Equipment

NORTHCOUNTRYGOLD

Westland Incinerators

1. *Model CY-2014-CA*

2. *Model CY-1020-FA “N”*

3. *ModelCY-2050-FA*

WESTLAND
ENVIRONMENTAL SERVICES INC.
www.westlandenvironmental.com

DOUBLE CHAMBER CYCLONATOR INCINERATOR

SERIES CY-2000-CA

- **Dual Chamber, Controlled Air Operation**
- **Built In Safety Features**
- **"Load-and-Go" Operation**
- **Meets Clean Air Guidelines in Most Areas**
- **Economical Operation**
- **Optional Dry Scrubber**

CY-2014-CA Incinerator

Designed for use in Permanent Locations for Types I, II, & III Wastes

Capacity
Nominal 20 kg/h for Type III waste. Actual capacity dependent on waste composition and operation

Power Requirements
115 V 60 Hz single phase

Combustion Chambers
0.40 m^3 Primary and Secondary Chambers

Stack
- 23 cm diameter
- 3 m high
- Refractory lined stack
- Spark arrester

Casing
10 gauge steel
Lining: high heat duty castable refractory
High temperature insulation.

Doors
711 mm x 711 mm clear opening; 6.35 mm steel plate c/w heavy duty blade latch. Refractory lined;

Air Supply - Adjustable
Forced air fan c/w ducts to secondary flame port air jets.

Auxiliary Burners
0.48 GJ/h (455,000 BTU) for both chambers; gun type, enclosed in protective steel housing.

Fuel Supply (Oil Fired Unit Only)
250 Gallon fuel storage tank c/w filter and flexible hose type connection.

Transporter
Incinerator mounted on skid type frame, 3m long x 1.5 m wide x 2.3m high

Height
2.8 m tall, with stack crated separate. Constructed of W150 I Beam

Weight
2000 kg. (4400Lbs.)
Largest dismantled piece is 900lbs for helicopter lift

Auxiliary Fuel Options
* LPG Fired burners
* Diesel Fired burners
* Natural Gas Propane

Control System
- PLC controller
- "Load-and-Go", One-Button operation for batch operation
- Temperature controllers in primary and secondary chambers
- Real time data logging
- Electronic weigh scale

Air Emissions
- Regulatory compliance tested
- Meets Environment Canada design draft guidelines for small incinerator
- Some waste streams may require the use of a scrubber
- **Optional dry scrubber guaranteed to meet all emission standards.**

MANUFACTURED BY:

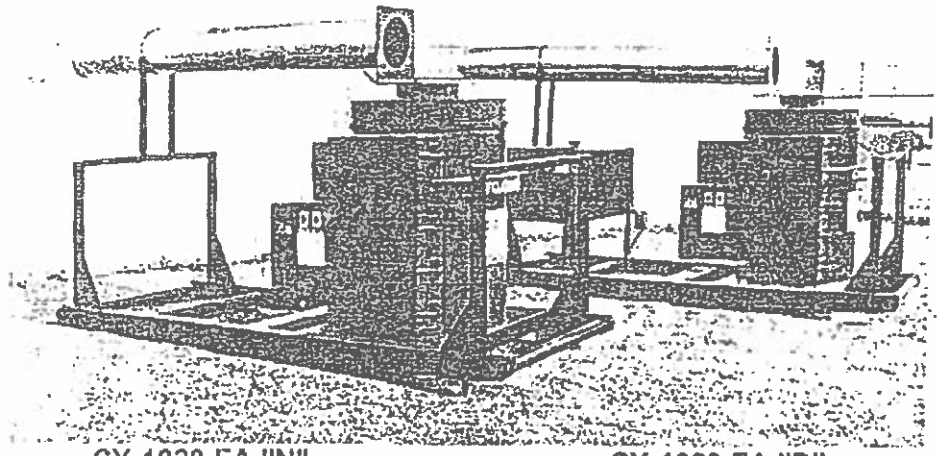
WESTLAND

Environmental Services Inc.
20204 – 110 Avenue, Edmonton, AB Canada T5S 1X8
Phone: (780) 447-5052 Fax: (780) 447-4912
E-MAIL info@westlandenvironmental.com

DISTRIBUTED BY:

WESTLAND

SINGLE CHAMBER CYCLONATOR INCINERATOR
SERIES CY1000



CY-1020-FA "N" CY-1020-FA "D"

- Built In Safety Features
- Readily Transportable
- Economical Operation
- Clean Burning

Designed for Petroleum, Mining, and Lumber Industries

Capacity
0.6 m^3, 64 Kg per hour
Type No. 1, 2, & 3 waste.

Power Requirements
115 volts 60 cycle single phase

Stack
Stainless Steel
- 14 gauge
- 33 cm diameter
- 3 m high
- c/w stainless steel Spark arrester
- a hinged base plate For moving

Casing
12 gauge steel
Lining: high heat duty castable Refractory over high temperature Insulation

Hearth
Refractory hearth over 6.35 mm steel base

Doors
6.35-mm steel plate c/w heavy-duty blade Latch.
Charging:
- 46 cm x 61 cm clear opening
- Refractory lined over steel plate

Ash:
- 46 cm x 30 cm clear opening
- Refractory lined over steel plate

Air Supply
Forced air fan c/w duct to primary air jets and to secondary and over-fire air jets.

Timers
Cycle timer interconnected to air supply fan and gun type burner enclosed in burner housing

Burner
500,000 BTU gun type oil burner
Gun burner enclosed in protective plate steel housing

Fuel Supply
450-liter fuel storage tank c/w filter And flexible hose type connection.

Transporter
Incinerator and fuel storage mounted On skid type frame 365 cm long x 152 cm Wide.
Height: 2.13 M tall, with stack folded. constructed of 15 cm I Beam c/w bumper posts.

Weight
1815 Kg

Options
- Double chamber cyclonator 2000 series
- LPG Fired burner
- Natural gas fired burner
- 23 m Electric power cord
- Stack winch
- 1.4 m^3 model 1050.
- Cold climate assembly.

Head Office:
WESTLAND
INCINERATOR CO. LTD.
20204 – 110 Avenue, Edmonton, AB Canada T5S 1X8
Phone: (780) 447-5052 Fax: (780) 447-4912
E-MAIL westland@ketek.ca

New Delhi Office:
WESTLAND
INCINERATOR CO. LTD.
12-A Vandana Bldg, 11 Tolstoy Marg, New Delhi, India, 110001
Phone: 332-8569 or 372-0192 Fax: 372-0192
E-MAIL vishal@ketek.ca

WESTLAND
ENVIRONMENTAL SERVICES INC.
www.westlandenvironmental.com

DOUBLE CHAMBER CYCLONATOR INCINERATOR

SERIES CY2000

- **Built In Safety Features**
- **Readily Transportable**
- **Economical Operation**
- **Clean Burning**

CY-2050-FA

Designed for Petroleum, Mining, and Lumber Industries

Capacity
1.4 m^3, 90 kg per hour.
Type No. 1, 2, & 3 waste.

Power Requirements
115 volts 60 cycle single phase.

Stack
Stainless Steel
- 14 gauge.
- 38cm diameter.
- 3m high.
- c/w stainless steel spark arrester.
- a hinged base plate for moving.

Casing
12 gauge steel.
Lining: high heat duty castable refractory over high temperature insulation.

Hearth
Refractory hearth over 6.35mm steel base.

Doors
6.35-cm steel plate c/w heavy-duty blade latch.
Charging:
- 61cm-x 71cm clear opening
- Refractory lined over steel plate.

Ash:
- 61cm x 40cm clear opening
- Refractory lined over steel plate

Air Supply
Forced air fan c/w duct to primary airs jets and to secondary over-fire air jets.

Timers
Cycle timer interconnected to air supply fan and gun type burner enclosed in burner housing.

Burners
650,000 BTU gun type primary burner.
Gun burner enclosed in protective plate steel housing.
450,000 BTU in secondary chamber.

Fuel Supply: Oil Fired Unit Only
1350-liter fuel storage tank c/w filter and flexible hose type connection.

Transporter
Incinerator and fuel storage mounted on skid type frame 4.27m long x 1.83m wide.
Height: 3.2m tall, with stack folded.
Constructed of W150 I-Beam c/w bumper posts.

Weight
5000 kg.

Options
* LPG Fired burner.
* Diesel fired burner.
* 2.3m Electric power cord.
* Stack winch.
* Cold climate assembly.

MANUFACTURED BY:

WESTLAND
INCINERATOR CO. LTD.

20204 – 110 Avenue, Edmonton, AB Canada T5S 1X8
Phone: (780) 447-5052 Fax: (780) 447-4912
E-MAIL westland@ketek.ca

DISTRIBUTED BY:

Proposed Clear Span Construction

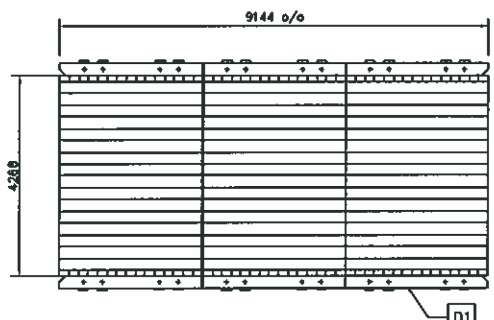
RUSKIN
CONSTRUCTION LTD.

9.144m 30FT L100 BRIDGE

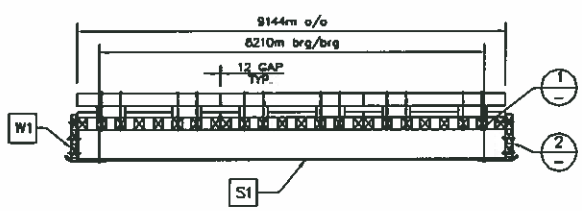
ALLNORTH
CONSULTANTS
LIMITED

[redacted]
www.allnorth.com

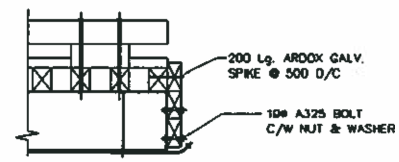
drawing no.
04-PC-0011



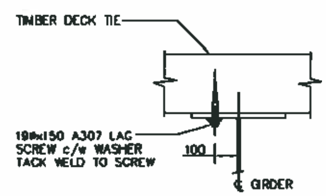
DECK PLAN
SCALE 1:100



ELEVATION
SCALE 1:100



2 DETAIL – WALL CONNECTION
SCALE 1:50



1 DETAIL – DECK CONNECTION
SCALE 1:20

ITEM	QTY.	PAGE	DESCRIPTION
D1	3	3	TIMBER DECK MODULE – L100 – 4.268m x 3.038m
S1	1	4	STEEL SUPERSTRUCTURE – L100 – 9.144m Lg.
W1	2	–	TIMBER BALLAST WALL – 3 – 150x300 x6.096m Lg. EACH SIDE (TREATED D. FIR)

no.	date	by	app.	subject
1	2004/01/05	CMD	DDW	ISSUED FOR REVIEW

RUSKIN CONSTRUCTION LTD.

9.144m 30FT
L100 BRIDGE

BRIDGE
ASSEMBLY

ALLNORTH CONSULTANTS LIMITED

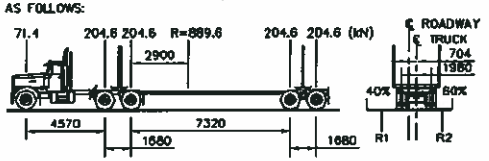
scale	AS NOTED
drawn	CMD
design	DDW
checked	DDW
map ref.	
revision	1
sheet no.	1 of 4
drawing no.	04-PC-0011-1

DESIGN LOADS:

1. DEAD LOAD – UNIT WEIGHTS AND MATERIALS ARE AS FOLLOWS:
CONCRETE (INCLUDING REINFORCING STEEL) = 24kN/m³
STRUCTURAL STEEL = 77kN/m³
SOIL = 20kN/m³

2. LIVE LOAD:

LOADING DIAGRAM L-100 OFF HIGHWAY G.V.W. = 90 680kg:
DESIGN IN ACCORDANCE WITH CAN/CSA-S6-00 WITH MODIFIED LOADING AS FOLLOWS:



3. CONSTRUCTION LIVE LOAD:
CONSTRUCTION LIVE LOAD NOT TO EXCEED 41700kg WITHOUT APPROVAL BY THE ENGINEER.

4. THERMAL ACTION:
MAXIMUM DAILY MEAN TEMPERATURE IS 40°C.
MINIMUM DAILY MEAN TEMPERATURE IS -50°C.

NOTE: ALL DIMENSIONS ON DRAWINGS TAKEN @ 0°C. IF TEMPERATURE DIFFERS AT TIME OF INSTALLATION OF BEARING, COMPENSATION WILL BE REQUIRED BY SITE ENGINEER.

DESIGN SPECIFICATIONS:

1. DESIGN IN ACCORDANCE WITH CAN3/CSA-S6-00 & VARIATIONS FROM SAME TO COMPENSATE FOR PECULIARITIES OF LOGGING TRUCK LOADS AS OPPOSED TO NORMAL DESIGN VEHICLES.

2. FATIGUE CATEGORY: 500 000 CYCLES AS PER CAN3/CSA-S6-00 (DYNAMIC LOAD ALLOWANCE INCLUDED). ALL MATERIAL SHALL BE NEW.

HANDLING SPECIFICATIONS:

1. THE BRIDGE WILL BE HANDLED, DURING TRANSPORTATION AND ERECTION, IN SUCH A MANNER AS TO NOT CAUSE HARM TO THE BRIDGE OR TO THE COMPONENTS OF THE BRIDGE.

BRIDGE IDENTIFICATION:

1. THE BRIDGE SHALL HAVE IT'S LOAD RATING, DATE OF MANUFACTURE AND MANUFACTURER'S NAME CLEARLY STAMPED OR PERMANENTLY MARKED ON ONE SIDE OF THE STRUCTURE. THE HEIGHT OF LETTERING USED SHALL BE MINIMUM 50mm UNLESS NOTED OTHERWISE.

SIGNS:

1. THE BRIDGE SHALL BE EQUIPPED WITH 4 HAZARD MARKERS UNLESS OTHERWISE NOTED.

2. THE SITE SHALL HAVE NARROW BRIDGE SIGNS POSTED AT LOCATIONS SPECIFIED BY THE ENGINEER.

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

2. ALL MISCELLANEOUS STEEL (INCLUDING ANGLES) SHALL COMPLY TO GRADE 350A.

3. WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W-59. WELDING ELECTRODES TO BE COMPATIBLE WITH BASE MATERIAL. ALL WELDS TO BE 6mm UNLESS OTHERWISE NOTED ON DRAWINGS.

no.	date	by	chkd	subject
1	2004/01/05	CMD	DDW	ISSUED FOR REVIEW

CONSTRUCTION LTD.

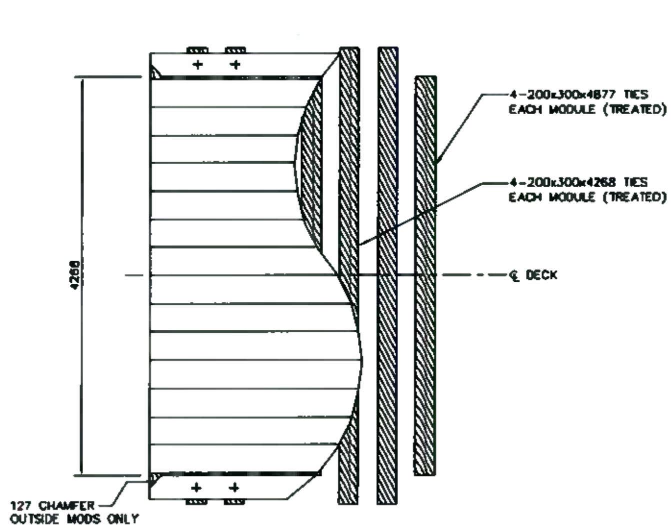
9.144m 30 FT
L100 BRIDGE

BRIDGE
CONSTRUCTION
SPECIFICATIONS

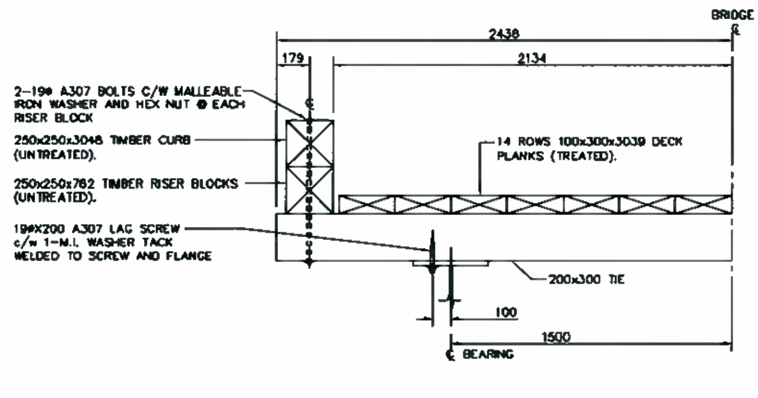
ALLNORTH
CONSULTANTS
LIMITED

scale	-
drawn	CMD
design	DDW
checked	DDW
engr ref.	
revision	1
sheet no.	2 of 4

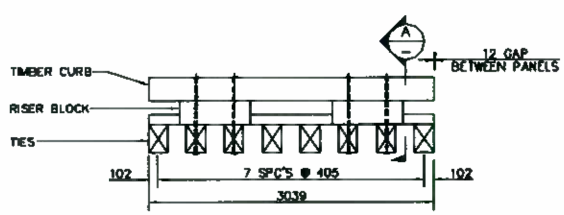
drawing no.
04-PC-0011-2
filename 04pc0011-2.dwg



PLAN
SCALE 1:50



A SECTION
SCALE 1:25



ELEVATION
SCALE 1:50

TIMBER DECK NOTES:

1. ALL TIMBER BOLTS SHALL BE ASTM A-307 HOT-DIPPED GALVANIZED C/W GALVANIZED MALLEABLE IRON WASHERS AND HEX-NUTS. SIZE TO FIT AFTER GALVANIZING.

