



**DISASTER MANAGEMENT
EQUIPMENT
& ITS MAINTENANCE**

DISASTER

Literal Meaning in Latin

DIS + ASTER
Bad Star

When Stars/Planets in the Sky
are

forming Bad Combination
Disaster Happens

DISASTER

Once Disaster Happened

Results into

Loss of Life

Loss of Infrastructure

Loss of Support System

DISASTER

Once Disaster Happened (Contd...)

What is to be done?

Rescue of Life

Restoration of System

DISASTER

Disaster Management

Management of Operation

that Involves

Rescue of Life

Restoration of System



DISASTER MANAGEMENT

Rescue of Life

To Prevent

Loss of Life

Loss of Health



DISASTER MANAGEMENT

Restoration of System

To Bring Back Life to Normal

Restore

Infrastructure

Support System

DISASTER MANAGEMENT

Motto

Fast Response

Speedy and Effective Rescue

Speedy and Effective Restoration

Speedy & Accurate information
to the Concerned



DISASTER MANAGEMENT

In Indian Railway

Rescue of life

To Take Out the Person from
Accident Affected Vehicle

First Hand Treatment of
the Injured Person

Sending the Injured Person to Hospital

DISASTER MANAGEMENT

Restoration of System

To clear the Accident Affected Area

Rerailing of Derailed Rolling Stock

Throwing out of Capsized Rolling
Stock/ Road Vehicle

Clear out the Debris



DISASTER MANAGEMENT

Restoration of System

Repair of Equipment

To make fit for Running of trains

Track

Overhead Electric Equipment

Signaling Equipment

DISASTER MANAGEMENT IN RAILWAYS

Rescue of life

Conventional Accident Relief Medical
Van

Consists of Two Coaches

Auxiliary Van

Medical Van

NEW DEVELOPMENT

Fast Response

For Sending Conventional ART/ARMV

Requires Loco

Takes Considerable Time
to arrange Loco

To overcome this problem

Development of

Self Propelled ART/ARMV

SELF PROPELLED AUXILIARY RELIEF MEDICAL VAN (SPARMV)

Consists of 3 Coaches

Diesel Hydraulic Power Car + Staff Room

Medical Van + AC Operation Theatre

Diesel Hydraulic Power Car + Equipment
Room

SELF PROPELLED AUXILIARY RELIEF MEDICAL VAN

Equipment Room/Auxiliary Van

To facilitate

To take out the person

From accident affected vehicle



SELF PROPELLED AUXILIARY RELIEF MEDICAL VAN

Equipment Room/Auxiliary Van

Hydraulic Rescue Device

Various Metal Cutting Equipments

Lighting Equipment

Other Specialized Equipment

Rope Ladder

Tent

Maintained by Mech Engg Deptt

SELF PROPELLED AUXILIARY RELIEF MEDICAL VAN

Medical Van

To Facilitate

First Hand Treatment of the injured



SELF PROPELLED AUXILIARY RELIEF MEDICAL VAN

Medical Van

Mini Operation Theatre

Medicines

First Aid Equipment

Dressing

Sling Arrangement

Medicines

Oxygen

Stretcher

SELF PROPELLED AUXILIARY RELIEF MEDICAL VAN

Equipment Room/Auxiliary Van

To take out person from

Accident involved vehicle requires

Cutting of Coach Body

Cutting of Window Rod

With Equipment

That does not splatter

During cutting process

Necessitates Cold Cutting Equipment

EQUIPMENT ROOM/AUXILIARY VAN

Hydraulic Rescue Device

Cold Cutting Equipment

Does not generate splatter during cutting

Consists of

- Petrol Engine Powered Pump

- Hydraulic Cutter

- Hydraulic Spreader

- Spreader & Cutter in Combination

- High Pressure Hose for transmitting Oil

- Rescue Ram

EQUIPMENT ROOM/AUXILIARY VAN

Hydraulic Rescue Device

Technical Parameter

Working Pressure – 700 bar (max)

Spreader

Spreading Force – 250 KN (min)

Pulling Force – 40 KN (min)

Cutter

Cutting Capacity – 360 KN (min)

Mild Steel Round Bar 30 mm (min)

Rescue Ram Single Stage

Retracted Length – 525 mm (max)

Extended Length – 750 mm (w/o Extn Piece)

Force – 135 KN



Petrol Engine Operated
Power Pack with Pump



Hydraulic Cutter in
Action



Making of Hole by Drill Machine
To initiate work of Spreader



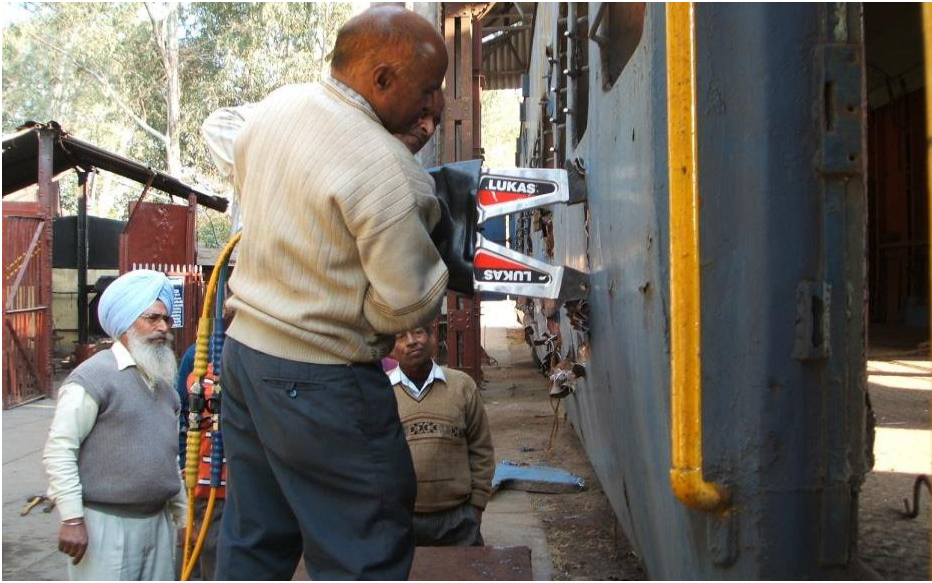
Holes made by Drill Machine
To facilitate work of Hydraulic
Spreader



Hydraulic Spreader inserted
Into Hole



Hydraulic Spreader in Action



Hydraulic Spreader in Action



Hydraulic Cutter in Action



Hydraulic Cutter in Action



Hydraulic Spreader is being used as Pulling device to open jammed door



Rescue Ram in position to
Spread the Wall



Rescue Ram in Action

EQUIPMENT ROOM/AUXILIARY VAN

Hydraulic Rescue Device

Maintenance

As prescribed by OEM



EQUIPMENT ROOM/AUXILIARY VAN

Various Metal Cutting Equipment

Hydraulic Rescue Device

Very Heavy

Need to work simultaneously

At different location

Necessitates Availability of

Other Electric Operated

Portable Metal Cutting Equipment

Readily Available in Market

Make BOSCH HITACHI

EQUIPMENT ROOM/AUXILIARY VAN

Various Metal Cutting Equipment (Contd..)

Portable Drill Machine to make hole
to initiate work of Hydraulic Spreader

Nibbler Machine

Portable Angle Grinder

Portable Saber Saw Machine

Portable Hydraulic Rod Cutter

Manually Operated

Portable Saw Machine



Portable Drill Machine



Nibbler Machine



Portable Angle Grinder



Portable Saber Saw

EQUIPMENT ROOM/AUXILIARY VAN

Pneumatic Equipment

Petrol Engine Powered Air Compressor

Inflatable Air Bag

To be used when very less gap available





Air Compressor



Inflatable Air Bag



Controller



Inflatable Air Bag in Action

EQUIPMENT ROOM/AUXILIARY VAN

Lighting Equipment

Generator Set that Generates Electricity

Petrol Powered Portable

Light Fittings with Stand

Cabling Arrangement for these lights

Inflatable Tower Light

Petrol Engine Powered

Compressor for Air to inflate Balloon

Alternator to Generate Electricity

To light up the Lamp

EQUIPMENT ROOM/AUXILIARY VAN

Inflatable Tower Light

Consists of

Inbuilt Gen Set of 1.2KVA Petrol Operated

Two blowers

400W metal halide lamp

Procedure

First to switch on the Gen Set

Then Blowers to inflate the cloth

Upto height 4.5 meters

Switch on the lamp

Illuminates area 10,000 Sq m.



Inflatable Tower Light



The system consists of inbuilt, Gen-set of 1.2KVA, Two blowers and 400W metal halide lamp.

