

MAJOR
Drilling

Rotary & RC
Drilling Services



QUALITY • SAFETY • RESULTS

Major Drilling Provides

QUALITY • SAFETY • RESULTS

Quality

- Safety
- Our people
- Equipment
- Our many services
- Training
- Excellent customer service
- Proven relationships
- Industry innovations

Safety

- Proactive work approach
- Thorough on-board training
- Continuous training, review and improvement
- Highest quality policies, procedures, equipment and training

Results

- Innovative equipment, tooling and procedures
- Solutions to client challenges
- Engaged safety culture
- A reputation of exceeding goals



Major Drilling Group International Inc.

- One of the world's largest drilling services companies primarily serving the mining industry.
- Has over 1,000 years of combined drilling experience within its management team alone.
- Maintains field operations and offices in Canada, the United States, Mexico, South America, Asia, Africa and Europe.
- Registered in more than 20 countries.

Our Corporate Strategy

- Be the world leader in specialized drilling.
- Diversify our services within the drilling field.
- Maintain a strong balance sheet.
- Be the best in class in safety and human resources.
- Modernize our fleet with innovation and expand our footprint in strategic areas.



Our Rotary & RC Drilling Services:

- Mineral exploration
- Water well drilling
- Geothermal
- Dewatering wells
- Monitoring wells
- Oilfield pre-sets and intermediate strings
- Salt water injection wells
- Specialized drilling
- Directional drilling

Rotary Drills:

Schramm T-455WS (Track Mount)
40,000 lb. Pullback

Schramm T-685WS
94,000 lb. Pullback

Schramm T-130
130,000 lb. Pullback

Schramm TXD
200,000 lb. Pullback



Schramm T-455WS Track Mount



- RC exploration to 1800 ft
- Pre-collars
- Shallow monitoring
- Wells up to 8 inch outside diameter
- Small footprint with rod carrier/rack built on drill

SCHRAMM T-455WS TRACK MOUNT SPECS

- 28.5 ft top head travel mast
- 40,000 lb pull-up 1800 ft capability
- Fuel efficient 1,800 rpm deck engine
- 1,050/350 air compressor with clutch
- Sliding top head, 15,000 lb winch
- KWL rod handling
- Metzke rod break out system
- Total hands-free operation
- 90° to 45° angle hole capability

Deck Engine

Caterpillar C-15 DIT ATAAC (ACERT)

580 bhp @ 1,800 rpm

240 gallon fuel tank

Standard Compressor

Two-stage, oil-flooded rotary screw

1,050 cfm @ 350 psi

Manually operated clutch between the engine and compressor

Schramm patented air-CONTROL®

Cooling

122° F (50° C) ambient design temperature

Variable speed cooling fan

Dimensions

OA length-transport: 38 ft 6 inches

OA width: 8 ft 6 inches

OA height-transport height: 13 ft 1 inch

OA height-mast up: 40 ft 2 inches

Table

16.5 inch maximum diameter through slipbox

Top Head Drive

Single reduction gearbox with heavy duty dual (2) speed, disc valve type motor

Infinitely variable rotation speed

Spindle Thru Hole: 2-11-16 inch ID

Maximum Torque: 0-146 rpm @ 4,442 ft/lbs

Maximum Torque: 0-74 rpm @ 8,885 ft/lbs

Outriggers

Dual Front: 4 inch bore x 41 inch stroke

Dual Rear: 4 inch bore x 41 inch stroke

Feed System

Top head driven by hydraulic traverse cylinder through heavy-duty leaf chain

40,000 lbf pullback

132 fpm up feed

264 fpm down feed

20,000 lbf pulldown

Mast

Tubular steel, all welded mast

38 ft 6 inches OA length

28 ft 6 inches head travel

Winch

15,000 lbf bare drum pull

194 fpm bare line speed

Additional helpers side control for standard winch and jib boom

Planetary design with spring applied hydraulic release brake

Hydraulic System

Open loop load sensing system

150 gallon system capacity

7 micron filtration

Water Injection System

18 gpm water pump

700 psi maximum pressure

Tool Lubricator

Positive displacement, air operated piston pump

Oil Flow: 0-2 g/hr

Maximum Pressure: 1,600 psi

Schramm T-685



- RC exploration to 3500 ft
- Pre-collars
- Intermediate wells up to 16 inch outside diameter
- 12 inch completion
- Shallow flooded RC
- Piezometers
- Mud rotary
- Geothermal temperature gradient wells

