# SH650 VFD Roof Support Carrier

## Empty Weights

| | | |
|---|---|---|
| Less Battery | 31 751 kg | 70,000 lb |
| 240 kW Hour Battery Pack | 46 040 kg | 101,500 lb |

## Tram Speed

| | | |
|---|---|---|
| Level and Empty on 0% Grade | 6.6 km/h | 4.1 mph |
| Level and Loaded on 0% Grade | 5.8 km/h | 3.6 mph |

• Tram Speed (calculated based on 4% rolling resistance)

## Lift and Carry Capacity

| | | |
|---|---|---|
| Without Ballast | 45 tonnes at 1575 mm | 50 tons at 62 in |

• Capacities based on 54×26 solid tire (from front of lift plate)

## Drive Train

Tram Motor

- Two proprietary design
- Mine traction
- Gear motors rated at 74 kW (100 hp)
- One-hour rating (111 kW/150 hp total)
- VFD driven
- 140V AC; MSHA totally enclosed, explosion-proof; non-ventilated cooling; foot-mounted. (Motor hp may increase as required for application.)
- One motor is front-frame-mounted and drives the front axle and the rear-axle tram motor is middle-frame-mounted.

Drive Lines

- 8.5 C Series Shafts with 76 mm (3 in) Slip Joints

Axles

- Front and rear rigid-mounted outboard planetary axles with wet disc, spring applied, hydraulically released brakes and hydraulically actuated Diff-Lock

Motor Overspeed Protection

- Motor overspeed protections are inherent to the AC drive package.

## Brakes

Service and Emergency/Park

- Spring-applied hydraulic release SAHR
- 4-wheel wet disc
- Left-pedal activated
- Controlled by reverse modulating valve

## Hydraulics

Pump Motor

- Mine duty
- Laminated frame
- VFD driven motor rated at 35 kW (47 hp) for one hour
- 140V AC
- MSHA totally enclosed, explosion-proof
- Non-ventilated cooling

Pump

- The pump is a splined shaft fit to the pump motor

Filtration (Standard)

- Three pressure filters
- One 25-micron filter on the main hydraulic circuit
- One 10-micron filter on the accumulator circuit
- One 10-micron filter on the pilot valve circuit
- One tank-mounted 25-micron return filter
- Ten micron fluid port filters on key control circuits

Reservoir

- A 220 L (50 gal) capacity, bolt in reservoir equipped with a spin-on filter/breather

Reservoir Fill System

- Venturi Jet refill system located on opposite side from operator on the middle frame that allows refilling of reservoir through the return-line oil filter.

Valve Bank

- Seven-section, pilot-operated, parallel type with internal relief and a dash-mounted, glycerin-filled pressure gauge

Hydraulic PTO

- Two (2) quick coupler connections, 17.58 MPa (2,550 psi) maximum recommended operating pressure

Tilt Lift Cylinder

- Two (2) 241 mm (9.5 in) bore, double-acting cylinders with load-locking valves

Bell-Crank Lift Cylinder

- Two (2) 203 mm (8 in) bore, double-acting cylinders with load-locking valves

Steering Cylinder

- Two (2) 152 mm (6 in) bore, double-acting cylinders with dual-relief setting at 15.9 MPa (2,300 psi)

Battery Changer Cylinder

- Two (2) 152 mm (6 in) bore, double-acting cylinders with load-locking valves

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## Dual Lift System

Standard Load Lift

A combination bell crank arm and bell crank lifting cylinder for vertical lifting and tilting cylinders for tilt lifting of a universal load lift frame that is provided as standard equipment. Heavy-duty forged alloy steel forks, 152 × 256 × 2134 mm (6 × 14 × 84 in), are standard for 45 tonne (50 ton) lift capability.

Winch

A fully hydraulic-operated, 31 751 kg (70,000 lb) winch with two-speed pay in/out. Heavy-duty fabricated steel drum.

Winch Cable Assembly (Options)

The standard winch cable is 7/8-in diameter, 6×36, IWRC, EIPS, class bright cable equipped with a swaged-on thimble, connecting link and swivel hook.

Coated 7/8-in diameter, Samson, Dynema, Samthane rope, connecting link and swivel hook. Attached to drum via U-bolt.

Tri-Section Frame

The tri-section frame design features multiple-plate, modular construction for maximum strength and structural integrity, and the design produces a maximum of stability while maneuvering with a heavy load. All high-stressed areas are manufactured with T-1 steel.

Center Section

Center section is designed with hardened 114 mm (4.5 in) diameter pivot pins and spherical bearings to provide maximum load transfer and long component life. Entire center section area manufactured with T-1 steel.

Oscillation Section

An 813 mm (32 in) diameter bearing with 1 3/4-in diameter rolling elements provides 20 degrees of oscillation.

Battery Change System

Hydraulically operated, bell-crank, forklift battery charger to pick up battery from grade. The battery/battery tray assembly can be further raised to increase the rear approach clearance up to 508 mm (20 in).

