Bell Haulage Tractors

Built for the job - developed in the harsh conditions of Africa for maximum availability and utilisation.

Bell Equipment is proud of the fact that most of the tractors built over the last 40 years are still going strong and in daily use. The philosophy of Strong Reliable Machines, has been the cornerstone of this product and is reinforced by the after sales support teams throughout the world.

Bell Haulage Tractors were originally born out of a need for a tractor capable of withstanding the relentless duty cycles of both off-road and road haulage applications.

The world’s first tractor to have an automatic transmission, the Bell Haulage Tractor has proved to be operator proof over the years.

Alloy steel fabricated axles and chassis form the backbone of these units, designed to absorb and transfer loads imposed by the trailer - thereby protecting the engine and drivetrain.

- Custom designed transfer case
- Robust axle set
- Full set of simple, functional instruments and onboard diagnostics
- Full set of working lights and interior lights in cab and bonnet
- Excellent cab visibility
- Easy entry to cab
- 24 Volt electrical system
- Improved hydraulic flow, increased compressor capacity
Built for the long haul

A combination of high strength alloy steels, lightweight material and efficient design make Bell Haulage Tractors, with their fully automatic 6 speed transmission, highly cost effective.

Bell Haulage Tractors are purpose designed for the haulage application. Every element of these machines is selected with this in mind, from the power source to the transmission and running gear - performance, efficiency and longevity are key. This focus on purpose design means the Bell Haulers last longer than alternates on the market. Many customers report a lifespan in excess of three to four times that of non-purpose built tractors.

Load Transfer
The Haulage Tractor is designed to transfer up to 5 tonnes of load from the trailer - thus improving carrying capacity of the tractor-trailer combination and ensuring traction on the rear wheels of the tractor.

With the hitch position some 65 mm forward of the rear axle centre line, some of the load is transferred to the front axle - thus improving steerability and traction in the 4WD units.

Sprung front axle suspension on the 2WD means a smoother ride, better control on bumpy roads and lower operator fatigue - hence better productivity.

Customisable hydraulic capacity
Optimise the setup for the application
Most tipping and other auxiliary functions can be accommodated with the standard flow

Integrated air compressor
As standard issue an integrated pneumatic system designed to provide world class trailer braking capability
Extended service intervals
Excellent engine air filtration with Powercore™

Superb serviceability
Engineered into every tractor - Daily service points directly accessible, space to work and reliable component selection

Built to Perform
Designed specifically for the Haulage Tractor, the transfer case has a robust design, built from the ground up for simple operation
Ground clearance - superb and high enough to clear most unfriendly stumps and obstacles

Bell Equipment has remained with the Allison transmission over the journey through Series I, II, III & IV Tractors, for good reason. The Haulage Tractor drive train has proven itself since the first load was delivered

Proven water-cooled Mercedes Benz Engine provides significant advantages in terms of:
• Power, torque and tractive effort
• Reduced fuel burn
• Exhaust valve braking minimises wear on service brakes
Single steering cylinder with steering.

**REAR AXLE**

Torque Converter Layout

**INSTRUMENTATION**

- Cab Roof: Polyethylene roof model with provision for front air work lights.

- Gauges: Digital electronic Multi Display Unit (MDU)

- Indicators of Gauges:
  - Air pressure
  - Engine Speed
  - Machine Speed
  - Engine coolant temp
  - Fuel level
  - Hourmeter

- Switches/Levers:
  - Hooter button
  - High/low beam
  - Indicators on steering column
  - Head Lights, Front & Rear Worklights, Hazard, Key start/stop
  - Beacon light on with ignition, Park brake pneumatic lever, Wiper Washers, Shift tower transmission controller, Remoted mounted direct hydraulic control levers (Hitch and Auxiliary).

- Accessories:
  - Allowance will be made in the electrical system to allow for the fitting of a FM radio and a 2 way communication radio with DC to DC converter to step the power down to 12 volts (Option).
  - Full interaction of Fleetm@tic as a critical.

- **Dimensions**

- **Machine Dimensions**
  - A: Length - Transport Position
  - B: Height Cab
  - C: Height/Exhaust Stack
  - D: Height - Bonnet
  - E: Width over Frame Front 800
  - G: Width over Frame Front 600
  - I: Inside Tyre Width Rear Wheelset
  - J: Inside Tyre Width Rear Wheelset
  - K: Inside Tyre Width Rear Wheelset
  - L: Inside Tyre Width Rear Wheelset
  - M: Inside Tyre Width Rear Wheelset
  - N: Inside Tyre Width Rear Wheelset
  - O: Inside Tyre Width Rear Wheelset
  - P: Inside Tyre Width Rear Wheelset
  - Q: Inside Tyre Width Rear Wheelset
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  - V: Inside Tyre Width Rear Wheelset
  - W: Inside Tyre Width Rear Wheelset
  - X: Inside Tyre Width Rear Wheelset
  - Y: Inside Tyre Width Rear Wheelset
  - Z: Inside Tyre Width Rear Wheelset

