



**AMERICAN
AUGERS®**

an Astec company

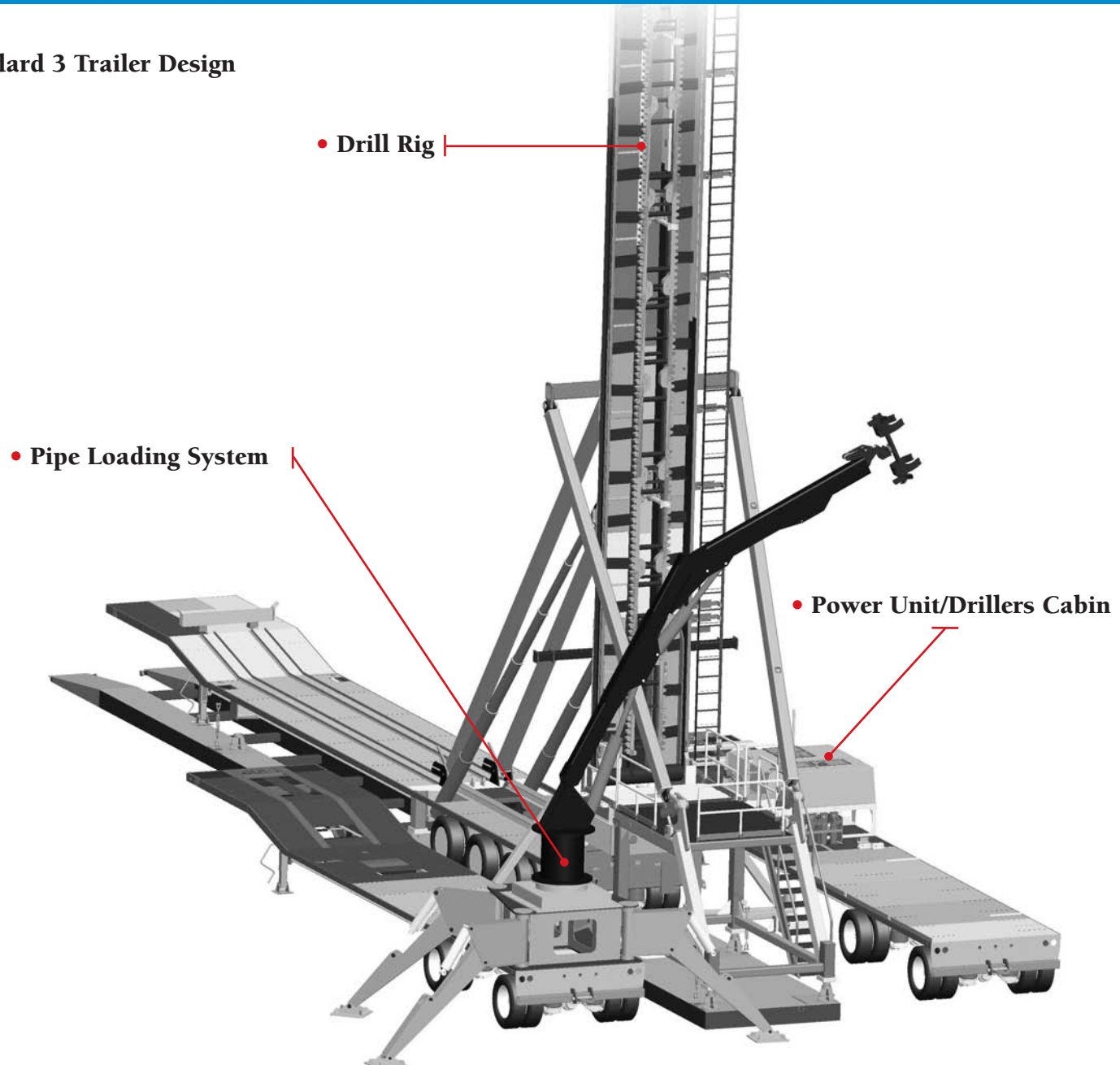
VR-330
VERTICAL DRILLING RIG



PENETRATOR SERIES

A Introduction

Standard 3 Trailer Design



PENETRATOR RIGS are the only rigs capable of providing up to 330,000 lbs of bit pressure starting from surface!
This means:

