

**INNOVATIONS & SYSTEM IMPROVEMENTS UNDER TAKEN DURING THE YEAR 2008- 09&2009- 10
PERTAINING TO MECHANICAL DEPARTMENT OF THIRUVANANTHAPURAM DIVISION**

April 2008

Passenger Emergency Alarm System

Working model of Passenger Emergency Alarm System for inter communication between Loco Pilots and passengers during emergencies developed at TVC coaching depot. It consists of Alarm pull chain, Passenger Emergency Alarm Signal Device, Passenger Emergency Alarm Valve, Isolating valve and pipe lines. When the alarm chain is pulled, air leaks out of the PEASD and it actuates the PEAV to reduce the BP pressure. Thus the driver gets the information by reduction in BP pressure and flow meter.



May 2008

Cooling system provided in the chimney of Incinerator

Cooling system provided in the chimney of Incinerator to control temperature, emission of ash and other flying particles through exhaust flue gas of chimney developed at TVC coaching depot. This consists of a horizontal rectangular conduit made of steel and covered with stainless steel, 2 water cooling pipe lines, one external and other internal.



Incinerator after fitment of cooling system



External cooling system

Working system

When the incinerator starts working, the valves of both internal and external cooling arrangements are opened and water is made to flow. The water used for external cooling arrangement is collected in the storage tank located at the floor and is re-circulated by means of a centrifugal pump similarly out let water of the internal cooling arrangement contains ash and other particles is collected in a tank, ash and other particles will remain in the tank and water is only allowed to flow out.

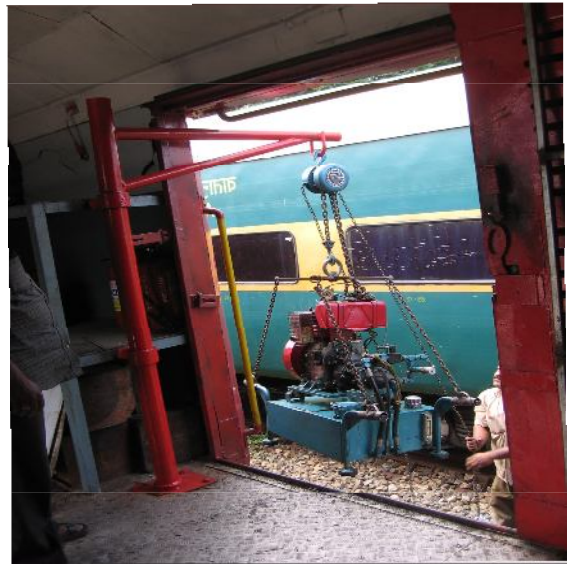
July 2008

Unloading arrangement in MFD coach

Unloading arrangement in MFD coach - Gadget for unloading and loading of diesel/petrol power pack developed at TVC coaching depot. With this facility it is possible to unload power pack with one man power against 4 to 5 men manually. Damage caused to power pack due to manual unloading and loading can also be reduced with this arrangement.

Features

This consists of a vertical pillar resting on thrust bearing and supported by two plain bearing support welded on to side frame. A pulley block of capacity one Tn. Is attached to the end of the pillar for enabling unloading and loading of power pack and other heavy components which are required for restoration work during accidents. A chain arrangement with 4 pipes has been attached as a lifting gadget.



August 2008

Special tool for crown clearance adjustment in coaches

Special tool for crown clearance adjustment in coaches developed at TVC coaching depot.



Features

This consists of a hexagonal socket; across flat distance is 37 mm, height 20 mm, thickness 3.15 mm attached to one end of the specially designed 410 mm long ratchet spanner. This hexagonal portion is to be inserted in between crown bolt and rubber pad for adjusting crown clearance

September 2008

Gadget for Bolster spring attention

Gadget for bolster spring renewal developed at TVC coaching depot. This consists of a metallic frame made of angle iron of size 50 x 50 x 7 mm fabricated to the size: length – 830 mm, breadth – 230 mm & height – 325 mm.



Features

The fabricated frame has been provided with 2 spring loaded wheels, with this, the gadget can be easily placed underneath the bottom bolster by simply rolling and pushing. When the gadget is loaded by placing underneath the bottom bolster, the spring arrangement and a lever attached to it disengages the wheels from the taking load so that the load exerted by the bottom bolster is born by the gadget only and not eh wheels. One pair small wheels attached with handle are for easy movement of gadget along the floor.

December 2008

Fabricated steel grates in between Pit 1 and PF 5

Fabricated drain grate in between Pit 1 and PF 5 To cover the drain duct with fabricated steel grates which enables staff can walk safely and sediments and waste does not settle over and near the steel grates developed at TVC coaching depot.



January 2009

Booster Pump



Booster Pump provided in between PF 3 & PF 4 for increasing water pressure and speedy filling of water in coaches booster pump procured, installed and commissioned in between PF 3 & PF 4 at TVC coaching depot.