## Operator's Compartment

Side egress access

Left-hand steering with control stick with the following functions:

- Pump motor start/stop
- Park brake release/set
- Directional headlights
- Tram direction
- Stop

Panic strip switch that de-energizes the electrical system and applies the automatic park brake.

Dash-mounted, glycerin-filled hydraulic gauges for accumulator, system pressure and emergency brake.

Warning gong

Right hand tilt-lift control lever

Hydraulic PTO control lever

Battery changer control lever

Hydraulic circuit breaker reset control

Emergency/park brake release hand pump

Right-foot accelerator pedal

Left-foot brake pedal

## Manuals

Two Parts Manuals

Two Operation and Preventive Maintenance Manuals

Two Electrical Troubleshooting Guides

Two Battery Maintenance Manuals

Two Battery Maintenance Charts

One CD, which includes all above manuals in electronic format

## Hydraulic Installation (Standard)

JIC fittings with 34.47 MPa (5,000 psi) hosing; MSHA 2G flame-resistant approved

## Electrical Controller

Modular design

Microprocessor-controlled IGBT

Contactorless

Variable Frequency Drive (VFD)

140V AC

1,600 amp total

Traction motor controllers with infinitely variable, stepless machine speed control.

Equipped with advanced onboard dashboard display for machine information of battery capacity, battery voltage, motor currents, elapsed time hour meter, distance traveled per battery charge cycle and troubleshooting diagnostics information.

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## Circuit Breaker Options

Magnetic, UVR Trip – controller enclosure equipped with UVR trip circuit breaker rated mine duty 800 amp frame, 600 volt.

Standard cab mounted breaker reset using a single, high-capacity, swivel-end style push/pull cable. A manual control handle is mounted within the confines of the operator's compartment.

## Cab Options

Manual Adjustable Cab Assembly – MSHA-certified cab, formed support plate, access handles, completely enclosed grid and dual corner-opening doors.

Hydraulically Adjustable Cab Assembly – MSHA-certified cab, formed support plate, access handles, completely enclosed grid and dual corner-opening doors.

## Tire/Wheels Options

54×26 SETCO solid tires with heavy side wall plate protection

48×25 SETCO solid tires

## Fire Suppression

ANSUL, 8-point fire suppression system with (2) 20# suppressant canisters. NPT (2) wire braid, MSHA 2G hose with NPT fittings. The system is designed within the guidelines published by the manufacturer.

## Lift Attachments

Fork Assembly, 25 603 mm (84 ft) overall length – set of 25 603 mm (84 ft) overall length must be forged forks designed to lift and carry 45 tonnes (50 tons) at 1575 mm (62 in) from the load lift plate mounted to the machine.

Quick-Attach Lift Plate, 25 603 mm (84 in) (fork assembly required) – designed to lift and carry 45 tonnes (50 tons) at 1575 mm (62 in) from the face of the load lift frame. The plate mounts directly to the 25 603 mm (84 in) forks through two parallel pockets and is held in place with two drop pins chained to the lift plate.

## Lighting System

Halogen, 12V DC, 50 watt – two 12-volt quartz halogen front headlights with protective guard, and two rear headlights with protective guard that moves up and down with the battery lift system.

## Battery Plug

Machine is equipped with two J&R 2000, 5-pole brass plugs wired in parallel, each with a captive wrench to install or remove the battery plugs. Each battery plug is rated at 600 amps.

## Machine Accessories (Optional)

Cable guide assembly

Reflector installation – additional reflectors mounted in strategic locations on the machine

Pressure switch kit, intrinsically safe – electric/hydraulic system to shut down the tram motors in the event of low hydraulic system pressure.

Shroeder TestMate with JIC fittings

Power disconnect switch (required in PA)

Tow hook installation – two tow hooks mounted on the front of machine rated at 10.89 tonne (12 tons) each.

Tram and pump motors with RTD monitoring. Temperature data recording provided to aid in motor protections and preventative maintenance. Available with 16-hp pump option.

Automatic fire suppression system.

Battery tray – one required for each battery assembly – heavy-duty welded steel battery trays for use with 2,000 amp-hour battery assemblies.

Park brake/tram inhibit installation kit providing brake system pressure monitoring to limit the potential to tram through parking brakes.

Hydraulic easy-test kit providing for the ability to monitor the hydraulic system.

In-line flow meter monitoring of the tandem hydraulic pump outputs. Provides the addition of two analogue gauges in the hydraulic bay.

Tilt cylinder protection kit consisting of two hinged, heavy-duty steel plates protecting the tilt cylinder rods.

Shield deflector/cage protector consisting of a frame-mounted supported structure, 25.4 mm (1 in) higher than the canopy at maximum height. Allowing protection for the canopy and cage assembly forming the operator's cab.

Ultra heavy-duty fork-mounted ejector bucket with quick-attach pins.