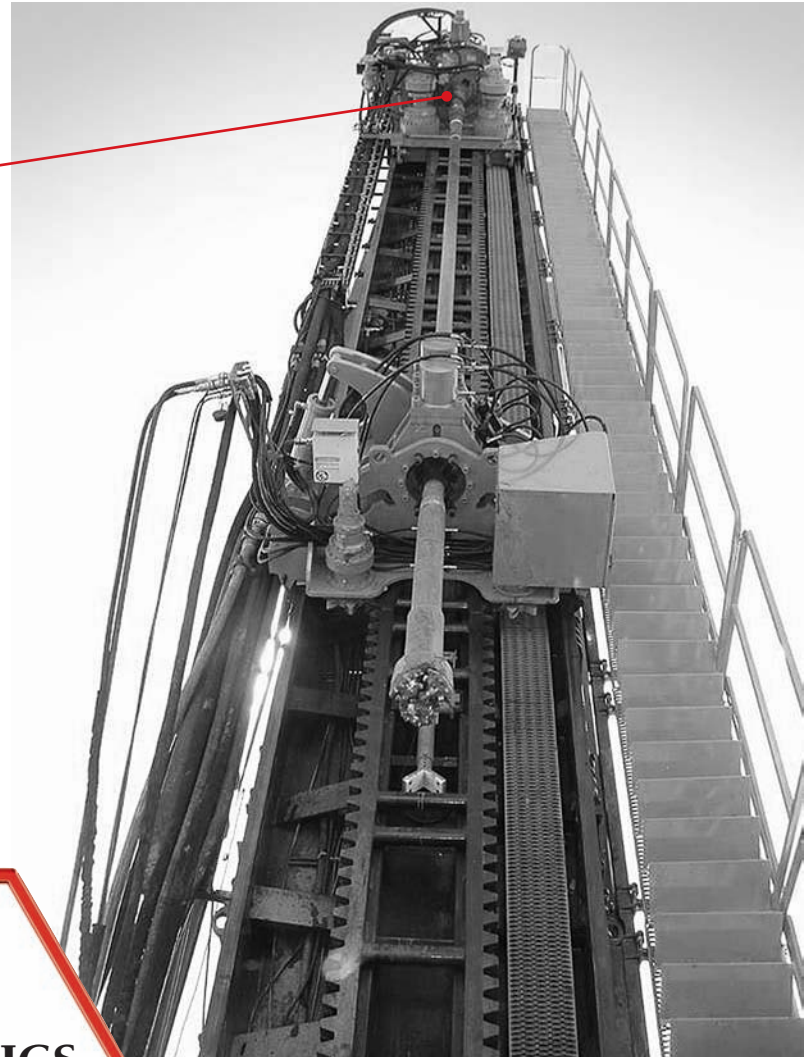
- Ability to immediately start horizontal curve
- Controlled bit pressure to maximize ROP
- Faster drilling of surface hole

PENETRATORS unique RACK & PINION TOPHEAD DRIVE system means:

- No pulling off bottom to make a connection
- No derrick or floor hands
- No drill collars, tongs, or chains

**Better Drilling Rigs
...Better Drilling Results**

- The secret to the VR-330's ability to thrust down and pull back 330,000 lbs, is the rack and pinion carriage system.
- You no longer have to rely on drill collars, drill string weight, and gravity to create bit weight.
- This means, no more slow drilling of surface holes and no slowing down when drilling directional holes.
- You have complete control on how much pressure you apply on the bit so you can get the job done faster



**PENETRATOR RIGS
CAN REDUCE
DRILLING TIME
UP TO 75%**

Keeping in mind: safety, speed, and cost, American Augers has taken drilling to a new level with rigs capable of both thrusting down and pulling back. Our rigs eliminate most traditional equipment that causes injury, slows down the drilling process, and increases operating costs.

A *Summary of Comparison*

TRADITIONAL DRILLING RIGS

- Draw works to pull pipe
- Rotary table to rotate pipe
- Kelly connection to connect to rotary table
- Traveling Block
- Chains to speed up pipe connection
- Manual tongs and wrenches to make and break pipe connections
- Cat head to lift pipe and other objects
- Manual slips to secure pipe
- Rat Hole and Mouse hole
- Drill collars
- Can require additional equipment during setup
- Typically requires 4 -6 man crews
- Slow drilling surface hole
- Slow drilling directional holes