February 2009

Special trolley for transportation of jacks.

Special trolley for transportation of jacks from coaching depot to pit line for 'V' belt changing developed at TVC coaching depot. It consists of a steel frame with special base with two wheels. One safety chain has been provided to secure the jack with the frame.



March 2009

1.Tool kit for attending buffer inter locking. Immediately on getting information, staff can proceed with this tool kit to release the buffer inter locking. This tool kit is developed at TVC coaching depot consists of Box spanner (36mm size) – 2 Nos., Tommy bars – 2 Nos., Pointed tool – 1 No., Hammer – 1 No., Leverage – 1 No. & Lever – 1 No.



View of tools kept in a box Items in tool kit for attending buffer interlocking

2. Provision of rack and exhaust pipe for Generator in the MFD/ART Coach No. SR MFD 92445.



Modified to increase the utility of the coach with new racks provided inside the coach. Exhaust pipe provided for 15 KWA generator. This developed at TVC coaching depot.

Racks provided in SR MFD 92445

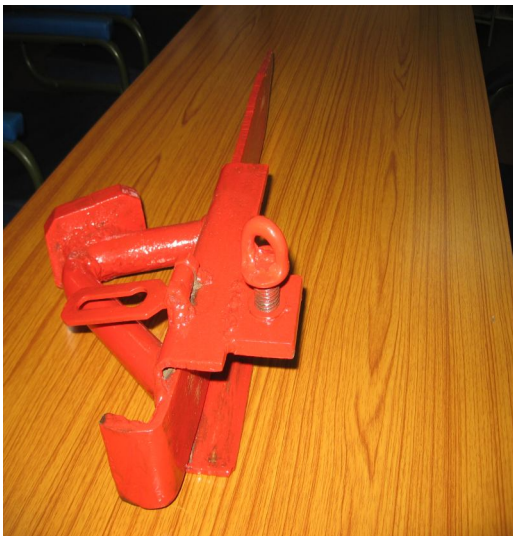
April 2009

Charging cubicle for LED type inspection lamp developed in Thiruvananthapuram coaching depot with dimension of Length – 950mm, Width – 370mm & Height – 1100mm.



May 2009

Skid with locking provision for securing of AEMV/ART coaches on track is developed by Thiruvananthapuram coaching depot.



June 2009

Light Roof shelter for Rolling in examination

Three numbers of Rolling in examination shelters are fabricated in Thiruvananthapuram coaching depot and erected between PF 1 & 2, PF 2 & 3, and PF 3 & 4.



Shelter between PF No. 1 & 2

Dimensions of the light roof shelter

Length - 2.4 Metres
Width - 1.4 Metres
Height - 1.7 Metres.



Shelter between PF 3 & 4



Shelter between PF 2 & 3

July 2009

Extension of welding cable in pit I

Welding line was not available at NCJ end of pit I of Thiruvananthapuram Coaching depot for 3 coach length due to which coaches placed at NCJ end of Pit I were used to mark sick if there is any welding repairs. By extending the welding cable, the depot is able to cater the welding needs at NCJ end of pit I & Pit 2. Separate Work and Earth cables have been provided with clamps at 2 coach interval through out the pit line I to avoid short circuit, rail earthing and damage that may caused to Roller bearing while doing welding on coaches.

Extension of welding cable in pit 1 at Thiruvananthapuram Coaching depot



August 2009

1. Provided Ladder for Pit line Cat Walk at KCVL



There was no provision of ladders on either side of KCVL pit line for climbing over catwalk for moving men and materials in to the compartment. This was pointed out by CME/MAS during his inspection at KCVL on 20.06.2009. To overcome this difficulty a special ladder has been designed, fabricated and erected by staff of TVC coaching depot, central successfully.

Dimensions of the Ladder

Length	: 2.8 M
Width	: 0.8 M
Height	: 1.85 M

2. Expresser converted air compressor commissioned



An Expresser converted air compressor received from GOC Workshops has been commissioned at TVC coaching depot. This enables air testing of coaches in IOH/ Sick line without starting heavy duty air compressors (80 HP/ 360CFM) available at TVC coaching depot. Considerable amount of energy can be saved by this air compressor. More over this can be used for rake testing in pit line also.

Details of the compressor

Maximum working pressure	: 8 Kg/Sqcm
Capacity	: 165 CFM (30 HP)

September 2009

1. Gadget for attending Train Parting

A gadget for attending Train parting has been prepared and kept in the depot for use during emergencies.

The main reasons for recent goods Train parting are

- a) Breakage of Knuckle in AAR type CBC
- b) Breakage of Yoke in Alliance II CBC
- c) Breakage of Lock in Alliance II CBC

Based on the above mentioned cases of train parting following are the list of materials and Tools available in the gadget.