EQUIPMENT ROOM/AUXILIARY VAN

Other Specialized Equipment

Breathing Apparatus

In case to tackle toxic hazard

Water Mist Fire Fighting System

Fire Suit

Life Detector System

Rope Ladder/ Telescopic Ladder



Water Mist Fire Fighting Equipment



Breathing Apparatus



Life Detector



Telescopic Ladder

EQUIPMENT ROOM/AUXILIARY VAN

Speedy and Effective Rescue

Operation Theatre

Made Air Conditioned in SPARMV

Breathing Apparatus

To rescue in Toxic Environment

Water Mist Fire Fighting System

Faster method to extinguish fire

EQUIPMENT ROOM/AUXILIARY VAN

Speedy and Effective Rescue

Life Detector System

Plasma Cutting Machine

Under Water Metal Cutting



EQUIPMENT ROOM/AUXILIARY VAN

Breathing Apparatus

A self-contained breathing apparatus

In extremely toxic chemicals

And in an oxygen-deficient atmosphere

Consist of

Bottle (tank or cylinder)

Carrying assembly

Gauge

Safety valve

Full face piece

Equipped with alarm to warn the wearer
when air in the tank about 25%



EQUIPMENT ROOM/AUXILIARY VAN

Water Mist Fire Fighting System

Fast Responder to Fire

Consists of

Fire fighting gun with Stainless Steel Nozzle

Main Vessel made of Aluminum Alloy

10 ltr. Capacity

One Compressed air cylinder

minimum rating of 2 ltr x 200 Bar

Hose length 1.3 meters



Water Mist gets vaporized easily

Creates envelope over the burning substance

Thus cutting the supply of Oxygen

Fire get extinguished rapidly

EQUIPMENT ROOM/AUXILIARY VAN

Life Detector System

Detect and locate victims
of collapsed buildings and coaches

Converts the entire collapsed structure
into a large sensitive microphone
to pinpoint signals from the trapped victims

Sensors of the system convert vibrations
created by the live victim
into audible and visual signals

EQUIPMENT ROOM/AUXILIARY VAN

Life Detector System

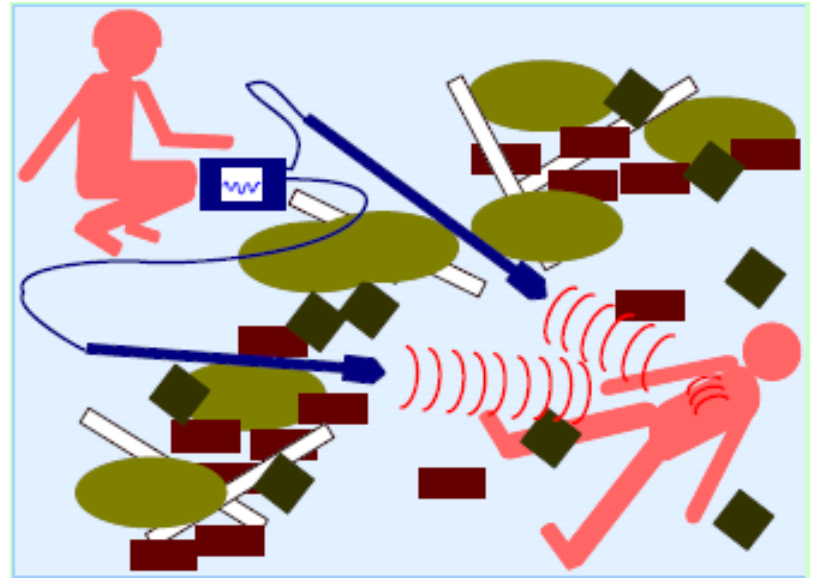
Utilizes radio waves to detect
the breathing and movement of survivors

Insertion of antennas into rubble

Ensures search operations carried out
without interference caused

by noise from the surrounding area





When there is a survivor



When there is no survivor



EQUIPMENT ROOM/AUXILIARY VAN

Plasma Cutting Machine

Ideal for cutting stainless steel
less than 1 inch thick

Oxy-fuel cuts by

Burning or oxidizing the metal

limited to steel and other ferrous metals
that support the oxidizing process

Metals like aluminum and stainless steel
form an oxide
making oxy-fuel cutting impossible

EQUIPMENT ROOM/AUXILIARY VAN

Plasma Cutting Machine

Plasma cutting does not rely on oxidation to work

Can cut aluminum and stainless

High velocity jet of ionized gas

Delivered from a constricting orifice

The high velocity ionized gas

Conducts electricity from the torch
to the work piece

The plasma heats melts blows the material



Uses shop air, no special gases required

Handle for easily transporting unit

Troubleshooting indicators lights

Built-in air pressure gauge and pressure adjustment control

Pilot arc feature for cutting fence and expanded metal

18 1/2ft. cable and torch lead

10ft. ground cable and clamp

Cuts 3/8in. mild steel, 1/4in. aluminum, 1/4in. stainless steel, 1/4in. galvanized metal, 1/8in. copper, 1/8in. brass

Additional electrodes and nozzle

AUXILIARY RELIEF MEDICAL VAN

Maintenance of Special Equipment

Weekly Operation of Each Equipment

Guidelines of OEM is to be followed



AUXILIARY RELIEF MEDICAL VAN

Maintenance of Rolling Stocks

Daily Visual Examination of Rolling Stock

Other Schedules of Rolling Stock
as per Standard (A B IOH)