- **Technical Data - 1214A**

- **ENGINE**
  - MTU CM604LA (Mercedes Benz)

- **Configuration**
  - Four-cylinder, h-line

- **Emission Certification**
  - Tier III

- **Aspiration**
  - Turbo charged & A/A intercooled

- **Displacement**
  - 4 250 cc

- **Gross Power**
  - 90 kW

- **Torque Rise**
  - 16 %

- **Governed Engine Speed**
  - 2 500 rpm

- **Maximum torque** (Net, Nm @ RPM)
  - 470 Nm @ 1 200 rpm

- **Compression ratio**
  - 18.01

- **Engine/Transmission Cooling**
  - Fin type cooler in a side by side configuration for the radiator and transmission coolers with the charge air cooler sandwiched in front of the radiator.

- **Engine Exhaust/Retardation**
  - Rear Axle cartier silenced, InTEGRATED in line in the exhaust system, Engine valve brake.

- **Engine Air Cleaner**
  - Under bonnet intake, Power Core type with integrated scavenged pre-cleaner.

- **TRANSMISSION**
  - Allison #2500, TC 210

- **Torque Converter Layout**
  - Hydrodynamic with lock-up in 2-6 gears and converter mode in gears 1 & 2

- **Torque Converter Model**
  - Allison TC 210

- **Allowable Maximum GCM**
  - 36 000 kg

- **REAR AXLE**
  - Bell, Steel Fabricated
  - Dynamic Load Rating 11 500 kg

- **FRONT AXLE**
  - Bell Steel fabricated steering axle,
  - with radius arm and coil spring suspension.

- **Static Load Rating**
  - 9 600 kg

- **Dynamic Load Rating**
  - 3 600 kg

- **Steering**
  - Single steering cylinder with through-rod and adjustable tie-rod ends.

- **UNLADEN MACHINE SPEEDS**
  - From Allison Scans
  - 1st gear: 5.2 km/hr
  - 2nd gear: 8.5 km/hr
  - 3rd gear: 15.1 km/hr
  - 4th gear: 18.1 km/hr
  - 5th gear: 20.5 km/hr
  - 6th gear: 38.5 km/hr

- **HYDRAULIC SYSTEM**
  - Pump: Location
  - Pump supplying steering fluid priority flow valve and trailer auxiliary (2 function direct lever control valve).

- **SUSPENSION**
  - Front
  - Bell radius arms with coil springs

- ** рай**
  - 4.4.4

- **STEERING SYSTEM**
  - Fully Hydraulic - steering orbital for auxiliary functions
  - Lock-to-lock Turns
  - 4.3

- **PNEUMATIC SYSTEM**
  - Compressor - MTU - gear driven, 352 cc

- **SYSTEM Pressure**
  - 800 kPa

- **Compressor Rating**
  - 17.4 kpm

- **ENGINE**
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- **SYSTEM Pressure**
  - 800 kPa

- **Compressor Rating**
  - 17.4 kpm

- **Engine**
  - MTU CM604LA (Mercedes Benz)

- **Configuration**
  - Four-cylinder, h-line

- **Emission Certification**
  - Tier III

- **Aspiration**
  - Turbo charged & A/A intercooled

- **Displacement**
  - 4 250 cc

- **Gross Power**
  - 90 kW

- **Torque Rise**
  - 16 %

- **Governed Engine Speed**
  - 2 500 rpm

- **Maximum torque** (Net, Nm @ RPM)
  - 470 Nm @ 1 200 rpm

- **Compression ratio**
  - 18.01
**Technical Data - 1214AF**

**Engine**

Model: MTU 16V504LA (Mercedes Benz)

Configuration: Four-cylinder, in line

Emission Certification: Tier 4

Aspiration: Turbocharged & A/A intercooled

Displacement: 4.250 cc

Gross Power: 90 kW

Torque Rise: 16 %

Governed Engine Speed: 2 200 rpm

Maximum torque (Net, Nm @ rpm): 640 Nm @ 1 100 rpm

Max Torque (Net, Nm @ rpm): 470 Nm @ 2 200 rpm

Compression ratio: 15:1

Engine/transmission Cooling: Fin type cooler in a side by side configuration for the radiator and transmission coolers with the charge air cooler sandwiched in front of the radiator.


Engine Air Cleaner: Pre-cleaner.


Transfer case:

Model: Allison 2500, TC 210

Torque Converter Layout: Torque divider in the exhaust system. Engine valve brake.

Transmission:

Model: Allison 2500, TC 210

Torque Converter Model: Allison TC 210

Allowable Maximum GCM: 36 000 kg

**Transfer Case**

Model: Ball

Layout: Direct coupled to rear diff.

Machine Dimensions

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<td>Z2</td>
<td>Outer Turning Circle Radius Old Wheelset (2 Wheelset)</td>
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</tbody>
</table>

**i Dimensions**

**Steering**

Single steering cylinder with through-rod and adjustable tie rod ends.

