

Loco Division

INTRODUCTION:

Loco division is mainly engaged in manufacturing of Electric Locomotives & HHP Diesel Locomotives. ALCO Diesel Locomotives are also being manufactured for Non-Railway Customers. This division consists of Loco Frame Shop, Truck Machine Shop, Pipe Shop, Sheet Metal Shop, Traction Assembly Shop, Loco Assembly Shop, Paint Shop and Loco Test Shop. Main activities carried out in various shops of Loco Division are explained as below:

Loco Frame Shop:

Under-frames are fabricated using heavy fixtures and positioners to ensure down hand welding to achieve designed weld strength. Requisite camber to the under-frame is provided during fabrication itself. Critical welds are tested radio-graphically. Welder training and their technical competence are periodically reviewed.

New loco frame shop is equipped with modern paint booth along with remote controlled hydraulic trolley for movement of under-frames.

Electric loco shell is fabricated using various assemblies like Central Underframe, Bolster, Centre sill, side sill, draft gear, buffer, driver cab, side wall, ductings etc. Quality of product is ensured by stage and final inspection and fully fabricated Underframe / Loco shell send to Loco Assembly shop for further assembly.



Underframe Fabrication & Paint booth



Electric Loco Shell



Pipe Shop:

Various pipes & pipe assemblies of HHP loco undergoes pickling process, to ensure proper cleaning. Thereafter, these cleaned pipes & pipe assemblies are fitted in under-frame at bottom equipping stage and in loco at different work stations.

Air testing of pipes is carried out to ensure leak proof joints. After that, air flushing is done to make all pipe lines free from foreign particles. Fabricated under-frame duly fitted with required piping is dispatched to Loco Assembly Shop.

Truck Machine Shop:

Truck (Bogie) of Electric and Diesel Locomotive is assembled by using bogie frames, wheels and axles, brake rigging, traction motors etc. Axle and wheel disc machining is undertaken on sophisticated CNC machines. Inner diameter of wheel discs are matched with the outer diameter of axles and assembled on wheel press. Complete assembled bogie is dispatched to Loco Assembly Shop.



Truck (Bogie) Manufacturing



Assembly of Electric Locomotive

Loco Assembly Shop:

Electric Locomotive Assembly: Final assembly of Electric locomotive is done in Loco Assembly Shop. In electric loco shell, Propulsion system and auxiliary assembly and devices such as Transformer, Traction Converter, Roof Assembly, Auxiliary Converter, OCU Blower with Radiator, MR Blower, TMB Blower assembly etc. and all electric connections applied. Special type of fixtures, lifting tackles and arrangements are required for assembly.

Finally loco is wheeled up and cab and machine door, pipings, miscellaneous fittings and connections are applied. Hotel load unit is mounted in case of passenger locomotive. Fully assembled locomotive is send to Loco test shop for complete Testing.

Diesel Locomotive Assembly: Assembly of power-pack, truck, superstructure, under-frame & other components is carried out in this shop. Tested powerpacks are received from Engine Division. Similarly under frames & assembled trucks are received from Frame Shop & Truck Machine Shop respectively. Alternator, compressor, Traction System, DB Fan, DB resistance, Crow Bar resistance, Radiator Fan etc. are being procured from reputed venders and received in shop in ready to use condition. Critical parameters like crankshaft deflection, alternator alignment, compressor alignment etc are maintained within specified limit during assembly stage. Deck Milling of under-frame is done on a special purpose machine to ensure proper alignment of Compressor, Engine & Alternator. Assembled loco is dispatched further for testing.



Assembly of Diesel Locomotive



Front Roof assembly

Loco Paint Shop:

BLW has state of art modern Paint Booth having automated technology for PU painting of the locomotive. The Paint booth provides safe & better working environment for operators in Paint booth through clean air supply, efficient exhaust systems, maintaining the temperature in comfortable range (25-30°C) with R.H. (60-80 %) of spraying booth. Paint booth can be operated in both Auto & Manual mode with operating panel. Paint booth equipped with 2k spray painting equipment to enhance the painting quality. It is also equipped with three dimensionally operated man lift, to make it easier for the operator to approach locomotive sides & roof areas to be painted in the booth.

Traction Assembly Shop:

Traction Assembly shop performs the harnessing as well as electrical connections of Electric locomotive and fitment of various assemblies such as middle roof assembly, End roof assembly, application of pantograph on roof etc. in Electric Locomotive.

All electrical cable/ wires harnessing, laying and connections of Diesel locomotive also performed by TAS.



Paint Booth



Painting of Electric Locomotive



Fully painted Locomotive

To expedite the intervening requirement of paint drying before application of next coat, drying oven has been provided. The drying is carried out in dust free environment. This reduces the cycle time of painting operation & enhances the painting quality. Drying oven provides hot air circulation in close loop cycle, bearing temperature 70-80°C in a close surrounding. Close loop cycle prevent heat losses of circulating hot air & consume less fuel (Diesel).

To transport locomotive between heating oven and paint booth, a pit type traverser of carrying capacity of 150 T has been installed. It facilitates shifting of locomotive between Paint Booth to Drying Oven.

Loco Test Shop:

Fully assembled locomotive is sent to Loco Test Shop for complete testing before it is dispatched to the customer.

Testing of locomotive involves –

- First Inspection
- Mechanical & electrical equipment Functional test,
- Shower Test,
- Electrical track Test
- Air brake test,
- RRT (Road Run Test), etc.

Finally locomotive is subjected to pre-dispatch inspection before being taken up for final dispatch for service.



Shower test of locomotive