2. DECK JOINTS SHALL BE CENTRED OVER TIES. DECK JOINTS ON ADJACENT PLANKS SHALL BE STAGGERED A MINIMUM OF 2 TIE SPACES.

3. DECK NAILING PATTERN:
   -DECK PLANKS TO TIMBER TIES, 200mm GALV. SPIRAL SPIKES.
   -1 PER PLANK END, 50mm BACK FROM END, CENTRED
   -2 PER PLANK END, 400mm BACK FROM END
   -1 @ 1000mm O.C. STAGGERED SIDE TO SIDE.

4. DECK (ROUGH SAWN):
   -TIMBER TIES SHALL BE #2 & BETTER, D.FIR. (TREATED)
   -TIMBER CURBS SHALL BE #2 & BETTER, ANY SPECIES. (UNTREATED)
   -PLANK DECK SHALL BE #2 & BETTER, D.FIR (TREATED).

5. LUMBER GRADES AS PER CANADIAN LUMBER STANDARDS ADMINISTRATIVE BOARD (C.L.S.A.B.) REQUIREMENTS.

6. TREATMENT TO BE CCA TREATMENT WHERE REQUIRED.

no.	date	by	chk.	subject
2	2003/07/29	DJV	DDW	REVISED DECK
1	2003/07/24	DJV	DDW	ISSUED FOR REVIEW

RUSKIN CONSTRUCTION LTD.

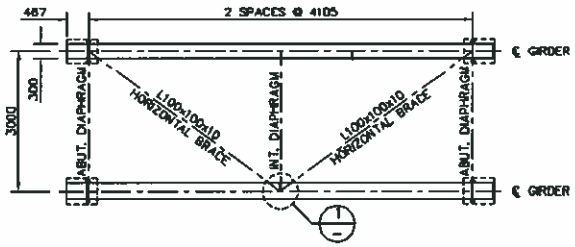
9.144m 30FT
L100 BRIDGE

TIMBER DECK
MODULE
L-100
4.268m x 3.039m

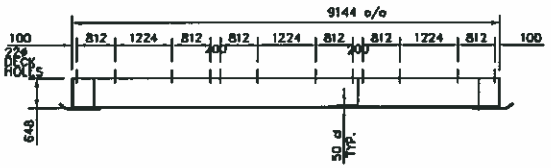
ALLNORTH CONSULTANTS LIMITED

reproduction scale 0 10 20 30

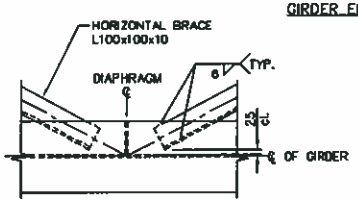
scale	AS NOTED
drawn	CMD
design	DDW
checked	DDW
map ref.	
revision	2
sheet no.	3 of 4
drawing no.	04-PC-0011-3



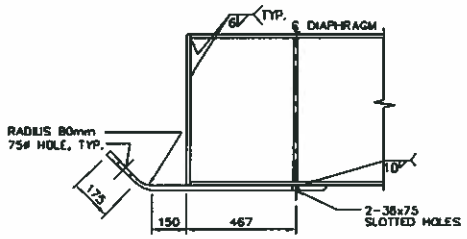
PLAN – TOP FLANGE



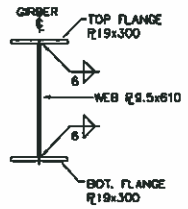
GIRDER ELEVATION



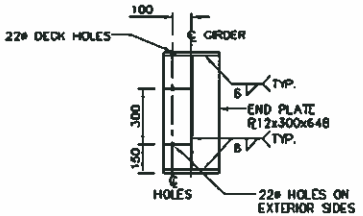
1 HORIZONTAL BRACE CONNECTION
SCALE 1:20



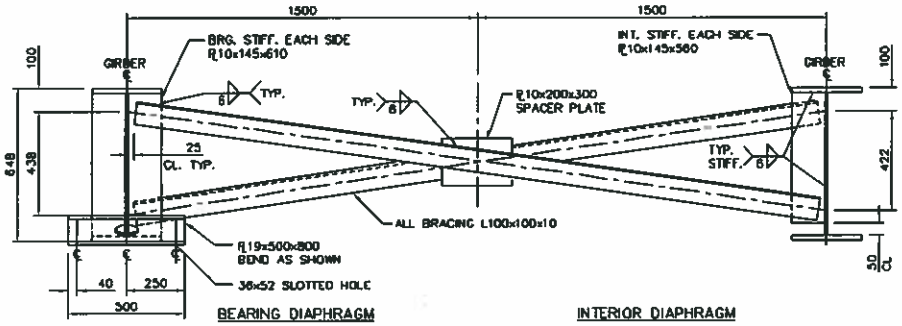
LIFTING DETAIL
SCALE 1:20



GIRDER DETAIL
SCALE 1:25



END PLATE DETAIL
SCALE 1:25



BEARING DIAPHRAGM

INTERIOR DIAPHRAGM

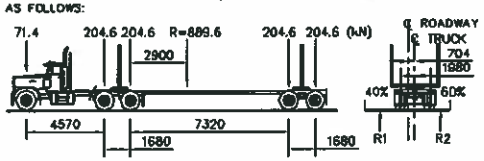
DIAPHRAGM DETAILS
SCALE 1:20

STEEL NOTES:

1. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH CSA STANDARD G40.21-M81, GRADE 350AT, CATEGORY 3. MILL CERTIFICATES TO BE FORWARDED TO THE ENGINEER.
2. ALL OTHER STEEL (INCLUDING ANGLES) SHALL COMPLY TO GRADE 350A.
3. GIRDERS ARE DESIGNED AS FRACTURE CRITICAL MEMBERS.
4. CHARPY V-NOTCH TESTS SHALL BE SPECIFIED ON A PER-PLATE FREQUENCY.
5. WELDING SHALL BE IN ACCORDANCE WITH CSA STANDARD W-59.
6. ALL BUTT WELDS TO BE RADIOGRAPHIC TESTED WITH COPIES SENT TO THE ENGINEER.
7. ALL BOLTS TO BE ASTM A325.
8. CONTACT ENGINEER FOR FABRICATION INSPECTIONS, A MINIMUM 2 WEEKS PRIOR TO SHIPPING.

LOADING DIAGRAM L-100 OFF HIGHWAY G.V.W. = 80 000kg

DESIGN IN ACCORDANCE WITH CAN/CSA-S6-00 WITH MODIFIED LOADING AS FOLLOWS:



1	2003/07/24	DJV	DDW	ISSUED FOR REVIEW
no.	date	by	chkd	subject

ROSKIN CONSTRUCTION LTD.

9.144m 30FT
L100 BRIDGE

STEEL
SUPERSTRUCTURE
L-100
9.144m Lg.

ALLNORTH CONSULTANTS LIMITED

reproduction scale

scale	AS NOTED
drawn	CMB
designed	DDW
checked	DDW
cross ref.	
revision	1
sheet no.	4 of 4

drawing no. 04-PC-0011-4

Jaw Crusher

Products > Crushers and screens > Mobile crushers and screens > Jaw crushers >

QJ240

Former name: Extec C10+ Jaw Crusher
This compact self-propelled machine brings the revolutionary features of the Sandvik QJ340 to the smaller quarry or demolition site, where operating space is limited, yet high performance required. Of most sturdy construction, its power management coupled with unique jaw design makes it an icon for this category of crusher. The QJ240 represents a totally new concept in tracked crushing designed to increase production, reduce operating costs and produce a consistent product. Suitable for crushing virtually any material it encounters.

Contact us

Find a dealer near you

Related products

QJ340

QJ330

Features and values

- High crushing speed, together with large feed opening, provides impressive rates of production, yet able to provide superb reduction ratios
- Hydraulically adjustable CSS for a variety of applications
- Reverse crushing action to relieve blockages and automatic central lubrication system to increase machine up-time
- Hydraulic legs for increased stability and servicing capabilities

Key specifications

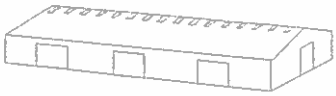
Equipment	-
Max feed size	520
Capacity up to	225 MPTH
No. of products	1 + NF
Weight (tons)	35.4 t
Operating dimensions	
Height	3.80 m (12 ft 6 in)
Width	3.84 m (12 ft 7 in)
Length	13.80 m (45 ft 3 in)
Transport dimensions	
Height	3.28 m (10 ft 9 in)
Width	2.75 m (9 ft 0 in)
Length	12.08 m (39 ft 8 in)
Main Conveyor dimensions	
Height	2.60 m (8 ft 6 in)
Width	0.80 m (2 ft 7 in)

Side Conveyor dimensions	
Height	1.65 m (5 ft 5 in)
Width	0.65 m (2 ft 2 in)

Jaw opening dimensions	
Height	1 m (3 ft 3 in)
Width	0.65 m (2 ft 2 in)

Structures

Industrial Modular Buildings
Commercial Modular Buildings



Fold-A-Way • Warehouses
• Repair shops

Sales • Rentals • Leasing

ATCO
ATCO Structures & Logistics Ltd
5115 Crowchild Trail SW., Calgary, Alberta T3E 1T9
Phone: (403) 292-7849 Fax: (403) 292-7575
E-mail: daniel.grunberg@atcosl.com

To: John Schabert	Date: November 26, 2010
Company: JDS Mining	
From: Daniel Grunberg	
Subject: Fold-A-Way – Budgetary Pricing	

If you have any problems receiving this document, please call (403) 292-7849

Hello John,

Thank you for inviting ATCO Structures & Logistics to submit a budgetary proposal for a Fold-A-Way building. We are committed to providing you with outstanding products and service, and look forward to continuing a dialogue to this end. Please see below for pricing details.

40' x 18' x 80' Fold-A-Way

Fold-A-Way package budgetary price - $220,000.00

Fold-A-Way package includes:

- Sky lights
- Galvanized interior and exterior
- One (1x) electrically operated cargo door on an endwall, with manual bypass
- Two (2x) steel personnel door packages at each end wall
- Three (3x) Used-oil powered unit heaters
- High-pressure sodium light package (interior & exterior)
- Electrical jacks throughout the building (total of 10)
- GSL 55 (Ground Snow Load)
- R20 insulation
- 14 foot side walls
- Ice guards over personnel and cargo doors

Terms:

- All applicable taxes are extra.
- Building to be engineered to fit into an aircraft w/ 9' panels.
- Pricing is for solely for budgetary purposes.
- This is for product supply, FOB Nisku, Alberta.
- Transportation and installation have not been quoted at this time.

If you have any questions or concerns regarding this quotation, please do not hesitate to contact me at (403) 292-7849 or fax at (403) 292-7575. Thanks again for considering ATCO products and services.

Best regards,

Daniel Grunberg
Sales Coordinator, Workforce Housing
ATCO
5115 Crowchild Trail S.W., Calgary, AB T3E 1T9
Direct: 403-292-7849

EnviroTank Specification

Envirotanks – Specifications

King Manufacturing to manufacture and fabricate two (2) 35,000 Litre fuel storage tanks capable of fitting into a Hercules aircraft.

Two (2) – Shop Fabricated Above Ground Steel Horizontal Storage Tanks for Flammable & Combustible Liquids

- Manufactured and Labeled in accordance with ULC Standard S-601 and S-653
- Designed for Transportation in Hercules Aircraft
- 88" Diameter
- 384" Length
- Shipping Weight – Approximately 16,000#
- 20 Litre Spill Box
  - 95% Overfill Valve
  - Drainback Valve
- Full length sills
- Constructed 3/16" steel plate (shell & heads)
- 2" Vent
- Manway
- Removable Ladder
- Standard Fittings
- Gauge Chart
- Dip Stick
- Exterior fittings and sills sandblasted and painted Endura (white)

Water Treatment and Waste Water Treatment Plants

Waste Water Treatment Plant, Sludge Press

1. *Seair*
2. *SaniTherm*
3. *BiPure Water*
4. *JDS Engineering*

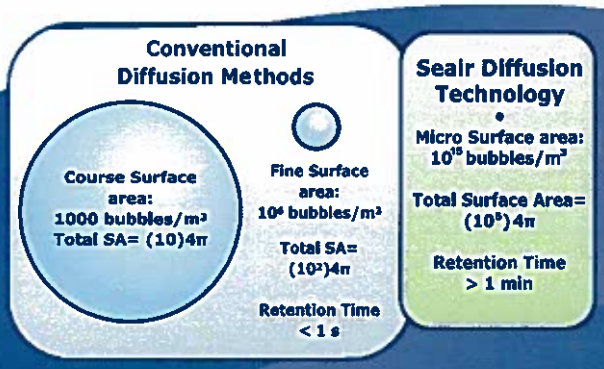
OUR COMPANY

Seair Septic Inc. is a leading distributor of portable wastewater treatment equipment providing easy, efficient, and cost effective solutions for all wastewater applications.

Seair Septic utilizes a proprietary diffusion and sterilization process that treats all organics and pathogens without the large scale and harmful chemicals associated with traditional methods of wastewater treatment.

Our Seair process primarily consists of:

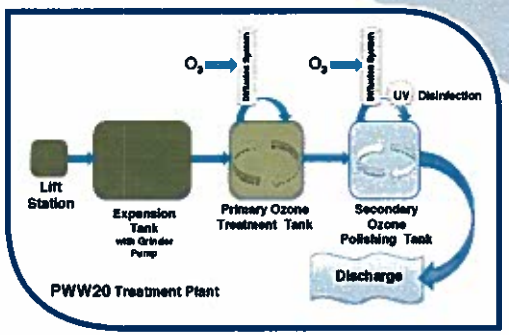
- Primary ozone treatment using our patented diffusion technology to breakdown fats, oils, greases and organics;
- Advanced oxidation or aeration using concentrated oxygen to promote natural degradation of organic matter; and
- Secondary ozone treatment to oxidize any remaining organics and sterilize the effluent, ensuring it is completely safe for discharge



OUR PRODUCTS

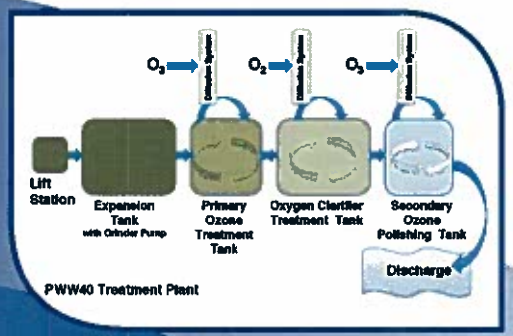
PWW20 System:

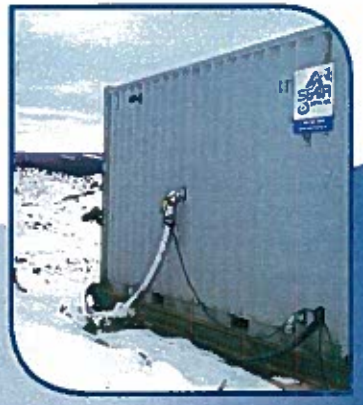
- Complete wastewater treatment plant housed in an insulated, skid mounted 20-foot container
- Suitable for 1500 gal/day (approx. 30 man camp)
- Utilizes ozone treatment and advanced oxidation



PWW40 System:

- Complete wastewater treatment plant housed in an insulated, skid mounted 40-foot container
- Suitable for 3000 gal/day (approx. 50 man camp)
- Utilizes ozone and biological treatment





FAQ

Why use ozone?

The intense oxidizing power of ozone makes it ideal for destroying any of the organic matter, pathogens and hazardous chemicals found in wastewater. The by-products of ozonation are water, oxygen and carbon dioxide, making it 100% safe for the environment.

Why a patented diffuser?

Seair's patented diffuser produces extremely small (5 micron) micro-bubbles. These bubbles increase overall surface area and stay in solution for minutes rather than seconds - allowing for more efficient use of gas and faster processing times.