**Braking System and Braking Torque**

Rear axle braking only

Service Brake Type: Type 24 pneumatic boosters, heavy duty drum type, air activated "F" cans and automatic slack adjusters on drive wheels

Specification Compliance: SANS 1447-1:2007 Ed.2

Pneumatic System Change Pressure: 8,2 bar

Service Brake Wheel Torque: 19.20 KNm

Park Brake Type: Type 3D Spring/pneumatic boosters, spring-activated on drive wheels

Park Brake Wheel Torque: 19.24 KNm

**REAR WHEELS**

Type Size and Type (STD): 58X20 R36

**FRONT WHEELS**

Type Size and Type (STD): 46X20R36

**UNLOADING MACHINE SPEEDS**

From Allison Soundos

1st gear: 6,3 km/hr
2nd gear: 11,4 km/hr
3rd gear: 17,7 km/hr
4th gear: 26,3 km/hr
5th gear: 37,6 km/hr
6th gear: 46,5 km/hr

**Suspension**

Front: Above-centre pivot

**HYDRAULIC SYSTEM**

Pump Application: Pump supplying steering lefthand flow valves and lift and trailer auxiliary (2 function direct lever control valve).

Rated Flow @ Engine Governor: 61,2 l/min

Central Valve Relief Pressure: 210 bar

**STEERING SYSTEM**

Full Hydraulic - steering orbital for auxiliary functions

Lock-to-lock Turns: 3,5

Max. Working Pressure: 172 Bar

Relief Pressure: 234 bar

**PNEUMATIC SYSTEM**

Compressor: MTU - gear driven, 350 cc

System Pressure: 830 KPS

Compressor Rating: 774 l/min

Air Reservoir Capacity: 50 l

Auxiliary (Trailer) Air Supply: Quick coupler at vehicle rear

**ELECTRICAL SYSTEM**

Battery Position: Inside side mounted (RHS) of the chassis battery box

Voltage: 24 V

Battery Type: Maintenance free, sealed type

Starter Motor Rating: 100 x 2 Ah

Alternator Rating: 24V / 180 A

Battery Rating: 100 x 2 Ah

**ICAR**

Fully enclosed with HVAC, ROPS certified to SANS 1602065, FOPS certified to SANS 8035:2006

Certified ROPS/FOPS Mass Loading: 6 300 kg

Mounting: Rubber

Operator Seat: Mechanical suspension. Lap strap restraining belt.

Operator Trainer Seat: Optional side mounted rigid seat with lap strap restraining belt.

Dashboard: Molded Akrilikine butadene styrene plastic dash housing the Display and Switches.

Ventilation: Heater Ventilation & Airconditioning (HVAC)

Guarding: Full-size expanded mesh rear window guard.

Ventilation: Full HVAC

**FRONT BODYWORK**

Chassis: Vertical z-section chassis

Bonnet: Multi Piece heavy duty steel, fixed to chassis gulf wing service access cover. Removable for major engine maintenance.

Grit: Easy Removable for Air Cleaner access.

Guarding: Front bar guard, underside belly plates, Centre plates hinged for transmission service access.

Fluid Tanks: Side-side diesel / hyd tank, behind cab. Optional long range spill over tank mounted to RHS of chassis bar.

Rear Mudguards: Steel with integral tail lights, and front indicator lights.

Cab Roof: Polyethylene riot mould plastic with provision for front/rear work lights.

**Instrumentation**

Gauges: Digital electronic Multi Display Unit (MDU)

Includes: Audible warning buzzer and colour change to red warning of unwieldable conditions.

Indicators of Gauges: Air pressure - Engine Speed - Machine Speed - Engine coolant temp - Fuel level - Hourmeter


All allowance will be made in the electrical system to allow for the fitting of a FM radio and a 2 way communication radio with a DC to DC converter to step the power down to 12 volts.

Full interaction of Flatech ABM as a diagnostic tool.

Full on board diagnostics via the digital display unit fitted as standard

**Drive-by Noise Emission**

SEASON S(0:0:0:0) 85 dB

**Operating Mass**

Standard configuration (see Line drawings with Full fuel loading and no operator).

Unladen Front: 2 039 kg

Unladen Rear: 3 008 kg

Unladen Total: 6 047 kg

(Standard machine with full fluids and no operator).

