looseness then replace as per latest OEM recommendation. • Final assembly and checking of functional operation of coupler.

NOTE:

1. The following gauges are shop-issue –size gauges and not condemning gauges:
   i) Contour maintenance gauge
   ii) Contour condemning limit gauge
   iii) Aligning wing limit gauge
   iv) Vertical height aligning wing pocket and guard arm gauge
   v) Knuckle nose wear and stretch limit gauge
   vi) Vertical height condemning limit aligning wing pocket and guard arm gauge
2. The gauges should be procured from the OEMs of CBC.
3. As given in Para 7.2 of APTA RP-M-004-98 Rev.02 or latest, no painting should be done on any part or the assembly after overhaul except where specifically advised by RDSO.
4. Only dry lubrication as per Para 3.2 and 7.3 of RP-004-98 Rev. 02 or latest should be done in schedule III.
5. Reconditioning procedure of coupler should be followed as per Para 4 of APTA-RP- M-004-98 Rev-02. As mentioned in APTA-RP-M-004-98 Para 2.3. Knuckles, locks, knuckle throwers, knuckle pivot pins, rotary lock lift assemblies and Pivot pins should not be reconditioned.

5.7.1 Preventive Maintenance Procedures

5.7.1.1 Coupler Assembly Inspection

1. Clean dirt/ grime from coupler assembly

2. Inspect to ensure that the train lines or other attachments do not interfere with coupler during operation. If piping or brackets are bent and out of alignment, straighten or replace.
3. Operate the coupler operating mechanism to ensure the knuckle (1) opens when the coupler-operating rod is raised to the top position.
4. Inspect the coupler body (10) sidewall and pin bearing bosses for cracks, broken sections or bent shank. If any damage is found, replace the coupler.

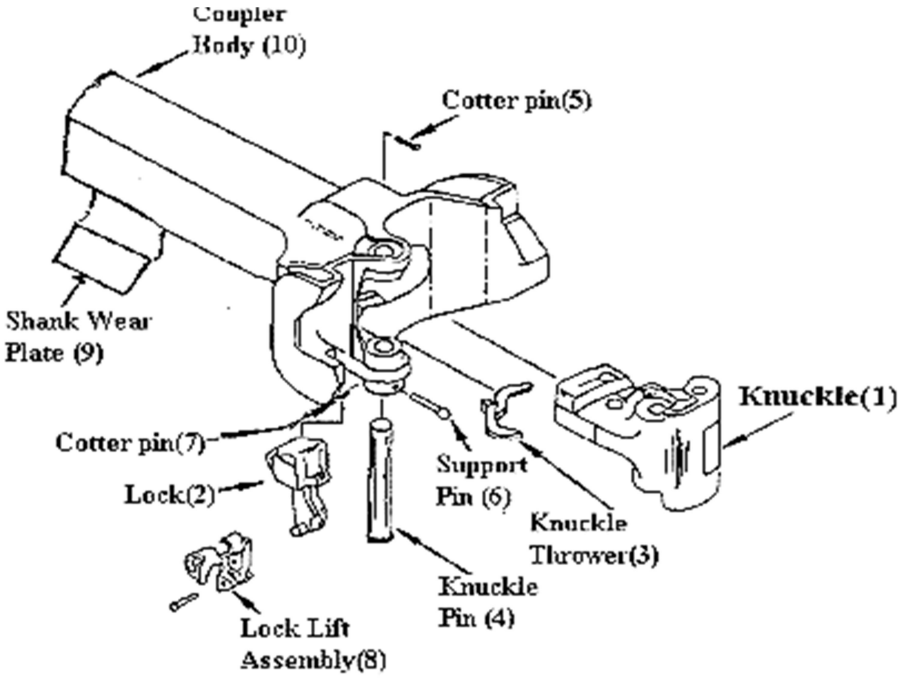


Figure: 5.7 Coupler Assembly Components

5. Inspect knuckle (1) pin bearing bosses and pulling face for cracks or broken sections or bent shank. If any damage is found, replace knuckle.
6. Check coupler shank wear plate for wear. If worn more than 3/16 inch (3-4) mm, the coupler wear plate should be replaced.
7. Inspect support pin (6). Ensure cotter pin (7) is secure in support pin. Original diameter of the support pin is 5/8 inch, if worn more than 25% replace support pin and/or cotter pin. (Compare pin thickness to thinnest part of wear for estimate).
8. Inspect knuckle pin (4). Ensure cotter pin (5) is secure in pivot pin. If worn more than 25%, replace pivot pin and cotter pin. (Compare pin thickness to thinnest part of wear for estimate.) The pivot pin's original diameter is 1-5/8 inches.

5.7.1.2 Shank Supporting Device Inspection

1. Clean dirt and grime from Coupler assembly.
2. Visually check to see if Couplers are resting on Coupler carriers. If not, inspect for the following -

- Replace collapsed or broken Coupler carrier.
- Low Car body height due to wheel wear or collapsed, weak or broken bolster and/or equalizer springs. If found, repair the damage, and re-inspect.

3. Check the thickness of wear plate. If needed, remove the wear plate from the support beam and add a new plate to the beam by welding.
4. Check that the telltale recess (as shown in figure) is not obstructed. If found obstructed, look for defective uncoupling mechanism or broken lock. Replace damaged parts as necessary.

NOTE: Coupler must be coupled to other equipment to perform this inspection.

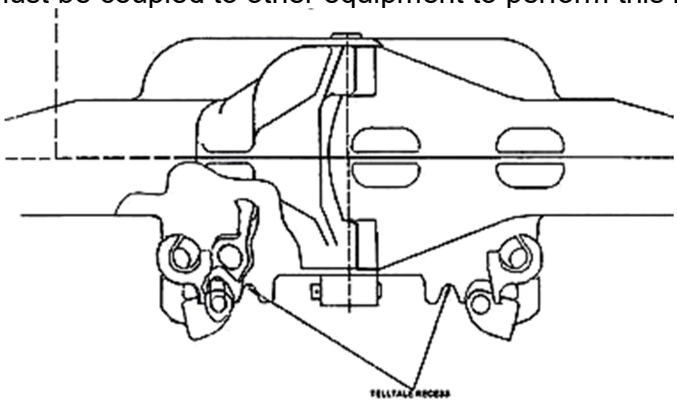


Figure-5.8 Recess Telltale

(A) Lock lift lever and operating rod inspection

1. Inspect for bent or broken uncoupling mechanism. If uncoupling mechanism is broken, replace.
2. Check for proper operating rod eye clearance as follows:
    a. Close and lock the knuckle and coupler.
    b. Ensure coupler is centered in the supporting device.
    c. Measure clearance between the operating rod eye and lock lift lever.
    d. Proper clearance should be 1/8 inch to ¼ inch on either side.
3. If operating rod eye clearance is not correct, metal piece of suitable thickness to be welded.
4. Check smooth sliding and operating of uncoupling handle, lubricate the sliding portion.
5. Locking screw should lock uncoupling handle properly such that no lifting and rotation of uncoupling handle/operating rod is allowed.

(B) Coupler wing limit inspection

Aligning wing limit gauge (No. 32600 (APTA gauge no.)

The aligning wing limit gauge is used to inspect for excessive distortion of guard arm of the coupler head as shown in figure.
The gauge must seat against the front face of the coupler head and the pivot lug and clear at all points around the interlocking lug guard arm face and lateral aligning surface. If the gauge does not seat or clear at the proper locations, there is excessive wear to the front face and pivot lug or distortion to the guard arm or interlocking lug. Remove and replace the coupler.

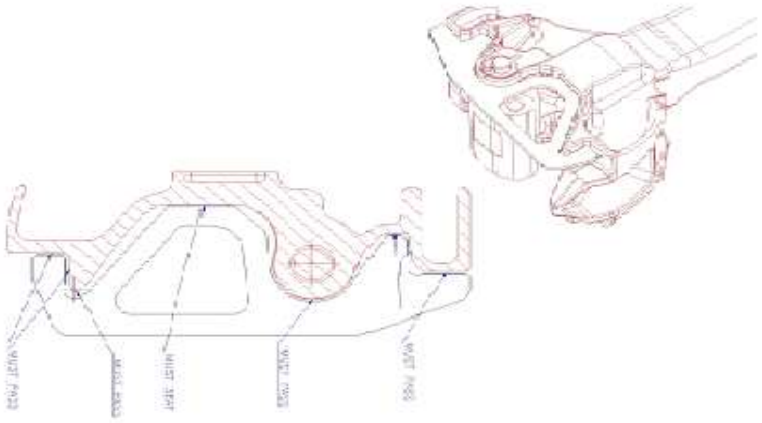


Figure: 5.9 Aligning Wing Limit Gauge.

(C) Vertical height aligning wing pocket and guard arm gauge (go gauge) 34101-4 (APTA gauge)

The vertical height aligning wing pocket and guard arm gauge is used to inspect for excessive distortion and vertical height of aligning wing and/or guard arm of the coupler head, as shown in figure. the gauge must pass (slide into) the wing pocket and over the guard arm. if the gauge does not pass, there is vertical distortion to the wing pocket and/or guard arm. remove and replace the coupler.