What happens to the sludge?

The Seair Septic Systems do not produce any sludge, all solid materials are fully oxidized.

What about larger camps?

The modular design of the Seair Septic systems allows them to be scaled to fit the needs of any size camp. They can also be custom designed for specific wastewater applications. 125 man and 500 man remote units available (upon request).

SERVICES

Seair Septic offers onsite maintenance with every unit.

- Qualified Seair trained service people
- H2S and First Aid Certified
- Preventative maintenance and 24 hour on-call service
- Scheduled testing to ensure effluent quality
- COR Certified

COR
Certificate of Recognition

100% Sludge Free - No Solid Residues Produced
No Chemicals
No Filters Or Grease Traps
No Consumables
Resistant To Biological Shocks
All Permits Handled By Us
Completely Odorless
Skid Mounted For Easy Relocation
Rugged Construction
Completely Environmentally Safe

INSIDE A PWW20

INSIDE A PWW40

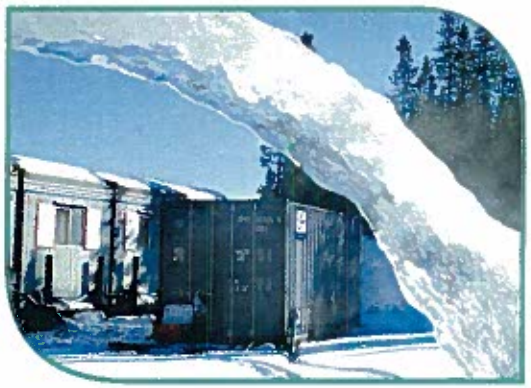
SEAIR SEPTIC INC.

Box 3329
Spruce Grove, AB, T7X 3A6

Tel: 780-960-6040
Fax: 780-960-6041
info@seairseptic.ca
www.seairseptic.ca

ADVANCED TECHNOLOGY FOR THE TREATMENT OF WASTEWATER

SEAIR SEPTIC INC.



A Leading Distributor of
Portable Wastewater Treatment Systems
For Camps of All Sizes

780-960-6040

SaniBrane®

Membrane Bioreactors for Wastewater Treatment Systems

SANITHERM A DIVISION OF PEAK

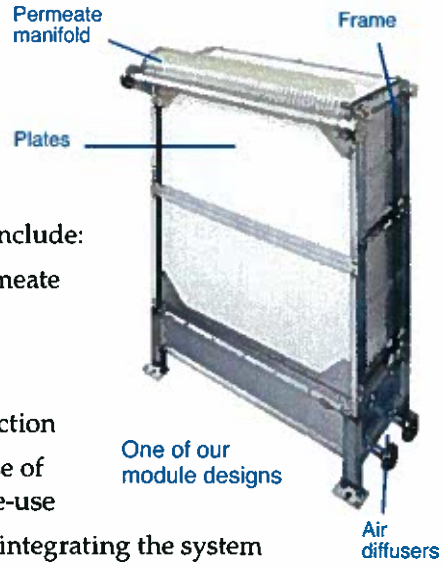
Over Sixty Years of Excellence

The SaniBrane® MBR: a Flat-Plate Design

SaniBrane® flat-plate MBR designs allow optimum air-scouring to keep the membrane surfaces clean.

The reliable air scouring and consistent, long-term flux rates make these membranes suitable for treating domestic sewage in both industrial and municipal environments.

A SaniBrane® module being installed in a concrete tank.



One of our module designs

Other benefits include:

- excellent permeate water quality
- considerable reduction in sludge production
- improved ease of wastewater re-use
- the option of integrating the system with reverse osmosis membranes
- two-year warranty on membrane life
- ability to operate with gravity flow (i.e., no pump required)
- significantly less operator intervention than is required with hollow-fibre membranes
- open-top flow-through design ensures effective scouring and MLSS mixing

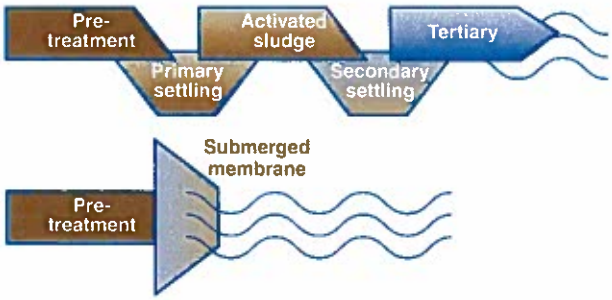
TYPICAL APPLICATIONS

SaniBrane® Projects	Design Flow	Modules	MLSS	BOD	TSS	Fecal Coliform	Comments
Snap Lake NWT, Canada	5,283 gpd (20 m³/day)	1	12,000 – 18,000 *(Design Range)*	< 5 mg/L *(detection limit)*	< 2 mg/L	< 15 F.C./100 ml	Industrial Camp
Sooke BC, Canada	63,401 gpd (240 m³/day)	4	12,000 – 18,000 *(Design Range)*	< 5 mg/L *(detection limit)*	< 1 mg/L		Residential
Attawapiskat ONT, Canada	48,750 gpd (184.5 m³/day)	3	12,000 – 18,000 *(Design Range)*	10 mg/L	10 mg/L	100 F.C./100 ml	650 Man Industrial Camp
Attawapiskat ONT, Canada	17,250 gpd (65.3 m³/day)	1	12,000 – 18,000 *(Design Range)*	10 mg/L	10 mg/L	100 F.C./100 ml	230 Man Industrial Camp
Gahcho Kue NWT, Canada	7,000 gpd (26.5 m³/day)	1	12,000 – 18,000 *(Design Range)*	15 mg/L	15 mg/L	10 F.C./100 ml	Industrial Camp
Pemberton BC, Canada	3,963 gpd (15 m³/day)	1	12,000 – 18,000 *(Design Range)*	< 5 mg/L *(detection limit)*	< 3 mg/L	< 5 F.C./100 ml	Industrial Camp
Lake O' Hara Lodge BC, Canada	5,019 gpd (19 m³/day)	1		< 5 mg/L *(detection limit)*	< 1 mg/L		Ultraviolet treatment following SaniBrane®
Gulf Islands, BC, Canada	26,417 gpd (100 m³/day)	2	36,000	< 5 mg/L *(detection limit)*	< 1 mg/L	< 1 F.C./100 ml	Sludge thickening: activated sludge

Membrane Bioreactor Treatment Technology:
Revolutionizing Wastewater Treatment.

A membrane bioreactor (MBR) combines one of the oldest and most mature wastewater treatment technologies with the very newest. It can be likened to an activated sludge treatment plant combined with an extremely effective clarifier.

The basic operating theory behind membranes is conventional biological treatment combined with a semi-permeable barrier that precludes mixed liquor suspended solids (MLSS) from being discharged from the biological reactor. This semi-permeable barrier is generally an engineered plastic such as PVDF, PES or PVC, perforated with innumerable tiny holes – smaller than the size of the MLSS.

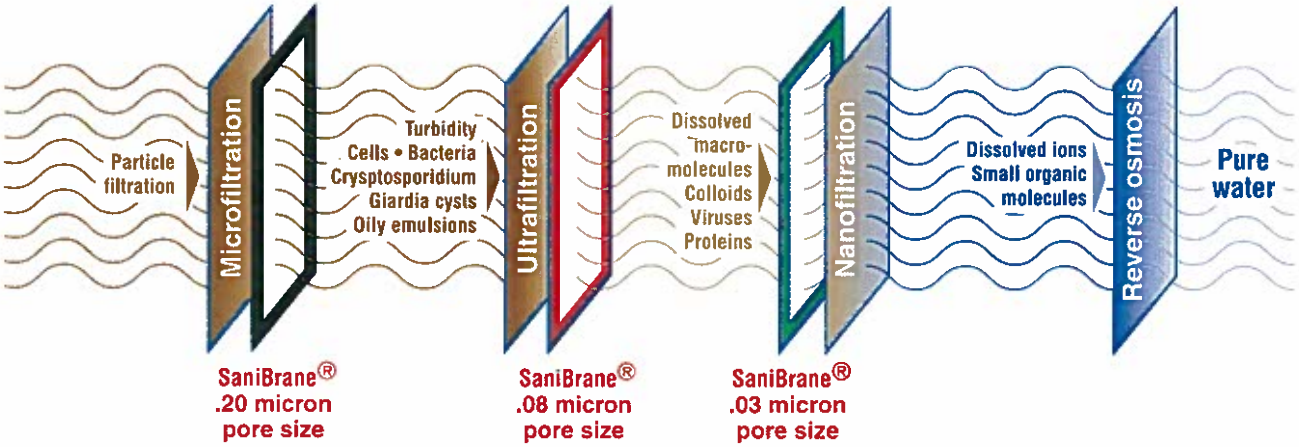


MBRs take fewer steps than conventional activated sludge plants to produce the required effluent. That means there is less room for operator error and equipment malfunctions – saving you money and time.

Clear, treated liquid is drawn through the openings, either by gravity or by using a pump. Normally, such a semi-permeable barrier would plug immediately after being placed in the MLSS tank, but proper design prevents solids from accumulating on the membrane surface and "blinding" the holes.

There are two main wastewater membrane configurations, hollow-fibre and flat-plate. Hollow-fibre designs resemble spaghetti strands with hollow centres. Flat-plate designs consist of plates with membrane fabric on each side. SaniBrane® designs are strictly flat-plate, which allows optimum air-scouring to keep the membrane surfaces clean. This results in less maintenance and simpler piping, for example, no back pulsing.

The SaniBrane® system results in effluent that is often well above the standard required.



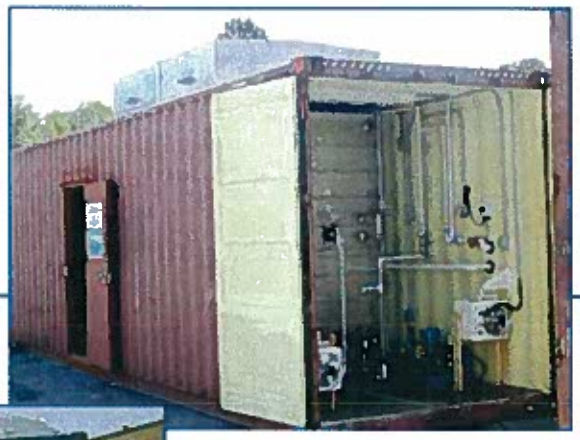
Sanitherm's experts select the most appropriate semi-permeable barrier for the application.

Plants Custom-Designed
to Meet Your Unique Requirements

SaniBrane® MBR technology is suitable for a wide variety of applications in both industrial and municipal environments. Sanitherm's range of configurations and housing systems will fit your needs perfectly, regardless of the remoteness of your location or the severity of the climate at your site.

Sanitherm's wastewater treatment plants are currently in use worldwide, in municipalities, rural gas stations, remote resorts, golf courses, schools, construction camps and oil and gas exploration camps. They are also suitable for cruise ships and offshore oil drilling facilities – anywhere needing reliable waste treatment with a small footprint.

Sanitherm's design team will work with you to determine the most suitable size and configuration for your project, based on population and environmental considerations. Then Sanitherm will build and install your system. Once in place, you will find it versatile and easy to operate.



Clients for this efficient plant include mines, oil fields, industrial camps, remote municipalities, resorts, rural rest stops and . . .

SaniBrane® Container Systems

Sanitherm is at the forefront of addressing wastewater challenges in remote areas. The SaniBrane® Container System is suitable if you have limited land mass, a small population and need a complete, compact and self-contained wastewater treatment system.

The plant is built in a shipping container, which makes shipping easy to any location in the world. A 15 m³/d plant weighs approximately 15,000 pounds or 6,800 kg, which means that it's transportable with a heavy-lift helicopter. On-site, it has a small footprint.

A SaniBrane® container system can be set-up and operating in just a few hours – no building required. All you need is the sewage inlet connection, the treated effluent connection and the power connection. The system is very low-maintenance and you will find that in most cases the effluent is of higher quality than required.

Several standard sizes are available, all complete with flow equalization, treatment tankage, heat, lights and controls. A long list of available options will ensure compatibility with your specific requirements. For example:

- Inlet screens
- Effluent discharge pump chamber
- Effluent disinfection
- Larger heaters (standard is 5kW)
- Air conditioning

Let Sanitherm custom-build a compact and cost-effective wastewater treatment solution for your site.

Standard sizes include:

- 4,000 gpd (15m³/d), built inside a 40-ft "hi-cube" container
- 8,000 gpd (30m³/d), inside a 48-ft container
- 12,000 gpd (45m³/d), inside two 40-ft "hi-cube" containers
- 16,000 gpd (60m³/d), inside two 48-ft containers
- Custom containers

If a helicopter can get there, so can a SaniBrane® Container System.

SaniBrane® Concrete Tank Systems

Installing the MBR units.

Customers with large volumes to treat may prefer the SaniBrane® Concrete Tank option. These permanent tanks are ideal for in-ground installations. They are space-saving, as you can build offices or equipment rooms above them. They can also be built in stages: pour the tanks now, install equipment as it is required.

Sanitherm can help you design an MBR to treat flows of 1 MGD (3800 m^3/d) and greater. Sanitherm's packages can include all of the ancillary equipment required, including screens, aeration blowers, permeate pumps, mixers and supplemental aeration from your preferred manufacturers. Similarly, you can incorporate process controls, starters and other electrical components using major suppliers such as Allen-Bradley, Siemens, IDEC, Mitsubishi or any other that you prefer. The plant controls can be simple or as comprehensive as you need.

A concrete tank is ideal for isolated municipalities.

Sanitherm also supplies miscellaneous fabricated components such as access stairways, grating and handrails.

Because of the modular design of the SaniBrane® membrane units, which do not require chemical dip tanks or back-pulse piping, plants are simple to build and expand. In-situ chemical cleaning reduces the long-term maintenance costs. Sanitherm has been designing plants since 1946 and troubleshooting sewage treatment plants in some of the most remote parts of the globe since the early 1990s. Sanitherm can offer your team real-world, practical experience.

SaniBrane® Pre-Fabricated Steel Plants

Municipal application: at a residential subdivision.

To minimize site labour, time and expense, a Sanitherm pre-engineered steel plant is the recommended solution. They handle large volumes, are portable, self-contained and pre-piped. Sanitherm has built hundreds of pre-fabricated treatment plants utilizing professionally-engineered tankage, fabricated to ASME, CWB and AWS standards.

Standard plants are built within a 12-ft (3.66-m) width and height envelope, as shipping requirements are also considered during design. Transporting via cargo plane, container ship or helicopter is feasible. To ensure minimum delay when reassembling on site, external piping is factory-installed and then removed for transport.

Industrial application: at a diamond mine. *Right:* prefab plants are easy to ship.

SaniBrane® pre-fabricated steel plants can be installed on-grade, on concrete pads or compacted gravel bases or they can be buried to suit your specific site conditions. Depending on the local climate, the plants can be totally free-standing or they can be housed within pre-engineered or site-built buildings.

Safe service access is assured with industrial-grade stairways, handrailing and grating over all tanks.

Typical installations include remote industrial sites as well as residential subdivisions. By reducing the installation time, the sites can be populated sooner and the subdivision lots can be sold more quickly.