Rated rear axle load: 8 000 kg

 Hitch Loading @ Rated Rear Axle

Load: 4 250 kg

Fully Laden Front: 2 363 kg

Fully Laden Rear: 8 000 kg

Fully Laden Total (GVM): 10 363 kg

**INTER**

Certifcated Capacity: 5 607 kg

Forward of Rear Axle: 65 mm

**FLUID CAPACITIES**

Hyd. oil — HDZ28

Standard: 125 l

Diesel Fuel Capacity: 150 l

Front Axle: 60/90—L95.8 l

Rear axle: 60/90—L95.8 l

Engine: 105 l

Transmission- Transmax Z: 27 l

Transfer Case- 60/90—L95.8 l

**i Grade Ability**

1. Determine the GCM (mass) of the rig.

2. Estimate grade and find the corresponding (Red) line.

3. Where vertical (mass) line and Red line cross.

4. Draw a horizontal line to intersect Traction chart on the right.

5. Drop a vertical line at that point and read off max. speed at a given grade and mass.
Technical Data - 1464AF

ENGINE
Model MTU OM904LA (Mercedes Benz)
Configuration Four-cylinder, in-line
Emission Certification Tier E
Aspiration Turbo charged & A/A intercooled
Displacement 4 250 cc
Gross Power 110 kW
Torque Rise 17 %
Governed Engine Speed 2 200 rpm
Maximum torque (Net, Nm @ RPM) 580 Nm 8 1 200 rpm
Compression ratio 18:1

Transmission
Engine/Transmission Cooling
Fin cooler type in a side by side configuration for the radiator and transmission coolers with the charge air cooler sandwiched in front of the radiator.

Engine Exhaust/Retention
Rectangular casereliner, integrated in line in the exhaust system. Engine valve brake.

Engine Air Cleaner
Under bonnet intake, Power Core type with integrated scavenged pre-cleaner.

Transmission
Model Allison #2500, TC 210
Torque converter layout Hydrodynamic with lock-up in 2 & gears and converter in gears 1 & 2.

Transfer Case
Model Ball
Layout Direct coupled to rear drive, Constant mesh (clutch) gears with pneumatic engagement & spring disengagement. Single speed with idler gear.

Rear Axle
Model
Ball
Diameter 360 mm

Front Axle
Model
Carrera 4x2, cast iron, steering axle, centre pivotal, side input
Static Loading 24 210 kg
Dynamic Loading Rating 9 683 kg

Technical Data - 1464AF

1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Read off the net load at that point and read off max. speed, given grade and mass.

Dimensions

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<tr>
<td>D3</td>
<td>Inside Tyre Width Rear Wheel (Option 3 Wheelset)</td>
</tr>
<tr>
<td>E1</td>
<td>Inside Tyre Width Rear Wheel (Option 1 Wheelset)</td>
</tr>
<tr>
<td>E2</td>
<td>Inside Tyre Width Rear Wheel (Option 2 Wheelset)</td>
</tr>
<tr>
<td>E3</td>
<td>Inside Tyre Width Rear Wheel (Option 3 Wheelset)</td>
</tr>
<tr>
<td>F1</td>
<td>Inside Tyre Width Rear Wheel (Option 1 Wheelset)</td>
</tr>
<tr>
<td>F2</td>
<td>Inside Tyre Width Rear Wheel (Option 2 Wheelset)</td>
</tr>
<tr>
<td>F3</td>
<td>Inside Tyre Width Rear Wheel (Option 3 Wheelset)</td>
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<td>G1</td>
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<tr>
<td>G2</td>
<td>Inside Tyre Width Rear Wheel (Option 2 Wheelset)</td>
</tr>
<tr>
<td>G3</td>
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</tr>
<tr>
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</tr>
<tr>
<td>H2</td>
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</tr>
<tr>
<td>I1</td>
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<tr>
<td>J1</td>
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<td>X2</td>
<td>Inside Tyre Width Rear Wheel (Option 2 Wheelset)</td>
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<tr>
<td>Y1</td>
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<td>Y2</td>
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</tr>
<tr>
<td>Z1</td>
<td>Inside Tyre Width Rear Wheel (Option 1 Wheelset)</td>
</tr>
<tr>
<td>Z2</td>
<td>Inside Tyre Width Rear Wheel (Option 2 Wheelset)</td>
</tr>
</tbody>
</table>

Grade Ability

1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Read off the net load at that point and read off max. speed, given grade and mass.


diagram
Technical Data - 1734A

**ENGINE**
- Model: MTU OM904LA (Mercedes Benz)
- Configuration: Four-cylinder, in-line
- Emission Certification: Tier II

**Transmission**
- Torque Converter Layout: Hydrodynamic with lock-up in 2 & 6 gears and converter mode in gears 1 & 2
- Torque Converter Model: Allison TC-413
- Allowable Maximum GCM: 48 000 kg

**REAR AXLE**
- Bale Steel Fabricated
- Dynamic Load Rating: 11 500 kg

**FRONT AXLE**
- Bale Steel Fabricated steering axle, with radius arm and coil spring suspension.
- Static Load Rating: 9 000 kg
- Dynamic Load Rating: 3 600 kg

**Steering**
- Single steering cylinder with through-road and adjustable tie-rods ends.

**Suspension**
- Bell radius arms with coil springs
- Front: Bell, Steel Fabricated steering axle,

**Tyre size and Type (STD) 18.00 x 25**
- Tyre size and Type (STD) 19.24 kNm

**INSTRUMENTATION**
- Gauges: Digital electronic Multi Display Unit (MDU)
- Indicators of Gauges: Air pressure, Engine Speed, Machine Speed, Brake pedal feel, Hourmeter