VR-330 PENETRATOR

- **NO** Draw works to pull pipe
- **NO** Rotary table to rotate pipe
- **NO** Kelly connection to connect to rotary table
- **NO** Traveling block
- **NO** Chains to speed up pipe connection
- **NO** Manual tongs and wrenches to make and break pipe connections
- **NO** Cat head to lift pipe and other objects
- **NO** Manual slips to secure pipe
- **NO** Rat Hole and Mouse hole
- **NO** Drill collars
- **NO** Additional equipment required to setup
- 2 man operating crew
- Fast drilling surface hole
- Fast drilling directional holes

PENETRATORSERIES **Embarrasses the Competition**

July 2007, marks a historic moment in drilling, when an American Augers' Penetrator Series rig was able to drill 4,800 feet horizontally at a depth of 400 feet, in an unbelievable time of only 41 hours. Other drillers in the area averaged 22 days.

Greater Penetration Rates... Greater Profits

Features & Benefits



Worldwide
Technical Support
& Parts Service

Ability to Push Harder for
Faster Surface Hole Drilling
\$Save a Day on Surface Hole\$

Industry Leading Push, Pull,
and Torque for Increased Working
Power and Reserve Capacity

Remote Control Pipe
Loader for Ease and Safety
of Operation

Removable 4 x 8 Section of Drilling Floor
Easy Access to Well Head and BOP

Rugged Top Head Drive with Slip Spindle
Best in Industry – Easy On Pipe Threads

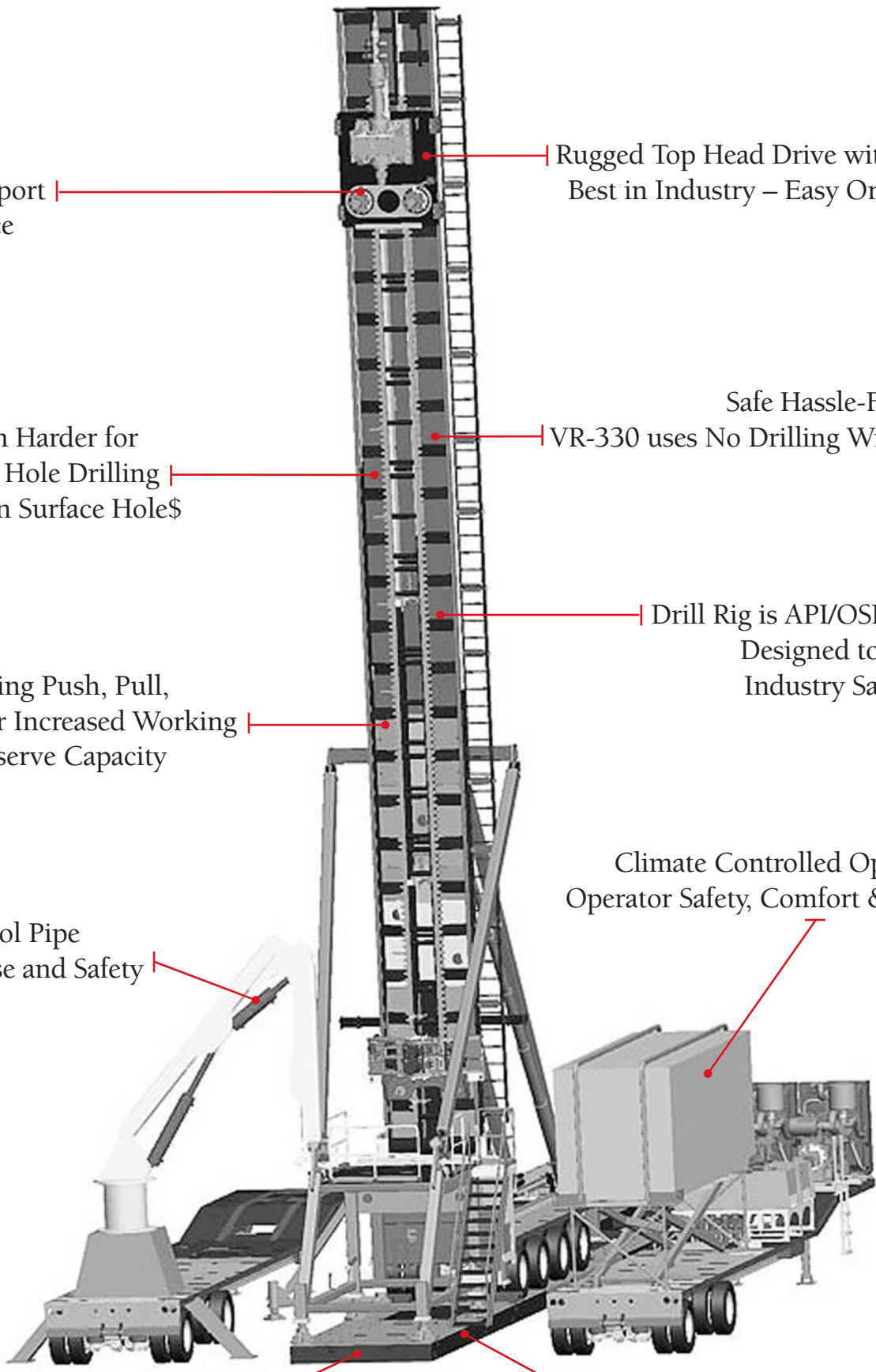
Safe Hassle-Free Operation

VR-330 uses No Drilling Winch or Cables

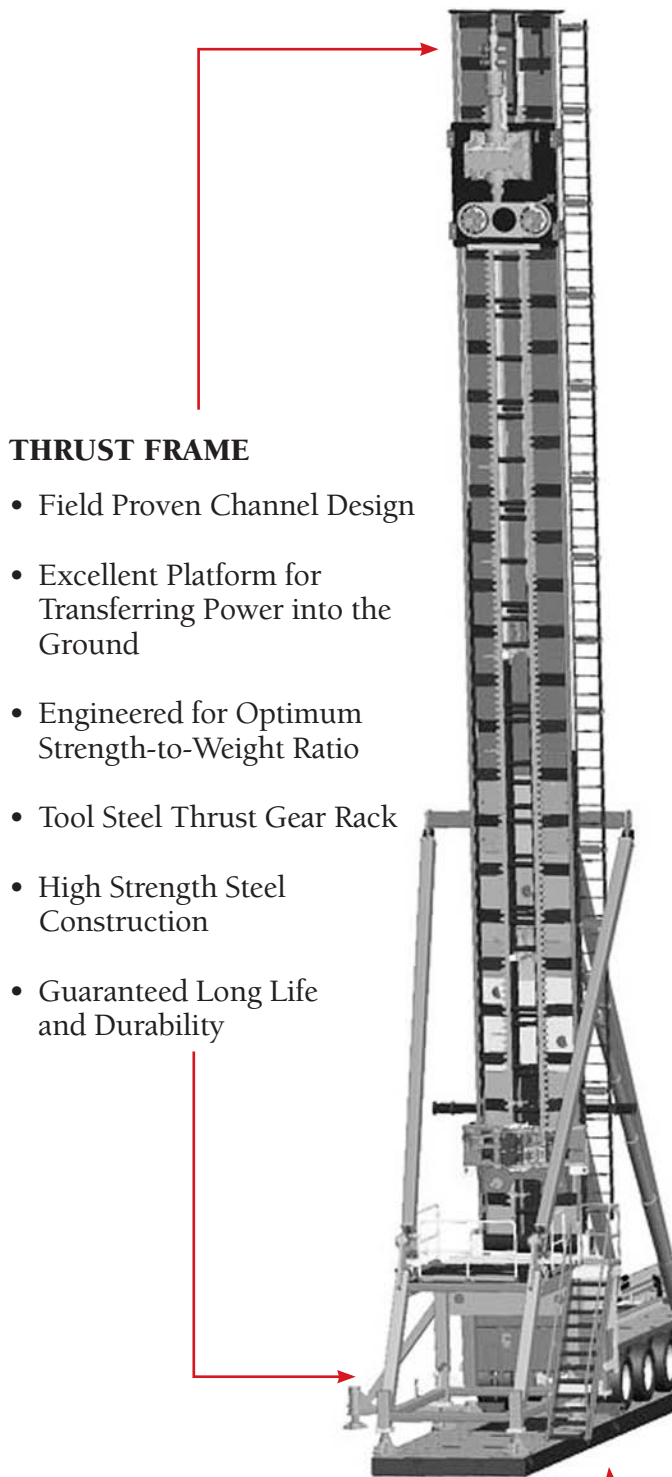
Drill Rig is API/OSHA Compliant
Designed to Construction
Industry Safety Standards