NEW DEVELOPMENT

Self Propelled ART/ARMV

Diesel Engine

Cummins India NTA855R

Hydraulic Transmission

Voith Transmission

Auxiliary Generator for Electrical System



NEW DEVELOPMENT

Diesel Engine

Cummins India NTA855R

6-Cyl Turbocharged Aftercooled

Max HP - 430 Max RPM - 2100

Maintenance

A Check - Daily/Weekly

B Check - 300 Hrs/6 Months

C Check - 1500 Hrs/1 Year

1500 Hrs Check

D Check - 6000 Hrs/2 Years

NEW DEVELOPMENT

Hydraulic Transmission

Voith Transmission

Max Power Input – 320 KW

Max Input Speed – 1884 RPM

Max Output Speed – 2863 RPM

Weight Dry – 840 Kg

Oil Capacity – 75 Ltr

NEW DEVELOPMENT

Voith Transmission

Maintenance

W1 - 25000 KM/500 Hrs of Driving

W2 - 300000 KM/5000 Hrs of Driving/
2.5 Years

H1,H2,H3 - 1.2 Million KM/20000 Hrs

NEW DEVELOPMENT

Auxiliary Generator for Electrical System



NEW DEVELOPMENT

Safety Features

Speedometer with Electronic Memory

Twin Beam Headlight

Auto Flasher Light

Cattleguard

Air Brake System

Power Car Wheel Dia 952 – 877 mm

Trailing Car Wheel Dia 915 – 812 mm

NEW DEVELOPMENT

Bogie of Trailing Car

ICF Bogie

Bogie of Driving Car

Powered Bogie

Non-powered Bogie

Couplers

Schaku between the Coach

Screw Coupling at Extreme End

ACCIDENT RELIEF MEDICAL VAN

Equipment should be provided as per

Standard List issued by Zonal HQ



EQUIPMENT LIST IN ARMV

ARMV /ASN (EASTERN RAILWAY)
REVISED LIST OF MISCELLANEOUS TOOL & EQUIPMENTS FOR AUXILIARY MEDICAL VAN/2011

Sl No	Descriptions	Stnd. Qty.	Available	Short Fall	Remarks
EQUIPMENT FOR RESCUE DEVICE					
1	Hudraulic Rescue Device(Cold cutting equipment)	1 set	1 set	Nil	
2	Spare Power Pack	1 set	1 set	Nil	
3	Hudraulic rod cutter	2	2	Nil	
4	Saber - Saw foe pillar/chanel cutting with accessories, Make - MICO BOSCH or similar	1 set	1 set	Nil	
5	Two Speed drill machine with accessories, Make MICO BOSCH or similar	2 set	2 set	NIL	
6	Nibbler machine with accessories Make MICO BOSCH or similar	1 set	1 set	Nil	
MEDICAL EQUIPMENT					
1	First Aid Box	2	2	Nil	
2	Pollution mask	20	20	Nil	
3	Foldable & light weight stretcher.	10	10	Nil	
EQUIPMENT FOR COMFORT					
1	Set of gas oven with L P G gas cylinder/ Primus stove with accessories	1 set	1set	Nil	
2	Stain less steel Kettles (Cap) 4.5 & 2 lts	2 each	2 each	Nil	
3	Tea Pot white china 1lt Cap	2	2	Nil	
4	Paper Cups and Dishes	200 each	200 each	Nil	
5	Tent Kabul Pal	1	1	Nil	
6	Toilet soap and soap dish	2 each	2 each	Nil	
7	Folding table 3'x3' and folding chair	2	2	Nil	
8	Tea (Commercial dept)	1 Kgs	1 Kgs	Nil	
9	Coffee (Commercial dept)	250 gm	250 gm	Nil	
10	Powder Milk (Commercial dept)	1 Kg	1 Kg	Nil	
11	Suger (Commercial dept)	2 Kg	2 Kg	Nil	
12	Biscuits (Commercial dept)	2 Kg	2 Kg	Nil	
13	Polythene water container with lid for drinking water	1	1	Nil	
14	Tea Spoon stainless steel	10	10	Nil	
15	Bucket polythene with with cover 5 lts cap.	2	2	Nil	
16	Blanket wollen superior quality	30	30	Nil	
17	Plastic water bottle 1 lt capacity	5	5	Nil	
18	Cotton Bed sheet 2.1x1.5 mt	30	30	Nil	
19	Pillow 50x20 cms with water proof cover	30	30	Nil	
20	Water proof polythene sheet 1 meter x 1 meter	2 Rolls	2 Rolls	Nil	
21	Dechi Stainless steel with cover 20, 18, 15, & 10	1 set	1set	Nil	
FIRE FIGHTING EQUIPMENT					
1	DCP type fire Extinguisher with spare powder	4	6	Nil	
ELECTRICAL EQUIPMENT					
1	Generator Dsl driven 6KVA, 220V/230V fixed complete with s/Board & accessories.	1	1	Nil	
2	Emergency Inflatable lighting tower	2	2	Nil	

EQUIPMENT LIST IN ARMV (Contd..)

3	Generator 1.5/2KVA 220V-230V- portable Complete luminare fitting with 1000w halogen lamp & controlled gear.	4	5	Nil
4	Complete luminare fitting with 150w metal halide lamp & controlled gear	6	6	Nil
5	Complete luminare fitting with 150w metal halide lamp & controlled gear	6	6	Nil
6	PVC insulated & sheathed 3-core flexible 23/0 193mm	1000mts	1000 MTS	Nil
7	Insulation tape PVC in rolls 10 mts	6	6	Nil
8	Drum on fixed stand for main cable	1	1	Nil
9	Telescopic stand 2 mts high for mounting luminare for halogen /metal halide fitting	12	12	Nil
10	Battery charger for charging 2 T. L. batteries at a time	1	1	Nil
FUEL & LUBRICANT (As REQUIRED)				
1	HSD Oil	100 lts	100 lts	Nil
2	Lubricating Oil	5 lts	5 lts	Nil
3	Kerosene Oil	50 lts	50 lts	Nil
4	Petrol	50 lts	50 lts	Nil
5	Hydraulic Oil	20 lts	20 lts	Nil
MISCELLANEOUS ITEM				
1	Set of Wrenches, Hammer Screw Driver, Cutting pliers	1 set	1 set	Nil
2	Tin and Bottle opener	1	1	Nil
3	Aluminium telescopic ladder 20' height	1	1	Nil
4	Earthing rod (TRD) depth	1	1	Nil
5	Chain pulley block 3 ton Cap.	1	1	Nil
6	Hydraulic Jacks 30t (manually operated	1	1	Nil
7	Hydraulic Jacks 10t (manually operated	1	1	Nil
8	Rope Manila 1" & 1/2" dia	50 each	50 each	Nil
9	Tommy bars	4	4	Nil
10	Felling Axes	4	4	Nil
11	Hackshaw with blade with adequate spare blades Sledge Hammer 7 lbs, Flat chisel, Khodali, Shovels etc	6 each	6 each	Nil
12	Bucket (G) 5 lts cap.	4	4	Nil
13	Fog Signals (Detonators)	20	20	Nil
14	Flag green, red, & banner flag 6'x4'	2 each	2 each	Nil
15	Tricolour torch	2	2	Nil
16	Torch light 3 cell with spare cells and bulbs	8	10	Nil
17	Rechargeable torchs of 12 V with charging adaptors & spare hallogen bulbs	4	4	Nil
18	Safety Helmet with head lamp & chargeable unit of 6 Volts	4	12	Nil
19	Oxygen Cylinder 150 Cu ft	4	4	Nil
20	Acetylene Cylinder 150 Cu ft	2	2	Nil
21	Cutting torch with hoses, nozzle set & accessories	2	2	Nil
22	Goggles, Leg guard, Apron	2 each	2 each	Nil
23	Tarfor 3-5 T & 5/8 T	1 each	1 each	Nil
24	Satellite Phone (S&T Dept)	1 set	1 set	Nil
25	Hand Umbrella	5	5	Nil
26	Rain Coat with Hood	11	11	Nil
27	Gum Boot Standered large	11	11	Nil
28	Padlock with key 65/75 mm	6	6	Nil
29	Waterproof garden Umbrella	4	4	Nil
30	Waterfilter 20lts Cap	1	1	Nil
31	Spark plug (as required)	2	2	Nil
32	Digital Steel camera	1	1	Nil
33	Digital Video Camera	1	1	Nil
34	Barrier tapes (Roll of 250mts length)	5 roll	5 Rolls	Nil
35	Spare spikes (iron)for fencing by barrier tapes	10	10	Nil
36	Wrist band serially numbered plastic token	100	100	Nil
37	Plastic chair	20	20	Nil
38	Coffin & Body bag (health dept)	10 each	10 body bag	10 coffin
39				20 nos.coffins kept in store of Divt. hospital

EQUIPMENT LIST IN ARMV (Contd..)

Sub: present status of 12 Additional Items
As per Director mechanical Engg(P)/ii/Rly.Bd's letter no.2003/M(M&P)/7/
DM/status/Pt.dt-31.12.2012

Sl. No	Name/description of the items	Unit	Qty	ART/ARMV	Dept.	Asansol ('A' class)		Remarks
						ART	SPAR MV	
						Available	Available	
1	Life Detector	Nos.	1	ARMV	Mech	-	Nil	As per DME(P)II/ Railway Boards letter No.2003/M(M&P)/7/DM/(states)/part New Delhi dated 31.03.2016 Zonal railways should not buy this equipment and seek assistance of NDRF wherever any such requirements arises.
2	Scene Tape	Roll	6	ART & ARMV	Mech	6	6	-
3	Rope manila nylon 100 mtrs	Nos.	1	ART & ARMV	Mech	1	1	-
4	Safety cone	Nos.	6	ART & ARMV	Mech	6	6	-
5	Stretcher folding Aluminum spinal stretcher	Nos.	4	ARMV	Medical	2	12	-
6	Breathing apparatus	Nos.	1	ART	Mech	4	-	-
7	Suitable portable DG set to meet the requirement of tools/equipment/lights or board along with necessary switch boards, cables etc	Sets	1	ART & ARMV	Mech	1	1	-
8	High capacity hydraulic rescue device for cutting stainless steel coaches and wagons	Nos.	1	ART & ARMV	Mech	Nil	Nil	Approved in M & P programme 2018-19.
9	Portable plasma cutting equipment for SS type coaches & wagons	Nos.	1	ART & ARMV	Mech	Nil	1	Proposed in M & P programme 2018-19.
10	Portable defibrillator	Nos.	1	ARMV	Medical	-	1	-
11	Abrasive cutting equipment	Sets	1	ART & ARMV	Mech	1	1	-
12	Life jackets (water rescue)	Nos.	100	ART & ARMV	Mech	20 Nos.	80 Nos.	-

DISASTER MANAGEMENT IN RAILWAY

Restoration of System

Accident Relief Train

Consists of 3 or 4 Coaches

Staff Van

Equipment Van

Generator Van

And 2 or 3 wagons

BCN Wagon – Track Fittings, Sleepers

BRN Wagon - Rails

ACCIDENT RELIEF TRAIN

Staff Van

For taking rest of staffs

during movement

to and from accident site

Equipped with Kitchen Facility



ACCIDENT RELIEF TRAIN

Equipment Van

Hydraulic Rerailing Equipment

Gas Cutting Equipment

Wooden Wedges

Chains Slings of various type

Other Specialized Equipment



ACCIDENT RELIEF TRAIN

Equipment Van

Hydraulic Rerailing Equipment

Petrol/Diesel Operated Power Pack with Pump Control Stand

Double Acting Jacks of various capacity 16 Nos.

