

HIRAIL PLATFORM TRUCK PT-100

SPECIFICATIONS DOCUMENT

HiRail Platform Truck will have the following major items:

- Truck
 - Diesel Engine
 - Chassis
 - Truck Body
 - Rear Deck Work Area
- Rail Gear, Under-cab and Rear; Must meet Federal Rail Administration (FRA)
- Low speed Creep Drive System
- Aerial Platform with Rotation
- Two Wire Manipulators
- Pantograph to measure contact wire
- Additional Features
 - 110 volt AC inverter
 - Lights

TRUCK

Requirements:

- Structural
 - Tandem axle truck 6' (1.83m) x 4' (1.22m), 20,000lb (9,072kg) front, 34,000lb (15,422kg) rear
 - Frame Rail section Outer "C" Channel, Heat Treated Alloy Steel 120,000 PSI Yield (826.80MPa); 10.813" (27.47cm) x 3.892" (9.89cm) x 0.312" (0.79cm)
 - Wheel Base is 189" (480cm)
- Engine: Diesel engine, Tier IV, 365 Horse Power (272kW)
 - Meets latest emissions requirements
 - Allison automatic transmission with PTO and hydraulic pumps
- Front and rear bumpers, steel channel added to truck for Pintle and D-ring Support
- Front Bumper to be replaced with toolbox
- Truck height less than 12'7" (3.81m) on tires (max 13'6") (4.11m)
- Truck height 13'6" (4.11m) on high rail (max 14') (4.27m)
- Truck Color: White
- Cab: Passenger seat is a bench to accommodate driver and 2 men. Equipped with heating, air conditioning and radio. Left hand driver. Steps to ground when on the tracks.
- Tires: Super Single 445/65Rx 22.5 rear tires, use widest available, to be centered on rail. Offset wheel may be necessary.
- No spare tire
- Fuel: Tank 40 gallon (151.4 liter) capacity. Locking Gas Cap.
- Sensors/Alarms:
 - Back up camera with screen mounted on inside of cab, side cameras to turn on automatically when the turn signals are on
- Lights, front and rear end to meet FRA requirements
 - Front End: 2 white lights that stay on all the time, 2 red rear lights
 - Rear End: 2 white lights, 2 red rear lights
 - If put in forward drive, front white lights and back red lights are engaged. If put in reverse, front red lights, and rear white lights turn on while on rail.
- Electric Trailer connections, both 6-pin and 7-pin connection plug in, easy to access and beside each other
- 12 Volts electrical system

- Lockable battery disconnect
- Spotlights, possibly LEDs to keep wattage low
 - Lights for each rail gear to watch them being put down, 4" (10.16cm) lights, switch to turn the lights on.
- 20 ton (18.14 metric tons) heavy-duty Pintle Hooks attached to front and rear with safety chain d-rings
- Truck should have two wire manipulators.
- Legal in California

TRUCK BODY / REAR DECK PLATFORM

Requirements:

- Steel deck, non-skid surface
- Steps that fold down, grab handles, cable or conveyer belt for flexible bottom step for 3 point contact.
- 110Vac power outlet, one plug at rear of truck, one near front passenger side and a power strip inside one of the tool cabinets for rechargeable batteries, power to be supplied from a 3000W inverter and to be GFCI
- 1 Common Hydraulic Tank with selector valves, full flow relief valves, and section pumps
- Truck Body
 - Best use of space available
 - Fixed storage boxes to store personal tools, maybe placed below the bed and behind the cab.
- NO Outriggers
- Work area on back of truck to be equipped with a removable vise

AERIAL PLATFORM

Requirements:

- Platform dimensions 8' (2.44m) x 16' (4.88m)
- Platform to pivot +/-90° from center
- 12' (3.66m) of platform needed when rotated
- 20' (6.10m) platform height to achieve a working height of 25' (7.62m).
- Capacity of 2000 pounds (907kg) at 100 pounds (45kg) per square foot
- The mid rail of the hand rails will be fixed(welded) to the flooring .