Climate Controlled Operators Cabin
Operator Safety, Comfort & Productivity

Much Less Manpower Required
on the Drilling Floor



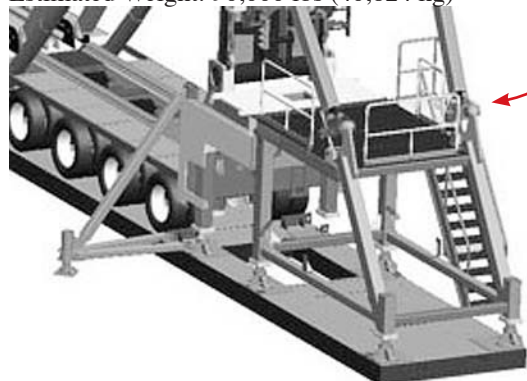
A Drill Rig



THRUST FRAME

- Field Proven Channel Design
- Excellent Platform for Transferring Power into the Ground
- Engineered for Optimum Strength-to-Weight Ratio
- Tool Steel Thrust Gear Rack
- High Strength Steel Construction
- Guaranteed Long Life and Durability

Estimated Weight: 90,000 lbs (40,824 kg)



PERFORMANCE SPECIFICATIONS

Carriage System

Maximum Thrust/Pullback: 330,000 ft-lbs (150 Tonnes)
 Carriage System: Rack & Pinion, (2) Pinion Drive w/ Adjustable Pull Down and Force Limiter
 Maximum Carriage Speed: 120 ft (36.6 m) / per minute

Rotary Drive

Maximum Rotary Torque: 60,000 ft-lbs (81,600 Nm)
 Maximum Rotary Speed: 95 RPM
 Rotary Speed: (3) Pinion & Gear Drive w/ Adjustable Torque Limiter
 Slip Spindle: 5 1/2" (139.7mm) API-FH Tool Joint Connection

Wrenches

Maximum Breakout Torque: 230,000 ft-lbs (312,000 Nm)
 Maximum Makeup Torque: 203,000 ft-lbs (33,700 Nm)
 Clamp Grip Range: 4 1/8" – 10 3/4" (121 x 273mm) OD
 Wrench Travel: Wrench Travels Full Length of the Thrust Frame
 Other Information: Wrenches Removable for Lighter Transport

Drill Pipe

Type: Range III
 Maximum OD: 13.5" (342.9mm)

Trailer

Style: Quad-Axle Trailer with Air Ride Suspension
 Length: 75' (23m)
 Width: 10' (3m)

Safety

Tilt Cylinders: (4) Mounted at the Attachment Point and Rear to Stabilize Drilling Forces
 Screw Jacks: (4) Mounted at the Gooseneck Transition and Rear
 Struts: (2) Connected from the Trailer to the Thrust Frame will Carry Thrust and Pull Loads without assistance from the Tilt Cylinders

DRILLING FLOOR

Clearance: 96" (2.4 m) Vertical Clearance from Ground to the Bottom of the Drilling Floor
Safety Plate: 1/4" (6.3mm), Top Mounted
Pipe Opening: 4 x 8 (1.2 x 2.4m), Removable Section
Crane Mounts: (2) Mounted on Either Side of the Sub Structure