High Pressure Hose

Axle Pusher Jacks

Roller Carriage for Lateral Movement

ACCIDENT RELIEF TRAIN

Equipment Van

Hydraulic Rerailing Equipment

Bridges for Lateral Movement 4 Nos.

Pulling Device

Claw Jacks

Tirfirs & Steel Ropes



ACCIDENT RELIEF TRAIN

Equipment Van

Hydraulic Rerailing Equipment

Max. Operating Pressure

Lukas	530 Bar
MFD	300 Bar

Engine

Petrol Operated	-	10 HP
Diesel Operated	-	10 HP

Jacks Double Acting Telescopic
Low Height & High Height

60/120 T Typical

ACCIDENT RELIEF TRAIN

Equipment Van

Hydraulic Rerailing Equipment

Pump of Two Rows

High Pressure

Low Pressure

Hydraulic Hose 3 Nos.

From Power Pack to Control Stand

High

Low

Return

Control Stand

Hydraulic Hose 2 Nos.

High for Lifting

Low for Lowering

Jacks



Hydraulic Rerailing Equipment in Action



Pulling Device



Operation of Claw Jack
to topple damage rolling stock



Rerailing on Spread gauge Rail

ACCIDENT RELIEF TRAIN

Hydraulic Rerailing Equipment

Maintenance

Weekly

Monthly/After Every Breakdown

Quarterly/50 Hrs of Run

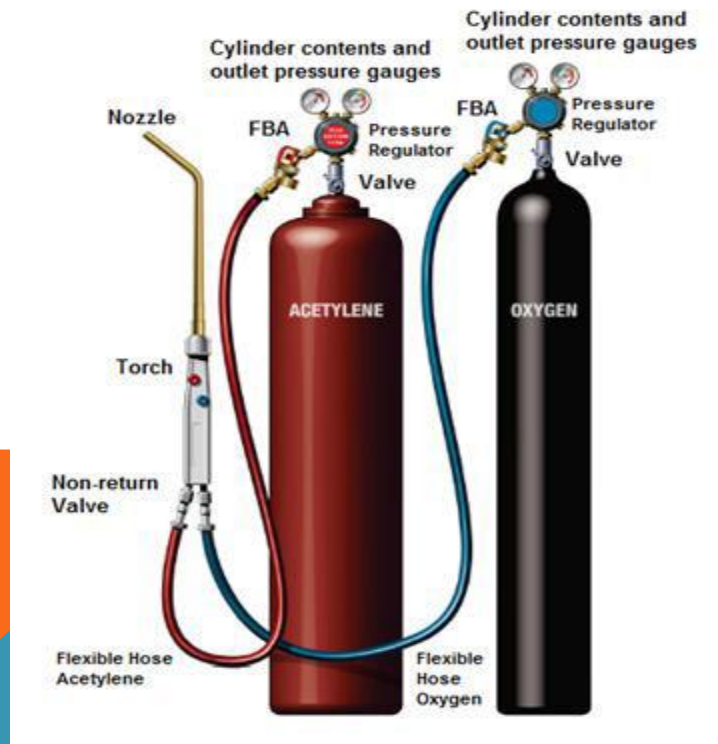
Half Yearly/100 Hrs of Run

Yearly/300 Hrs of Run

ACCIDENT RELIEF TRAIN

Equipment Van

Gas Cutting Equipment



Oxy Acetylene Gas Cutting Equipment

ACCIDENT RELIEF TRAIN

Equipment Van

Other Specialized Equipment

Rail Skate

Fire Extinguisher

Inflatable Air Bag System of Capacity 120T

Telecommunication Equipment

Satellite Phone

Walkie Talkie

Mega Mike

To alert person during restoration work

ACCIDENT RELIEF TRAIN

Speedy and Effective Restoration

Inflatable Air Bags

To make space to position jacks

Inflatable Tower Light

Rail Skate

To move Disabled Rolling Stock
with Bearing Seizure

ACCIDENT RELIEF TRAIN

Inflatable Air Bags

Where putting hydraulic jack is not feasible
due to space constraint

May be put in the cavity

Rolling stock may be lifted up
by blowing it

and making space for putting jacks

Care must be taken for sharp edges
may damage inflatable air bag.

ACCIDENT RELIEF TRAIN

Inflatable Air Bags (120T Capacity)

Consists of

Air Compressor Petrol Operated

Air Bag

Controller

High Pressure Hoses

Air Cylinder

Gauges

Operates at 8 kg/sq cm



ACCIDENT RELIEF TRAIN

Rail Skate

Essential for Rolling Stock involved
In Hot Box

Journal Breakage

After Lifting of Wheel by Jacks

Rail Skate is inserted

beneath the both wheel

of disabled pair of wheel

ACCIDENT RELIEF TRAIN

Rail Skate

Can move at

20 kmph on Straight Line

15 kmph on Curve

Applicability

All Classes of Locomotive

Reference RDSO Instruction Bulletin

MP.IB.VL-01.02.07 (Rev 00)

MP.IB.VL-01.05.07 (Rev 00)

MP.IB.VL-03.14.10 (Rev 00)



ACCIDENT RELIEF TRAIN

Generator Van

6 KVA/15 KVA Diesel Generator Set

Portable Petrol Operated Gen Sets

Lighting Fittings with Stands

Inflatable Tower Lights

Store



ACCIDENT RELIEF TRAIN

Speedy and Effective Rescue

Improved Illumination

By Providing

15 KVA Diesel Generator Sets

In place of 6 KVA DG Sets

Inflatable Tower Light

To provide adequate illumination

At distant location

ACCIDENT RELIEF TRAIN

Speedy & Accurate information to the
Concerned

Provision of Satellite Phone

Can work even in absence of Network

Provision of Laptop in ART



AUXILIARY RELIEF TRAIN

Maintenance of Special Equipment

Weekly Operation of Each Equipment

Guidelines of OEM is to be followed



AUXILIARY RELIEF TRAIN

Maintenance of Rolling Stocks

Daily Visual Examination of Rolling Stock

Other Schedules of Rolling Stock
as per Standard

A B IOH of Coaches

ROH of Wagons

POH at 3.5 Years of Coaches

POH Periodicity of Wagons as Standard

ACCIDENT RELIEF TRAIN

Equipment should be provided as per

Standard List issued by Zonal HQ



EQUIPMENT LIST IN ART

REVISED LIST OF ART TOOLS AND EQUIPMENTS of ART'2011 (Eastern Railway)					
Position of 'A' CLASS ART/ASN					
SI No	Descriptions	Std. Qty. Class A	Available	Short Fall	Remarks
HYDRAULIC RE-RAILING EQUIPMENTS :-					
1	Set of Hydraulic Re- railing Equipments	1 Set	2 Set	Nil	
2	Power Pack with Engine as spare	1	1	Nil	
3	Portable Control Table as a spare	1	1	Nil	
4	Pairs of high Pressure Hoses 10m with couplings as a spare	1 pair	2 pair	Nil	
5	Set of sealings for Engine, Control Table & hand pump as a spare	1 set each	1 set each	Nil	
6	Set of sealings for Jacks as a spare	1 set each	Nil	1 set each	
7	set of tool box for maintenance of HRE set	1 set	1 set	NIL	
OXY CUTTING EQUIPMENTS :-					
1	Portable Welding Set 220V Single Phase	1 set	1set	Nil	
2	Electrode	4 Pkts	4 Pkts	Nil	
3	Hand held torch with spares tips length 4.5'/5'	1	1	Nil	
4	Cutting torch with hoses, nozzle set & accessories	2 set	2 Set	Nil	
5	Pressure gauge Oxygen (Double type)	2	2	Nil	
6	Pressure gauge Acetelene (Double type)	2	2	Nil	
7	Acetelene Cylinders 150 Cu Ft	2	2	Nil	
8	Oxygen Cylinder 150 Cu Ft	4	4	Nil	
9	Goggles	2 pairs	2 pairs	Nil	
10	gloves and Leg guards - lather makes	2 each	2 each	Nil	
11	Tool set for maintenance	2 set	2set	Nil	
12	OXY fuel cutting equipment(under water cutting)	1 set	Nil	1 Set	Proposed in M&P 2019-20
ROPES AND WINCHES					
1	Wire rope 5-1/2" Cir (1.1/4" dia) length 20 ft	4	4	Nil	
OTHER MECHANICAL EQUIPMENTS					
1	Rail Skate for movement of disabled wagons (broken/hot axle)	1 set	1 set	Nil	
2	Portable Rail Trolley	1 set	1 set	Nil	
3	Rail Claws for maintaining gauge	6	6	Nil	
4	Ramp single (L H Inside)	1	1	Nil	
5	Ramp single (R H Inside)	1	1	Nil	
6	Ramp single (L H OutSide)	1	1	Nil	
7	Ramp single (R H OutSide)	1	1	Nil	
8	Air bags, capacity -132 T	1 set	1 set	Nil	
9	Skids	6	6	Nil	
FITTER'S TOOLS					
1	Block differential pully with chain 3 Tons capacity	1	1	NIL	
2	Bar crow claw steel 1-1/2" dia 6' long	2	2	Nil	
3	Bar crow claw steel 1-1/2" dia 4'- 6" long	2	2	Nil	
4	Bars Tommy	6	6	Nil	
5	Hammers Sledge 14 lbs	2	2	Nil	
6	Hammers ball pene 1-1/2 lbs	6	6	Nil	
7	Handles pipes for levering spanners	8	8	Nil	
8	Pliers	2	2	Nil	
9	Spanner Box 10 mm to 50 mm	1 set	1 set	Nil	
10	Spanner double ended 6 mm to 50 mm	1 set	1 set	Nil	
11	Hand Saw 12.5" DC	6	6	Nil	
12	Blades for Hack Shaw 300x12.5x1.00 mm as a spare	6	6	Nil	
13	Bench Vice (Dual)	1	1	Nil	
14	Chisel cross cut	4	4	Nil	