Materials

- | | | |
|----------------------------------|---|------|
| 1. Knuckle, Alliance II CBC | - | 1No. |
| 2. Knuckle , AAR type CBC | - | 1No |
| 3. Lock (Alliance II CBC) | - | 1No. |
| 4. Lock lift assembly | - | 1 No |
| 5. Knuckle Pin (Alliance II CBC) | - | 1 No |

Tools & Accessories

- | | | |
|-----------------------------------|---|----------|
| 1. Tommy bar | - | 1No. |
| 2. Chisel | - | 1No |
| 3. Hammer | - | 1No |
| 4. Bolts and Nuts | - | 2 Nos |
| 5. Chain (Diameter of link 9mm) | - | 8.5 Mtrs |

(Photograph is enclosed for reference)



Oct - 2009

Modified Trolley for ART

A light weight trolley made with aluminium frame which was brought from CWM / IZN in the year 2005 for the use of ART /TVC had got an inherent draw back in which the wheels of the trolley will derail at crossings and also while negotiating curves which was not at all desirable at accident sites. Since the wheels are fitted independently, while negotiating curve, every chances are there to derail it.

To sort out this issue the trolley was modified by utilizing two push trolley wheels brought from SSE/ Pway /TVC. Hence now ART equipments can be transported safely with this trolley on emergencies.



Modified Trolley for ART

November 2009

1. Modified latch for Berth cum back rest of ICF built ACCW coaches.



Modified latch for Berth cum back rest

Falling of berth cum back rest during run in ICF built second AC coaches due to poor holding of latches have been reported from public. This is either due to the member of latch which is coming in contact with berth cum backrest rotating freely as tension of the spring getting lost or there is no stopper preventing it from rotation. To overcome this problem a stopper has been welded in the latch at TVC coaching depot.

2. Provided small type wash basin in ICF built AC coach to increase the existing clearance.

MOSR (A) had made a remark while traveling by Train number 6346 TVC – LT (T) Express in that one Lavatory door unable to open fully in a second AC coach SR ACCW 00060. On examination it was noticed that clearance between wash basin and lavatory door when lavatory door opened is very less when compared to other lavatory doors of the same coach. It is difficult for a passenger to pass through the gap. Hence clearance was increased by replacing the present wash basin with smaller one and fitted at one corner of the toilet at TVC coaching depot.



Before fitment



After fitment

3. Provided tumbler holder.

Fitted recently procured tumbler holder made of nylon wire in coaches during IOH by pop riveting at TVC coaching depot.



Tumbler holder

December 2009
Booklet published

Steps involved in Rescue operation with hydraulic Rescue devise
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Coaching Depot, Thiruvananthapuram

Coaching Depot Published on December 2009

January 2010

Thiruvananthapuram Coaching Depot's IOH facility has been provided with BP and FP hose testing facility. Even though the required pressure is 10Kg/cm², due to non availability of air compressor generating 10 kg/cm² (Maximum working pressure of air compressor has been set at 7 Kg/cm²) a new air compressor generating 10 kg/cm² was procured recently and commissioned exclusively for this facility.

Details of the air compressor

Make	Coimbatore Compressor Engineering company Pvt. Ltd.
Model	ELT 300
Working Pressure	10Kg/cm ²
RPM	950
Tank Capacity	200 Lts.

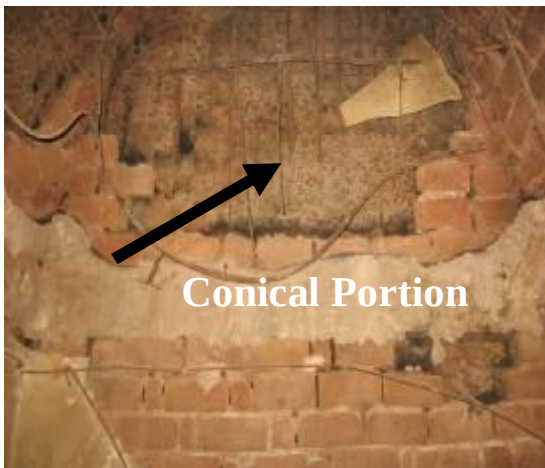


February 2010

Thiruvananthapuram, Coaching Depot has been provided with an incinerator, commissioned in the year 2006. Due to continuous use at very high temperature, RCC conical structure insulated with fire bricks totally collapsed and was under break down for the past two weeks. TVC depot took this work and conical part of the incinerator strengthened from out side with rails, steel strips, fire bricks and allied materials. Fire bricks and allied materials supplied from workshops (GOC, PWP & PWL) and rails and used tie bars received from engineering department. Now the incinerator is functioning properly.



After repair out side view



Before repair inside view

March 2010

Overhauling of welding plant -

One of the ESAB make welding plant available at Thiruvananthapuram, Coaching Depot went out of order due to over heating at the time of welding. The M&P wing of the coaching depot overhauled the welding plant and made in good working condition by carrying out the following repairs.

1. All the worn contactors re-built and used
2. All defective shoes replaced
3. All defective +ve and -ve terminals replaced.