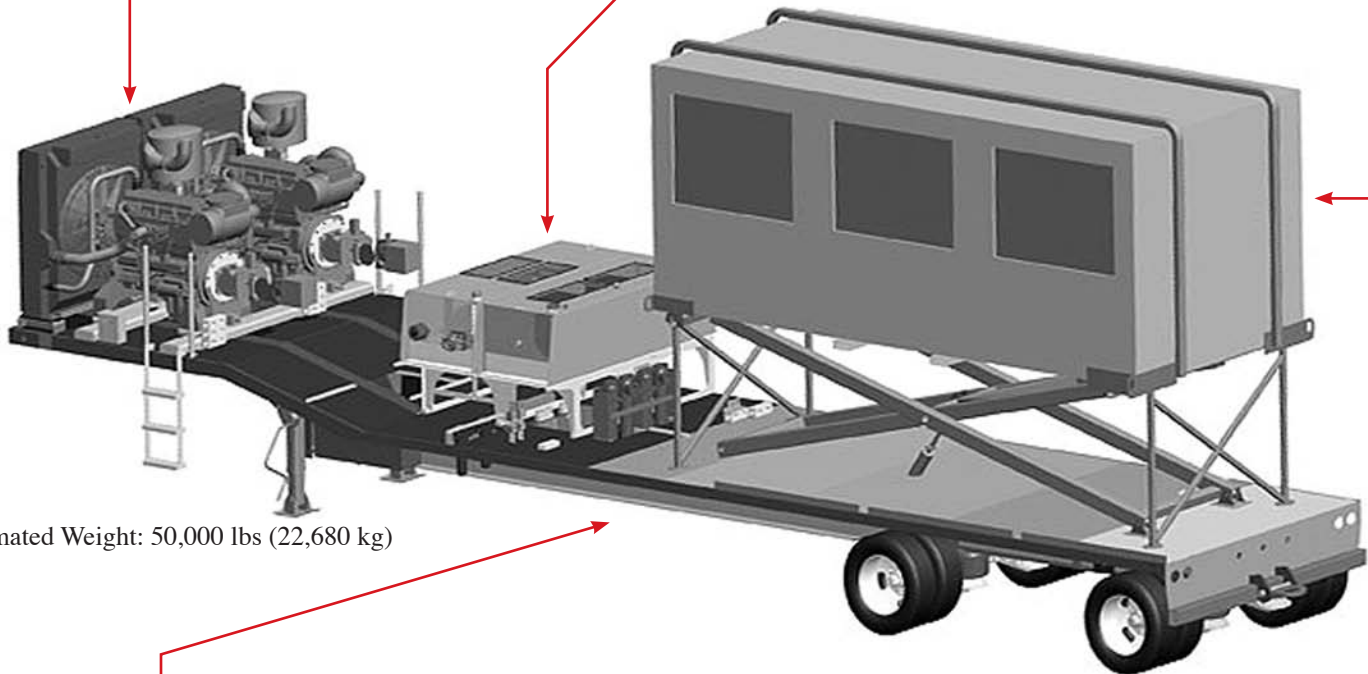
Power Train & Operation



POWER TRAIN

Engine: (2) Caterpillar® C-11 Tier III Diesel Engine
Rating: 365 HP (272 kW) each @ 2100 RPM

Fuel Capacity: 270 Gallon (1,022 L)
Hydraulic Capacity: 230 Gallon (871 L)



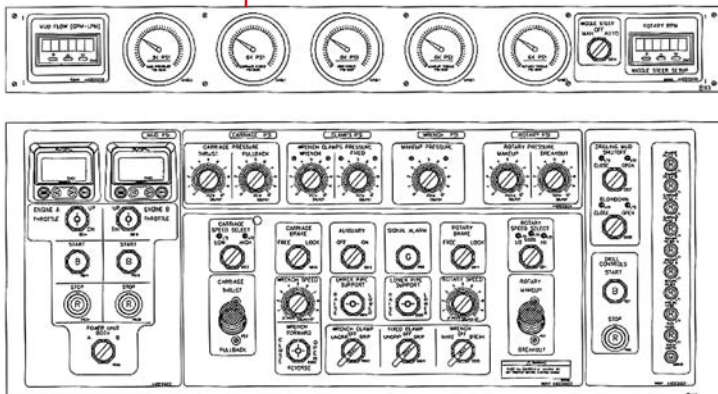
Estimated Weight: 50,000 lbs (22,680 kg)

DRILLERS CABIN

Size: 7' x 20' (2 x 6 m)
Standard Features: 4' table, 13.5k BTU AC, 100 AMP service panel with 5 each 20 AMP breakers, one GFI, four windows with vandalism shields, recessed lighting, five 110v outlets, key entry 13" X 18" cable opening and 72" RH door with deadbolt.