SANITHERM

A DIVISION OF PEAK

Over Sixty Years of Excellence

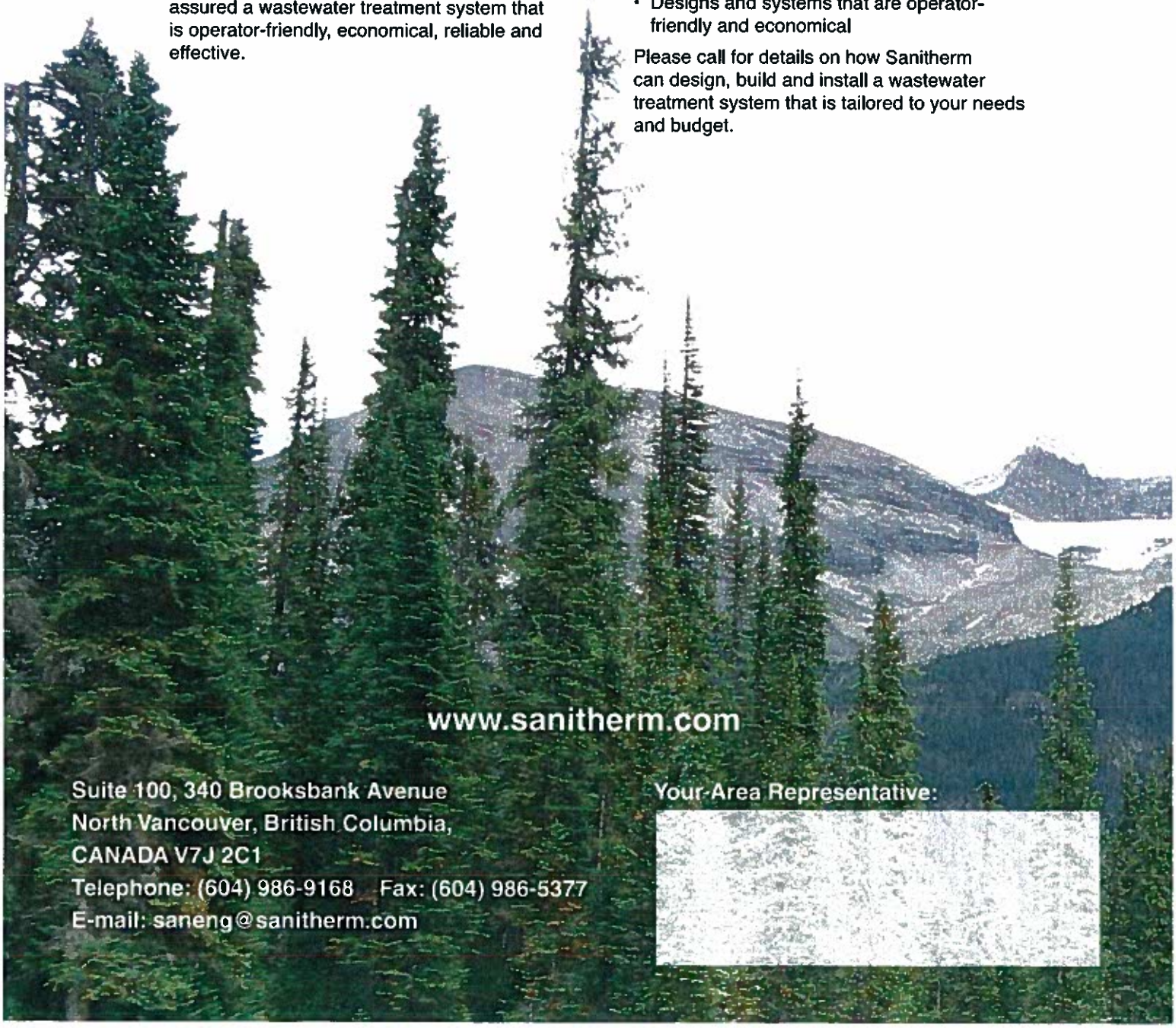
Sanitherm has earned a worldwide reputation for quality equipment and service and continues to acquire new and proven technologies capable of meeting the toughest of regulations.

Sanitherm's experienced team will work with you to create a custom design to suit your requirements. With Sanitherm, you are assured a wastewater treatment system that is operator-friendly, economical, reliable and effective.

Sanitherm has designed, manufactured and installed hundreds of SaniBrane® systems, giving Sanitherm the experience necessary to provide you:

- Standard systems that are pre-plumbed, pre-wired and tested
- Custom designs to suit your requirements
- Designs and systems that are operator-friendly and economical

Please call for details on how Sanitherm can design, build and install a wastewater treatment system that is tailored to your needs and budget.



www.sanitherm.com

Suite 100, 340 Brooksbank Avenue
North Vancouver, British Columbia,
CANADA V7J 2C1
Telephone: (604) 986-9168 Fax: (604) 986-5377
E-mail: saneng@sanitherm.com

Your-Area Representative:

APPLICATION: Packaged Water Treatment Plant in Insulated Container

PARAMETERS:

Client supplied information:

- Installation near Rankin Inlet
- 100 man camp
- Use 30 US gallons/man/day treatment rate – per customer
- Water from lake, clean. No analysis available (required for confirmation of equipment and scope of supply)
- Raw water supply pump(s) and supply to WTP (by others)
- Use 20' standard container, for transportation in Hercules aircraft
- Power available for TBA

If water analysis results in additional treatment requirements, there will be additional costs for extra scope of supply and related costs for design, equipment, manufacturing, and service work.

Facility	Max. No. of people	Maximum Use per Day USG	Treatment USGPM	Peak Flow Pumping Rate USGPM.
Camp	100	3,000	10	25

PROCESS/OPERATION:

20 micron sediment filters
5 micron sediment filters
1 micron absolute sediment filters
Ultraviolet disinfection units
Chlorination unit
Water will be stored in a a water storage tank
The distribution system consists of dual booster distribution pumps and pressure tanks that are capable of handling peak use flow.

BI PureWater (Canada) Inc.
#255 – 19358 96th Ave.
Surrey, BC, V4N 4C1
Canada

Ph: 604-882-6650
Fx: 604-882-6659
Toll Free: 1-888-901-3111
Web: www.bipurewater.com

SCOPE OF SUPPLY:

1. Inlet Strainer
2. Pressure Regulator
3. One (1) WB 40SC-2 SS Filter Housing with two (2) 20 micron filter cartridges (1 start up spare, 1 duty)
4. One (1) WB 40SC-2 SS Filter Housing with two (2) 5 micron filter cartridges. (1 start up spare, 1 duty)
5. One (1) WB 90SC-2 SS Filter Housing with two (2) 1 micron absolute filter cartridges (2 log removal, 1 start up spare, 1 duty)
6. One (1) SPV 740 UV units each capable of treating 11.2 USGPM to NSF drinking water standards with UV intensity monitor, alarm, and fail safe shut-off signal.
7. One (1) Flow Meter with 4-20 mA feedback to control panel
8. One (1) Sodium Hypochlorite Chlorination system with tank and dosing pump.
9. Level switches for storage tank
10. One (1) Distribution Booster Pumps capable of each pumping the required flow. (VFD driven 25 gpm, 60 psi)
11. One (1) Pressure Tank (119 USG ea.)
12. One (1) Control panel with PLC, alarm lights, audible alarms, switches, dry contact for remote alarms, and all wiring within the enclosure (PLC DL06)
13. Complete piping and fittings Schedule 80 PVC
14. One (1) 20' insulated container (new) with
    1. newly painted exterior surface
    2. man door

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Web: www.bipurewater.com

3. electrical panel
4. fluorescent lights
5. receptacles
6. baseboard heaters
7. insulation for Northern climate
8. Alarm beacon on outer wall of structure

15. Instruments and valves (preliminary):

    24 block valves
    5 check valves
    6 sample point/valves
    3 air release valve
    1 pressure relief valve

    4 level switches
    12 Pressure indicators
    1 Pressure transducer (Distribution system)
    2 Differential Pressure switch (Filter change)
    2 Solenoid valves (UV controls)

16. Emergency eyewash station.

17. Three (3) sets of Operating and Maintenance Manuals in English each system.

Estimated Weights :

Dry - !0,000 pounds
Wet (installed and filled with water at job site) – 12,000 pounds

NOTES:

Customer will supply adequate storage tanks for storage and chlorine contact time. BI Pure Water will supply level switches to be installed by others.

All information is preliminary and subject to final engineering.

PRICE: $124,000.00

BI PureWater (Canada) Inc.
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Surrey, BC, V4N 4C1
Canada

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Fx: 604-882-6659
Toll Free: 1-888-901-3111
Web: www.bipurewater.com

Recommended Consumables and Spare Parts for 1 year operation

Item	QTY	Description	Unit Price	Total Price
1	12	HC/40-20 20 micron filter	$92	$1,104
2	12	HC/40-5 5 micron filter	$92	$1,104
3	12	PP-HC-90-1 1 micron absolute filter	$278	$3,336
4	1	S740RL-HO Lamp	$162	$162
5	1	QS-740 Quartz Sleeve	$85	$85
6	1	Ball Block Valves	$86	$86
7	1	Ball Check Valves	$86	$86
8	1	Sample Taps	$64	$64
9	1	Lot Pipe and Fittings	$260	$260
10		Total	Total	$6,287

Recommended Capital Spare Parts

Item	QTY	Description	Unit Price	Total Price
1	1	SPC-ICE-HO Controller	$670	$670
2	1	254NM-FP2 Sensor	$452	$452
3	1	Differential Pressure Switch	$176	$176
4	1	Chlorine injection pump	$1,298	$1,298
5	1	25 gallon Distribution Pumps	$3,244	$3,244
6	1	VFD	$1,298	$1,298
7	1	Pressure Transducer	$476	$476
8		Total	Total	$7,614

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Web: www.bipurewater.com

Exclusions:

- Power supply, exterior piping. (connection to equipment- we connect power and control cables to all equipment inside our buildings)
- Shipping, offloading, placing, well pump & controller, surge protection, connection of control cables, power or piping to building.

Price is FOB Surrey, BC. All applicable taxes, duties are extra.

Technical Service:

Our rate for technical service is $90/hour plus travel time and expenses for travel, lodging and meals. Our rate for programming service is $120/hour plus above items.

Payment Terms:

40% deposit at time of order with commercial purchase order
50% at shipment (ship after receipt of payment)
10% within 30 days after commissioning (not later than 3 months after shipment)

Delivery: Approximately 12 to 14 weeks after receipt of deposit (to be confirmed at time of PO)

Warranty:

All the equipment delivered by BI Pure Water is warranted for a period of twelve months from the date of commissioning (or 18 months from delivery if less) against any manufacturing or labour defect provided the plant is operated as per our operation and maintenance instructions

Validity:

This quote is valid for a period of 90 days from today.

BI PureWater (Canada) Inc.
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Surrey, BC, V4N 4C1
Canada

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Toll Free: 1-888-901-3111
Web: www.bipurewater.com

Triple Chlorine solution injection pumps mounted on a Chlorination unit.

...::: BACK :::...

Wednesday, November 24, 2010

JDS MINING

JDS MINING
WASTE WATER
TREATMENT PLANT

BY SANITHERM INC.
PROJECT # 10XXXX
PROCESS DRAWINGS AND GENERAL ARRANGEMENTS

DRAWING TABLE OF CONTENTS:

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
A SUBSIDIARY OF PEAK ENERGY TRUST
SUITE 100 - 340 BROOKSBANK AVENUE, NORTH VANCOUVER, BC, V7J 2C1, CANADA
TEL: (604) 986 - 9168
FAX: (604) 986 - 5377
E-MAIL: sanengr@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT: JDS MINNIG WASTE WATER TREATMENT PLANT				PROJ. NO: 10XXXX	
CLIENT: JDS MINING					REV. NO: 0
TITLE: TITLE PAGE					
DRAWN BY: M.R.	CHECKED BY: -	DATE: 27-OCT-2010	SCALE: N.T.S.	DRAWING NO: SEL-10XXXX-T1	

PROCESS EQUIPMENT AND VALVE IDENTIFICATION

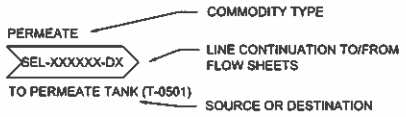
EQUIPMENT AND VALVE IDENTIFICATION

ABBREVIATION	DESCRIPTION
B	BLOWER
CO	CONVEYOR
EF	EXHAUST FAN
EFX	XP EXHAUST FAN
F	FILTER
FP	FILTER PRESS
H	HEATER
HX	XP HEATER
MM	MEMBRANE MODULE
MX	MIXER
P	PUMP
SC	SCREEN
T	TANK
UV	ULTRAVIOLET UNIT

BV	BALL VALVE
CV	CHECK VALVE
GV	GATE VALVE
MV	MOTORIZED VALVE
AV	PNEUMATIC VALVE
SV	SOLENOID VALVE

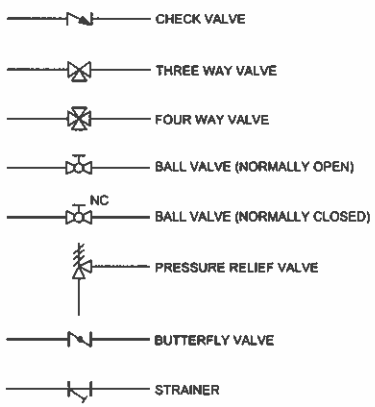
ZONE	DESCRIPTION
00	MAIN BUILDING
01	INFLUENT SCREENING
02	FLOW EQUALIZATION
03	ANOXIC / NITIFRICATION
04	SUPPLEMENTAL AERATION
05	MEMBRANE BIOREACTOR
06	PERMEATE
07	ULTRAVIOLET / EFFLUENT
08	CHEMICAL
09	SYSTEM AERATION
10	SLUDGE HANDLING
11	LIFT STATION

LINE SOURCE OR DESTINATION TAG

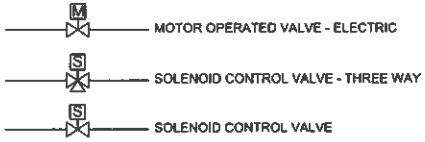


LINE IDENTIFICATION

VALVES

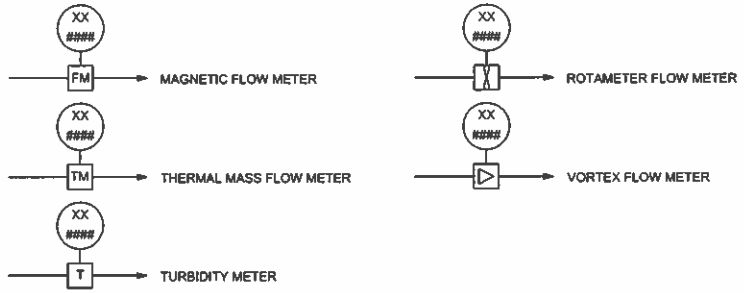


CONTROL VALVES

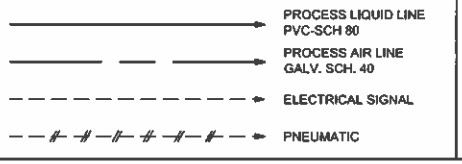


FUNCTION CONTROLS

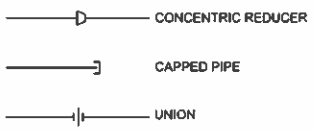
METERS



PROCESS LINES



PROCESS SYMBOLS



REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
A SUBSIDIARY OF PEAK ENERGY TRUST
SUITE 100 - 340 BROOKSBANK AVENUE, NORTH VANCOUVER, BC, V7J 2C1, CANADA
TEL: (604) 986 - 9168
FAX: (604) 986 - 5377
E-MAIL: saneng@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO.	10XXXX
CLIENT	JDS MINING
REV NO.	0
TITLE	P&ID EQUIPMENT LEGEND & STANDARD SYMBOLS - SHEET 1
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-L1

EQUIPMENT

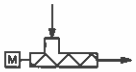
PUMPS


CENTRIFUGAL PUMP


RECIPROCATING PUMP


DIAPHRAGM PUMP


GRINDER PUMP



PROGRESSIVE CAVITY PUMP

MIXERS

MIXER

SUBMERSIBLE MIXER


BUILDING FAN


BUILDING HEATER


MEMBRANE REACTOR

ULTRA-VIOLET DISINFECTION UNIT


HORIZONTAL AIR COMPRESSOR C/W RECEIVER TANK


POLY PRESS C/W SCREW CONVEYORS


BLOWER


MECHANICAL SCREEN C/W BASKET

MISCELLANEOUS SYMBOLS


CYLINDER/PISTON

MOTOR OPERATED

NOZZLE CONNECTION
(CLASS 150 FLANGE CONNECTION)


HOSE CONNECTION/
SOCKET CONNECTION/
TRUE-UNION CONNECTION


PACKAGE EQUIPMENT LIMIT


SKID LIMIT


COARSE BUBBLE DIFFUSERS


FINE BUBBLE DIFFUSERS


DRAIN


FLOAT


VENT TO ATMOSPHERE

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
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SUITE 100 - 340 BROOKSBANK AVENUE, NORTH VANCOUVER, BC, V7J 2C1, CANADA
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E-MAIL: sanengr@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO.	10XXXX
CLIENT	JDS MINING
REV. NO.	0
TITLE	P&ID EQUIPMENT LEGEND & STANDARD SYMBOLS - SHEET 2
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-L2

INSTRUMENTATION

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CIRCUIT			CONTROL	CONTROL
D	DISCONNECT	DIFFERENTIAL			
E	VOLTAGE/EMERGENCY		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO ()FRACTION			
G	GENERAL/COMMENT		GLASS VIEWING DEVICE		
H	HAND OPERATED				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME, RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	ON/OFF		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT TEST CONNECTION		
Q	QUANTITY, STATE	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY	STATUS	SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL, ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED, FINAL, CONTROL, ELEMENT	