SCHRAMM T-685 SPECS

- Up to 93,700 lb pull up
- 28 inch table opening
- 760 hp deck engine
- On-board air compressor
- 1,350 cfm @ 350 psi & 1,150 @ 500 psi
- Hydraulic mud pumps
- Sandvik rod arm
- Air drill power break out
- Hands-free operation
- 90° to 45° angle hole capability

Deck Engine

Detroit Diesel DDC/MTU 12V-2000TA DDEC

760 bhp (567 kw) @ 1800 rpm

2 x 110 gallon (415 l) fuel tanks

Air or electric start available

Standard Compressor

Variable volume two-stage oil flooded rotary screw compressor

Selectable air: 1,150 cfm @ 500 psi or
1,350 cfm @ 350 psi
(32.6 m³/min @ 35.5 bar, 38 m³/min @
24.1 bar)

Schramm patented air-CONTROL®

Cooling

Three core side-by-side heat exchangers
with variable speed cooling fan

117°F (47°C) ambient design temperature

Carrier

CCC 8 x 4 carrier

Cummins engine rated 425 hp @ 2,100 rpm

44,000 lb (19,955 kg) front axle

21,500 lb (9,750 kg) pusher axle

52,000 lb (23,587 kg) full locking rear axle

117,500 lb (53,298 kg) GVWR

Mast

Telescoping mast design permits long
head travel and working height yet short
overall length in transport position

Hydraulically operated adjustable
mast feet

69 ft 9 inches overall height fully extended

Drill Table

Table Opening: 22 inches

Top Head Drive

Heavy-duty single reduction gearbox with
multiple disc valve type hydraulic motor

Infinitely variable rotation speed via HRC
control

Maximum Torque: 8,884 ft-lbs

Rotation Speed: 0-143 rpm

Maximum operating pressure: 3,000 psi

Feed System

50 ft head travel

130,000 lbf pullback distance

125 fpm pullback speed

32,000 lbf pulldown weight

270 fpm pulldown speed

Exploration Jib Boom

For handling drill pipe on angles up to 45°
from vertical, an extended dipper stick is
mounted to a (swing and extend) hydraulic
jib boom

Swings: 140°

Extends: 40 inches

Winch

9,600 lbf bare drum line pull

216 fpm bare line speed

Planetary design with spring applied
hydraulic release brake

Hydraulic System

Open loop load sensing system

160 gallon system capacity

Water Injection System

25 gpm water pump

13.2 maximum gpm foam pump

800 psi maximum pressure

Schramm T-130



- Pre-sets
- Intermediate casing pre-sets
- Deep pre-collars
- Intermediate large diameter wells
- 16 inch completions
- Gob vent boreholes
- Injection and extraction wells
- Deep flooded reverse with RC
- Air or mud rotary
- Geothermal

SCHRAMM T-130 SPECS

- 130,000 lb actual pullup
- 28 inch table opening
- 760 hp deck engine
- 1,350/350 – 1,150/500 variable volume compressor
- 50 feet of clear head travel
- Range III casing