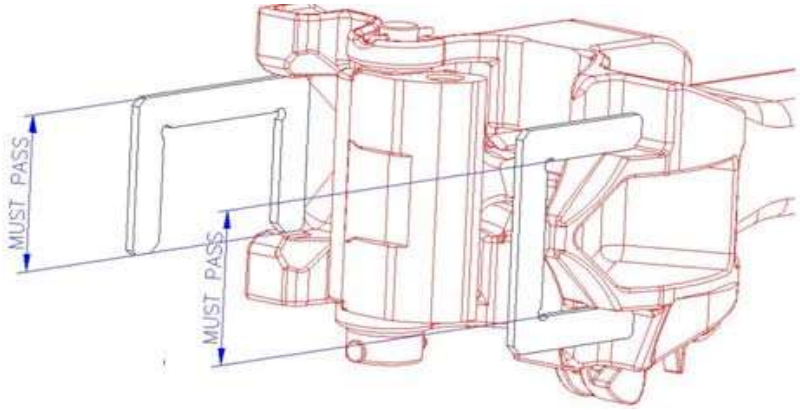


Figure: 5.10 Vertical Height Aligning Wing Pocket and Guard Arm Gauge

(D) Vertical height condemning limit aligning wing pocket and guard arm gauge no. 44250-5 (APTA gauge)

The vertical height condemning limit aligning wing wear and Guard arm gauge is used to inspect for excessive distortion and vertical height of aligning wing and/or guard arm of the coupler head. The gauge must not pass (slide into) the wing pocket or over the guard arm. If the gauge does not pass, there is excessive wear on the interlocking surface of the wing pocket and/or guard arm. Remove and replace the coupler.

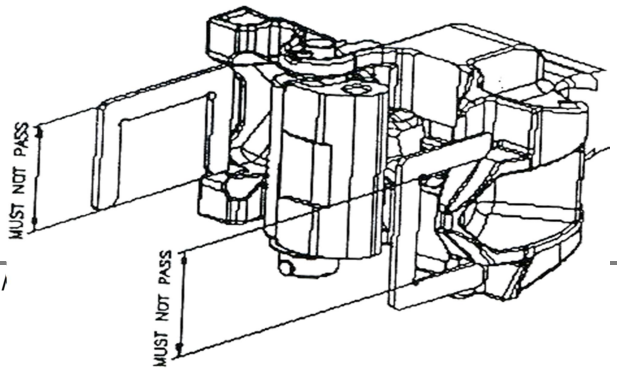


Figure: 5.11 vertical height condemning limit aligning wing Pocket and guard arm gauge.

(E) Contour maintenance gauge no. 31000 (APTA)

This is a pass through gauge. The Contour maintenance gauge is used to inspect for correctness of contour. The gauge must pass through the contour with the knuckle fully closed and locked, with the gauge seated against the front face of the coupler head. If the gauge does not seat against the front face of the coupler, there is excessive wear to the front face of the coupler or a stretched knuckle. Remove and inspect the knuckle, using the Knuckle Nose Wear gauge.

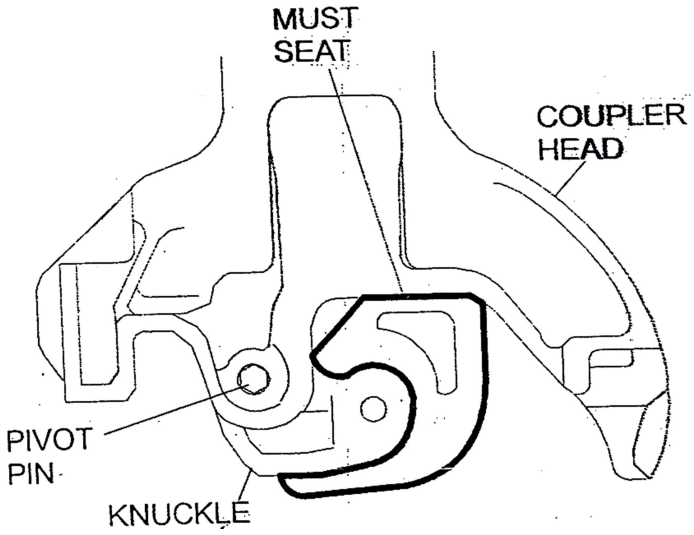


Figure: 5.12 Contour Maintenance Gauge.

(F) Knuckle nose wear and stretch limit gauge No. 34100 -2A (APTA gauge)

The knuckle nose wear and stretch limit gauge is shown in figure, Verify that points A, B, and C of the gauge seat on the knuckle and that point D does not touch or clear more than ¼ inch. If the points do not touch or clear properly, replace the knuckle.

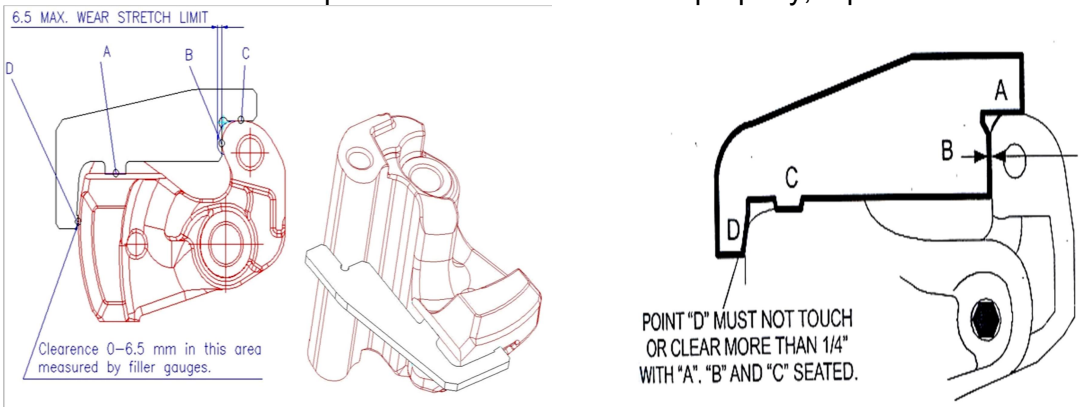


Figure: 5.13 Knuckle Nose Wear and Stretch Limit Gauge.

(G) Contour condemning limit gauge no. 34100 -1 (APTA gauge)

The Contour condemning limit gauge no. 34100-1 is used to inspect limit of contour slack (limit has been set at 3/8 inch). To inspect the limit of contour slack, close the knuckle and then pull slack of knuckle out toward you. The gauge must not pass

between the front face of the coupler head and the pulling face of the knuckle. If the gauge does pass, remove the knuckle and inspect once more for wear. If the knuckle is worn, replace knuckle. While the knuckle is out of the coupler, inspect the knuckle pivot pin and pivot pin hole for excessive wear. If the knuckle pivot pin is worn, replace knuckle pivot pin. If the knuckle pivot pin and pivot pin hole are in acceptable condition, the lock could be worn and should be replaced. Also, the front face of the coupler could have excessive wear and should be replaced if found worn out.

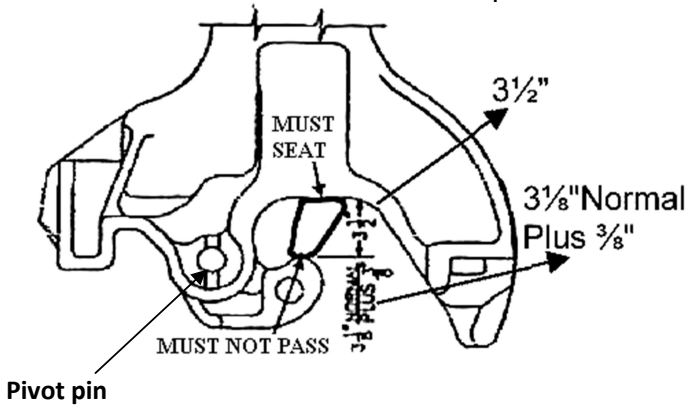
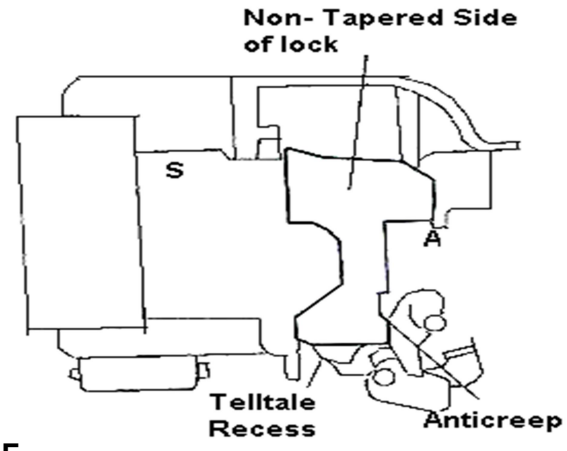


Figure: 5.14 Contour Condemning Limit Gauge.

