BTI BREAKER TECHNOLOGY
an Astec Industries Co.

MINE RUNNER

Beyond Safety

Breaker Technology's Mine Runner is a modern day solution for a future focused mining operation aimed at safety, lower emissions, and increased productivity. Not to be confused with a customized road vehicle or generic people carrier, the Mine Runner has Hydraulic Wheel Drive (HWD) motors, providing greater power, and extended maintenance and duty cycles. With HWD for power and braking, there are no brakes to wear and fail, increasing passenger safety. Designed with one of the cleanest engine configurations, Tier 4 Interim, the mine runner meets and exceeds air quality standards. The heavy duty chassis and axle specifications allow the Mine Runner to be deployed in a variety of configurations from Personnel Carrier, Maintenance/Mechanics Vehicle, Fuel/Lube Vehicle, Crane/Scissor Lift Vehicle and Telescopic Aerial Boom Vehicle. This purpose built-in flexibility allows supervisors to add real time support in ways previously unseen in underground mining. The flexibility of design lends the Mine Runner to suit additional needs of an underground mining operation and can include medical/emergency vehicle, trash compaction/collection etc. With a CANbus system the Mine Runner can be integrated into the growing monitoring and maintenance standards that are being implemented with modern production equipment.

Beyond Safety!

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Protecting Your Most Valuable Asset!

MINE RUNNER

Protecting your most valuable Assets!

The Mine Runner is a totally re-imagined support platform engineered from the ground up to be a leader in personnel safety and operational flexibility. The ever increasing payload requirements and tramming distances have exceeded the capabilities of the typical re purposed highway 4x4 style truck. Unlike many Over the Road (OTR) type vehicles being modified for use Underground (UG), the Mine Runner is purpose designed and built for the UG environment.

Both the primary braking (service brakes) and the secondary braking (emergency brakes) have been designed and tested to meet and exceed the CSA Braking Standard and Performance for Underground Mining Machines. CAN/CSA - M424.3-M90

Standard on the Mine Runner is a rigorously tested and independently certified ROPS/FOPS operator cabin.

Ahead of the Grade

While never under estimating the importance and need for safety, BTI's Mine Runner is designed to provide superior durability and reliability. These attributes highlight the Mine Runner's excellent return on investment as it will consistently outlast and outperform the competition.

Powered by our innovative "Hydraulic Wheel Drive" or "HWD" fluid controlled power train, the Mine Runner is capable of easy customization from Personnel Carrier, Maintenance Mechanics Vehicle, Fuel/Lube Vehicle, Crane/Scissor Lift Vehicle and Telescopic Aerial Boom Vehicle applications without hindering performance or longevity of components.

Advantages of HWD powertrain:

-Increased efficiencies of the HWD system provide optimized power delivery to each wheel independently, with up to 40% more over all powertrain efficiency beyond conventional mechanical powershift transmission systems. Traction to each wheel regardless of ground conditions contributes to its increased tire life.

- The system also ensures the diesel engine is running within its optimal power band, as such a smaller engine can deliver higher levels of performance. "More for Less"

- Purpose built rigid axles with parabolic leaf springs and shock absorbers custom designed for extended life to reduce downtime and operational losses, providing a smooth ride throughout various load conditions.

- Independent and reactive wheel end drive provides unparalleled traction control, even on steep grades that are wet or slippery. True independent 4 wheel drive!

- Tier 4 Interim engine comes standard and is the latest technology for clean and reduced emissions.

- Service braking accomplished through HWD motors and pump. No brake pads to wear out or replace.