INSTRUMENTATION SYMBOLS

GENERAL SYMBOL IN-LINE, ELEMENT
XX = FI - FLOW INDICATOR
FIT - FLOW INDICATOR TRANSMITTER
FT - FLOW TRANSMITTER

PI - PRESSURE INDICATOR
PIT - PRESSURE INDICATOR TRANSMITTER
PT - PRESSURE TRANSMITTER
PS - PRESSURE SWITCH

LS - LEVEL SWITCH
LIT - LEVEL INDICATOR TRANSMITTER
LT - LEVEL TRANSMITTER

	PRIMARY LOCATION	FIELD MOUNTED
DISCRETE INSTRUMENTS		
SHARED DISPLAY, SHARED CONTROL		

SAMPLE FORMAT

ALARM
P-0101 & P-0102 OFF
P-0201 & P-0202 ON
P-0201 OR P-0202 ON
P-0201 & P-0202 OFF

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
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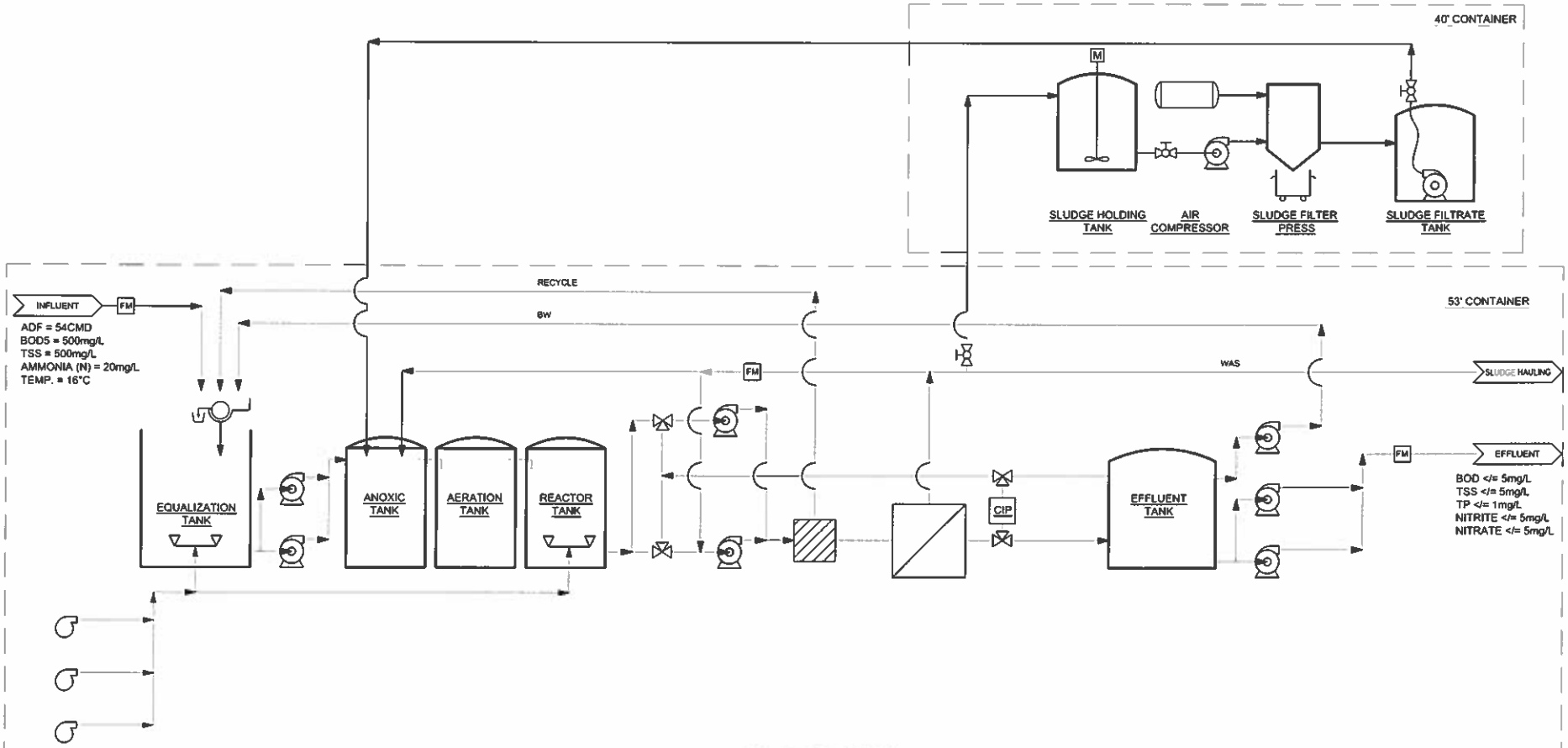
E-MAIL: sanengr@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO.	10XXXX
CLIENT	JDS MINING
REV NO.	0
TITLE	P&ID EQUIPMENT LEGEND & STANDARD SYMBOLS - SHEET 3
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-L3



CHECK

AEROBIC TANK
VOLUME: 142.5 ft^3

PROCESS AERATION BLOWERS	EQUALIZATION TANK	EQUALIZATION PUMPS	AUTOMATIC SCREEN	ANOXIC TANK	REACTOR TANK	MEMBRANE FEED PUMPS	INLINE SCREENS	MEMBRANE MODULE	CIP SYSTEM	EFFLUENT TANK	SCREEN RINSE PUMP	EFFLUENT PUMPS
AIR FLOW: 10-220 CFM	VOLUME: 495 ft^3	FLOW: 13gpm @ 10ft	SCREEN: 0.5mm	VOLUME: 142.5 ft^3	VOLUME: 281.25 ft^3	FLOW: 352 gpm@ 120ft	SCREEN: 0.8mm	CAPACITY: 40 CMH	CLEAN IN PLACE SYSTEM	VOLUME: 500 USG	FLOW: 3 gpm @ 90ft	FLOW: 35 GPM @ 25ft

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
A SUBSIDIARY OF PEAK ENERGY TRUST
SUITE 100 - 340 BROOKSBANK AVENUE, NORTH VANCOUVER, BC, V7J 2C1, CANADA
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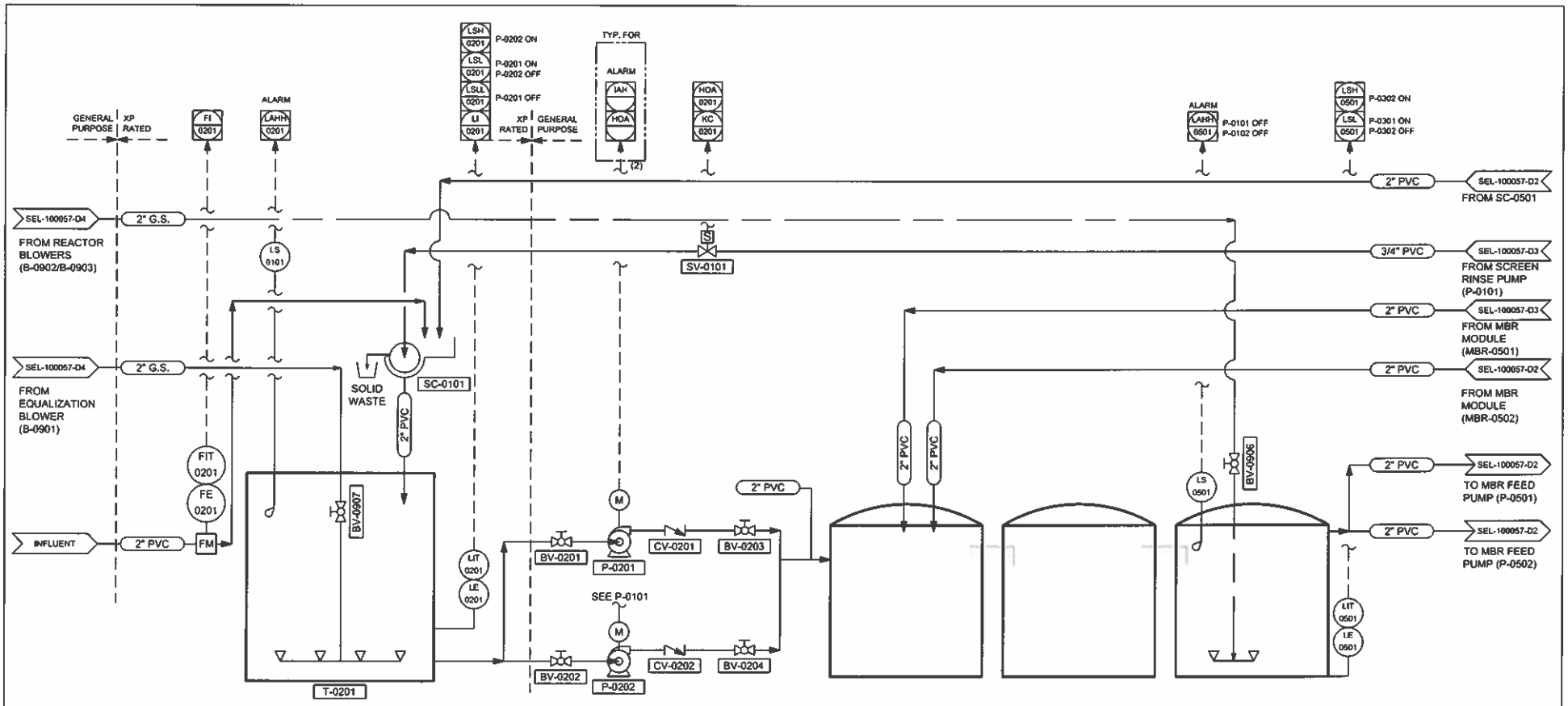
E-MAIL: saneng@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO	10XXXX
CLIENT	JDS MINING
REV NO.	0
TITLE	PROCESS FLOW DIAGRAM - 200 MAN CAMP (SANIBRANE®)
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-PFD



EQUALIZATION TANK
T-0201

CAPACITY: 495 ft^3
SIZE (INTERNAL): 15'-0" L x 6'-10" W x 6'-0" H (SWD 7'-6")
MATERIAL (WALL/LINER): CARBON STEEL

AUTOMATIC FINE SCREEN / COMPACTOR
SC-0101 (XP-RATED)

MODEL: IPEC SLB6LP301
SCREEN: 0.5mm
CAPACITY: 30 gpm
POWER: 0.50 HP
ELECTRICAL: 208V/3ϕ/60Hz
FLA: 0.9A

FLOW EQUALIZATION PUMPS
P-0201 & P-0202

MODEL: TBD
FLOW RATE : 7 gpm @ 10 ft.
POWER: 0.75 HP
ELECTRICAL: 120V/1Φ/60Hz
FLA: TBD

ANOXIC TANK
T-0301

CAPACITY:
SIZE : Ø" x _'H
MATERIAL: PLASTIC

SUPPLEMENTAL AERATION TANK
T-0401

CAPACITY:
SIZE : Ø" x _'H
MATERIAL: PLASTIC

REACTOR TANK
T-0502

CAPACITY:
SIZE : Ø" x _'H
MATERIAL: PLASTIC

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

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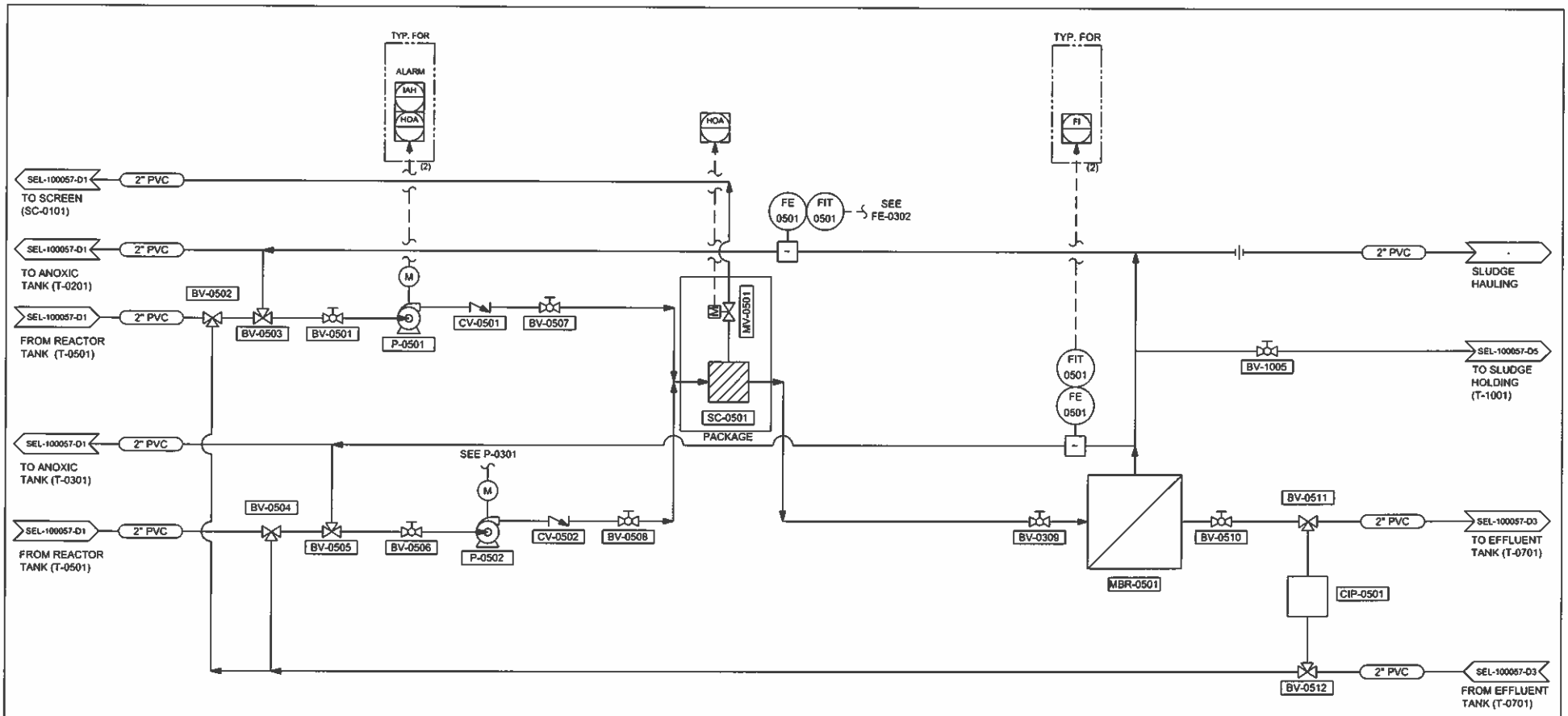
E-MAIL: saneng@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO.	10XXXX
CLIENT	JDS MINING
REV. NO.	0
TITLE	P&ID - 100 MAN CAMP - PRIMARY TREATMENT
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-D1



MEMBRANE FEED PUMPS
P-0501 & P-0502

MODEL: TBD
FLOW RATE : 180 gpm @ 114 ft
POWER: TBD HP
ELECTRICAL: 208V/3 ϕ/60Hz
FLA: TBD

INLINE SCREENS (AUTOMATED VALVE)
SC-0501

MODEL: TEKLEEN MTF3-L
SCREEN: 5-800 MICRON
CAPACITY: 350 gpm @ 150 psi
ELECTRICAL: 120V/1 ϕ/60Hz
FLA: 5.0 A

INLINE SCREEN (FILTER CONTROLLER)
SC-0501

MODEL: TEKLEEN GB6-UL
ELECTRICAL: 120V/1 ϕ/60Hz
FLA: 10.0 A

MEMBRANE MODULES
MBR-0501

MODEL: ORELIS MP4. 5S8P
CAPACITY: 30 CMH

CIP TANK (CLEAN IN PLACE)
CIP-0501

CAPACITY:

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

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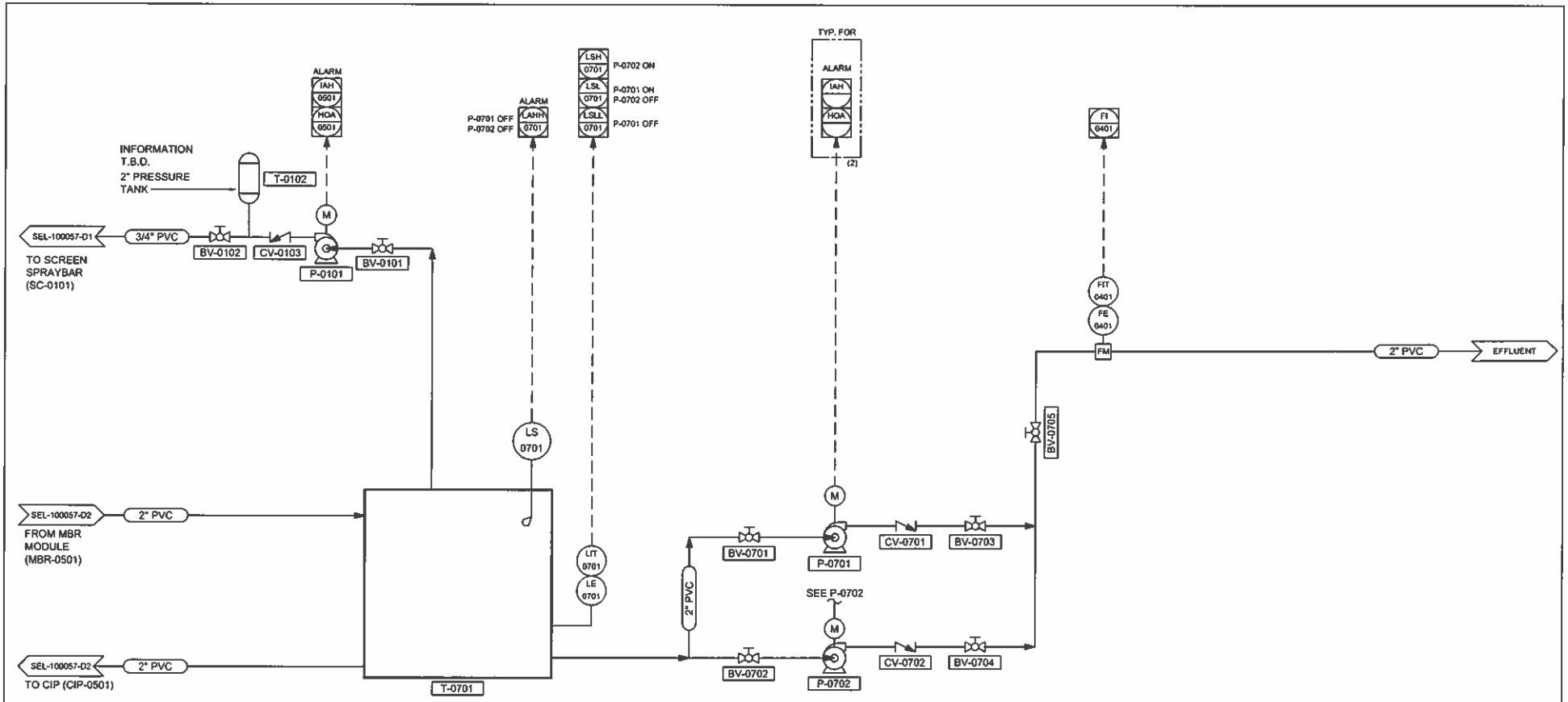
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO	10XXXX
CLIENT	JDS MINING
REV. NO.	0
TITLE	P&ID - 100 MAN CAMP - MEMBRANE PROCESS
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-D2