(H) Lock on knuckle tail shelf

To inspect lock on knuckle tail shelf, make sure the coupler lock is seated not more then 1/8 inch. above the knuckle tail shelf,(preferably seated on the shelf. See "S" in figure). If adjustment is necessary metal should be removed from guard arm (non tapered) side of lock by grinding preferably by machining. The amount of metal to be removed is 1/8 inch the distance the lock is to be lowered.



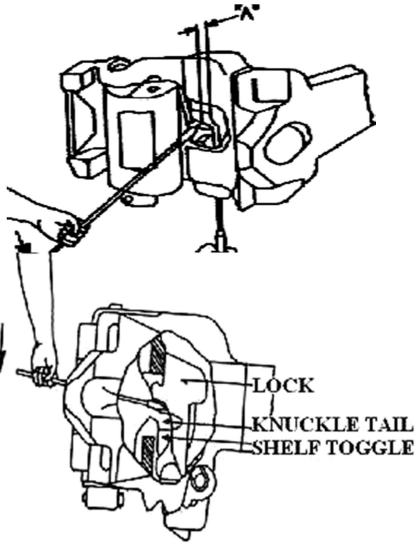
F

Fig: 5.15 Lock on Knuckle Tail Shelf

(I) Anti – creep protection inspection

Anti–creep protection is the front of overlap between the toggle and the anti–creep shoulder on couplers. Perform following steps to inspect for proper anti–creep protection:

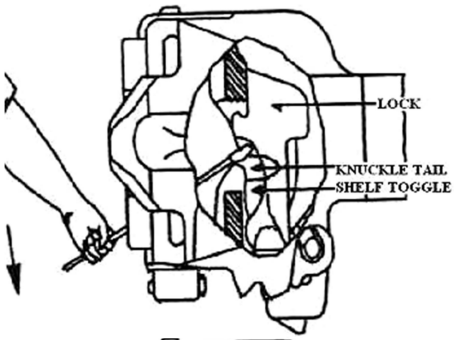
Step I. Inspection for anti–creep protection is made through the front of the coupler.



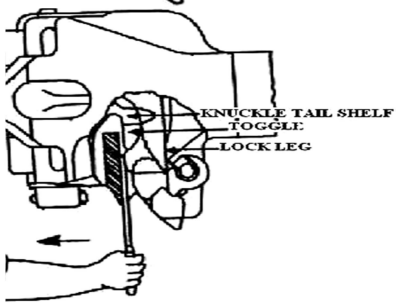
Step II. With the coupler in the locked position insert a

pry bar through the front of the coupler between the knuckle tail shelf and lock, forcing the lock upward.

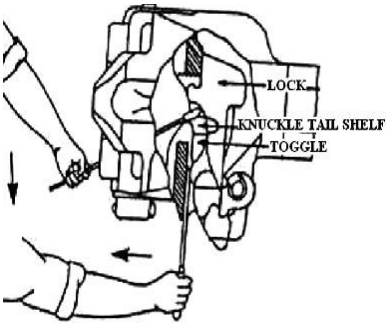
Step III. Forcing the lock upward as far as it will go engages the top of the toggle with the bottom of the knuckle tail shelf.



Step IV Insert a pry bar between the leg of the lock and the front of the lock hole. Pull toward the front of the coupler to force the lock leg rearward.

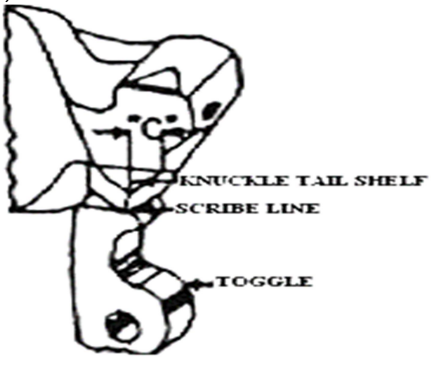


Step V If the front edge of the toggle is 1/8" or more forward of the rear corner of the knuckle tail shelf the anti-creep is unacceptable; replace lock lift assembly.



Step VI.

If an actual measurement is desired, inscribe a line on top of the toggle along the rear face of the knuckle tail shelf. Measure at point "C", the measurement must not be less than 3/8".





(J) Guard arm distortion inspection

The guard arm distortion gauge is used to check distortion of the guard arm. To

inspect for distortion of guard arm, the knuckle must be in pull position. When properly applied, the gauge must seat on the knuckle, and front of guard arm. The right side of the gauge must clear the right side of the guard arm. If the gauge does not clear the right side of the guard, the guard arm or pin protector boss is distorted or bent, and the coupler should be replaced.

(K) Procedure for building up the wear on coupler shank

The coupler shank is welded with a wear plate in the supporting area, made of manganese steel. This plate is the contact area of the coupler shank to the coupler support device. In case of wear, the worn plate can be removed and substituted by a new one.

(L) Coupler height inspection

If coupler is separated, inspect couplers to be maintained in a level position and at correct coupler height.

I. Check levelness

a. Suspend a weighted string against the machined front face of the knuckle when the coach is on a level track.
b. Measure the distance from the front face of the knuckle to the string. The maximum distance should be not more than ¼ inch.
c. To restore to level position, add shims on the coupler carrier if no other method of adjustment is provided in the shank carrier design.
d. Excessive shimming should be avoided to maintain necessary vertical height of the coupler.
e. When couplers are level, no shimming should be done at the carrier for coupler height.

II. Check for correct coupler height

a. Coupler height should be 34 inches to 35 inches (34 ½ inches preferred). Reference coupler height center of coupler to rail (1105 mm) 43.5 inches.
b. If the coupler height is too low, it could be due to worn, collapsed or broken coupler carrier springs. In addition, the car body height could be too low due to worn, collapsed, broken equalizer springs or bolsters, or extreme wear.

5.7.2 Coupler Height Adjustment

Coupler height shall be adjusted by adding or removing shims from the bottom of the coupler carrier assembly when the vehicle is empty and at rest on a level track.

5.7.2.1 Increasing Coupler Height

1. Using a jack, support the head of the coupler.
2. Elevate the jack to raise the coupler to proper height. Coupler height of center of coupler to rail is 1105 mm.
3. Clean all dirt and debris from coupler shank, Coupler shank wear plate and Coupler (shank) carriers.
4. Measure the gap between the top of the coupler carrier and the bottom of the coupler shank wear plate.
5. Select a combination of shims that most closely equal the gap measurement.
6. Loosen coupler carrier bolts located at the front of the coupler carrier.
7. Inspect the wear of the coupler wear plate. The original thickness is ¼ inch. If wear plate is reduced to 1/16inch.it shall be replaced.
8. Inspect the wear on the coupler earner wear plate. The original thickness is ¼ inch. If wear plate is reduced to 1/16 inch. It shall be replaced.

9. Using a pry bar. Pry the coupler carrier up to support the correct coupler height.
10. Insert the shim or the shim between the coupler carrier and the striker support from the front of the striker.
11. Tack weld shim or shims to striker support.
12. Retighten coupled Coupler bolts.
13. Lower the jack until the coupled shank wear plate is supported by the coupler carrier.
14. Inspect the coupler carrier height center of coupler to rail is 1105 mm.

5.7.2.2 Decreasing Coupler height

1. To determine the distance by which the coupler should be lowered. Subtract the required coupler height (34 ½ inches plus or minus ½ inch) from the actual measured coupler height. Reference coupler height from center of coupler to rail is (1105 mm) 43.5 inches.
2. Loosen coupler carrier bolts located at the front of the coupler carrier.
3. Inspect the wear on coupler wear plate.
4. Inspect the wear on the coupler carrier.
5. Using a pry bar, pry the coupler carrier up.
6. Remove tack weld to remove shims.
7. Tack weld shim or shims to striker support.
8. Retighten coupler carrier bolts.
9. Lower the jack until the coupler shank wear plate is supported by the coupler carrier.
10. Inspect the coupler carrier height; center of coupler to rail is 1105 mm.
11. If coupler remains too high after all shims are removed. Inspect for damage to coupler carrier, coupler shank or car body.

5.7.3 Repairs – (please refer to fig 5.10)

5.7.3.1 Support Pin Replacement

1. Straighten legs of cotter pin (7).
2. Remove cotter pin (7) from support pin (6) and discard used cotter pin.
3. Push up and hold knuckle pin (4) to relieve weight on support pin.
4. Remove support pin (6) and discard.
5. Insert new support pin (6). Inspect to ensure cotter pin hole is visible beyond the back edge of the knuckle pin lug on the coupler body.
6. Release knuckle pin (4)
7. Insert new cotter pin (7) through hole in support pin (6)
8. Spread legs of cotter pin (7) to secure.

5.7.3.2 Knuckle Pin Replacement

1. Using a jack, support the weight of the knuckle (1).
2. Remove cotter pin (7) and support pin (6).
3. Straighten legs of cotter pin (5)
4. Push up and hold knuckle pin (4).