**Hitch Loading @ Rated Rear Axle (standard machine with full fluids and auxiliary hydraulic control levers (Hitch and Auxiliary))
- Hitch Loading: 5 097 kg

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

---

**Machine Dimensions**

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

---

**Machine Dimensions**

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

---

**Machine Dimensions**

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

---

**Machine Dimensions**

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

---

**Machine Dimensions**

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

---

**Machine Dimensions**

**OPERATING MASS**
- Gross Tractive Effort [kN]: 120 kW

**Dimensions**

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line.
3. Where vertical (mass) line and Red (Grade) line cross.
4. Choose a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.
Technical Data - 1734AF

TRANSMISSION Model Allison 3000, TC 413 Torque Converter Layout Hydrodynamic with lock-up in 2-6 gears and converter mode in gears 1 & 2. Torque Converter Model Allison TC 413 Allowable Maximum GCM 48 000 kg TRANSFER CASE Model MTU Ball Layout Direct coupled to rear axle. Constant mesh (helical gears) with pneumatic engage & spring disengage. Single speed with idle gear. REAR AXLE Ball, Steel Fabricated Dynamic Loading Rating 11 500 kg FRONT AXLE Garrard #26, cast iron, steering axle, centre pivot, side input Static Load Rating 24 210 kg Dynamic Loading Rating 9 683 kg

Engine
Model MTU OM940LA (Mercedes Benz) Configuration Four-cylinder, in line Emission Certification Tier II Aspiration Turbo charged & A/A intercooled Displacement 4.250 cc Gross Power 150 kW Torque Rise 47 % Governed Engine Speed 2 200 rpm Maximum torque (Net, Nm @ RPM) 1 150 875 Nm @ 1 200 rpm 1 150 240 Nm @ 2 200 rpm

Braking System Type 30 Spring/pneumatic boosters, spring-activated on drive wheels Park Brake Type Type 3D Spring/pneumatic boosters, lock-to-lock Turns 172 bar

Pneumatic System
Compressor MTU - gear driven, 352 cc System Pressure 830 KPa Compressor Rating 774 l/min

Steering
Single steering cylinder with through- rod and adjustable tie rod ends.

Electrical System
Battery Position Inside side mounted (RHS) of the chassis battery box Voltage 24 V Battery Type Maintenance free, sealed type Starter Motor Rating 3 kW Alternator Rating 240 / 80A Battery Rating 100 x 2 Ah

Fuel and Engine
Full size expanded mesh rear (HVAC) display and switches.

Air Cleaner
Vertical Z-section chassis

Bodywork
Front Bodywork Multi Piece heavy duty steel, fixed to chassis gull wing service access covers. Removable for major engine maintenance.

Cabin Roof Polyethylene rotor mould plastic with provision for front/rear work lights.

Instrumentation
Digital electronic Multi Display Unit (MDU)

Switches/Levers
Hooter button, high low beam and indicator on steering column stalk.

Brakes
Type 30 Spring/pneumatic boosters, Remoted mounted direct acting hydraulic control levers (Hitch and Auxiliary).

auxiliaries
Allowance will be made in the electrical system to allow for the fitting of a FM radio and a 2-way communication radio with a converter to step the power down to 12v (Option). Full interaction of Flashtmit as a converter.

Auxiliary Operations
Full on board diagnostics via the digital display unit fitted as standard.

Drive-by-Nose Emission
SA2005C,2007 85 dB

Operating Mass
Standard configuration (see Line drawings) with Full fuel loading and no operator.

Unladen Front 2 500 kg Unladen Rear 3 800 kg Unladen Total 6 300 kg (standard machine with full fluids and no operator).

Rated Axle Load 8 000 kg Hitch Loading @ Rated Axle Load 4 250 kg Fully Laden Front 2 250 kg Fully Laden Rear 8 000 kg Fully Laden Total (GW) 10 336 kg

Hitch
Certified Capacity 5 097 kg Hitch forward of Rear Axle 66 mm

Fluid Capacities
Hid. oil - HDZ68 Standard 125 l Diesel Fuel Capacity 150 l Front Axle - 60/90-WL 8.5 l Rear Axle - 60/90-WL 32 l Engine - 10W40 Transmission - Transmax Z 27 l Transfer Case - 60/90-WL 4 l

Engine
Fuel Capacity 8.5 l

Governed Engine Speed 2 200 rpm

Specifications
Aluminum alloy (Hitch) battery box

Electrical System
Alternator Rating 24V / 80A

Fluid Tanks
Engine Air Cleaner Rectangular canister silencer.

Cooling System
Transmission coolers with the charge configuration for the radiator and engine valve brake.

Transmission
Type with integrated scavenged engine coolant temp

Engine
Type 30 Spring/pneumatic boosters, Single mesh (helical gears) with pneumatic direct coupled to rear diff. Constant

Transmission Type
Mode

Hitch Loading @ Rated Rear Axle 5 474 kg Hitch Ability (Grade) 60%

Braking System
Static Load Rating

FRONT AXLE
11 500 kg

REAR AXLE

675 Nm 1 200 rpm Compression ratio 8.2:1 Engine/Transmission Cooling Fin type in cooler with side by side configuration for the radiator and transmission coolers with the charge air cooler sandwiched in front of the radiator.