Drill Table

Table Opening: 20 inches or 28 inches with table retracted

Hydraulically retractable slip box

Drill Pipe and Casing

Range III tubular capability

28 inch maximum diameter through the slip box

Outriggers

Single Front: 5 inch bore x 41 inch stroke

Dual Rear: 5 inch bore x 41 inch stroke

Winch

Planetary design with spring-applied hydraulic release brake

9,600 lbf bare drum line pull

150 fpm bare drum line speed

Hydraulic System

Open loop load sensing system

200 gallon (760 l) system capacity

Water Injection System

25 gpm water pump

Tool Lubricator

Positive displacement, air operated piston pump

Lighting & Electrical System

24 volt DC electrical system

Mast: (4) 60 watt floodlights

Control Panel: (2) 60 watt gauge floodlights

Work: (3) 70 watt halogen

Rig Weight and Dimensions

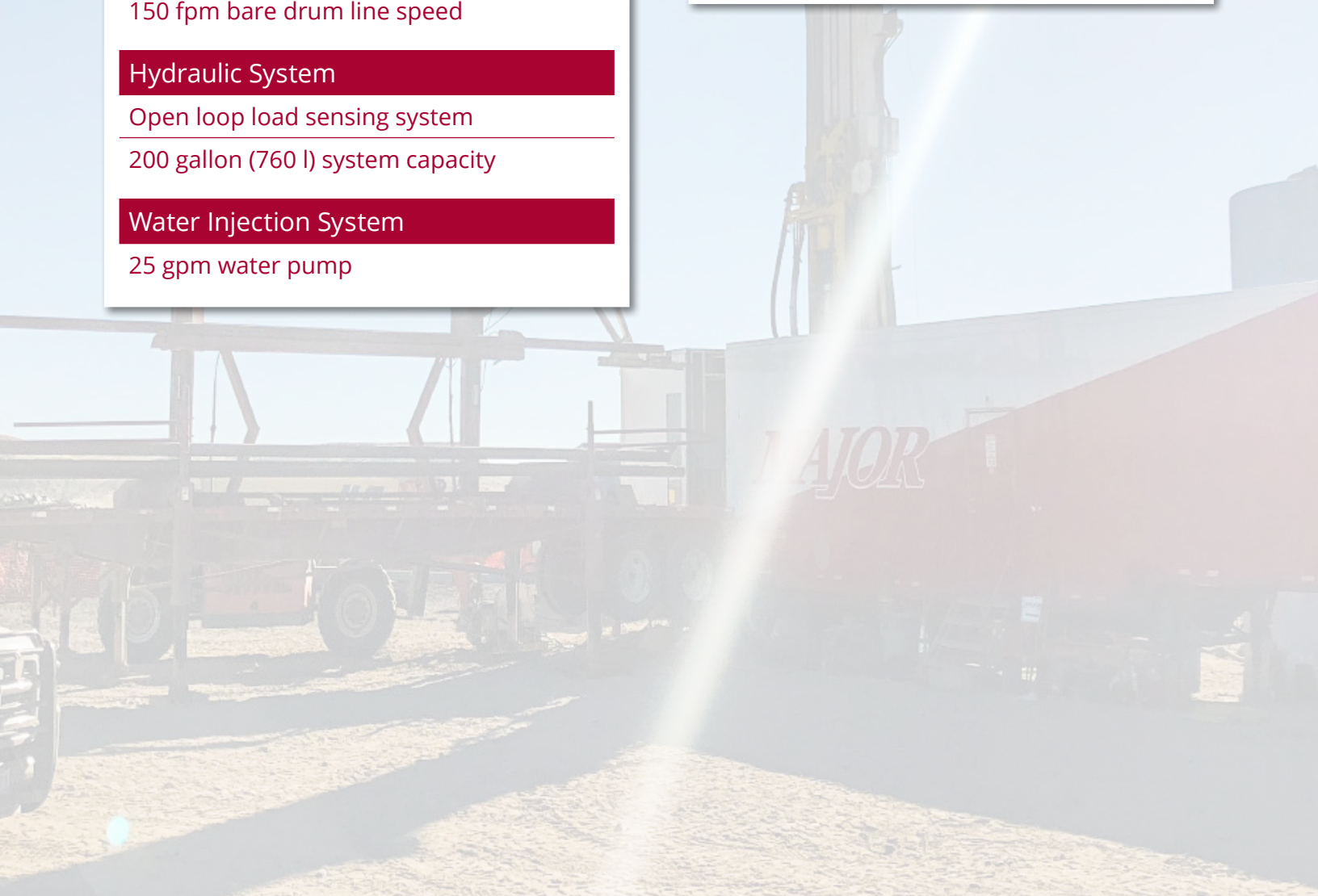
OA length, transport: 42 ft 9 inches

Front mast down transport overhang 8 ft

OA width: 8 ft 6 inches

OA height, transport: 13 ft 6 inches

Typical GVWR: 100,000 - 110,000 lbs



Schramm TXD



- Large diameter holes
- Large diameter wells
- Deep pre-sets/pre-collars
- Deeper intermediate casing sets
- Geothermal production wells

SCHRAMM TXD SPECS

- Up to 200,000 lb hoist capacity
- Up to 32,000 lb pulldown
- Range III tubular capability
- Precise hydraulic weight on bit control
- Compact 53 ft transport length
- Loadsafe automated pipe handling system included
- Rotation brake for directional drilling available
- Integral sub-base

Deck Engine

Detroit Diesel DDC/MTU 12V-2000TA DDEC

760 bhp @ 1,800 rpm

2 x 110 gallon fuel tanks

Air or electric start available

Cooling

A two core, side-by-side heat exchanger with variable speed cooling fan

130°F (54.4°C) ambient design temperature

Mast

Telescoping mast design permits long head travel and working height, yet short overall length in transport position

Free-standing mast design

Hydraulically operated adjustable mast feet and slip box

Tilting Top Head Drive

Heavy duty, single reduction gearbox with 4 two-speed disc valve type hydraulic motors

Infinitely variable rotation speed via HRC control