EQUIPMENT LIST IN ART (Contd...)

15	Chisel half round 9" long	4	4	Nil
16	Chisel rod flat 1" dia x 2'- 6" long	2	2	Nil
17	File flat bastard 400 mm long	2	2	Nil
18	File 20 mm round bastard 400mm long	2	2	Nil
19	File 20 mm square bastard 400 mm long	2	2	Nil
20	File half round bastard 400 mm long	2	2	Nil
21	Centre Punch	1	1	Nil
22	Shovels	6	6	Nil
MEASURING TOOLS				
	Measuring tape 100ft stell (30 metres)	1	1	Nil
	Rule stell foldins 2 ft	1	1	Nil
	Feeler gauge 100 mm long .03 mm to 1 mm	1	1	Nil
	Set of Aumatic & Spring loaded measuring gauges	1 set	1 set	Nil
WOODEN PACKING/SYNTHETIC PACKING				
	600x300x20 mm bonded with 30x5 mm thick band	20	20	Nil
	600x300x50 mm bonded with 30x5 mm thick band	20	20	Nil
	600x300x75 mm bonded with 30x5 mm thick band	20	20	Nil
	600x300x300 mm bonded with 30x5 mm thick band	6	6	Nil
	2000x300x300 mm bonded with 30x5 mm thick band	4	4	Nil
	900x300x100 mm bonded with 30x5 mm thick band	4	4	Nil
	900x900x300 mm bonded with 30x5 mm thick band	4	4	Nil
ELECTRICAL EQUIPMENTS				
1	Generator diesel driven 6 KVA 220 - 230 V fixed complete with switch board and accessories	1	1	Nil
2	Generator 1.5/2 KVA 220 - 230 V Portable	6	8	Nil
3	Emergency Inflatable Lighting Tower	4	4	Nil
4	Complete luminate fitting with 1000W halogen lamp & controlled gear	10 sets	10 sets	Nil
5	Complete luminate fitting with 150watt metal halide lamp & controlled gear	10 sets	10 sets	Nil
6	PVC insulated & sheathed 3 core flexible 23/0.193 mm	1600 mts	1600mts	Nil
7	Drum on fixed stand for main cable	2	2	Nil
8	Telescopic stand 2 mts high for mounting luminate for halogen/ metal halide fittings	20 SETS	20 SETS	Nil
9	insulation tape PVC in rolls 10 mts	10	10	Nil
10	battery charger for charging 2 T. L. battery at a time	1	1	Nil
ILLUMINATION OTHER THAN ELECTRICAL				
1	Torch (3 cell)	10	10	Nil
2	Spare Torch bulb (4.5 V)	1doz	1 doz	Nil
3	Rechargeable torches 12 V with charging adopters & spare halogen bulbs	6	6	Nil

SHOT ON REDMI NOTE 5 PRO
 WITH DUAL CAMERA

EQUIPMENT LIST IN ART (Contd...)

OIL AND GREASE (AS REQUIRED)				
1	Kerosene oil	200 lt	200 lt	Nil
2	Graphited Grease for wire rope	5 Kg	5 Kg	Nil
3	Petrol	80 L	80 L	Nil
4	Diesel oil	200 L	200 L	Nil
5	Hydrolic oil (HYDROWL-15)	100L	100L	Nil
E & W SPARES				
	Coupling Hook	2	2	Nil
	Coupling screw with shackles and pins	2	2	Nil
	Brake pipe hose (flexible)	6	6	Nil
	Feed pipe hose (flexible)	6	6	Nil
	MU washer for A/Brake pipe	20	20	Nil
	Angle Cock	2	2	Nil
	Emergency deaw bar	1	1	Nil
	Shako Coupling for EMU Coach (TRS)	1	1	Nil
GENERAL STORES				
	Cotton waste	10	10	Nil
	Tent Kabul Pal	1	1	Nil
	Samiana	1	1	Nil
	Ladder Aluminium	2	2	Nil
	Rope Manila 3" circumference	100 ft	100 ft	Nil
	Wasdge Iron assorted (for ramps)	8	8	Nil
	Hand Umbrella	6	6	Nil
	Rain coat with hood	25	25	Nil
9	Gum boot	25	25	Nil
10	Industrial Safety Shoes	25	25	Nil
11	Funnel for Diesel oil	1	1	Nil
12	Oil feeders	2	2	Nil
13	Lashing Chains 1/2" dia x 15 ft length with hook & rings	4	4	Nil
14	Lashing Chains 5/8" dia x 10 ft length with hook & Rings	4	4	Nil
15	Lashing chains 5/8" dia x 20t length with hook & Rings	4	4	Nil
16	Lamp hand Signal (tricolour)	2	2	Nil
17	Flags hand signal green	4	4	Nil
18	Flags banner	2	2	Nil
19	Flags hand signal red	4	4	Nil
20	Fog signals (Detonators)	20	20	Nil
21	Board last vehicle	2	2	Nil
22	Safety matches	4 box	4 box	Nil
23	Spectacle	1/ staff	1/ staff	Nil
24	Breath Analyser	1	1	Nil
25	Plastic Chair	20	20	Nil
26	Self contained breathing apparatus	4	4	Nil
27	Barrier taps (Roll of 250 mts length)	5 rolls	5 rolls	Nil
28	Spark plug	3	3	Nil
29	Chain Shaw for cutting wood telling & branches	1	1	Nil
30	Hydrolic rod cutter	2	2	Nil
31	Trifor 3T/5T, 5T/8T1	1 each	1 each	Nil
32	Portable electrically operated cutting & boring tool	1 Set	1 Set	Nil
33	Uniforms Pant dark brown Shirts bright orange	2 sets/staff	63	NIL
34	Luminious Jacket	34	34	Nil
LIST OF UTENSILS & STORES IN STAFF CAR				
1	Set of gas Cven with LPG cylinder/Primus stove	1 set	1set	Nil
2	Tumblers stainless steel	36	36	Nil
3	Tea spoons stainless steel	18	18	Nil
4	Stainless steel degchies with cover 400 mm dia 200 mm deep	4	4	Nil

SHOT ON REDMI NOTES PRO
 MI DUAL CAMERA

EQUIPMENT LIST IN ART (Contd...)