Engine Exhaust/Retardation
Pancangular cast iron silencer. Integrated in line in the system engine. Exhaust brake.

Engine Air Cleaner
Undiverted intake. Power Cone type with intercooled scavenged pre-cleaner.

Transmission
Model Allison 3000, TC 413 Torque Converter Layout Hydrodynamic with lock-up in 2-6 gears and converter mode in gears 1 & 2. Torque Converter Model Allison TC 413 Allowable Maximum GCM 48 000 kg

Transfer Case
Model MTU Ball Layout Direct coupled to rear axle. Constant mesh (helical gears) with pneumatic engage & spring disengage. Single speed with idle gear.

Rear Axle
Ball, Steel Fabricated Dynamic Loading Rating 11 500 kg Static Load Rating 24 210 kg Dynamic Loading Rating 9 683 kg

Front Axle
Garrard #26, cast iron, steering axle, centre pivot, side input Static Load Rating 24 210 kg Dynamic Loading Rating 9 683 kg

Air Compressor
MTU - gear driven, 352 cc System Pressure 830 KPa Compressor Rating 774 l/min

Air Reservoir Capacity 30 l

Auxiliary (Trailer) Air Supply Quick coupler at vehicle rear.

Electrical System
Battery Position Inside side mounted (RHS) of the chassis battery box Voltage 24 V Battery Type Maintenance free, sealed type Starter Motor Rating 3 kW

Alternator Rating 240 / 80A

Battery Rating 100 x 2 Ah

Control Valve Relief Pressure 8.2 bar

Service Brake Valve Torque 30.46 kNm

Park Brake Type Type 3D Spring/pneumatic boosters, spring-activated on drive wheels Park Brake Valve Torque 19.24 Nm

REAR WHEELS Tyre Size and Type (STD) 580/70 R23

FRONT WHEELS Tyre Size and Type (STD) 480/70 R23

UNLOADING MACHINE SPEEDS From Allison Scans 1st gear 61.6 km/hr 2nd gear 14.6 km/hr 3rd gear 10.6 km/hr 4th gear 7.7 km/hr 5th gear 6.8 km/hr 6th gear 4.8 km/hr

Suspension
Front Above-centre pivot

HYDRAULIC SYSTEM
Pump Application Pump supplying steering (whitby flow valve and hitch lift and trailer auxiliary 2 function direct lever control valve). Rated Flow @ Engine Governed RPM 612 l/min

Control Valve Relief Pressure 210 bar

STEERING SYSTEM
Fully Hydraulic - steering control for auxiliary functions Lock-to-lock Turns 3.5 Max. Working Pressure 172 bar Relief Pressure 234 bar

PNEUMATIC SYSTEM Compressor MTU - gear driven, 352 cc System Pressure 830 KPa Compressor Rating 774 l/min

Grade Ability
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Red) line. 
3. Draw a horizontal line to intersect Tractive chart on the right.
4. Drop a vertical line at that point and read off max. speed at that given grade and mass.

Dimensions

Machine Dimensions
A Length - Transport Position 4846 mm B Weight-Cab 300 kg C Weight-Exhaust Black 50 kg D Weight -Hitch Axle (Rear) 500 kg E Weight - Engine (Front Axle) 1054 kg F Width over Tyres-Front 4470 mm (236 mm) G Width over Tyres-Rear 4782 mm (236 mm) H Width over Tyres-Front 4712 mm (236 mm) I Width over Tyres-Back 4800 mm (236 mm) J Width over Tyres-Front 4712 mm (236 mm) K Width over Tyres-Back 4800 mm (236 mm) L Width over Tyres-Front 4712 mm (236 mm) M Weight over Maxiguard Rear 2116 kg N Weight over ETL 1580 kg O Width over Mirror Operating Position 2005 mm P Ground Clearance Hitch-Hitch (Std Wheelset) 371 mm Q Ground Clearance Hitch-Hitch (Option 1 Wheelset) 325 mm R Ground Clearance Front Axle 587 mm S Ground Clearance Max. 685 mm T Weight over Maxigaurd Rear 487 kg U Rear Axle Centre to Bin Wall Centre 148 mm V Front Axle Centre to Rear Axle Centre 3118 mm W Front The Down High 1043 mm X Minimum Steering Angle-Std Wheelset 28 ° Y Minimum Steering Angle-Option 1 Wheelset 28 ° Z Inner Turning Circle Radius-Std Wheelset 6500 mm \( R \) Inner Turning Circle Radius-Option 1 Wheelset 6500 mm \( R \) Outer Turning Circle Radius-Std Wheelset 8000 mm \( R \) Outer Turning Circle Radius-Option 1 Wheelset 8000 mm \( R \)