***WARING**: The knuckle is free to move when the knuckle pin is removed. Exercise extreme caution that the knuckle is not moved before knuckle pin is installed.*

5. Remove cotter pin (5) from knuckle pivot pin (4).
6. Lower knuckle pin (4) through the pivot pin hole of the coupler and the knuckle.
7. Insert new knuckle pivot pin (4) in coupler and knuckle.

NOTE: The pivot pin must be inserted from the bottom of the coupler with the cotter pin hole visible above the top of the coupler head.

8. Insert new cotter pin (5) and spread cotter pin legs to secure.
9. Push up on pivot pin (4) and hold.
10. Install new support pin (6) and cotter pin (7).

5.7.3.3 Replace Knuckle

1. Verify that the knuckle (1) is closed and locked.
2. Using a jack table, support the weight of the knuckle.
3. Remove knuckle pin (4).
4. Slide knuckle (1) forward until it is free from coupler body (10) and fully supported on jack table.
5. Discard old knuckle (1)
6. Place new knuckle (1) on jack table and position at coupler body (10).
7. Slide knuckle (1) into opening between knuckle pin lugs in coupler body (10)
8. Use draft pin to align pivot pinholes on coupler body (10) and knuckle (1).
9. Install new knuckle pin (4), new support pin (6), and new cotter pin (5 and 7).
10. Spread legs of cotter pins (5 and 7) to secure.

5.7.4 Coupler Assembly Overhaul

Coupler assembly should be completely overhauled during Shop Schedule –III (6 Years) in accordance to OEM's instructions.

5.7.5 Troubleshooting

For trouble shooting, respective Maintenance manual/ OEMs Maintenance Manual should be referred.

5.8 Tools and Accessories

(Refer respective OEM maintenance manual)

Handling of major subassemblies requires availability of one or two overhead traveling cranes of sufficient lifting capacity, lifting straps and trestles. Other special tools and aid required for maintenance are mentioned below.

Standard Tools and Aids such as:-

- Screw drivers
- Fitters Hammers (500/1000 grams)
- Set of wrenches
- Set of ring wrenches
- Set of Hexagon Socket Screw Key
- Torque Wrenches for 73 Nm
- Torque Wrenches for 510 Nm
- Thickness Gauges

Standard Materials

- Compressed air (oil free)
- Cleaning Rags
- Paint Brushes
- Grease
- Non resign penetrating oil
- Pocket lamp /torch
- Steel rule
- Lifting apparatus for – 0.5 tons
- Primer

5.9 Reconditioning & Coupling Procedure

Please refer to OEMs manual for reconditioning procedure.

Note:

I. Please refer to OEMs manual for reconditioning procedure and APTA RP-M004-98Rev.02 or latest for reference.

II. Please refer CMI & JPO issued by RDSO for proper coupling operation with Loco to coach or coach to coach

Presently components of CBC of different makes are not interchangeable and design-dimension is different. In such situation, the maintenance manual of OEM to be followed for maintenance and CMI-02 & JPO dt. 26.02.14 issued by RDSO for coupling & gauging operation, described in Section A,B,C,D,E & F.

A. The General Guidelines For Coupling Of CBCs Between Coach To Coach or Locomotive To Coach

1. Ensure that coaches to be coupled together are dead stopped at a distance of 1-2 meter from each other. In case of coupling with locomotive, it should be 2-3 metre. The first five coaches or remaining portion of the standing rake should be in braked condition.
2. Ensure that manual uncoupling operating rod handles of coupling end of both the vehicles are unlocked.



Unlocked uncoupling Device handle

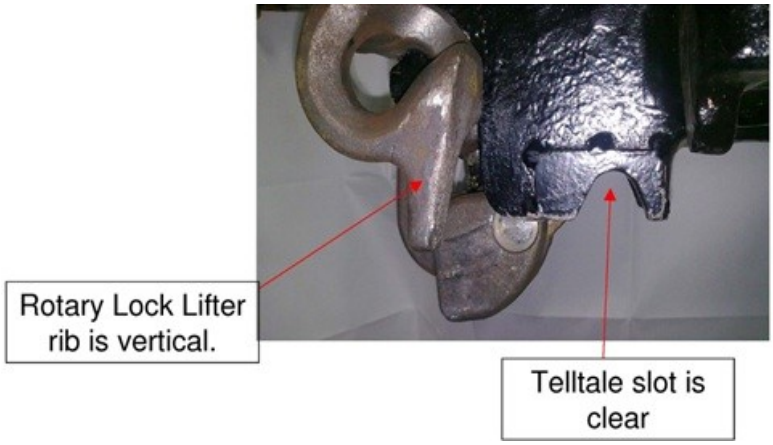
3. Align the two couplers to bring them in the gathering range.
4. Ensure knuckle of at least one of the coupler is open. Coupling can take place when knuckle of only one of the coupler is open or knuckles of both the couplers are open. When coupling with locomotive, knuckle of locomotive should be preferably opened. However, when situation demands more gathering range knuckles of both the couplers may be opened.

The operating rod handle of the manual uncoupling device must be raised to the top position to open the coupler. Raising the handle disengages the coupler lock and actuates the knuckle to the open position.



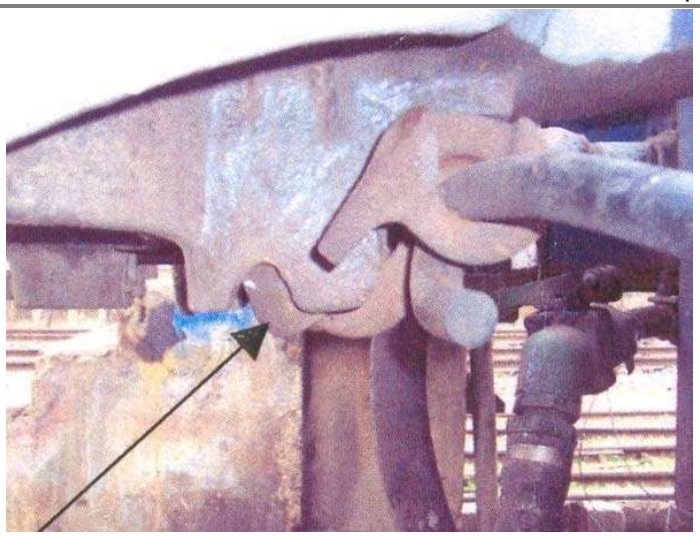
Knuckle in Open Condition

5. Speed at the time of coupling should be 2 to 3 kmph. This speed is high enough to ensure that the lock lift lever is completely dropped. The coupler will automatically lock.
6. Ensure that the lock lift levers of both the couplers are completely dropped.



Clear Telltale Slot and Vertical Rib of Rotary Lock Lift Lever Indicates Proper Locking of Knuckle

Note: It is possible that knuckles are locked but the lock lift lever is not fully dropped. This situation is the most dangerous as it gives false indication of coupler locking. The coupler may open during run. Ensuring complete dropping of lock lift lever is important. However, such incidence of partial locking of coupler should be taken very seriously and it should be put on record with details of coupler particular and should be advised to RDSO.



Telltale Slot not Clear and Rotary Lock Lift Lever Rib not Vertical Indicates Partial Locking of Knuckle

7. Adequate lighting should be provided to ensure that couplers are properly coupled. RDSO has issued an instruction of a marking scheme of painting lock lift lever with bright yellow paint of approx. 2" dia. The details have been covered in Para 5.9.4.
8. Ensure that manual uncoupling operating rod handles of both the vehicles are locked after fully locking of couplers.



Manual Uncoupling Handles in Locked Condition

9. The coupler must be checked for proper locking by pulling these couplers (by pulling loco forward). "Tertiary locking pin arrangement given has to be locked by inserting locking pin in its groove.

B. The Guidelines For Coupling Of CBC Equipped Coach With Locomotive

The following procedure order should be adopted for a coaching train fitted with CBC:

1. After berthing the CBC rake on the platform and before releasing the rake by C&W, the first five coaches should be in braked condition.

2. For attaching the locomotive, the loco shall be stopped at 20 meters from the first coach and shall move slowly to again stop at not less than 3 meters from first coach of the rake.
3. The SLR CBC and loco CBC shall be aligned horizontally so that they are within gathering range. The gather range of 'E' type coupler is 80 mm and in case adjoining coupler heads are offset by more than this, they need manual alignment.
4. SLR CBC knuckle shall be normally in the closed position and ensure full clearance of tell tale recess. The loco CBC knuckle shall be unlocked and in open condition.
5. The loco pilot shall proceed the loco up to the 3rd notch in succession so that the loco can couple with the coach at a speed of 2 to 3 kmph.
6. On coupling, full clearance of tell tale recess of both couplers shall be ensured by C&W staff. C&W staff after ensuring that both the couplings are in place shall lock uncoupling rod by putting locking screw in place.
7. The training of all the loco pilots, concerned C&W and operating staff shall be arranged. A dedicated training session on correct procedure of coupling the CBC rakes and how to ensure proper locking should be part of the training Loco pilots should be made responsible for checking proper locking of CBC of 1st coach with locomotive. Till all concerned staff are trained, C&W staff may be deputed to escort the train.