SHOT ON REDMI NOTE 5 PRO
MIDUAL CAMERA

6	Kitchen spoon stainless steel	5	5	Nil
7	Knives cook 8" blade	2	2	Nil
	Dinner plate 255 mm dia stainless steel	30	30	Nil
8	Katoras 3" dia stainless steel	10	10	Nil
9	Tea cups and saucers china	10	10	Nil
10	Aluminium degchies with cover 12" dia	2	2	Nil
11	Grinding stone	1	1	Nil
12	Grinding roller	1	1	Nil
13	Iron tawa 10" dia	1	1	Nil
14	Kettle aluminium 4.5 lts	1	1	Nil
15	Kettle aluminium 2 lts	1	1	Nil
16	Table forks stainless steel 200 mm long	6	6	Nil
17	Table knves stainless steel 200 mm long	6	6	Nil
18	Tea pot white china 1 lt cap.	2	2	Nil
19	Tea	1/2 Kg	1/2 Kg	Nil
20	Condensed Milk cap. 250 gm	1Kg	1Kg	Nil
21	Sugar	2Kg	2Kg	Nil
22	Jug stainless steel	3	3	Nil
23	Water pots 4 galonns capacity	3	3	Nil
24	Duster (cloth khadi)	12	12	Nil
25	Pillows canvas white stuffed with cotton 26"x18"	30	30	Nil
26	Pillows covers white khadi	30	30	Nil
27	Bed sheet khadi	30	30	Nil
28	Towels 40"x22"	10	10	Nil
29	Blankets	30	30	Nil
30	Soap bars	1	1	Nil
31	Frying pan Aluminium 300 mm dia	2	2	Nil
32	Soap Toilet	1	1	Nil
33	Pad lock with duplicate keys 65/75 mm (as per requirment)		3	Nil
34	Polythene water container cap 500lt	1	1	Nil
35	Water filter cap. 20 lt	1	1	Nil
36	Digital weiging Machine cap. 100 Kg	1	1	Nil
MEDICAL EQUIPMENT				
1	First Aid Box	2	2	Nil
2	foldable and light weight Strecher	2	2	Nil
3	Multi Gas detector	1	1	Nil
FIRE FIGHTING EQUIPMENT				
	Water Mist Fire Fighting System	1 set	1 set	Nil
1				
2	Spare Air Cylinder	4	4	Nil
3	Spare Foam Jar Cap-5 Ltrs	2	2	Nil
4	Water buckets	6	6	Nil
5	F./extinguisher (DCP type) with spare part	6	13	Nil

EQUIPMENT LIST IN ART (Contd...)

Sub: present status of 12 Additional Items.
As per Director mechanical Engg(P)/ii/Rly.Bd's letter no.2003/M(M&P)/7/DM/status/Pt.dt-31.12.2012

SHOT ON REDMI NOTES PRO
IM DUAL CAMERA

Sl. No	Name/description of the items	Unit	Qty	ART/ARMV	Dept.	Asansol ('A' class)		Remarks
						ART	SPARMV	
						Available	Available	
1	Life Detector	Nos.	1	ARMV	Mech	-	Nil	As per DME(P)II/ Railway Boards letter No.2003/M(M&P)/7/DM/(states)/part New Delhi dated 31.03.2016 Zonal railways should not buy this equipment and seek assistance of NDRF wherever any such requirements arises.
2	Scene Tape	Roll	6	ART & ARMV	Mech	6	6	-
3	Rope manila nylon 100 mtrs	Nos.	1	ART & ARMV	Mech	1	1	-
4	Safety cone	Nos.	6	ART & ARMV	Mech	6	6	-
5	Stretcher folding Aluminum spinal stretcher	Nos.	4	ARMV	Medical	2	12	-
6	Breathing apparatus	Nos.	1	ART	Mech	4	-	-
7	Suitable portable DG set to meet the requirement of tools/equipment/lights or board along with necessary switch boards, cables etc	Sets	1	ART & ARMV	Mech	1	1	-
8	High capacity hydraulic rescue device for cutting stainless steel coaches and wagons	Nos.	1	ART & ARMV	Mech	Nil	Nil	Proposal sent for inclusion in M&P programme 2018-19 Vide DME(O&F)/ASN L/no-MP-152/O/M&P/2018-19, dt-09.05.18
9	Portable plasma cutting equipment for SS type coaches & wagons	Nos.	1	ART & ARMV	Mech	Nil	1	Proposal sent for inclusion in M&P programme 2018-19 Vide DME(O&F)/ASN L/no-MP-152/O/M&P/2018-19, dt-09.05.18
10	Portable defibrillator	Nos.	1	ARMV	Medical	-	1	-
11	Abrasive cutting equipment	Sets	1	ART & ARMV	Mech	1	1	-
12	Life jackets (water rescue)	Nos.	100	ART & ARMV	Mech	20 Nos.	80 Nos.	-

EQUIPMENT LIST IN ART (Contd..)

BOOKS AND MANUALS				
1	Accident Manual	1	1	Nil
2	& SR Rule Book	1	1	Nil
3	First Aid Manual			Nil
4	Conference Rules Part-III & Part-IV for TXRS (C&W)	2	2	Nil
5	Working Tim table	2	2	Nil
RECORDS				
1	Accident Relief Train log book	1	1	Nil
2	Attendance Register	1	1	Nil
3	Equipment register	1	1	Nil
4	Wire Rope and and chain Testing Register	1	1	Nil
5	Test register for Equipment	1	1	Nil
6	Inspection Register for (HQ level, Div. Level, Insp. Level)	1	1	Nil
MISCELLANEOUS				
1	Digital Still Camera	1	1	Nil
2	Digital Video Camera	1	1	Nil
3	Flash drive 4 GB	2	2	Nil
4	Laptop Computer	1	1	Nil
5	Earthing rod	2	2	Nil
SIGNALING AND TELECOMMUNICATION EQUIPMENT				
1	Portable field telephone complete in wooden Box	1	1	Nil
2	Telescopic pole equipment in a wooden box	1	3	Nil
3	Inspection Book	1	1	Nil
4	Railwaya control alignment book	1	1	Nil
5	Battery box for 3 dry cells	2	3	Nil
6	Dry cell large 6-1 1.5 V	35	35	Nil
7	(delton) PVC insulated, PVC seathed twin core plastic cable	500 mts	500 mts	Nil
8	Wire VIR 1/0.004 in 100 meters bundles	2 bundles	2000 m	Nil
9	Microphone Dymanic with cable 5 meters with floor stand	1	1	Nil
10	Loud speaker horn type 5/10 W	1	3	Nil
11	Transistorised amplifier 10/20 W power out put battery operated 12 to 24 V DC	1	2	Nil
12	Megaphone transistorises 2 watt to work on 9 V dry cell	3	4	Nil
13	Stand portable for loudspeaker telescopic 7 adjustable	1	2	Nil
14	Mechanical tool kit with 12 volts tin in soldering iron	1 set	1 set	Nil
15	Field service Telephone cable PVC insulated	500 mts	510 m	Nil
16	Mobile VHF trans receivers	4	4	Nil
17	Walkie - Talkie sets	12	25	Nil
18	Setellite Phones	1 set	1 set	Nil
19	Mobile cellular phone with camera & net facility.	4 set	Nil	4 Set