Torque: 0-90 rpm @ 17,750 ft-lbs/0-180 rpm @ 7,670 ft/lbs

Rotation Speed: 0 - 180 rpm

Maximum Operating Pressure: 3,000 psi

Feed System

50 ft head travel

200,000 lbf hoist capacity

100 fpm hoist speed

32,000 lbf pulldown

200 fpm pulldown speed

Drill Table

Table Opening: 30-inch diameter with table retracted

Hydraulically retractable slip box

Drill Pipe and Casing

Range III tubular capability

30-inch maximum diameter through the slip box



MAJOR

Loadsafe Automated Pipe Handling System

- Lifts drill pipe and casing from horizontal position into alignment with tilting tophead
- Racks and stores tubulars
- Positions blowout preventer
- 47-ft maximum tubular length, Range III
- 30-in maximum diameter casing capability
- 5,000-lb tubular lift capacity

Winch

Planetary design with spring applied hydraulic release brake

9,600 ft/lbs bare drum line pull

150 fpm bare drum line speed

Hydraulic jib boom swing and extend

Auxiliary winch available

Outriggers

Dual Front: 5 inch bore x 36 inch stroke

Dual Rear: 5 inch bore x 41 inch stroke

Hydraulic System

Open loop load sensing system

200 gallon (760 l) system capacity

7 micron filtration

Electrical System

24 volt DC electrical system

Rig Weight and Dimensions

OA length, transport: 53 ft

OA width: 9 ft 6 inches

OA height, transport: 13 ft 6 inches

Rig trailer weight: 95,000 lbs

Pipe handling trailer weight: 40,000 lbs

Standard Accessories

Tool box, breakout wrench

Optional Equipment

Rotation brake for directional drilling

Hydraulic roughneck

Power slips with Schramm bowl

Water injection and tool lubricator systems

Hazardous area lighting package

Integral sub-base

An industrial drilling site at sunset. In the foreground, numerous large-diameter metal pipes are laid out in neat rows on the ground. To the left, a large, cylindrical metal storage tank stands. In the background, a tall drilling rig is visible against a sky with a large plume of dark smoke rising from the left. The scene is illuminated by the warm, low light of the setting sun.

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