8. In case locomotives are not fitted with 'H' type AAR coupler head, a vertical restrictor should be provided in CBC of front end of first vehicle. A new vertical restrictor design has been finalized (RDSO Sketch No. CG-10063). The new vertical restrictor restricts the vertical movement in both the direction (Up & down).



V

Vertical Restrictor to be Provided in the First Vehicle

9. In case locomotives are not fitted with 'H' type AAR coupler, difference in height of locomotive knuckles and that of Generator van/ SLR should be checked by TXR with a gauge as prescribed in RDSO letter no. MC/BLB/CBC dated 26.07.2010. This gauge should be used by TXR to check before departure of train. By application of this gauge, the adequate overlap between loco knuckle and coach knuckle can be ensured to prevent uncoupling between the loco and Generator van/ SLR.

Procedure of using the gauge

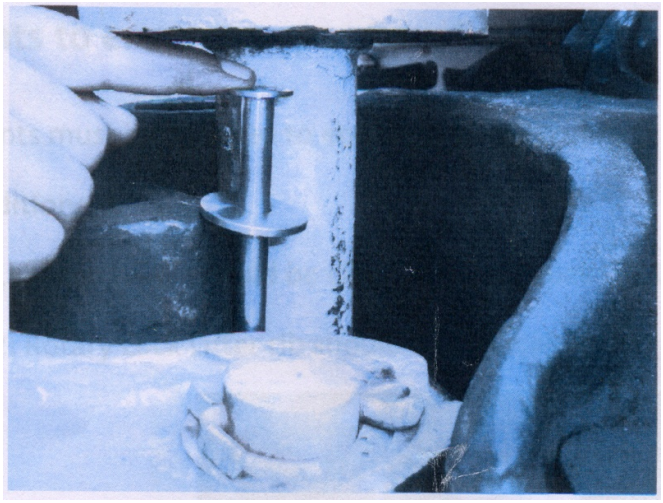
When the loco knuckle is below the coach knuckle

In this case, the gauge should not be used.

When the loco knuckle is above the coach knuckle

Washer should be placed on the top of the loco knuckle and the bolt should be allowed to go down. The gauge should be kept in such a way that the washer rests evenly on the top of the loco knuckle and the lower end of the bolt touches the top of the coach knuckle. In this position, it should be seen that the

mark provided in the centre of the bolt is above the washer. If the mark is not visible above the washer, the generator van should be unloaded till such time the centre mark is visible above washer.



Gauge for measuring difference in height of coupler

Note: It should be noted that this gauge should not be taken as a measure of minimum buffer height of 1030 mm as per IRCA rules. To ensure this stipulation, the extant instructions shall be followed.

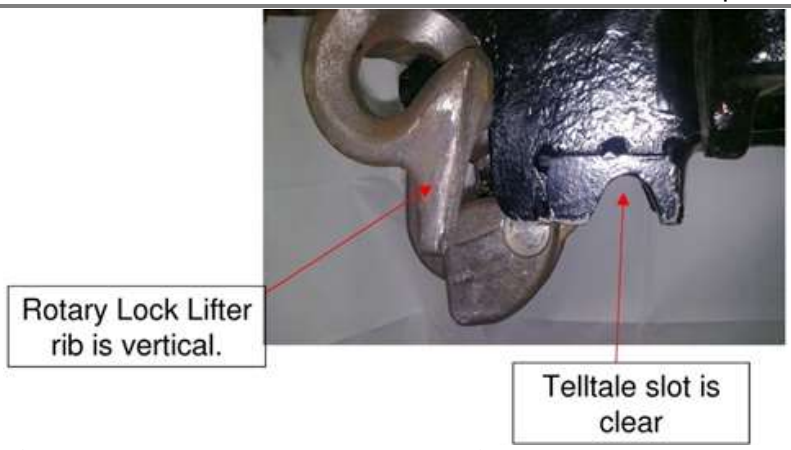
10. The loco pilot shall take the 2nd notch for checking the proper coupling by pulling the rake. The C&W staff shall insert the shim.
11. When the loco is in the pulled condition, the gaps in the CBCs shall be filled by providing shims of adequate thickness by the C&W staff. The shims shall be tied with wire to the restrictor plate.
12. The loco pilot and guard shall ensure that the required amount of BP and FP pressures are built up in loco and SLR respectively.
13. After ensuring the above procedure for coupling, the brakes of first five coaches shall be released by C&W staff.
14. CBC of the coaching stock should be maintained as per respective OEMs maintenance manual while loco CBC as per RDSO technical booklet no. G-76. Further, coupling procedure of Loco with coach and coach to coach should be followed as per RDSO/2010/CG/CMI-02 dt.30.07.2010 or latest and JPO (MP.IB. LD.01.17.10-Rev.03) dt.26.02. 2014 or latest (content given in Para 5.9 A,B,C,D,E & F).

C. Check Points For CBC Coupler To Ensure Proper Coupling

Following points must be checked to ensure proper coupling:

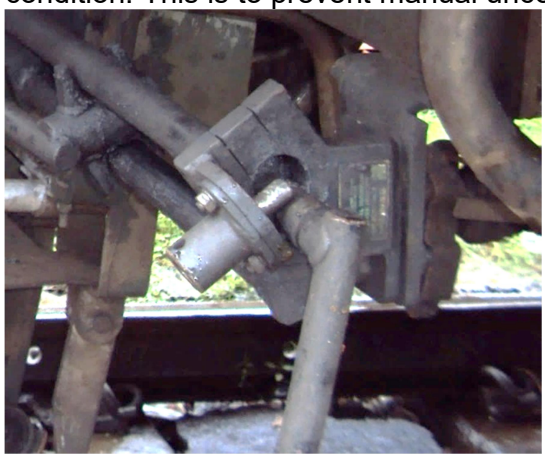
Coupled Conditions:

Check Point 1: Telltale slot should be clear of Rotary Lock Lift Lever
Check point 2: Rotary Lock Lifter rib should be vertical.



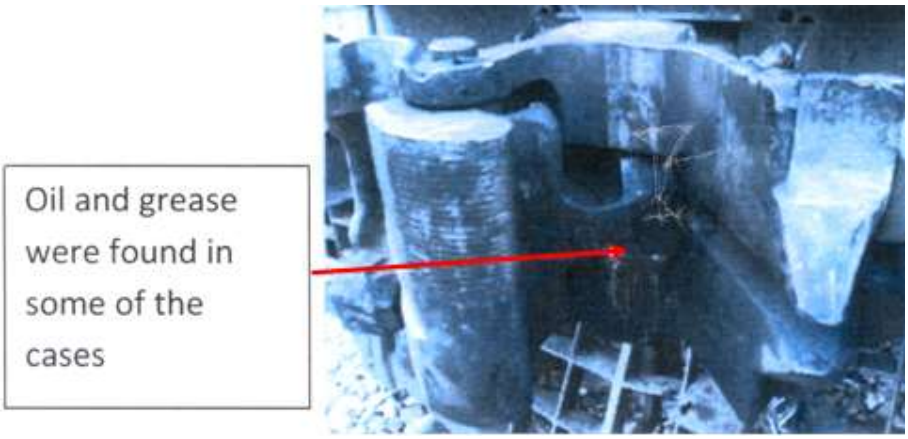
Clear Telltale Slot and Vertical Rotary Lock Lift Lever Indicates Proper Locking of Knuckle

Check point 3: Locking screw of Manual Uncoupling Device should be in locked condition. This is to prevent manual uncoupling inadvertently.

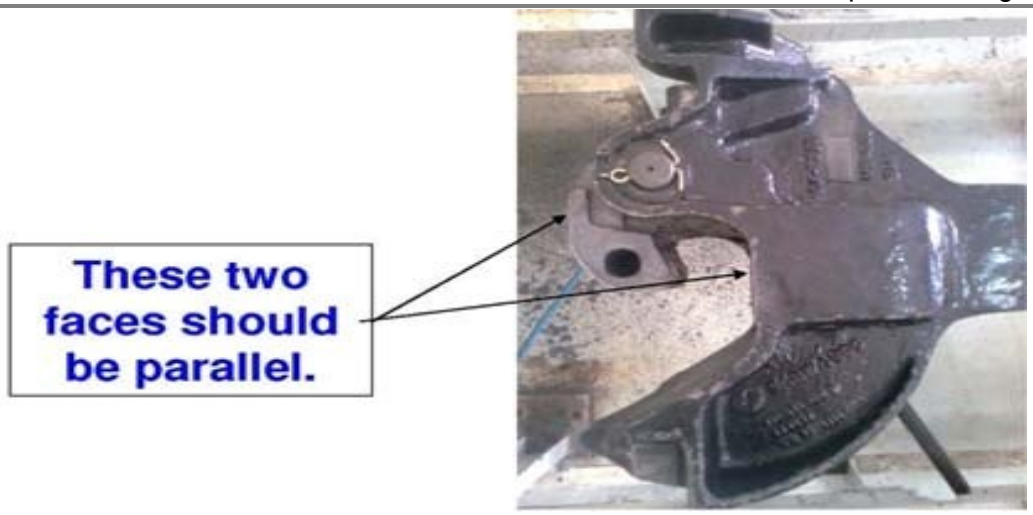


Following points should be checked before coupling

Check Point 1 : No oil or grease should be applied on the coupler internal parts such as Knuckle, Lock, Rotary Lock Lifter etc., Oil and grease on the coupler internal parts can cause the Lock to slide and lead to uncoupling automatically.