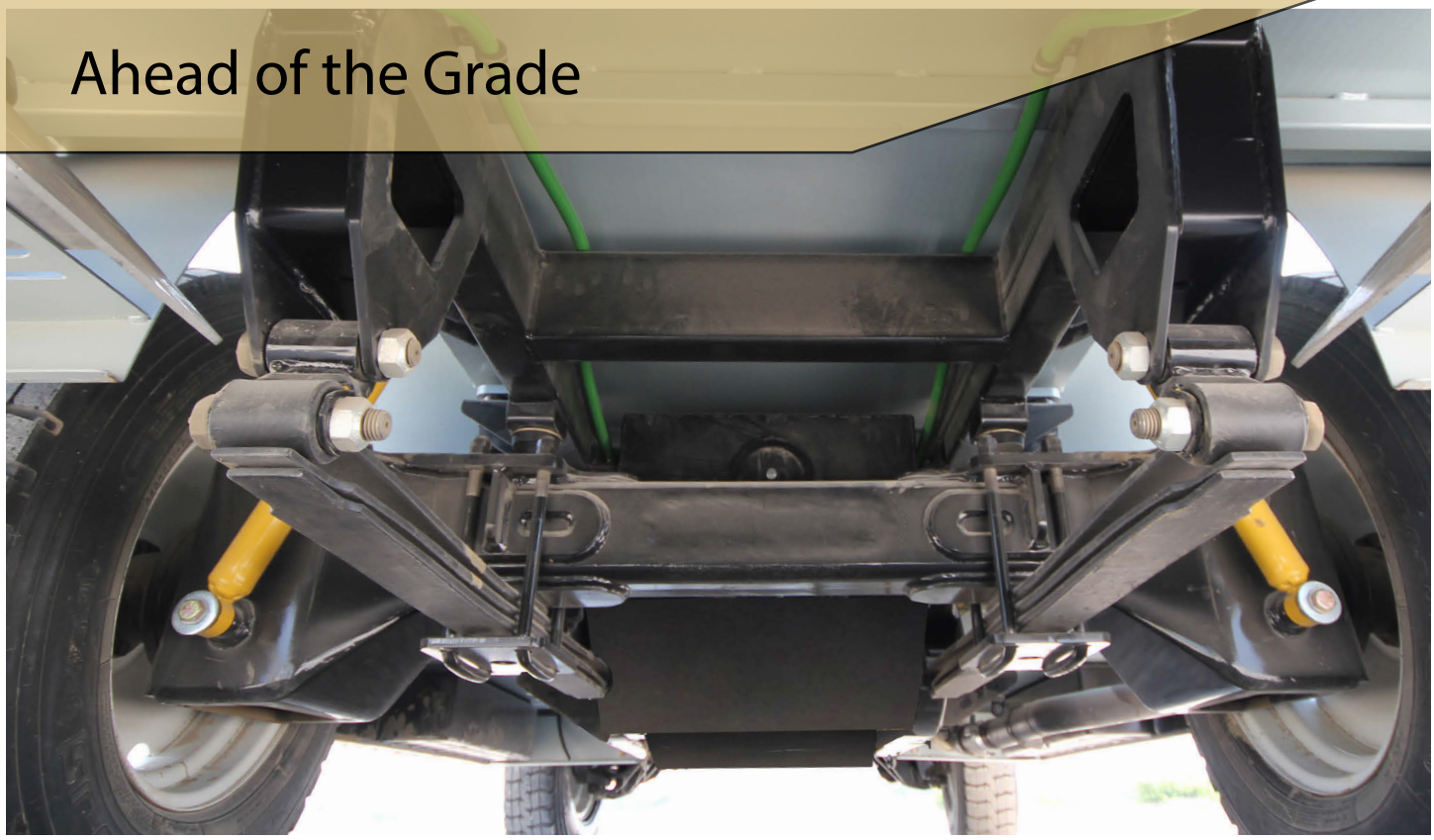
- Elimination of mechanical drive shafts and universal joints which are prone to collision with high points in tram ways.

-The removal of a mechanical drive train allows greater flexibility on the chassis for related application components units such as tanks or personnel cabs.

-With 12" of ground clearance & over 7" of suspension travel, the Mine Runner is very capable of navigating rough terrain.