- All dimensions are based on options and specifications at the time of printing.
- These dimensions should be verified if critical.
Technical Data - 2134A

**ENGINE**
- Model: MTU OM904LA (Mercedes Benz)
- Configuration: Four-cylinder, in-line
- Emission Certification: Tier II

**Aspiration**
- Turbo charged & A/A intercooled

**Displacement**
- 4,800 cc

**Gross Power**
- 181.9 kw

**Rated Engine Speed**
- 1500 rpm

**Natural Torque**
- 4,800 Nm

**Governed Engine Speed**
- 1600 rpm

**Compression ratio**
- 21.6:1

**Drive-by-Noise Emission**
- SANS 10205:2007 88 dB(A)

**Emission Control system**
- Fully enclosed with HVAC, ROPS certified to 8083:2006

**INSTRUMENTATION**
- Certified ROPS/FOPS Mass 1412 kg
- H: Inside Tyre Width Rear-18x25, 12ply, L3 (Std Wheelset)
- G: Inside Tyre Width Rear-48x16 (Std Wheelset)
- F: Inside Tyre Width Rear-46x16 (Option 1 Wheelset)
- E: Inside Tyre Width Rear-44x16 (Option 1 Wheelset)
- D: Inside Tyre Width Rear-42x16 (Option 1 Wheelset)
- C: Inside Tyre Width Rear-40x16 (Option 1 Wheelset)
- B: Inside Tyre Width Rear-38x16 (Option 1 Wheelset)

**Grade Ability**
1. Estimate the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Rad) line.
3. Plot the vertical mass line and Rad (Grade) line cross.
4. Draw a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.

**Dimensions**
- Note: All dimensions are based on options and specifications at the time of printing. These dimensions should be verified if critical.

**Machine Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>A Length - Transport Position</th>
<th>B Height Cab</th>
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<tbody>
<tr>
<td></td>
<td>4546 mm</td>
<td>3913 mm</td>
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<tr>
<td>B1</td>
<td>Height Rear Axle</td>
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<tr>
<td>H2</td>
<td>Height - Bumper Front</td>
<td>1708 mm</td>
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<td></td>
<td>Certified Capacity (Rear Axle)</td>
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<td></td>
<td>Fully Laden Rear</td>
<td>8000 kg</td>
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<tr>
<td></td>
<td>Fully Laden Front</td>
<td>2111 kg</td>
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<tr>
<td></td>
<td>Fully Laden Total (GVW)</td>
<td>11021 kg</td>
</tr>
</tbody>
</table>

**Tyre and Tyre Type**

<table>
<thead>
<tr>
<th></th>
<th>STD</th>
<th>900x16 (Std Wheelset)</th>
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<tbody>
<tr>
<td></td>
<td>18x25, 12ply, L3 (Std Wheelset)</td>
<td>12434 lb</td>
</tr>
</tbody>
</table>

**HYDRAULIC SYSTEM**
- Pump Application: Forward of Rear Axle
- Control Valve Relief Pressure: 24.2 bar

**SUSPENSION**
- Coil spring rear suspension
- Fully adjustable for ride height

**TRANSMISSION**
- Model: Allison #3000, TC 413
- Engine/Transmission Cooling: Rectangular canister silencer
- Auxiliary (Trailer) Air Supply: 210 bar

**ELECTRICAL SYSTEM**
- Battery: 24V / 80A
- Voltage: 24 V
- Starter Motor Rating: 3 kW

**ELECTRONICAL SYSTEM**
- Flap-Over: N/A

**FRONT BODYWORK**
- Bonnet: Certified Capacity 739 mm
- R: Rotating Beacon 1244 mm
- T: Rear Axle Centre to Ball Hitch Centre 3896 mm
- F: Front Axle Centre to Ball Hitch Centre 4288 mm
- J: Ground Clearance-Rear Axle 2462 mm
- I: Front To Side Height 1708 mm

**SIDE BODYWORK**
- Bonnet: Certified Capacity 1412 mm
- H1: Inside Tyre Width Rear-18x25, 12ply, L3 (Std Wheelset)
- G1: Inside Tyre Width Rear-48x16 (Std Wheelset)
- F1: Inside Tyre Width Rear-46x16 (Option 1 Wheelset)
- E1: Inside Tyre Width Rear-44x16 (Option 1 Wheelset)
- D1: Inside Tyre Width Rear-42x16 (Option 1 Wheelset)
- C1: Inside Tyre Width Rear-40x16 (Option 1 Wheelset)
- B1: Inside Tyre Width Rear-38x16 (Option 1 Wheelset)

**HITCH**
- Drawbar Rear Axle: 8000 kg
- Fully Laden Rear Axle: 8000 kg
- Fully Laden Total (GVW): 11021 kg

**FLUID CAPACITIES**
- Engine-10W40: 32 L
- Front Axle-80W90 LS: 150 L
- Standard-125 L

**BEARING SYSTEM AND BRAKING TORQUE**
- Rear axle braking only
- Service Brake Type: Type 24 pneumatic boosters, heavy duty drum type, air activated 9" cans and automatic slack adjusters on drive wheels.
- Specification Compliance: SANS 1447-1:2007 B3.2
- Pneumatic System Charge Pressure: 8.2 bar
- Service brake wheel torque: 30.46 kNm