PRESSURE TANK
T-0102

CAPACITY: USG
SIZE: -
MATERIAL:

SCREEN RINSE PUMP
P-0103

MODEL: GOULDS 1SVA1C6B4
FLOW RATE : 3 gpm @ 92 ft
POWER: 0.5 HP
ELECTRICAL: 208V/3Φ/60Hz
FLA: 0.8 A

EFFLUENT TANK
T-0701

CAPACITY: 500 USG
SIZE: 4'-9" L x 2'-6" W x 6'-10" H
MATERIAL: PLASTIC

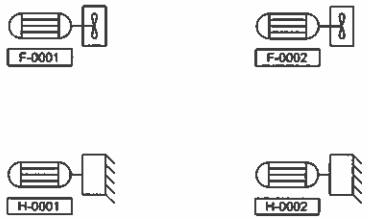
EFFLUENT PUMPS
P-0701 & P-0702

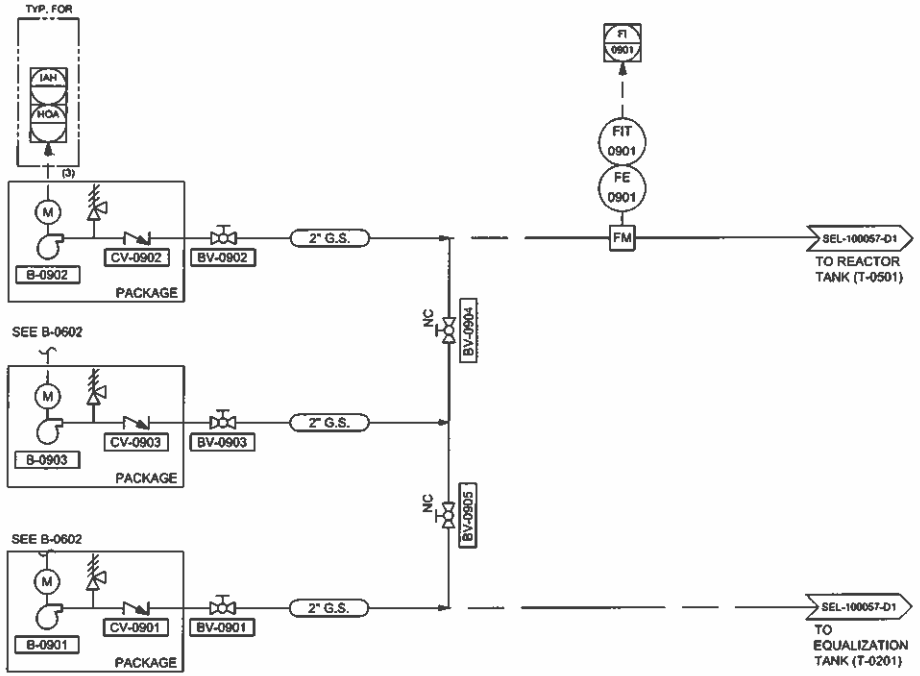
MODEL: GOULDS TBD
FLOW RATE : 7 gpm @ 20 ft
POWER: 1.0 HP
ELECTRICAL: 208V/3Φ/60Hz
FLA: 1.4 A

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
A SUBSIDIARY OF PEAK ENERGY TRUST
SUITE 100 - 340 BROOKSBANK AVENUE, NORTH VANCOUVER, BC, V7J 2C1, CANADA
TEL: (604) 986 - 9168
FAX: (604) 986 - 5377
E-MAIL: sanengr@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT	PROJ. NO	10XXXX		
CLIENT	JDS MINING	REV. NO.	0		
TITLE	P&ID - 100 MAN CAMP - EFFLUENT DISCHARGE				
DRAWN BY	M.R.	CHECKED BY	-	DATE	27-OCT-2010
SCALE	N.T.S.	DRAWING NO.	SEL-10XXXX-D3		





BUILDING FAN (XP-PROOF)
F-0001
MODEL: CANARM SD-12 XPF
ACPH : 12
MOTOR: 0.33 HP
DUTY: 120V/1Φ/60Hz
FLA: 7.25 A

BUILDING FAN
F-0002
MODEL: DAYTON 2C819B
ACPH : 12
MOTOR: 0.03 HP
DUTY: 120V/1Φ/60Hz
FLA: 1.4 A

BUILDING HEATER (XP-PROOF)
H-0001
MODEL: NORSEMAN XB4-6450T2D
POWER: 4.8 kW
DUTY: 208V/3Φ/60Hz
FLA: TBD

BUILDING HEATER
H-0002
MODEL: CLAORITECH GE052CT
POWER: 5.0 kW
DUTY: 208V/3Φ/60Hz
FLA: TBD

FLOW EQUALIZATION AERATION BLOWER
B-0901
MODEL: REPUBLIC HRB402-E
FLOW RATE : 7 cfm @ 4.5 psi
POWER: TBD
ELECTRICAL: 208V/3φ/60Hz
FLA: TBD

REACTOR AERATION BLOWERS
B-0902 & B-0903
MODEL: REPUBLIC HRB600-E
FLOW RATE : 75 cfm @ 3psi
POWER: TBD HP
ELECTRICAL: 208V/3φ/60Hz
FLA: TBD

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

SANITHERM INC.
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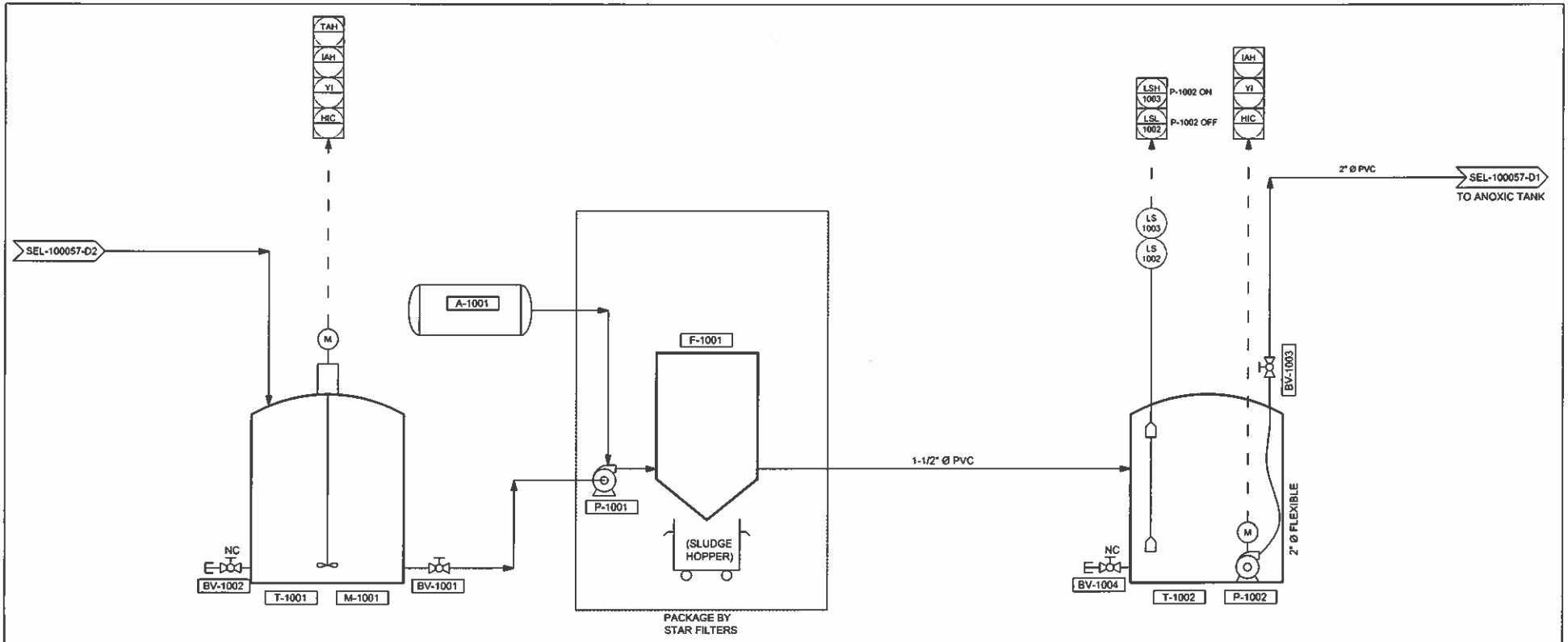
E-MAIL: saneng@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO	10XXXX
CLIENT	JDS MINING
REV. NO.	0
TITLE	P&ID - 100 MAN CAMP - PROCESS AERATION AND HVAC
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-D4



FLOC MIXER
MIX-1001
TYPE:
DRIVE:

SLUDGE HOLDING TANK
T-1001
CAPACITY: 550 USG
DIMENSION:

AIR COMPRESSOR
A-1001
MODEL: INGERSOLL-RAND 2340L5
INLET FLOWRATE:
PRESSURE: 35 cfm / 175 psi

SLUDGE PUMP
P-1001
TYPE: PROGRESSIVE CAVITY
FLOW RATE:

SLUDGE FILTER PRESS
F-1001
MODEL: STAR ERC24-470Q
PLATE: 470mm
CHAMBER: 24

SLUDGE FILTRATE TANK
T-1002
CAPACITY: 305 USG
DIMENSION:

SLUDGE FILTRATE PUMP
P-1002
MODEL: TSURUMI HS 2.5
FLOW RATE :
POWER: ½ HP
ELECTRICAL: 120V/1φ/60Hz
FLA: 5.4 A

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	27-OCT-10	PRELIMINARY DESIGN

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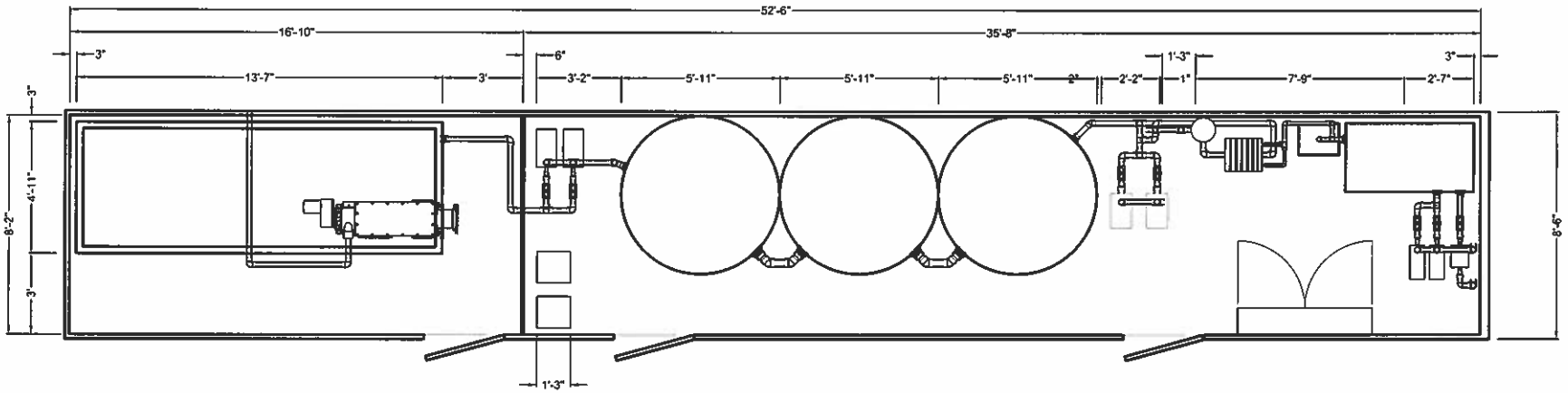
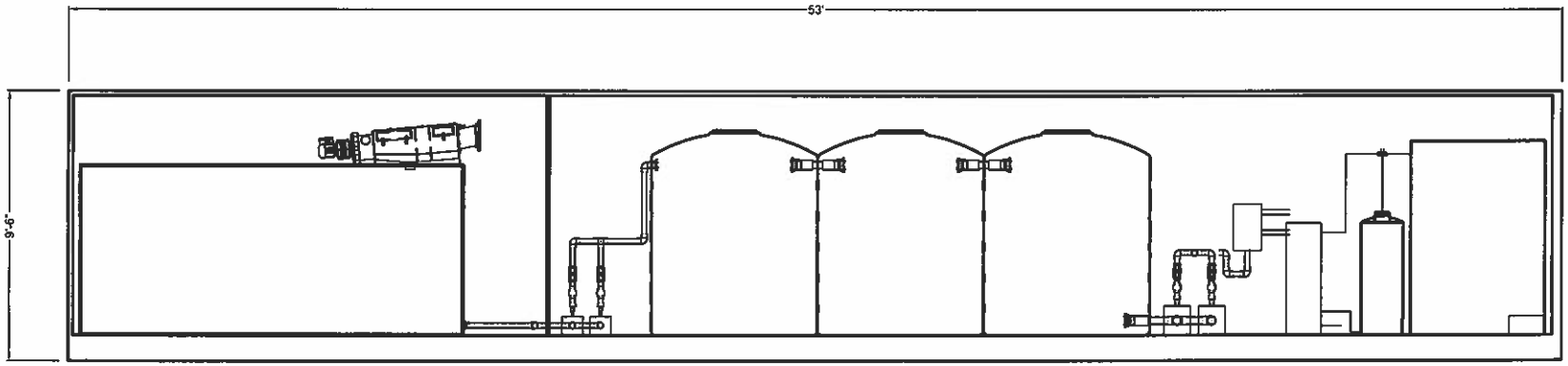
E-MAIL: saneng@sanitherm.com
WEBSITE: www.sanitherm.com

PROJECT	JDS MINNIG WASTE WATER TREATMENT PLANT
PROJ. NO.	10XXXX
CLIENT	JDS MINING
REV. NO.	0
TITLE	P&ID - 100 MAN CAMP - SLUDGE HANDLING
DRAWN BY	M.R.
CHECKED BY	-
DATE	27-OCT-2010
SCALE	N.T.S.
DRAWING NO.	SEL-10XXXX-D5





REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	01-NOV-10	INITIAL RELEASE (WORK IN PROGRESS)