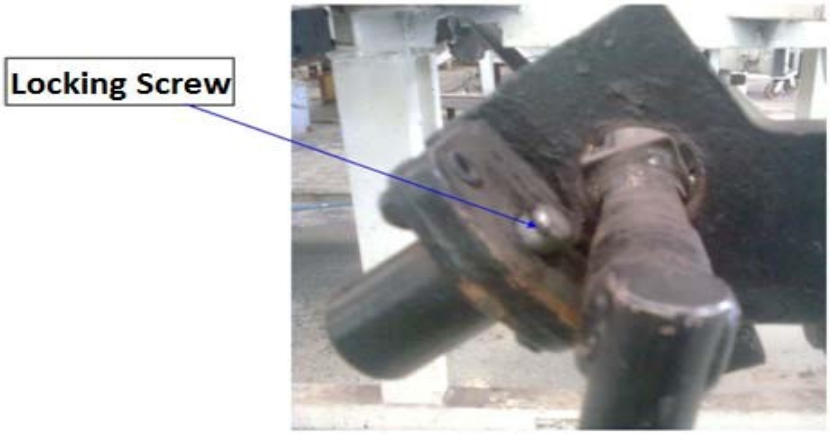
Check Point 2 : Knuckle and Coupler Head machined faces should be parallel when knuckle is in closed condition. This can be examined visually.



Position of Knuckle in Closed Condition

Uncoupled Conditions:

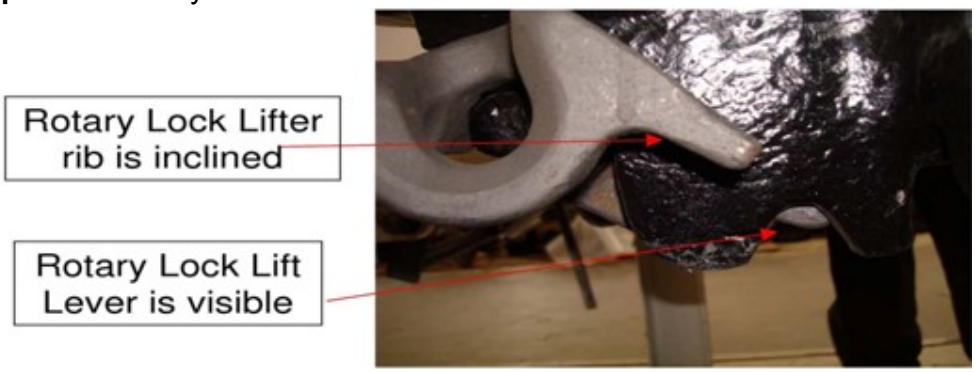
Check point 1: Securing Bolt should be in unlocked condition. Uncoupling Device operating rod handle can be operated to uncouple.



Unlocked uncoupling Device handle

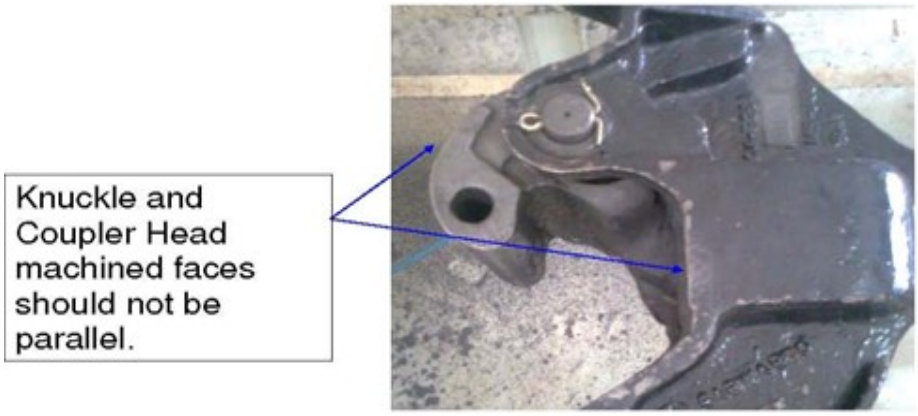
Check point 2. Rotary Lock Lift Lever should be visible in tell tale slot.

Check point 3. Rotary Lock Lifter rib should not be vertical.



Position of Rib of Rotary Lock Lift Lever

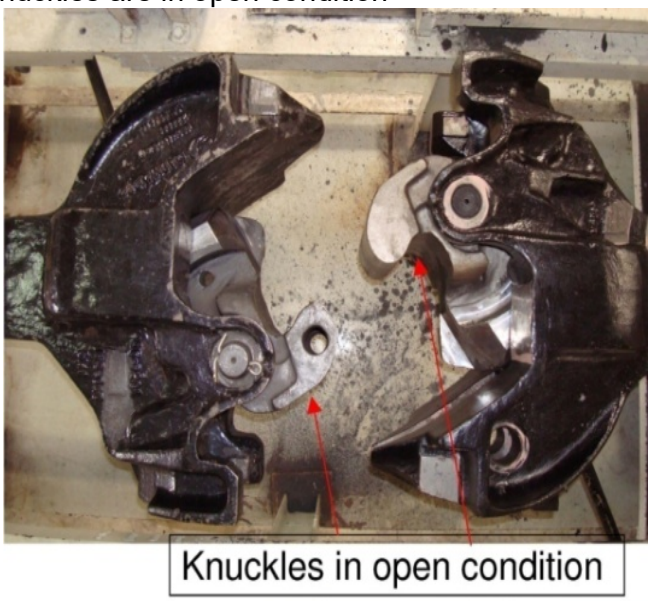
Check point 4: The Knuckle and Coupler Head machined faces should not be parallel.



Knuckle in Open Condition

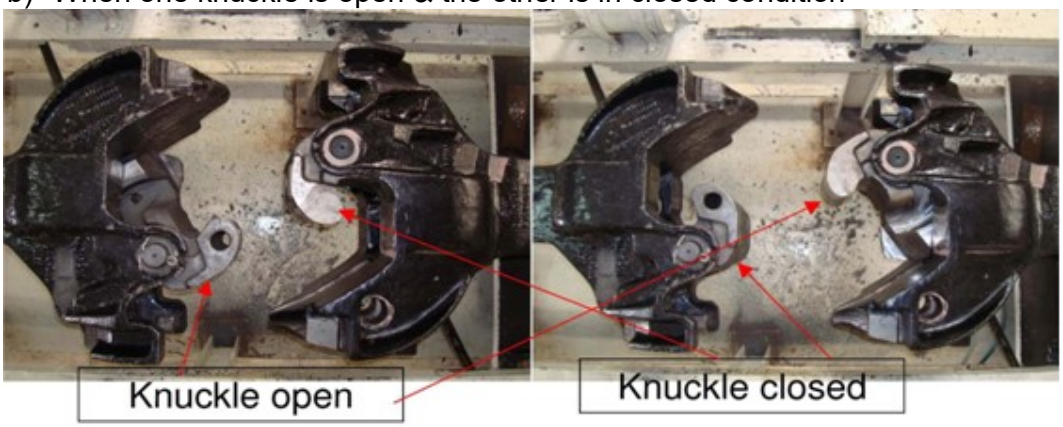
Coupling is possible under any of the following conditions

a) When both Knuckles are in open condition



Both Knuckles are in Open Condition

b) When one knuckle is open & the other is in closed condition



Only one knuckle in Open Condition

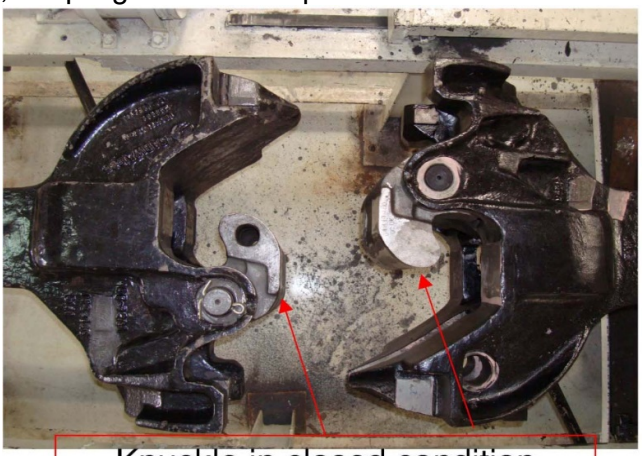
c) Couplers are coupled



However, for coupling first coach with locomotive, SLR CBC knuckle shall be in the closed position as advised in para - 4 of section A. For coach to coach coupling, coupler head of one of the coach shall be preferably in closed condition.