**Transmission-Transmax Z**
- Maximum Torque: 160 kW
- Torque Rise: 10.5 x 16
- Tyre Size and Type: 18.00 x 25

**SWITCHES/LEVERS**
- Hooter button, High/low beam and indicator on steering column stalk
- Head Lights, Front & Rear Worklights, Hazard, Key start/stop
- Beacon light on with ignition, Park brake pneumatic lever, Wiper Washer, Shift tower transmission controller, Remoted mounted direct acting hydraulic control levers (Hitch and Auxiliary).

**STEERING SYSTEM**
- Vertical Z-seccion chassis
- Bonnet: Multi-Plate heavy duty steel, fixed to chassis gull wing service access covers.
- Grill: Easily Removable for Air Cleaner access.

**HITCH**
- Drawbar Rear Axle: 8000 kg
- Fully Laden Rear Axle: 8000 kg
- Fully Laden Total (GVW): 11011 kg

**FUEL CAPACITIES**
- Engine-10W40: 32 L
- Front Axle-80W90 LS: 150 L
- Standard-125 L
- Fluid- HDZ68: 154 L

**SIDE BODYWORK**
- Bonnet: Certified Capacity 739 mm
- H1: Inside Tyre Width Rear-18x25, 12ply, L3 (Std Wheelset)
- G1: Inside Tyre Width Rear-48x16 (Std Wheelset)
- F1: Inside Tyre Width Rear-46x16 (Option 1 Wheelset)
- E1: Inside Tyre Width Rear-44x16 (Option 1 Wheelset)
- D1: Inside Tyre Width Rear-42x16 (Option 1 Wheelset)
- C1: Inside Tyre Width Rear-40x16 (Option 1 Wheelset)
- B1: Inside Tyre Width Rear-38x16 (Option 1 Wheelset)

**SUSPENSION**
- Front Tyre Size and Type: 10.5 x 16
- Front Tyre Size and Type (STD): 18.00 x 25
- Front Tyre Size and Type (STD): 10.5 x 16

**ENGINE/TRANSMISSION COOLING**
- Engine Exhaust/Retardation Cooling: Sandwich configuration for the radiator and transmission coolers with the charge air cooler sandwiched in front of the radiator.
- Engine Exhaust: Exhausted through-rod and adjustable tie-rod

**ENGINE**
- Model: MTU OM904LA (Mercedes Benz)
- Configuration: Four-cylinder, in-line
- Emission Certification: Tier II

**Aspiration**
- Turbo charged & A/A intercooled

**Displacement**
- 4,800 cc

**Gross Power**
- 181.9 kw

**Rated Engine Speed**
- 1500 rpm

**Natural Torque**
- 4,800 Nm

**Governed Engine Speed**
- 1600 rpm

**Compression ratio**
- 21.6:1

**Drive-by-Noise Emission**
- SANS 10205:2007 88 dB(A)

**Emission Control system**
- Fully enclosed with HVAC, ROPS certified to 8083:2006

**INSTRUMENTATION**
- Certified ROPS/FOPS Mass 1412 kg
- H: Inside Tyre Width Rear-18x25, 12ply, L3 (Std Wheelset)
- G: Inside Tyre Width Rear-48x16 (Std Wheelset)
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- B: Inside Tyre Width Rear-38x16 (Option 1 Wheelset)

**Grade Ability**
1. Determine the GCM (mass) of the Rig.
2. Estimate grade and find the corresponding (Rad) line.
3. Plot the vertical mass line and Rad (Grade) line cross.
4. Draw a horizontal line to intersect Tractive chart on the right.
5. Drop a vertical line at that point and read off max. speed at a given grade and mass.
## Features and Options

### WHEEL SET OPTIONS

<table>
<thead>
<tr>
<th>Option</th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Std)</td>
<td>480/70 R28, 14.9 X 24</td>
<td>580/70 R38, 18.4 X 34</td>
</tr>
<tr>
<td>2</td>
<td>480/65 R28</td>
<td>600/65 R38</td>
</tr>
</tbody>
</table>

### ADDITIONAL OPTIONS
- Bonnet Doors
- Clevis Hitch
- 24 to 12 V Adaptor
- 3 Bank Hydraulics
- Cab Gaurding
- Belly Plate
- Fleetm@tic
- Additional Fuel Tank

### 4WD OPTIONS

#### 124AF-1464AF-1734AF

<table>
<thead>
<tr>
<th>Option</th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Std)</td>
<td>900 X 16, 340/65 R18 x p27</td>
<td>18 X 25, 12 ply, 600/65 R18 x p27</td>
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<td>2</td>
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#### 124A-1464A-1734A-2134A

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