ELECON
ELECTRICALLY OPERATED SHUNTING ROBOT PUSHER CAR

ELECON
GEARING THE FUTURE
MATERIAL HANDLING EQUIPMENT DIVISION

ELECTRICALLY OPERATED SHUNTING ROBOT (PUSHER CAR) :

Technical Data :

1.	Capacity	To push 25 Nos. of eight wheeler wagons (optionally suitable for pushing rake of 58 wagons can be offered on request).
2.	Duty	To push rake of loaded wagons by one wagon length during each tipping cycle such that the leading wagon will be at waiting position.
3.	Travel length	400 M (Approx)
4.	Travel speed (Approx)	0-1.8 M/Sec. idle travel speed 0-0.3 M/Sec. while pushing loading wagons.

CONSTRUCTIONAL DETAILS :

The electrically operated wagon shunting robot will mainly consist of the following components :

a) Drive unit

b) Body complete with wheels, axles, buffers, coupler, stairs, hand rails etc.

c) Electricals including motors, control desk, MCC, power and control cables, current collectors, necessary limit switches, signals, DSL type power supply system etc.

a) Drive Unit :

The drive unit will consist or Hydraulic motor and hydrostatic oil gearing system for infinitely variable speed control as well as adjustable time with zero stroke and torque limitations, acting in both travelling directions including electro-mechanical adjusting devices for speed cotrol. 1 No. central stand disc brake directly mounted at the central gearing will be provided.

b) Body :

The body shall be of robust steel construction resting on 2 x 2 axle. The body will be provided with necessary door and windows with glass panel enabling the operator to have a clear view of the track and surroundings. Each axle will have two wheels with bearings and will be connected to body structure by suitable brackets.

1 No. wagon buffer coupler to connect the robot with railway wagons would be provided. Necessary spring type buffers to absorb the thrust would be provided. Necessary stair and hand railings would be provided. Necessary sand boxes with control gates would be provided for sanding purpose, if required.

Necessary current collecting arrangement and over head power/control conductors with insulators and supporting brackets/poles would be provided for travel length.

Operator s cabin built into the pusher car body with complete electric control for the pusher car and with control desk to manually control all commands as well as the control lamps including illumination of the operator s stand and of the switch cabinet would be proveded.

Necessary remote control system is also provided to operate the pusher car remotely from the wagon tippler operator s cabin.

All other necessary accessories such as buffers, buffer coupler, 1 No. warning horns, search lights, limit switches, Co2 fire extinguishers etc. would be provided for safe and satisfactory performance of pusher car.

WORKING DESCRIPTION : (Suitable for 12 Tip s/Hr.)

Function of the pusher car is to push the rake of loaded wagon to the tippler table and wagon is decoupled manuallly after the rake with remaining wagon will be pulled back by the pusher car at predetermined position. Meanwhile, the tippler will tip the loaded wagon and come back to the original position with empty wagon. Pusher car will now push the rake with remaining wagon to the tippler table, pushing out empty wagon. Thus , the cycle goes on till all wagons are tipped.

With this kind of pushing and pulling of rake 12 Tips/Hr. can be acheived easily.

Also higher capacity is available.

WORKING DESCRIPTION (FOR HIGHER TIPPING CYCLE OF WAGON TIPPLER) :

The function of the pusher car is to push the rake of loaded railway wagons by one wagon length during each tipping cycle such that the leading wagon will come at waiting position.

At the beginning of operation the shunting robot is parked at the far end of the inhaul track. The loaded rake of 25 wagons is placed on the inhaul rail track by the locomotive such that the first wheel of leading wagon is at the market post. The shunting robot is pushed forward and engaged to last wagon tippler till the first wagon occupies the Wagon Waiting Position .

At the position the leading wagon is decoupled from the rake and operator will give the indication to the tippler operator that beetle is ready. Now the tippler operator will push beetle forward push button. The beetle forward stroke will be started. The leading wagon will be placed on the tippler table. The beetle will pause for few seconds and automatically start reverse motion and it will stop at its original position.

The tippler will tip the wagon. in the meantime, the pusher car will move the rake by one wagon length so that the leading wagon will be at waiting position and the cycle will repeat.

The shunting robot is operated from the control desk located in the wagon tipper control room and is provided with start, stop and control in forward and reverse direction from the control desk.

ADVANTAGES OF PUSHER CAR :

1. The pusher car performs as dedicated machine oprating continuously on the same railway track unlike beetle charger which can haul 8 to 10 wagons at a time. Both, beetle charger and side arm charger require separate rail track and embankment at a very high cost and quite often enough space is not available for installation of side arm charge.
2. No separate operator is required and operator siting in the tippler control room can run this machine. Chances of accident are nil, due to common opertor handling both the tippler and electric car pusher.
3. Machine being provided with hydro static drive spotting of the wagon is very conventient and precise. Being an electrical driven machine the operating cost is very low as compared with diesel loco.
4. Being a dedicated machine, it is always available for speedy unloading of railway wagon saving demurrage and overtime expenses.
5. Pusher car can be supplied to handle 25 or 58 loaded wagons hauling at a time, considering space availability.

ADVANTAGES IN COMPARISON WITH USAGE OF DIESEL LOCO

SHUNTER:

1. Cost of shunting loco is considerably high.
2. Being a diesel machine, loco shunter involves considerable maintenance cost and results in substantial down time for maintenance.
3. As shunter loco is capable of travelling on the railway, quite often it is put to many services and not being a dedicated mahcine is not available at the right time for quick unloading of railway wagon.
4. Shunting loco being located at the other end of the train tippler operation gets considerably slowed down to avoid possible accident. This results in delay and extra employment of man-power for tippler and for loco operation.
5. Inching operation for wagon spottings are not provided in shunting loco, whereas, pusher car is provided with hydro-static drive so that the speed and the stroke of the pusher car can be regulated accurately for spotting wagon precisely.

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