OPERATING CONTROLS

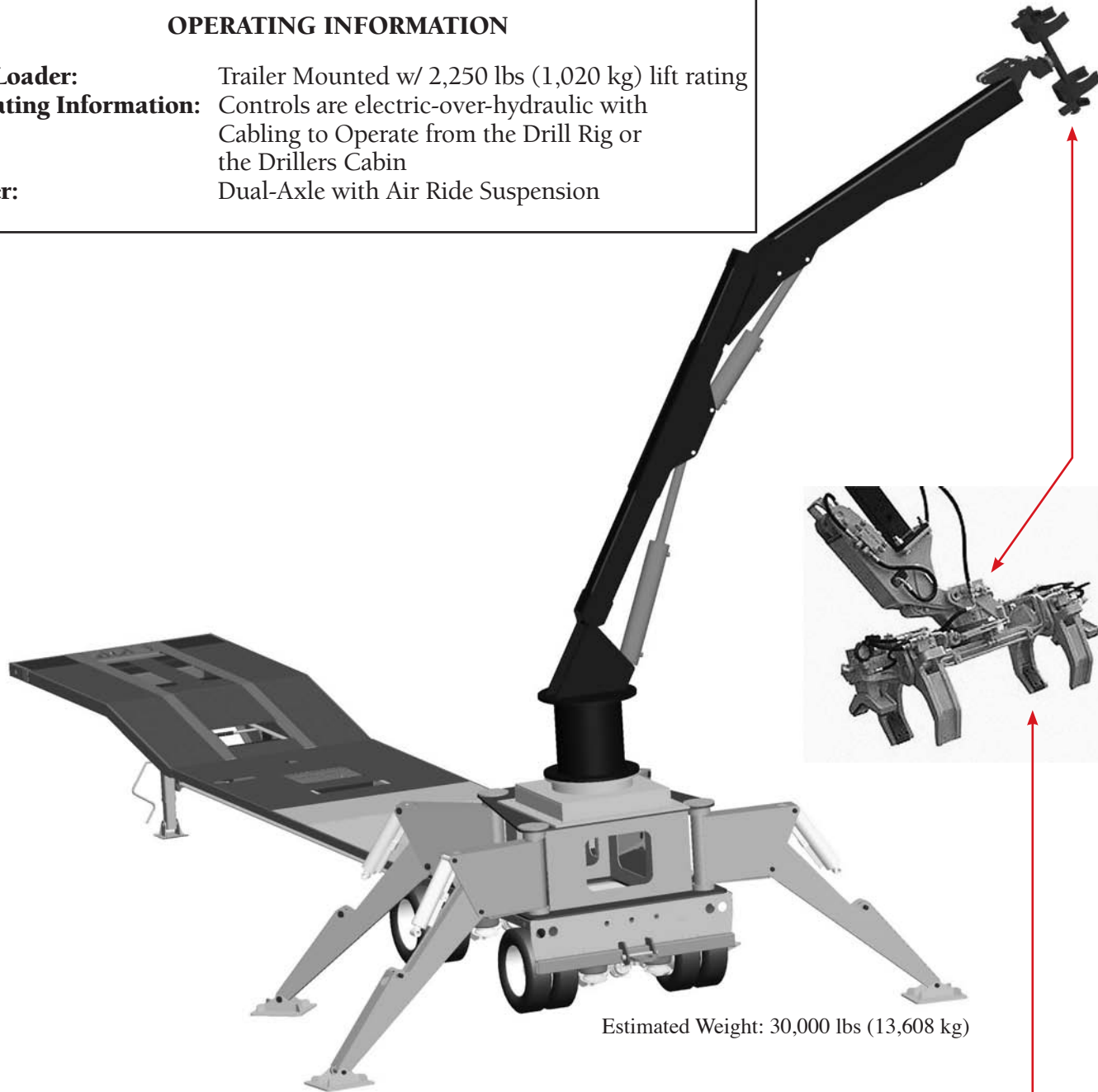
Control Panel: Engine Start/Stop, Throttle Control, Full Proportional Control on Rotary and Thrust/Pullback Functions, Operator Adjustable Torque Limiter for Rotary and Wrench Makeup Torque, Operator Adjustable Force Limiters for Thrust/Pullback and Wrenches, Mud Blow Down Valve Control.
Other Features: 110V Electrical Outlets and Rig Mounted Lighting.



A Pipe Loading System

OPERATING INFORMATION

Pipe Loader: Trailer Mounted w/ 2,250 lbs (1,020 kg) lift rating
Operating Information: Controls are electric-over-hydraulic with Cabling to Operate from the Drill Rig or the Drillers Cabin
Trailer: Dual-Axle with Air Ride Suspension



Estimated Weight: 30,000 lbs (13,608 kg)

GRAPPLE

- Hydraulic Function has the Ability to Grip, Lift, and Pivot Drill Pipe with Unlimited Angle Rotation
- Equipped with Mechanically Operating, Hydraulically Controlled Brake to Prevent Unintentional Pivoting

Grapple Operating Specifications

Load Capacity	Gripping	Width	Tines	Self Weight	Closing Force
2,204 lbs	3.94"/11.82"	2.6'	2	683 lbs	50.7 lb-force
1,000 kg	100/300 mm	785mm	2	310 kg	23 KN