MINE RUNNER

Ahead of the Grade



MINE RUNNER

Handling and Operating

Handling and Operator Considerations

Operationally one of the most important considerations in support vehicles is their speed and handling characteristics. It is essential that production equipment not be held up due to slow moving or poor handling trucks that can't tram at or above the production flow of traffic safely. Our Engineers ensured that we not only meet the speed required on grade, but exceed the speeds of any production equipment available today globally while still providing stable and reliable handling.

Where the Mine Runner truly excels is in the operator cab design. Unlike most underground mining equipment, where the need to ensure heavy duty reliability has come at the cost of operator comfort, the Mine Runner has generous space that can comfortably sit three occupants. Sleek, flush body panel designs and integrated safety cage structure have been incorporated to maximize effective width while reducing the danger of snagging stationary objects with unnecessary external tube construction common to many re purposed 4x4 trucks.

The BTI Hydraulic Tram Braking Control System is operator friendly simulating an OTR (over the road) automatic transmission system. This provides and optimizes power and braking up and down ramps for easy operator control.

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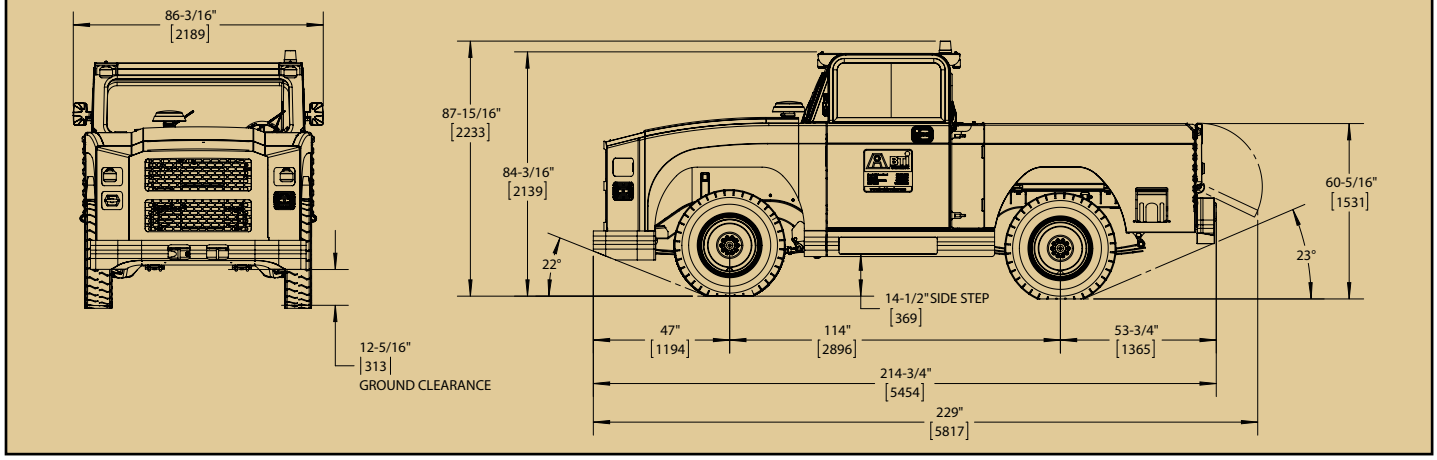
Specifications MINE RUNNER