PIT disconnect kit required for PA approval.

## Water Delivery Kits (Optional)

Triple 22 L (5 gal) tanks on the delivery kit store distilled water. The delivery kit is to be used in conjunction with the setup kit to maintain a supply of distilled water to be used in the filling of the battery cells.

## Machine Battery (Dual Tray)

Battery, 120ss-125-17, 1,000 amp/hour with slide latch and clip shrouds – dual-tray battery assembly with slide latch locking devices on the battery lids and clip-on insulating shrouds on the internal cell connections.

## Battery Charger (Dual Connector)

Single-output for one battery

Dual-output for two batteries

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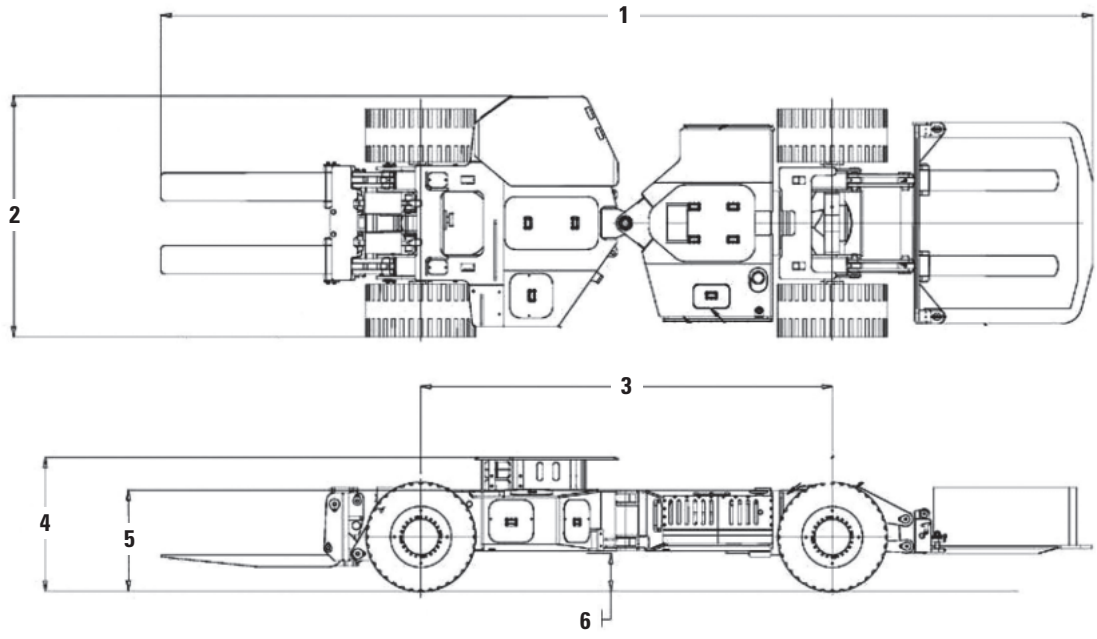
## Dimensions

All dimensions are approximate.




| | | SH650 VFD | |
|---|---|---|---|
| **1** | Overall Length | | |
| | Length Less Load Lifting and Battery Lift Forks | 7467 mm | 24 ft 6 in |
| | Length with 2134 mm (84 in) Lifting Fork | 11 760 mm | 38 ft 7 in |
| | Length with Lift Plate Attachment | 12 039 mm | 39 ft 6 in |
| **2** | Overall Width | | |
| | With Attachments and 1219 mm (48 in) Tires | 2819 mm | 9 ft 3 in |
| | With Attachments and 1372 mm (54 in) Tires | 3022 mm | 9 ft 11 in |
| **3** | Wheelbase | 5232 mm | 17 ft 2 in |
| **4** | Cab Height (With 508 mm [20 in] Cab) (Lower cab heights available on request) | | |
| | With 1219 mm (48 in) Tires | Std. Cabs adjust from 1448-1702 mm | Std. Cabs adjust from 57-67 in |
| | With 1372 mm (54 in) Tires | Std. Cabs adjust from 1524-1778 mm | Std. Cabs adjust from 60-70 in |
| **5** | Chassis Height (nominal) | | |
| | With 1219 mm (48 in) Tires | 1168 mm | 46 in |
| | With 1372 mm (54 in) Tires | 1244 mm | 49 in |
| **6** | Ground Clearance (Nominal) (Please reference sales drawing for ground clearance profile) | | |
| | With 1219 mm (48 in) Tires | 406 mm | 16 in |
| | With 1372 mm (54 in) Tires | 4883 mm | 19 in |
| Inside Turn Radius | | 4140 mm | 13 ft 7 in |
| Outside Turn Radius | | 7213 mm | 23 ft 8 in |
| Steering Articulation – Total | | 100° | 100° |
| Frame Oscillation – Total | | 40° | 40° |

Shown with 1372 mm (54 in) tires.
Detailed GA drawings available for specific dimensions and component locations