SHOT ON REDMI NOTE 11 PRO MICRO CAMERA

DISASTER MANAGEMENT IN RAILWAY

Restoration of System

140T Break Down Crane

BD Crane with Match Truck

Two Coaches

Staff Van

Equipment Van

And 1 wagon

BCN Wagon – Wooden Wedges

Slings

DISASTER MANAGEMENT IN RAILWAY

140T Break Down Crane

BD Crane with Match Truck

Diesel Hydraulic Crane

Cowans

Gottwald

Match Truck for resting of Boom

140T BD CRANE

Diesel Hydraulic Crane

Main Engine

CIL NTA-855 6-Cyl Engine

Auxiliary Engine

Kirloskar Engine 2-Cyl Engine

To pack up in case Main Engine fail

Main Hoist

140T Speed Lifting – 4 m/min

Auxiliary Hoist

25T Speed Lifting - 15 m/min

Speed more but less load

Hydraulic Circuits

140T BD CRANE

Diesel Hydraulic Crane

Hydraulic Motors

Electrical System

Operation of Solenoid Valves

Charge Batteries for Starter

Lights

Supply to Safety device

Safe Load Indicator System



140T BD CRANE

Diesel Hydraulic Crane

Propping System

Counterweight System

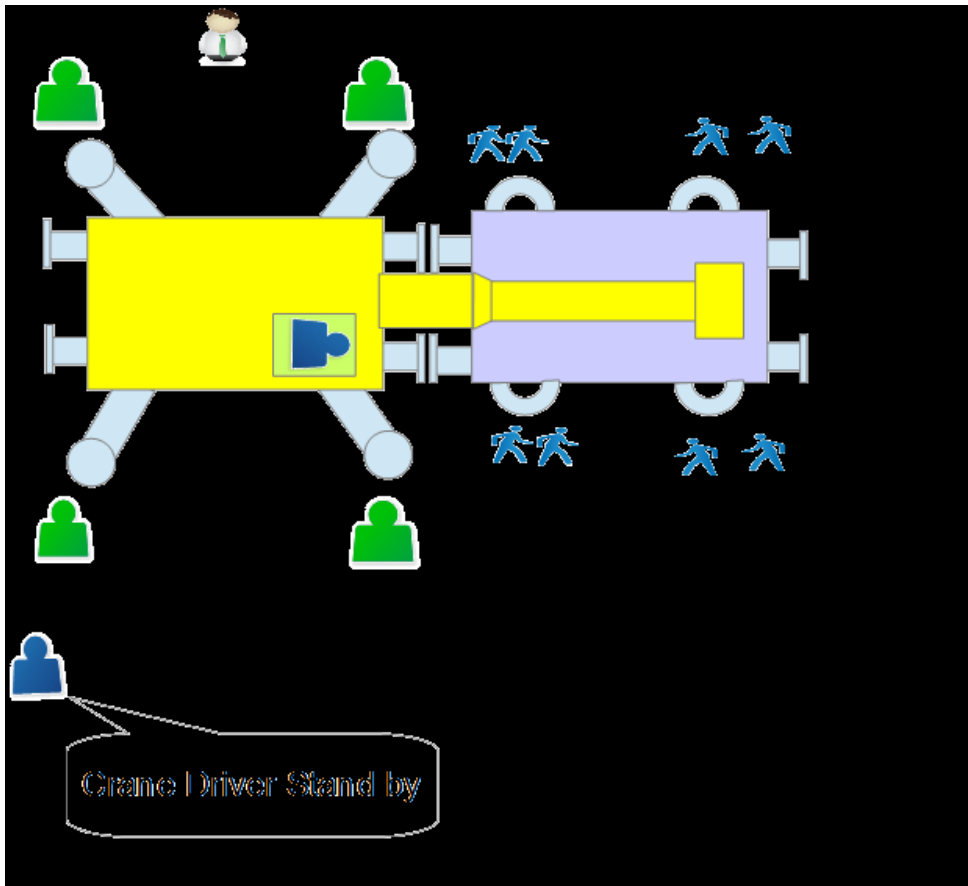
Air Brake System





140T BD Crane

2 Crane working
Simultaneously to lift
A loco



Manpower Deployment

During Crane Operation

KEY	Description	Numbers
	Supervisor	01
	Driver	02
	Skilled	04
	Unskilled	08

140T BD CRANE

Staff Van

For taking rest of staffs

during movement

to and from accident site

Equipped with Kitchen Facility



140T BD CRANE

Equipment Van

Lighting Equipment

Portable Petrol Operated Gen Set

Light Fittings with Stands

Inflatable Tower Light

Manually operated Tools

Gas Cutting Equipment

Rescue Platform

Store



Rescue Platform



Rescue Platform in Action

140T BD CRANE

Maintenance

A - Daily

B - Monthly/100 Hrs

C - Quarterly/250 Hrs

D - Half Yearly/500 Hrs

E - Yearly/1000 Hrs

F - 2 Yearly/2000 Hrs

G - 4 Yearly/4000 Hrs

POH - 8 Yearly/8000 Hrs

140T BD CRANE

Maintenance of Special Equipment

Weekly Operation of Each Equipment

Guidelines of OEM is to be followed



140T BD CRANE

Maintenance of Rolling Stocks

Daily Visual Examination of Rolling Stock

Other Schedules of Rolling Stock
as per Standard

A B IOH of Coaches

ROH of Wagons

POH at 3.5 Years of Coaches

POH Periodicity of Wagons as Standard

140T BD CRANE

Equipment should be provided as per

Standard List issued by Zonal HQ



140T BD CRANE

APPROVED LIST OF TOOLS AND EQUIPMENTS FOR 140 T B.D CR				
Ref No- CMPE/ER/KKK's letter NO. M/RL/M/10/7/Vol. VI Dated 19th April'2006				
SI No	Descriptions	Stnd. Qty.	Available	Short Fall
I.	OXY CUTTING EQUIPMENT			
1	Cutting torch with hoses, nozzle sets and accessories.	1 Set	1 Set	NIL
2	Pressure gauges Oxygen (Double type).	2	2	NIL
3	Pressure gauge Acetelene (Double type).	2	2	NIL
4	Acetelene cylinders 150 Cu. Ft.	2	1	NIL
5	Oxygen Cylinders 150 Cu. Ft.	2	2	NIL
6	Goggles.	2 Pairs	2 Pairs.	NIL
7	Gloves and leg guards - leather make with Apron.	2 Each	2 Each	NIL
8	Tool sets for maintenance.	1 Set	1	NIL
II.	ROPES, SLINGS AND CHAIN (1986 & 1997 design)			
1	Double Leg Wire Rope Sling, Cap 70 T.	2	2	NIL
2	Single Leg Wire Rope sling, Cap. 70 T.	4	4	NIL
3	Single Let Wire Rope sling, Cap 50 T.	4	4	NIL
4	Special Draw bar Wire Rope - 70 T.	2	2	NIL
5	Double Leg Wire Rope Sling, Cap 30 T.	4	4	NIL
6	4 - Leg Wire Rope sling. Cap 25 T.	1	1	NIL

140T BD CRANE

7	Double Leg Chain Sling, Cap. 25 T.	4	4	NIL
8	Single Leg Wire Rope sling, Cap. 10 T.	4	4	NIL
9	Double Leg Chain Sling, Cap. 5 T.	2	2	NIL
III	WOODEN PACKINGS/SYNTHETIC PACKINGS			
1	2000X250X250 mm. bonded with 30x5 mm. thick band.	24	24	NIL
2	1000X250X250 mm. bonded with 30x5 mm. thick band.	24	24	Nil
3	1000X250X250 mm. bonded with 30x5 mm. thick band.	24	24	Nil
4	1000X250X250 mm. bonded with 30x5 mm. thick band.	24	24	Nil
5	1000X250X250 mm bonded with 30x5 mm. thick band.	24	24	Nil
6	1000X250X250 mm. bonded with 30x5 mm. thick band.	24	24	Nil
7	380x150x25 mm. bonded with 30x5 mm. thick band.	12	12	Nil
IV	FITTERS TOOLS			
1	Adjustable Wrench size 300 mm	1	1	NIL
2	Adjustable Wrench size 250 mm	1	1	NIL
3	Adjustable Wrench size 200 mm	1	1	NIL
4	Adjustable Wrench size 150 mm	2	2	NIL
5	Hammers Sledge 14 lbs	6	6	NIL
6	Hammers ball pene 11/2 lbs	6	6	NIL
7	Handles pipes of soms for levering spanners	4	4	NIL
8	Hacksaw - size 300x12.5x1.00 mm.	6	6	NIL
9	Hacksaw blade - size 300x12.5x1.00 mm.as a spare.	1	1	NIL
10	Long Nose Plier Size - 200 mm.	1	1	NIL
11	Long Nose Plier Size - 165 mm.	1	1	NIL
12	Long Nose Plier size 140 mm.	2	2	NIL
13	Allen Wrench size 10 mm.	2	2	NIL
14	Allen Wrench size 8 mm.	2	2	NIL
15	Allen Wrench size 6 mm.	2	2	NIL

140T BD CRANE

16	Allen Wrench size 22 mm.			
17	Allen Wrench Size 27 mm.	2	2	NIL
18	Allen Wrench size 32 mm.	2	2	Nil
Note	Other necessary tools may be kept as per requirement	2	2	Nil
V	OIL & GREASE (As a spare)			
1	Servo Coat - 140.			
2	CF - 4 15 W - 40 Lub Oil.	25 Lits	25	NIL
3	HP - 90 (IOC) Gear Box Oil.	50 Lits.	50	NIL
4	HLPN - 68 (IOC) Hydraulic Oil.	100 Lits.	100	NIL
5	HSD OIL.	1400 Lits.	1400 lits	Nil
6	Kerossene Oil.	400 Lits.	400	NIL
7	Petrol.	50 Lits.	25	NIL
		20 Lits.	20	NIL
VI	GENERAL STORES			
1	Cloth Khadi.	10 Kg.	10	NIL
2	Ladder Aluminium 20' telescopic.	1	1	NIL
3	Hand Umbrella.	6	6	NIL
4	Rain coat with hood.	20	20	NIL
5	Gum Boot.	20	20	NIL
6	Industrial Safety Shoe.	20	20	NiIL
7	Funnel for Oil.	2	2	Nil
8	Oil Feeders.	1	1	NIL
9	Flag hand signal Green.	2	2	NIL
10	Flag hand signal Red.	2	2	NIL
11	Flag Banner.	2	2	NIL
12	Lamps hand signal (tricolour).	2	2	NIL
13	Fog Signals (Detonators).	20	20	NIL
14	Board last vehicle.	2	2	NIL
15	Plastic chair.	10	10	NIL
16	Spark Plug.	2	2	NIL
17	Luminious Jacket.	20	20	NIL
18	Uniforms, Pants - Dark Brown, shirts - Bright Orange.	20 Each	20	NIL
19	Helmet.	20	20	NIL
VII	ELECTRICAL EQUIPMENTS			
1	Generator, 1.5/2 KVA, 220-230 v, Portable.	6	6	NIL
2	Portable switch board with 4 water proof industrial sockets each sapable of taking 500 watt load & 2 meters, 15 Amp. Cap. PVC insulated copper lead with plug on one end.	6	6	Nil
3	Weather proof Halogen flood light fitting 1000 Watt with 15 meter lead and water proof plug.	2	2	NIL
4	Weather proof Halogen flood light fitting 500 Watt with 15 meter lead and water proof plug.	6	6	NIL