- There will be a 2 foot (0.61m) cut out in the middle of the front and rear hand rail to accommodate working on the messenger wire while on a curve. This cut out will be closed when not in use.
- The platform will be insulated to 1kV
- Stairs leading up to platform will be a vertical distance of approximately 12" (30.48cm)
- Hand rails will be between 39" (99.06cm) – 42" (106.7cm) from the floor
- Platform will be radio controlled
- Stair access to the work platform
- 4 inch (10.16cm) minimum high toe boards around bottom of platform
- Lanyard attachment points with good access.
- Railing to support 300 pounds (136kg) force in any direction.
- Platform deck to have lift points
- Deck to be steel construction
- Hand rails including fold down portion to be steel construction
- Need good access to platform and the harness tie off points when the handrails are in their lowered position
- Guard to be installed around the elevator to keep objects from getting into or under the elevator arms and to keep people and parts of them out of the pinch points of the elevator.
- Hand rails will be powered up and down so no one needs to get on the deck without handrails set in place. There shall be provisions made to manually raise or lower the handrails in the event of power failure, this can require the use of a body harness and lanyard.

RAIL GEAR

Requirements:

- 56.5" (143.5cm) inside to inside rail dimension, considered standard gauge
- 6 inch (15.24cm) max super elevation
- 6% max grade
- Turning radius with under-cab is 100ft (30.48m) radius.
- 20 mph (32kph) travel speed when driving from cab on the rail, not using Creep Drive
- Front rail gear installed under cab, behind front axle. Rear rail gear is placed close enough to meet 100ft (30.46m) turning radius while still being stable.
- Brakes on Rail Gear
- Non-insulated rail gear wheels

Brand: Diversified Metal Fabricators (DMF)

Model: DMF 1630 Rail Gear with optional rail brake assist

RAIL DRIVE SYSTEM / INTEGRATED CONTROLS

Creep Drive System

- Creep drive system will be installed, speeds are auto limited: slow speed is 2-3 mph (3.22 – 4.83kph) while on platform if not stowed (proportional control) and 5 mph with it stowed.
- Hydraulic brake on rail gear and fail safe brakes on truck.
- Forward and reverse, equal speed range and controlled deceleration
- Speed will be limited to slow speed if platform is raised.
- Cannot use the Rail drive if the platform is rotated.

TWO WIRE MANIPULATORS

Requirements:

- 27' (8.23m) max height to messenger wire
- 36" (91.44cm) travel for manipulator, beginning from stowed extended to side of truck

Features of Wire Manipulator:

- Will pick up wire, move and hold wire in place
- Operated by remote control
- Telescoping and stows, located on top of the cab
- Performs all work without truck on outriggers, will be on rails
- Can be easily removed from the truck
- The fingers to hold the wire should be changeable in case a different configuration is needed
- Equipped with lift eyes for installation or removal from the truck
- Must have good access if necessary for servicing and a lanyard tie off
- A light will come on in the cab when the wire manipulator arm is extended or lifted, i.e. not in stowed position
- Must have a properly stowed position with cylinders fully retracted
- Controls to include slow /fast speed
- See load chart next page for limits of wire manipulator. With platform centered, the goal is to rate machine to limits of the wire manipulator. When the platform is rotated the manipulator rating may have to be down rated.

PANTOGRAPH

Pantograph to be supplied by Schunk Graphite with rule on pantograph contact head for measuring stagger. Nominal 21' (6.40m) height. Optional 23' (7.01m) or 25' (7.62m) height. Pantograph head to match Customers profile. Pantograph has 12 V which is used to latch in the down position and lower. The spring is used to apply a nominal upward force on the pantograph head.

ADDITIONAL FEATURES

- One hydraulic function at a time, might need 2 functions at a time. Peak pressure 3,000 psi (20.67MPa) for most function, creep drive will be higher pressure up to 5000 psi (34.45MPa).
 - Lift/lower
 - Platform rotation left/right
 - Rail Gear
 - Wire manipulator
 - Creep drive
- Priority and inter-locks must be in the electrical system.
- Deutsch connectors, wash down capable connectors, cables and wire connections to be top quality and sealed.
- Oil cooler
- Strobe lights on headache rack, front and rear bumper
- Switch to indicate stowed or unstowed height of platform
 - Light on in cab if not completely down
 - High creep drive speed only when stowed
- Platform Rotate switch cannot use manipulator if platform is rotated
- Swing lockout on one side or other to stay off adjacent track when it is live. This would be same as bucket, soft electric stop with hard mechanical stop
- Hydraulic E stop on rear and side with guard
- Engine stop start from rear and side control panel