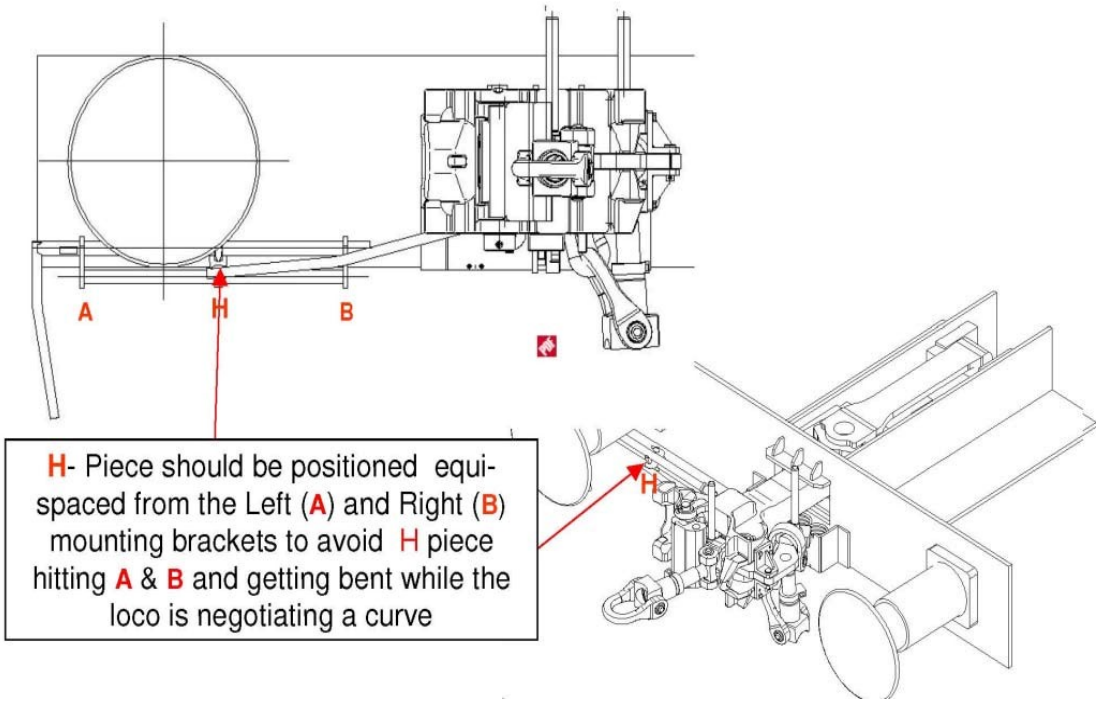
Conditions that will not permit coupling

1. If both knuckles are in closed condition coupling will not take place
2. If coupler is beyond gathering range i.e. more offset from 90 mm in vertical or 110 mm horizontally, coupling will not take place".



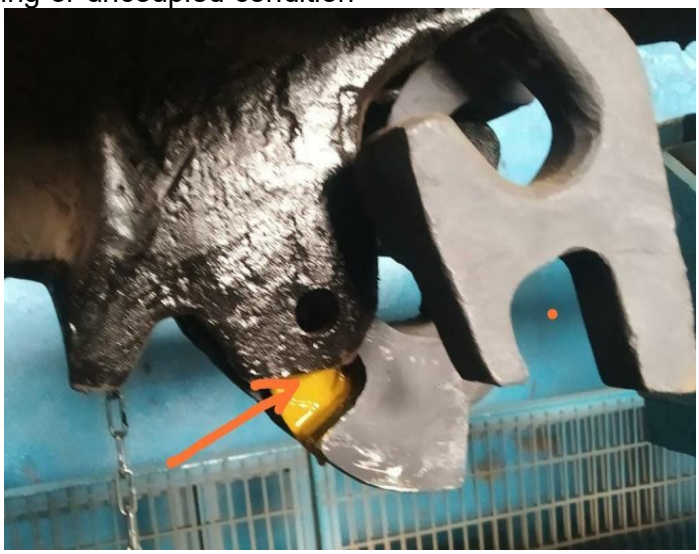
Knuckle in closed condition

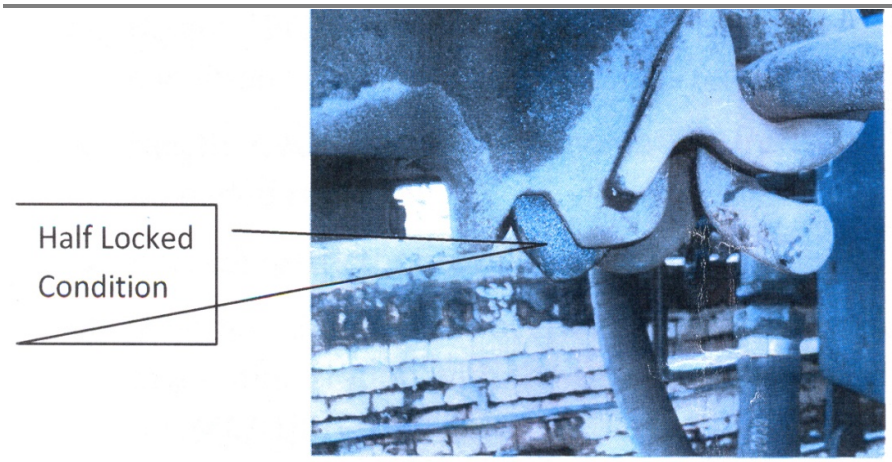
Manual Uncoupling Device

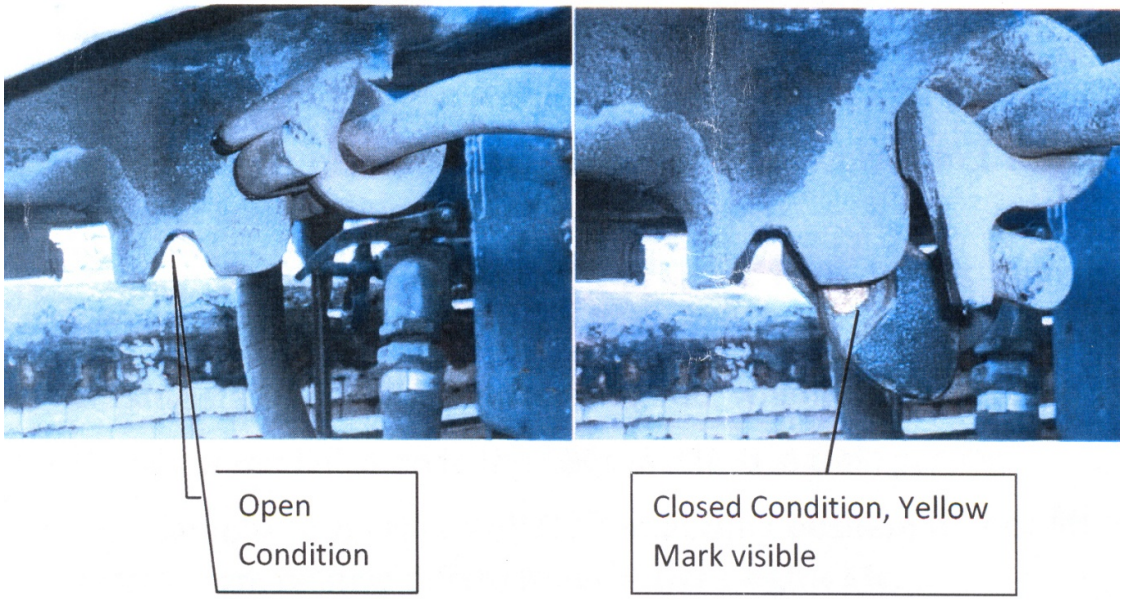


D. Marking Scheme Of Lock Lift Lever

Adequate lighting should be provided to ensure that couplers are properly coupled. Lock lift lever in working condition has dull dark colour and its position is difficult to ascertain when there is inadequate light. “As per RDSO marking scheme for marking lock lift lever with bright yellow paint of 1” (preferably) or 2” dia. (round) to improve visibility. Position of the of the yellow marking should be on or about toggle pin of rotary lock lifter assy. such that it is not worn due to coupling –uncoupling operation and completely visible when lock lift lever is fully dropped and should not visible in case of half locking or uncoupled condition







E. Points to be Checked in the Event of Train Parting

1. Train no. and name
2. Primary maintenance depot of the train.
3. Section and location of train parting.
4. PRO particulars of the coach involved.
5. Make of CBCs involved in train parting.
6. In case, the train parts between loco & coach,
   - Schedule particulars of the locomotive along with base shed should be indicated.
   - Type of locomotive coupler head, whether it is 'E' type or 'H' type. iii.Height CBC (Centre) of coach from rail level loaded and unloaded condition.
   - Height CBC (Centre) of locomotive from rail level loaded and unloaded condition.
   - Vertical restrictor provided or not.
   - Whether checking for overloading of SLR/ power car was done at originating station with the gauge as prescribed vide RDSO's letter no.