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5	Main cable for fixed Generater 15 Amp. Cap. Three core, armoured - rubber/PVC seathed, flexible 200 mts. length.	2 Coils	2	NIL
6	Drum on fixed stand for main cable.	1	1	NIL
7	Telescopic stand for flood light 1800 mm height with suitable arrangement for fixing light fittings.	8	8	NIL
8	Battery charger for charging 2 T.L. Battery at a time.	1	1	-
VIII	ILLUMINATION OTHER THAN ELECTRICAL			
1	Torches (3 cells)	4	4	NIL
2	Spare torch bulbs (4.5 V).	1 Doz.	1 Doz.	NIL
3	Rechargeable torches 12 Volt with adopters & spare hallogen bulbs.	2	2	Nil
IX	LIST OF UTENSILS & STORES (except ration) IN STAFF			
1	Set of Gas oven with L.P. Cylinder/Primous Stove with accessories.	1 Set (LPG - 2 Cyt.)	1 Set	NIL
2	Tumblers Stainless steel.	20	20	NIL
3	Tea spoons stainless steel.	12	12	NIL
4	Aluminium degchies with cover 500 mm dia, 200 mm deep.	2 Each	2	NIL
5	Kitchen spoon stainless steel.	4	4	NIL
6	Knives cook 8" blade.	2	2	NIL
7	Dinner plate 255 mm dia (stainless steel).	20	20	Nil
8	Katoras stainless steel 3" dia.	20	20	Nil
9	Tea cups saucers.	12	12	NIL
10	Aluminium Degchies with covers 12" dia.	2	2	NIL
11	Grinding stone.	1	1	NIL
12	Grinding roller.	1	1	NIL
13	Iron tawa 10" dia.	1	1	NIL
14	Kettle aluminium 4.5 Litre. & 2 Litrs. Cap.	1 Each	1 Each	NIL
15	Tea Pot white china 1 Ltr. Cap.	2	2	NIL
16	Tea	1/2 Kg.	1/2 Kg.	NIL
17	Condensed milk 250 gm.	2 Tins.	2 Tins.	NIL
18	Jug (Stainless steel).	2	2	NIL

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19	Safety Matches.	4 Boxes	4	NIL
20	Duster.	10	10	NIL
21	Pillows size 26"x18"	20	20	NIL
22	Pillows covers.	20	20	NIL
23	Bed Sheet.	20	20	NIL
24	Blanket.	20	20	NIL
25	Towels size 40"x22".	6	6	NIL
26	Soap bars.	1	1	NIL
27	Frying Pan Aluminum 300 mm dia.	1	1	NIL
28	Soap Toilet.	1	1	NIL
29	Padlock with duplicate keys 65/75 mm. size (as required).	5	5	NIL
30	Polythene Water Container, Cap. - 500 Lits.	1	1	NIL
31	Bucket Polythene 10 Lits. Cap.	2	2	NIL
32	Folding Table 4'x3'.	1	1	NIL
X	FIRE FIGHTING EQUIPMENT			
1	Water Buckets.	6	6	NIL
2	Fire Extinguisher (CO2 type) Cap. 5 Kgs.	4	4	Nil
3	Fire Extinguisher (DCP type) with spare power.	8	8	NIL
XI	MEDICAL EQUIPMENT			
1	First Aid Boxes (Health Dept.).	1	1	NIL
2	Stretcher with blanket and cances bag (Health Dept.).	2	2	NIL
XII	SIGNALLING AND TELECOMMUNICATION EQUIPMENT			
1	Mega - Mike transistorised 2 watts. To work on 9 Vilts dry.	2	2	Nil
2	Walkie-Talkie sets.	6 Sets.	6	NIL
3	Mobile cellular phone.	2 Sets.	-	2
XIII	BOOKS AND MANUALS			
1	Manual for operation & Maintenance (issued by RDSO & JMP).	1 each	1	NIL

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2	Rules for the working of cranes, chains, slings & Wire Ropes.	1	1	NIL
3	Manual for Maintenance shedule (issued by RDSO & M/s. Cummins).	1 Each	1	NIL
4	Papers (as required) for PCs, Fax etc.	-	-	-
5	Accident Manual.	1	1	NIL
6	First Aid Manual (Health).	1	1	NIL
7	Safety first instruction book (Safety).	1	-	1
8	Working Time Table.	1of each divn.	1of each divn.	NIL
XIV	RECORDS			
1	Attendance Register.	1	1	NIL
2	Equipment Register.	1	1	NIL
3	Wire Rope, Sling and Chain Testing Rregister.	1	1	NIL
4	test Register for equipments.	1	1	NIL
5	Inspection Register (HQ. level & Divnt. Level).	1	1	NIL
6	Register for consumption of oil, grease, Lubricant etc.	1	1	NIL
7	Working Register for 140 T. B.D. Crane (Daily Testing, B.D. work & Salvage work).	1	1	NIL
8	Register for AMC of Main Engine & PAT - System.	1	1	NIL
9	Register for under repair & OFF repair in detail.	1	1	NIL
XV	MISCELLANEOUS			
1	Digital Still Camera.	1	1	Nil
2	Set of PCs with FAX, Modern and e-mail facilities.	1 Set	-	1 Set
XVI	SPARE PARTS TO BE WITH 1986 DESIGN CRANE			
1	Air intake filter (Main Engine).	1	1	NIL
2	V-Belt - LW (SPZ) for Q6 + Q7 Pump 1600 LW as per DIN 7753.	2	2	NIL
3	V - Belt - LW 2000 (SPB) for Aux. compressor	2	-	NIL
4	Angle Tramnsmitter WG 203 (PAT System)	1	-	NIL
5	Lub Oil filter element.	2	2	NIL
6	Fuel Oil filter element (Main & Aux. Engine).	2	2	NIL
7	Ribbed Belt for wataer pump in Main Engine.	2	2	NIL
8	Hydraulic Oil Filter.	4	4	NIL
9	Halogen Lamp (24V, 100 Watt).	4	4	NIL
10	Fuse - 60 Amp.	6	6	Nil
11	Fuse - 16 Amp.	10	10	NIL
12	Brake Shoe Liner (Fibre).	12	12	NIL

140T BD CRANE

				NIL
13	Emergency check valve.	2	2	NIL
14	Solenoid Valve (HED 80A1X350X15L25).	4	4	
15	Solenoid Valve (15 Y - 125).	2	1	1
16	Dual Pressure gauge (0 - 10 bar) & Sensor.	1	1	NIL
17	Lub Oil Pressure gauge (0 - 10 bar) & Sensor..	1	1	Nil
18	Lub Oil Temperature gauge (0 - 120 degree Cent.) & Sensor.	1	1	NIL
19	Water Temperatture gauge (0-105 degree Cent.)& Sensor.	1	1	NIL
20	Engine RPM meter (2100 RPM).	1	-	1
21	Amp.Metre (50-0-50)	1	1	NIL
22	Starting Relay (24V DC, 50 Amp.)	1	1	NIL
23	Main Relay (24V DC, 60 Amp.)	1	1	Nil
24	Battery (12V) 143 Amp/Hr.	2		2

CLASSIFICATION OF ARTs

Class-A

Accident Relief Train with 140T BD Crane
Equipped with Hydraulic Rerailing Equipment

Class-B

Accident Relief Train – Alone
Equipped with Hydraulic Rerailing Equipment

Class-C

Accident Relief Train – Alone
Not equipped with Hydraulic Rerailing
Equipment
Using Manually operated Jacks only

REFERENCE

CAMTECH Publication on

Hand Book On

Rescue & Relief Operation by HRD

Hand Book On Restoration by

Hydraulic Re-railing Equipment

Hand Book On Restoration by

140T Break Down Cranes

Eastern Railway Jamalpur Workshop

Manual for Operation & Maintenance of

140 Ton Gottwald Crane