Body Style	Center seated, engine forward
Drive Type	4 Wheel Drive / 2 Wheel Steer
Suspension	Rigid Axles, with parabolic leaf springs and shock absorbers, approximately 7" of travel and 12" ground clearance
Gross Vehicle Weight Unladen Payload	14,000 lb / 6364 kg 10,000 lb / 4545 kg 4,000 lb / 1818 kg
Vehicle Width	78 in / 1.98 m (without mirrors)
Vehicle Height Limit	88 in / 2.24 m (to top of Beacon) 84 in / 2.13 m (to top of Cab)
Ground Clearance	12.5 in / 31.8 cm (to the lowest point on skid plate) 13.5 in / 34.3 cm (to bottom of frame)
Turning Radius - Outer Turning Radius - Inner	22.25 ft / 6.795 m 12.25 ft / 3.74 m
Top Speeds on 0-2% Grade (Loaded): 1st Gear: 2nd Gear: 3rd Gear: Automatic: Reverse	 13.7 mph / 22 km/hr 17.4 mph / 28 km/hr 25.0 mph / 40 km/hr 25.0 mph / 40 km/hr 13.7 mph / 22 km/hr
Top Speeds up 20% Grade (Loaded) Forward (Automatic) Reverse	 9.3 mph / 15 km/hr 9.3 mph / 15 km/hr
Approach / Departure Angle	36% (20°) Front and Rear angle - unladen condition
Number of Passengers	3 std (Operators Cab)
Engine	DEUTZ TCD 3.6L EPA Tier 4 Interim 120 HP / 90 KW @ 2300 RPM
Tires	8.25R20 / 16 PLY Tube Type - Mining Tires c/w Wheel chocks
Brakes	SA/HR (Spring Apply / Hydraulic Release) Parking / Emergency brake in each hydraulic wheel motor. Closed Loop Hydraulic Wheel End Service Brakes via pump over-center swash plate Certified to CAN/CSA-M424.3-M90 Braking Test
Steering System	Automotive Style Tilt & Telescopic Steering Wheel in dash / Full Hydraulic Steering, with Orbital Steering Valve and Single Steer Cylinder / Horn Button in steering wheel
Hydraulic System	Poclain Over Center Hydraulic Pump for Forward and Reverse Poclain Hydraulic Wheel Motors Single 28 Gal (106 L) Oil Reservoir Pressurized breather on hydraulic tank Charge Pressure return filtration 9 micron absolute with spin-on filter on pump 3 micron absolute spin-on return line filter - open loop (charge loop) Hand pump used to fill hydraulic tank, through same 3 micron filter as above SAE Split Flange and/or ORS hose fittings and adapters

MINE RUNNER Specifications

Electrical System	24 Vdc 80 amp Alternator CAN based electronic control system Flame retardant wiring Lockable battery disconnect FWD/REV High output LED drive lights Roof mounted high output LED work lights FWD/REV Rear red LED marker/brake lights Back-up alarm Horn Roof mounted beacon light
Dash Instrumentation	Ergonomically fitted operator controls Graphical User Interface Health monitoring and diagnostics for engine and HWD systems. Electric fuel gauge 12V 12.5A auxiliary power outlet
Controls	Automotive style, accelerator and service brake pedal Automatic and standard shift (1, 2, 3 & A Select, Forward and Reverse) Drive by wire 4WD Traction Control - minimal tire wear/scrub throughout entire turning radius
Fuel System	30 Gal Tank (113 L) Pre-filter Water separator with primer Dash mounted fuel gauge
Chassis and Body	Heavy bumpers front and rear, tied into main frame / Tow hooks front and rear Standard utility box with flip down tailgate & tie down (inside dimensions 71" long x 72" wide X 20" tall)
Cab	ROPS/FOPS Certified Windshield wipers/washer system Cab heating Safety glass windows, slider windows in doors 3 independent adjustable seats with seat belts (adjustable mechanical suspension) No hydraulics in the cab
Available Options	Fire suppression system Fire extinguisher AC system Rear windshield wiper Hand pump manifold for release of Emergency Parking Brakes - for towing Cab pressurizer with RESPA® filtration system
Optional Configurations	Personnel Carrier (ROPS/FOPS optional) Maintenance/ Mechanics Vehicle Fuel /Lube Vehicle Crane / Scissor Lift Vehicle Telescopic Aerial Boom Vehicle



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