SANITHERM INC.
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SUITE 100 - 340 BROOKSBANK AVENUE, NORTH VANCOUVER, BC, V7J 2C1, CANADA
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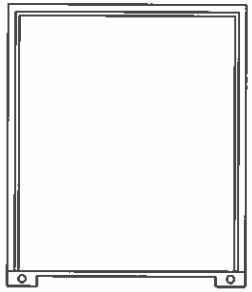
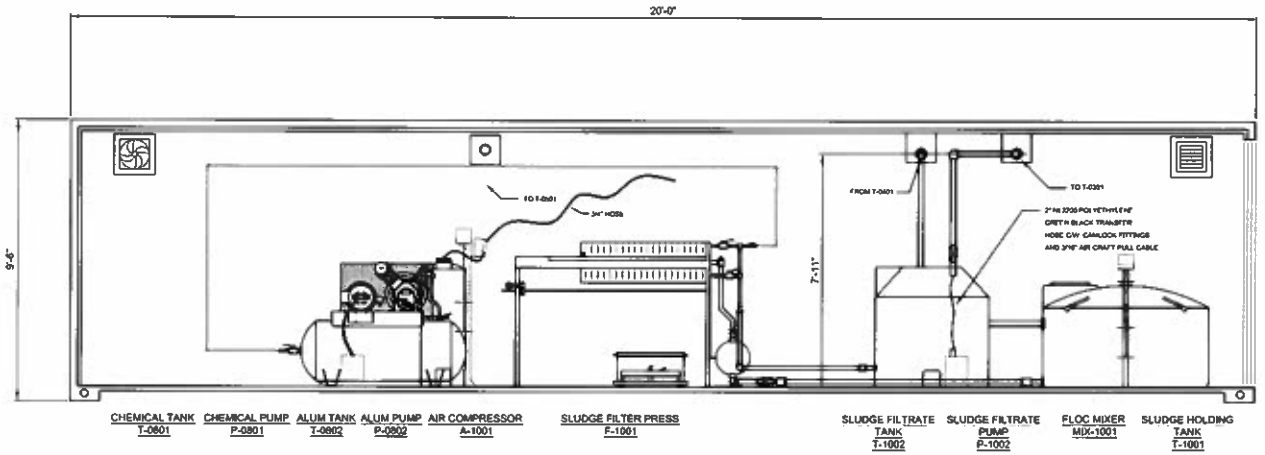
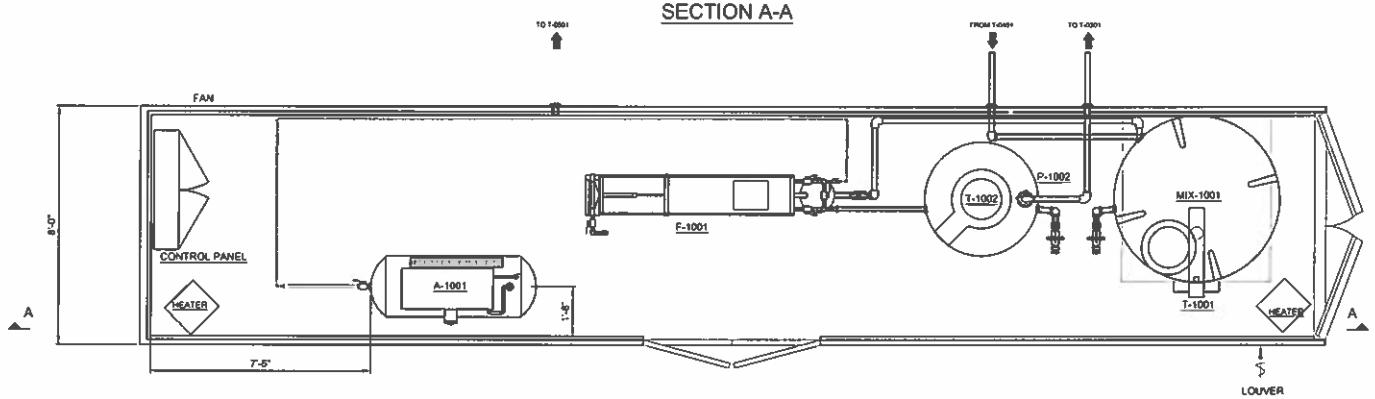
WEBSITE: www.sanitherm.com

PROJECT	JDS MINING WASTE WATER TREATMENT PLANT			PROJ. NO.	10XXXX
CLIENT	JDS MINING			REV. NO.	0
TITLE	53' CONTAINER				
DRAWN BY	K.C.D.	CHECKED BY	-	DATE CREATED	01-NOV-2010
SCALE	1/4" = 1'-0"	DRAWING NO.	SEL-10XXXX-GA1		





SECTION A-A



PLAN

REVISION	DATE	DESCRIPTION
-	-	-
-	-	-
0	01-NOV-10	INITIAL RELEASE (WORK IN PROGRESS)

SANITHERM INC.
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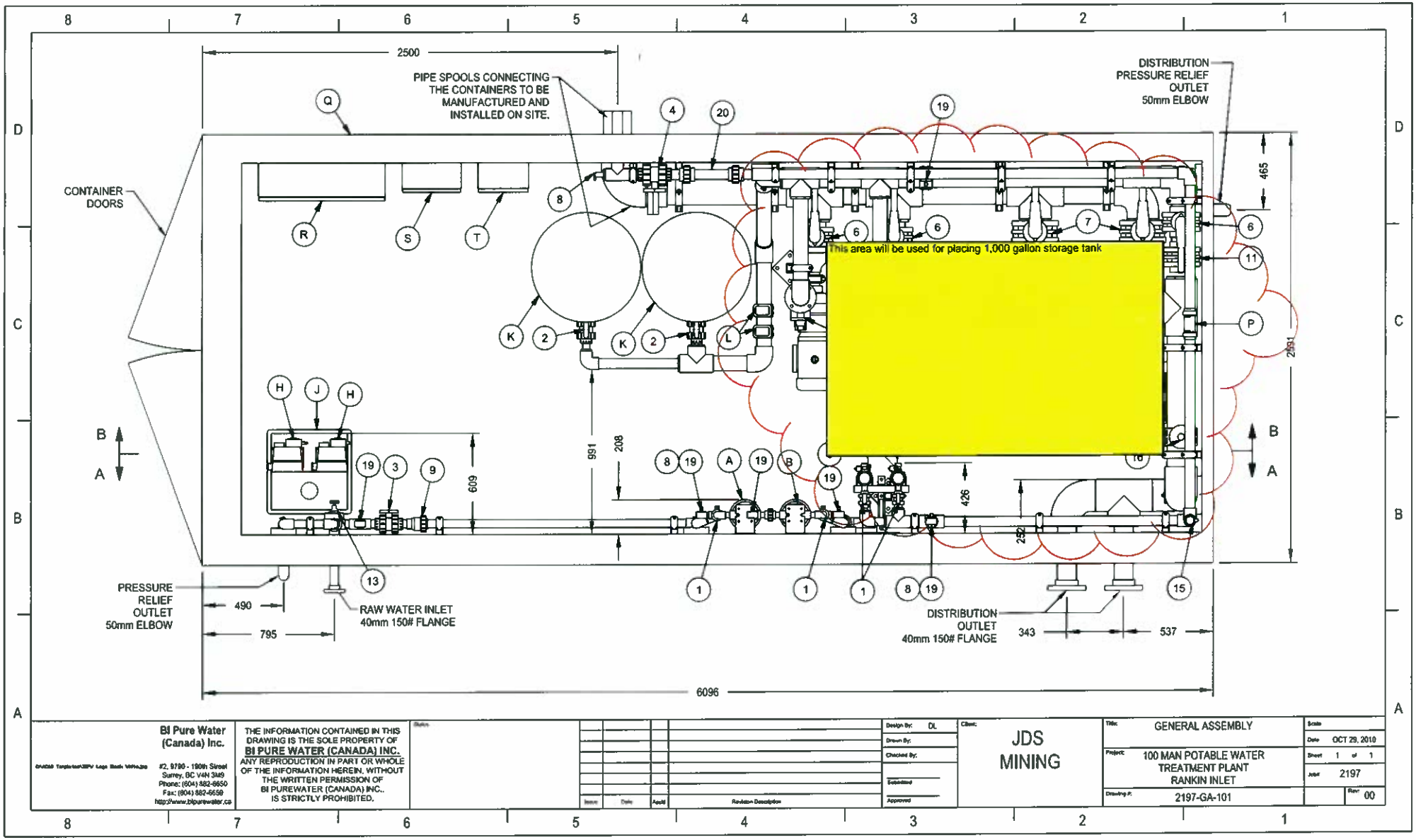
PROJECT	JDS MINING WASTE WATER TREATMENT PLANT
PROJ. NO.	10XXXX
CLIENT	JDS MINING
REV. NO.	0
TITLE	20' CONTAINER
DRAWN BY	K.C.D.
CHECKED BY	-
DATE CREATED	01-NOV-2010
SCALE	N.T.S.
DRAWING NO.	SEL-XXXXXX-GA2



BI Pure Water (Canada) Inc.
#2, 9780 - 190th Street
Surrey, BC V4N 3M9
Phone: (604) 882-6650
Fax: (604) 882-6550
http://www.bipurewater.ca

Design By: DL
Drawn By:
Checked By:
Submitted
Approved

Client: JDS MINING

Title: GENERAL ASSEMBLY
Project: 100 MAN POTABLE WATER TREATMENT PLANT RANKIN INLET
Drawing #: 2197-GA-101

Scale
Date: OCT 29, 2010
Sheet: 1 of 1
Job#: 2197
Rev: 00

Waste Oil Furnaces

CLEAN BURN

The #1 Waste Oil Furnace In Customer Satisfaction

VERSATILE WASTE OIL HEATING TECHNOLOGY

Furnace system includes:
- Oil supply pump
- In-line washable oil filter
- Vacuum gauge for filter
- Check valve
- Tank filter
- Oil line fittings package
- Wall thermostat
- Barometric damper

6 ft. figure shown for scale

	CB-1750	CB-2500	CB-3250	CB-3500	CB-5000
*Maximum BTU/hour	175,000 (51.25 kW)	250,000 (73 kW)	325,000 (95.3 kW)	350,000 (102 kW)	500,000 (146 kW)
*Maximum oil consumption	1.2 GPH (4.54 L/h)	1.7 GPH (6.4 L/h)	2.1 GPH (7.91 L/h)	2.5 GPH (9.5 L/h)	3.6 GPH (13.6 L/h)
Fuels	← Used oils: Crankcase, ATF, hydraulic Fuel oils: #2, #4, and #5 fuel oil →				
Air flow output (CFM)	Unit heater 1700 Central furnace (ducted) 0.25 SPWC (in.) 1500 0.30 SPWC (in.) 1400	Unit heater 2700 Central furnace (ducted) 0.25 SPWC (in.) 2500 0.40 SPWC (in.) 2400	Unit heater 3300 Central furnace (ducted) 0.25 SPWC (in.) 3150 0.40 SPWC (in.) 2900	Unit heater 4200 Central furnace (ducted) 0.25 SPWC (in.) 4000 0.40 SPWC (in.) 3900	Unit heater 5500 Central furnace (ducted) 0.25 SPWC (in.) 5200 0.40 SPWC (in.) 5100
*Air compressor req'd	2.0 CFM @ 20 PSI (3.4 m³/h @ 1.4 bar)	2.0 CFM @ 20 PSI (3.4 m³/h @ 1.4 bar)	2.0 CFM @ 20 PSI (3.4 m³/h @ 1.4 bar)	2.0 CFM @ 25 PSI (3.4 m³/h @ 1.7 bar)	2.5 CFM @ 25 PSI (4.25 m³/h @ 1.7 bar)
Stack size	8 inch dia. (203mm dia.)	8 inch dia. (203mm dia.)	8 inch dia.(203mm dia.)	8 inch dia. (203mm dia.)	10 inch dia. (254mm dia.)
Furnace dimensions, assembled L x W x H (inches) (millimeters)	83 x 29.25 x 31.5 (2190 x 743 x 787)	103.25 x 29.25 x 31.5 (2623 x 743 x 787)	121" L x 31.25 W x 35 H (3073 x 794 x 889)	74 x 35 x 61 (1880 x 889 x 1549)	78 x 38 x 73 (1981 x 965 x 1845)
Approx. weight (Uncrated furnace system)	406 pounds (182.7 kg)	509 pounds (229.1 kg)	641 pounds (288.7 kg)	836 pounds (376.2 kg)	1036 pounds (466.2 kg)
Electrical requirements	115 VAC 60 Hz, single phase 20 A circuit breaker	115 VAC 60 Hz, single phase 30 A circuit breaker	115 VAC 60 Hz,single phase 30 A circuit breaker -or- 230 VAC 60 Hz,single phase 20 A circuit breaker	230 VAC 60 Hz, single phase 30 A circuit breaker	230 VAC 60 Hz, single phase 30 A circuit breaker

* Values indicated above are nominal. Actual values will vary depending on fuel and installation.

Clean Burn, Inc. 1835 Freedom Road, Lancaster, PA 17601 1-800-331-0183 Fax: 717-656-0952 **www.CleanBurn.com**

Model 200

The lightweight, versatile 200 single pass heater is designed with a lifetime limited heat exchanger warranty and an advanced heat exchange. This heat exchange reduces thermal stress points, which creates a longer life span and allows for easier maintenance.

- Heat exchanger design eliminates the need and cost of a burner target
- Tubeless: No fuel tubes means reduced cleaning time, no tube replacement or repair costs
- Accessible Design: Labor saving with up to 75% less cleaning time than a conventional multi-pass system
- Warranty: lifetime limited heat exchanger warranty
- Versatile: Dual stack connections vent gas out left or right side for more versatile installation. Model 200 also provides multi-directional air ventilation through the left and/or right side and up or down louvering.
- Squirrel Cage Blower Standard
- Multiple Voltages: 120-volt/60-amp and 220-volt/50-amp available
- Multiple Mounting: Designed for floor stand, tank rack or ceiling suspension mounting
- Customized regular and complete maintenance of heat exchanger
- Download pdf

SPECIFICATIONS

Input (approx. BTU/hr.)	200,000
Output (approx. BTU/hr.)	160,000
Stack size	8"
Shipping Weight	437 lbs./199 kg.
Heater dimensions (L x W x H) Includes outside measurements of fan and burner	34.5" x 22" x 92.5"
Duct Opening	16" x 16"
Electrical requirements (maximum circuit protection)	30A (15A for export)
Approx. fuel consumption	1.43 GPH
Blower CFM	2550
Outlet Air Temperature	170 F
Compressed air requirements	2 CFM @ 40 PSI
Agency listings	UL, C-UL
Patents	5,950,616
Fuels	Crankcase oil, transmission and hydraulic fluids, as well as other petroleum-based lubricants (any weight combinations up to SAE 50 as well as #1 and #2 fuel oil.)
Oil transfer pump	18 GPH @ 35 PSI (68 LPH @ .24 Mpa)

- Efficiency: The innovative Horizon Heater's heat exchanger design eliminates the costs of a burner target. This system also contains no fuel tubes, which means reduced cleaning time and no tube repair costs.
- Advanced Heat Exchanger Design: Reduces corners and thermal stress points to provide longer life and easier upkeep
- Warranty: lifetime limited heat exchanger warranty
- Dual Stack Connections: Vent gas out left or right side for a more versatile installation
- Dual, Multi-Directional Air Outlets: Left and/or right side, up or down, right or left louvering
- Squirrel Cage Blower Standard
- Light Weight: Easy to handle and install
- Multiple Voltages: 120-volt/60-amp and 220-volt/50-amp available
- Customized Heat Exchanger Cleanout Tool Standard: Promotes regular and complete maintenance of heat exchanger
- Download pdf

SPECIFICATIONS

Input (approx. BTU/hr.)	155,000 (45.42kW)
Output (approx. BTU/hr.)	120,000 (38kW)
Stack size	8" / 20.3 cm
Shipping Weight	390 lbs./ 177 kg.
Heater dimensions (L x W x H) Includes outside measurements of fan and burner	34.5" x 22" x 79" / 87.6 cm x 55.9 cm x 2.0 m
Duct Opening	15" x 15" (38.1 cm)
Electrical requirements (maximum circuit protection)	30A (15 A for export)
Approx. fuel consumption	1.12 GPH
Blower CFM	2550
Outlet Air Temperature	170 F
Compressed air requirements	2 CFM @ 40 PSI / .057 m3/min.@.28Mpa
Patents	US: 5,067,894 utiliy, 331,104 des., 331,105 des. CAN: Pat. 2,029,366, 69,374 des., 69,157 des.
Fuels	Crankcase oil, transmission and hydraulic fluids, as well as other petroleum-based lubricants (any weight combinations up to SAE 50 as well as #1 and #2 fuel oil.)
Oil transfer pump	18 GPH @ 35 PSI (68 LPH @ .24 Mpa)

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Machinery

1. *Core Saw Specification*

2. *Polaris Quad*

3. *Snow Machine*

Specifications for core saw

3HP electric motor
- 220v/15A draw
- single phase 60Hz

Dimensions
- 19" wide x 39" long x 31" high
- 100 kg total weight
- 14" diameter diamond blade

Water cooled blade
- water pump for recirculation
- water receptacle (18" wide x 31" long x 4" high; 36 litre capacity)

Polaris 325 – 4x4 Quad – for use in transporting field equipment from the esker airstrip to the camp (300m) with a small 80lb 4 wheeled quad trailer.