MC/LHB/Coach dated 26.07.2010.

- At the time of last coupling, whether knuckle of SLR/ power car coupler was opened or knuckle of locomotive coupler was opened or knuckle of both the couplers was opened.
- Last station in which the loco was coupled

7. Locking status of knuckles of both the CBCs involved in train parting, whether knuckles were found locked or open.
8. Position of lock lift lever of CBC in which knuckle was found open, whether the lock lift lever was fully or partially dropped.
9. Locking status of manual uncoupling rod, whether it was locked.
10. Details of modification in the CBCs involved in train parting.
11. Photographs to be taken of CBCs indicating position of lock lift lever, telltale sign, relative difference in buffer heights etc.
12. Topography (index plan) of the section involved where train parting took place. Condition of track like presence of low joint, curvature etc.
13. Statement of driver, guard, operating staff and officer who attend to the train parting.
14. Operating features like caution order, emergency braking or any other prima-facie reason which could contribute towards train parting.
15. Any other factor which could have contributed towards opening out of CBC.
16. Whether any difficulties were observed at the time of coupling?

All the concerned staff/ officers should be made aware of this check list. Railways are advised to follow the above check list in recording the incidents of train parting and report to RDSO.

F. Gauges for Maintenance

1. Contour condemning limit gauge no. 34100 -1 (APTA gauge)
2. Knuckle nose wear and stretch limit gauge No. 34100 -2A (APTA gauge)
3. Aligning wing limit gauge (No. 32600 (APTA gauge no.)
4. Vertical height aligning wing pocket and guard arm gauge (go gauge)
5. 34101-4 (APTA gauge)
6. Vertical height condemning limit aligning wing pocket and guard arm
7. gauge no. 44250-5 (APTA gauge)
8. Contour maintenance gauge no. 31000 (APTA)

(Refer Para 5.7.1.2 of this manual for details)

5.10 Side Buffer Assembly for Power Car

The modified Loco Side Buffer (B.G.) as per R.C.F. drg. No. M1004277 is used on LHB Coaches along with CBC.

Buffer assembly and its components meet the requirements of RDSO Spec. no. MP 0.41.00.02, which is the standard specification for the Loco Side Buffer Assembly.
The General Arrangement of this Buffer shall confirm to RDSO drawing. No. LA/ BD – 153/M (Alt – Latest) except the mounting holes on the base of buffer casing, overall length of Buffer and shape & size of Face Plate.

The Face Plate of side Buffer shall be as per drawing no. LP 22/02 and LP 22/03 for LH & RH. Respectively.

Periodic Maintenance

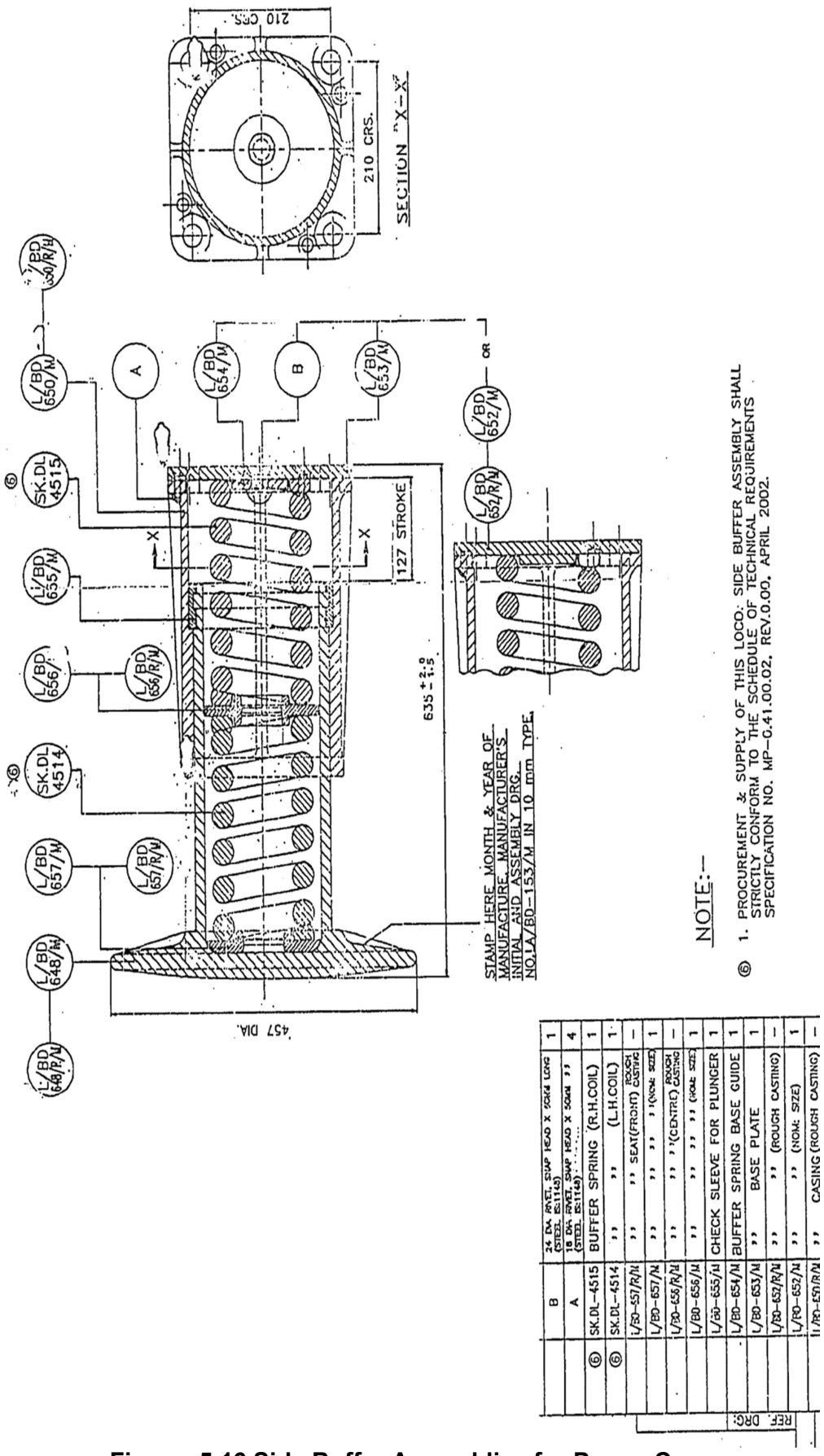
Side Buffer Assembly should be examined for cracks / damages and/or corrosion during trip schedule. Check for tightness of buffer fixing bolts, drooping of buffers and

slackness on buffer plunger.
Buffer force should be scrubbed with a scrapper to remove dirt and muck and wiped clean using cleaning fluids. After cleaning, the buffer force should be checked for the condition of CSK rivets holding the face plate. Apply graphite grease on the face plate after checking for cracks and wear.
Projection of buffer from the head should be within 600 mm to 635 mm.
(Refer to OEM manual for maintenance)

5.10.1 Shop Schedules

Side Buffer assembly should be completely overhauled during shop schedule II (36 months) & shop schedule III (72 months)

Note:- Overhauling of side buffers and replacement of rubber springs during SS-I/SS-III (Ref. Chapter – 9 of CAMTECH Manual for BG Coaches of ICF design). Length of side buffer of CBC-equipped SLR (FV & LV) is maintained to 635 mm as per RDSO drawing no. SK - 98145 (Ref: Carrg. Dte/RDSO letter no. MC/BLB/CBC dtd 17.02.08).



REF. DRG.			
	B	24 DIA RIVET, SNAP HEAD X 90MM LONG (STEEL, IS:1148)	1
	A	18 DIA RIVET, SNAP HEAD X 50MM " (STEEL, IS:1148)	4
⑥	SK.DL-4515	BUFFER SPRING (R.H.COIL)	1
⑥	SK.DL-4514	" " (L.H.COIL)	1
	L/BD-657/R/M	" " SEAT(FRONT) ROUGH CASTING	—
	L/BD-657/M	" " " (NOM. SIZE)	1
	L/BD-656/R/M	" " " (CENTRE) ROUGH CASTING	—
	L/BD-656/M	" " " " (NOM. SIZE)	1
	L/BD-655/M	CHECK SLEEVE FOR PLUNGER	1
	L/BD-654/M	BUFFER SPRING BASE GUIDE	1
	L/BD-653/M	" BASE PLATE	1
	L/BD-652/R/M	" " (ROUGH CASTING)	—
	L/BD-652/M	" " (NOM. SIZE)	1
	L/BD-652/R/M	" CASING (ROUGH CASTING)	—

Figure: 5.16 Side Buffer Assemblies for Power Cars