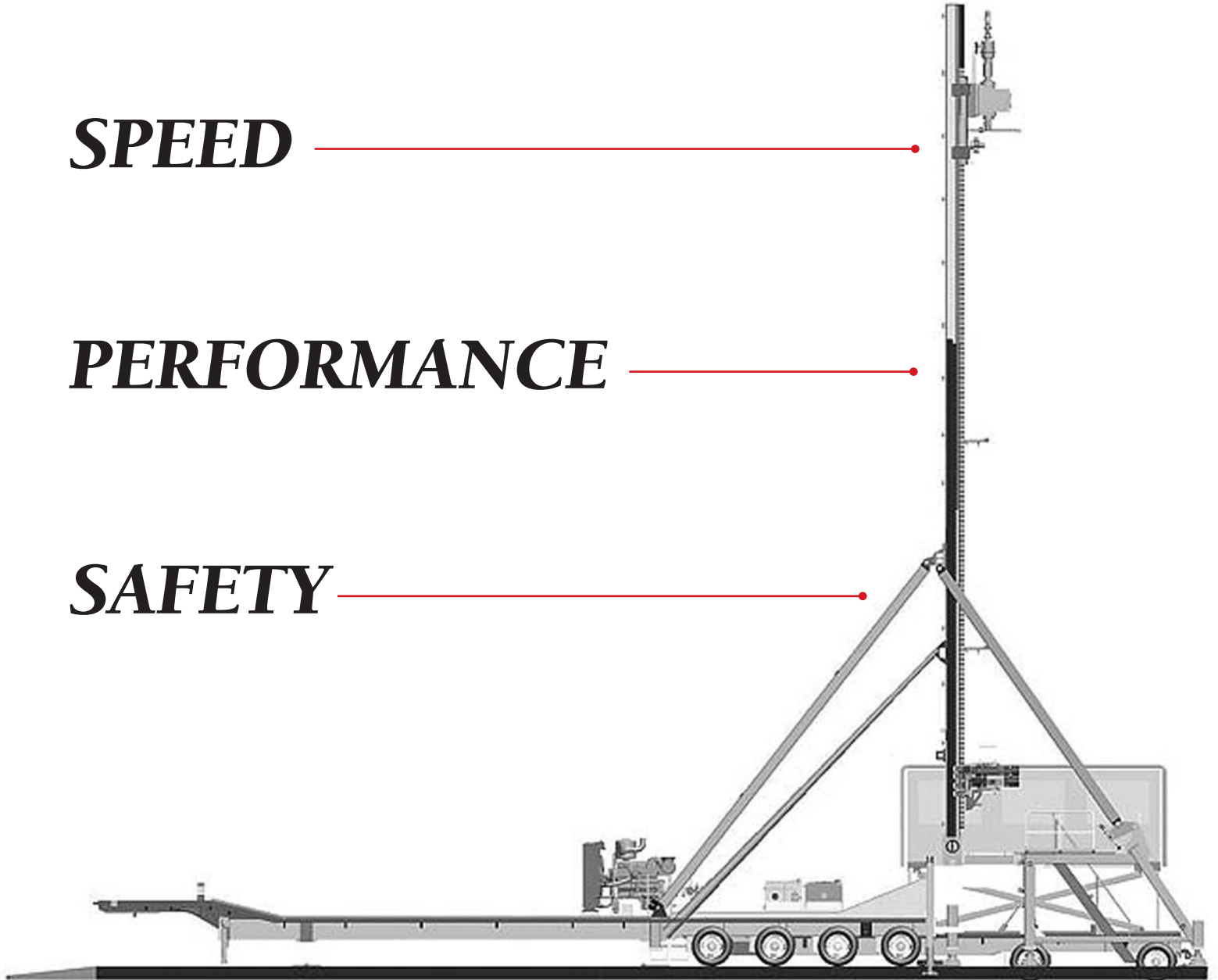
VR-330 Maximizes



SPEED

PERFORMANCE

SAFETY



Experience the **“Augers Advantage”**

The **“Augers Advantage”** is American Augers 37 years of Auger Boring & Directional Drilling experience, which continue to lead the way in mechanical, technological, and customer based design improvements for the horizontal earth boring & directional drilling market. American Augers continues to factory direct support our machines, so that we support our customers success!