Engine	
Displacement	325 cc
Engine Type	4-stroke
Cooling	Air-cooled w/fan-assisted oil cooler
Lubrication	Wet sump
Oil Capacity	1.9 qts/1.8 ltr
Carburetion	31 mm - CV Mikuni
Fuel Capacity	3.25 gal/12.3 ltr
Coolant Capacity	N/A
Starting System	Electric with recoil backup
Alternator	200 watts
Drivetrain	
Drive System	Shaft Ride System
Transmission	Automatic PVT (Polaris Variable Transmission)
Gear Range	E-Z shift high/low and reverse
Front Wheel Drive	Thumb-switch engage On-Demand true 4-wheel shaft drive
Rear Wheel Drive	Shaft
Suspension	
Front Suspension Type	MacPherson strut with 6.7 in/17.0 cm of travel
Rear Suspension Type	Progressive rate swing arm with 7.1 in/18.0 cm of travel
Rear Shock	2 in gas-charged twintube shock with Tractionline mount
Brakes	
Front Brakes	Single-lever hydraulic disc
Rear Brakes	Hydraulic rear foot brake
Rear Caliper	Hydraulic, floating caliper
Rear Disc	Rear axle fixed disc
Parking Brake	Hydraulic lock, all wheel

Tires	
Front Tire	24 x 8-12 (4 psi)
Rear Tire	24 x 11.5-12 (3 psi)
Dimensions	
Wheelbase	49.75 in/126.4 cm
Turning Radius (Approximate)	85 in/215.9 cm
Dry Weight	634 lbs/287.6 kgs
Length	81 in/205.7 cm
Height	46 in/116.8 cm
Height	46 in/116.8 cm
Capacities	
Front Rack Capacity*	90 lbs/40.8 kgs*
Rear Rack Capacity*	180 lbs/81.6 kgs*
Hitch Towing Capacity*	850 lbs/385.6 kgs*
Hitch Tongue Capacity*	30 lbs/13.6 kgs*
Electrical	
Brake Light	Standard
Handlebar Headlight	N/A
Hood Headlight	N/A
Grill Headlight	2 dual beam high/low 30/30 watt qtz halogen
DC Outlet	Accessory
Instrumentation	
Speedometer / Odometer	Accessory
Hourmeter	Accessory
Trip Odometer	Accessory
High Beam Indicator	Standard
Neutral/Reverse Light	Standard
High Temperature Light	Standard

Snow Machine [Close window]

Cross Country -> Mx Z 440	
ENGINE	
Engine	Rotax 443 Axial-fan-Cooled W/ Piston porting
Cylinders	2
Displacement	436.6 cc / 26.6 in³
Bore	67.5 mm / 2.7 in
Stroke	61.0 mm / 2.4 in
Carburation	2 x VM-34 (choke)
Exhaust System	Tuned muffler
POWERTRAIN	
Drive Pulley Type	Cushion drive T.R.A.C.
Driven Pulley Type	Formula, cam on countershaft
Maximum speed	7000 rpm
Engagement	3700 rpm
Pulleys Center Distance	257.5 mm / 10.1 in
Small Sprocket Number Of Teeth	21
Large Sprocket Number Of Teeth	44
Drive Sprocket diameter	179 mm / 7.05 in
Brake System	Hydraulic disc, Self-adjusting
CAPACITIES	
Fuel	37 Liters / 9.8 Gal (US)
Recommended Fuel Type	Regular unleaded
Minimum Octane	87
Oil	2.55 Liters / 2.4 Quarts (US)
Lighting System Output (AC)	240 @ 6000 RPM
Headlamp Bulb Hi / Low Beam	1 x 60 / 55 w (H-4)
SUSPENSION	
Front Suspension	DSA / Swing Arm / Radius Rods Sway Bar (Formed Shape)
Front Shock	2 Motion Control Gas Shocks
Front Suspension / Max. Vert. Travel	196.0 mm / 7.7 in
Rear Suspension	SC - 10 Sport
Front Arm Shock	1 Motion Control Gas Shock
Rear Arm Shock	1 High-Pressure Gas (H.P.G.)
Rear Suspension / Max. Vert. Travel	254.0 mm / 10.0 in
MATERIALS	
Front Member & Frame Material	Aluminum
Hood	RRIM / Polyurethane
Belly Pan	Impact resistant copolymer
Skis	Plastic (Flex)
DIMENSIONS	
Vehicle Overall Length	2725 mm / 107.3 in
Vehicle Overall Width	1175 mm / 46.3 in
Vehicle Overall Height	1169 mm / 46.0 in

Official Dry Weight	201 kg / 442 lbs
Ski Stance	1041 mm / 41.0 in
Ski Overall Length	997 mm / 39 in
Ski Width	133 mm / 5.3 in
Track Nominal Width	381 mm / 15 in
Track Nominal Length	3074 mm / 121 in
Track profile height	18.4 mm / 0.72 in
STANDARD EQUIPMENT	
	Seating: 1 Handlebar: Straight Heated Grips / Throttle Speedometer / Tripmeter (White Facia) Fuel Gauge: Mechanical Windshield: Medium Profile Carbides: 7 Throttle: 1 Stage
OPTIONAL EQUIPMENT	
	Electric starter Gauge, tachometer, White facia Grill kit (adjustable) (S series), Black B-160 Heated visor quick connect kit Hitch, hook type Hitch, tongue type Mirrors, kit (S series) Nonskid strip kit, Black B-160 Proactive Control System, Black (Flex ski) Reverse mechanical Short brake lever Ski plastic (Flex), Amethyst M-530 Ski plastic (Flex), Blue B-182 Ski plastic (Flex), Viper Red B-178 Ski plastic (Flex), Yellow B-190 Ski runner (Flex) Ski steel wide (S series) Slider shoe SC-10, Amethyst Slider shoe SC-10, Black Slider shoe SC-10, Blue Slider shoe SC-10, Viper Red Slider shoe SC-10, Yellow Toe hold adjustable kit Tunnel protector kit Windshield S series (High) without windshield support Windshield S series (Low) without windshield support

[Close Window]

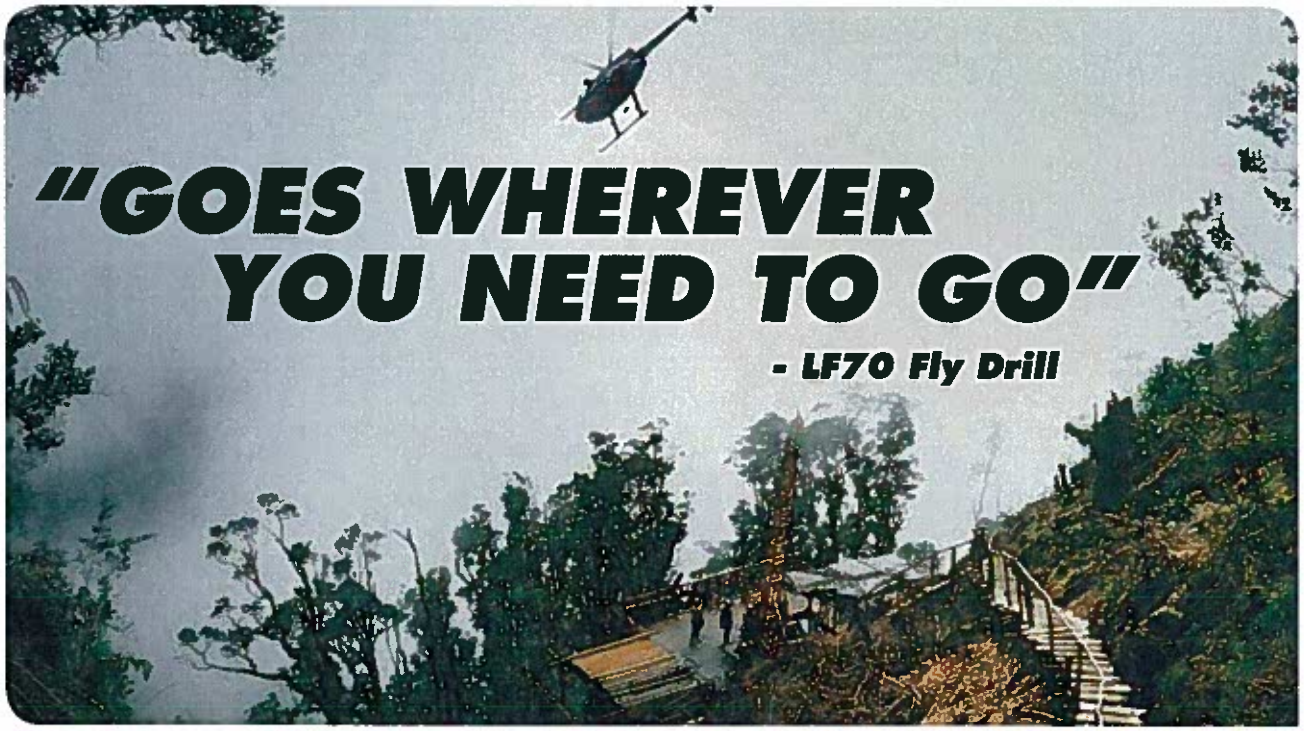
Drills

1. LF 70

2.“Super Hornet” RC

3. Drill Rig Weights

4. A5



www.boartlongyear.com

DEPTH CAPACITY: 700 M (2300 FT) (NQ/NRQHP)

A LIGHTWEIGHT, FLY CONFIGURATION AVAILABLE FOR REMOTE PROJECTS

HQ/PQ PATENTED, NITROGEN GAS SPRING NITRO-CHUCK®

RUGGED PERFORMANCE

LF70 Hydraulic Diamond Core Fly Drill

Mobility

Can be configured to be heliportable for remote locations. Reduced downtime when mobilizing between sites and with less environmental disruption.

Modular Design

With just seven components, it takes less than one hour to pull down the rig and the same time to reassemble.

Lightweight

A major consideration when designing this compact drill was the overall weight and dimensions of each component. The LF70 is ideal for drilling in confined, remote locations.

BOART LONGYEAR

LF70 Hydraulic Diamond Core Fly Drill

ROTATION UNIT:
- Hollow spindle for HQ tools
- 2-speed (hi-low range) reversible - bent axis piston type hydraulic motor
- Chain driven with FUNK 4-speed transmission
- HQ Nitro-Chuck® with one year warranty

POWER UNIT
- Cummins 4BTA3.9C, Tier 1, 4 cylinder, liquid cooled, turbocharged, diesel engine

OPERATOR'S PANEL / HYDRAULIC MODULE
- Self contained and ergonomically designed for ease of operation
- Manually operated hydraulic control valves

MAIN HOIST
- 12,000 lb capacity single line pull - hydraulic driven
- Spring applied, failsafe brake
- 15 mm (9/16 in) diameter hoisting cable

WIRELINE HOIST
- Hydraulically driven with hydraulic motor counter balance valve
- Spooling capacity - 1 890 m (6,200 ft) swaged 4.8 mm (3/16 in) cable

MAST
- Standard 3 m (10 ft) pull or 6 m (20 ft) with modular middle mast section
- 30° off horizontal (angle drilling) to 90° vertical down
- Direct coupled feed cylinder with 1.83 m (6 ft) stroke
- Single sheave, large diameter crown block for improved cable life

OPTIONS
- Deutz BF4L914, Tier 2, 4 cylinder, air cooled, turbocharged lightweight diesel engine for fly-in applications - check factory for availability
- Deutz BF6L913, Tier 1, 6 cylinder, air cooled, turbocharged diesel engine - check factory for availability
- PQ Nitro-Chuck®/Gear Head with one year warranty
- Hydraulically powered foot clamp - BQ rod to HWT casing jaw sizes
- Rod racking platform
- Dual mast raising cylinders
- Mud mixer - hydraulically powered
- W11 Fluid circulation pump - hydraulically powered
- Single axle towing group
- Mud tank outrigger supports

Refer to Tech Data sheets for additional technical information.

BOART LONGYEAR IS A LEADING PROVIDER OF:

GLOBAL DRILLING SERVICES

EXPLORATION TOOLS AND EQUIPMENT

ROCK DRILLING TOOLS AND EQUIPMENT

GEOTECHNICAL AND ENVIRONMENTAL TOOLS, EQUIPMENT AND INSTRUMENTATION

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BOART LONGYEAR

LF70-HQ Diamond Core Drill System

DRILLING DEPTH GUIDELINES

The figures in these tables have been calculated, based on field experiences, and may be reasonably expected.

Actual drilling capacity will depend on in-hole tools and conditions, drilling techniques and equipment used.

	METRIC SYSTEM	U.S. CUSTOMARY SYSTEM
	Hole Depth (metres)	Hole Depth (feet)
DRILL ROD/CORE BARREL	Dry Hole ***(Fluid Filled)***	Dry Hole ***(Fluid Filled)***
BRQHP/BQ	915 ***(1050)***	3000 ***(3440)***
BRQLW/BQTK	1145 ***(1320)***	3750 ***(4320)***
NRQHP/NQ/NQ2"	705 ***(810)***	2310 ***(2650)***
NRQHP Upset	830 ***(960)***	2730 ***(3140)***
HRQHP/HQ	475 ***(545)***	1560 ***(1785)***
HRQHP Upset	655 ***(755)***	2145 ***(2480)***
HWT/PQ	315 ***(360)***	1025 ***(1175)***

PRIME MOVER		
Standard Unit	Deutz BF4L913, 4 cylinder, air cooled, turbocharged diesel engine.	
Displacement	4.08 L	249 cubic inch
Net Power (intermittent)	79 kW	106 hp
Continuous Output	65 kW	87 hp
Max Rated RPM	2,500 rpm	

Optional Unit (for altitude ASL)	Deutz BF6L913, 6 cylinder, air cooled, turbocharged diesel engine.	
Displacement	6.13 L	374 cubic inch
Net Power (intermittent)	119 kW	160 hp
Continuous Output	99 kW	132 hp
Max Rated RPM	2,500 rpm	

LF70-HQ Diamond Core Drill System

	METRIC SYSTEM	U.S. CUSTOMARY SYSTEM
HYDRAULIC SYSTEM		
Primary Pump	Eaton axial piston, variable displacement, pressure compensated with low pressure standby.	
Max Flow	163 Lpm	43 Gpm
Maximum Pressure (As used on LF 70)	24.1 MPa	3,500 psi
Secondary Pump	Eaton axial piston, variable displacement, pressure compensated.	
Max Flow	41.6 Lpm	11 Gpm
Maximum Pressure (As used on LF 70)	13.8 MPa	2,000 psi
Auxiliary Pump	Eaton axial piston, hydrostatic drive with manual swash plate control.	
Max Flow	38 Lpm	10 Gpm
Maximum Pressure (As used on LF 70)	14 MPa	2,000 psi
DRILL HEAD		
Hollow Spindle - Inside Diameter	95.2 mm	3-3/4 in
Rotation Motor	Rexroth hydraulic motor - variable/reversible.	
Mechanical Transmission	Funk 4 speed	
Ratios	1st 6.63:1	
	2nd 3.17:1	
	3rd 1.72:1	
	4th 1.00:1	
Final Drive	Roller chain drive.	
Ratio	2.58:1	
Hydraulic HQ Chuck	Hydraulically opened, spring closed.	

TORQUE AND RPM RATINGS lbft	**Rpm**	**Nm Torque**
(Hydraulic motor at minimum displacement, prime mover at 2200 rpm)		
1st Gear	190	2 305 1,700
2nd Gear	400	1 085 800
3rd Gear	730	610 450
4th Gear	1,250	340 250

LF70-HQ Diamond Core Drill System

	METRIC SYSTEM		U.S. CUSTOMARY SYSTEM	
TORQUE AND RPM RATINGS lbft			**Rpm**	**Nm Torque**
(Hydraulic motor at maximum displacement, prime mover at 2200 rpm)				
1st Gear	95		4 610	3,400
2nd Gear	200		2 170	1,600
3rd Gear	370		950	700
4th Gear	630		680	500
Drill Head Lubrication	Force fed bearings, oil bath for roller chain.			
Drill Head Lubricating Oil Filtration	10 Micron spin-on type oil filter.			
DRILL MAST				
Lower Section Feed Stroke	1 830	mm	72	in
Length	3 213	mm	126.5	in
Middle Section				
Length	3 284	mm	129.3	in
Upper Section				
Length	2 705	mm	106.5	in
DRAW WORKS				
Main Line Hoist (KPL12)				
Hook Load (single part line)				
Bare Drum	5 450	kg	12,000	lbf
Full Drum	3 720	kg	8,200	lbf
Hoisting Speed (single part line)				
Bare Drum	59	m/min	193	ft/min
Full Drum	80	m/min	261	ft/min
Cable Capacity (maximum)	67	m of 16 mm cable	220	ft of 5/8" cable

NOTE: Do not use multiple part lines with the 12,000 lb hoist, use single part line ONLY.

LF70-HQ Diamond Core Drill System

		METRIC SYSTEM		U.S. CUSTOMARY SYSTEM	
Wireline Hoist					
Line Pull	**Bare Drum**	990	kg	2,190	lbf
	Full Drum	277	kg	502	lbf
Line Speed	**Bare Drum**	100	m/min.	337	ft/min.
	Full Drum	443	m/min.	1,470	ft/min.
Cable Capacity (swaged)		1 898	m of 4.8 mm cable	6,200	ft of 3/16" cable
FEED CYLINDER					
Pull Capacity	**@ 2000 psi**	6 414	kg	14,137	lbf
Thrust Capacity	**@ 2000 psi**	4 231	kg	9,326	lbf

LF70-HQ Diamond Core Drill System

DIMENSIONS AND WEIGHTS *

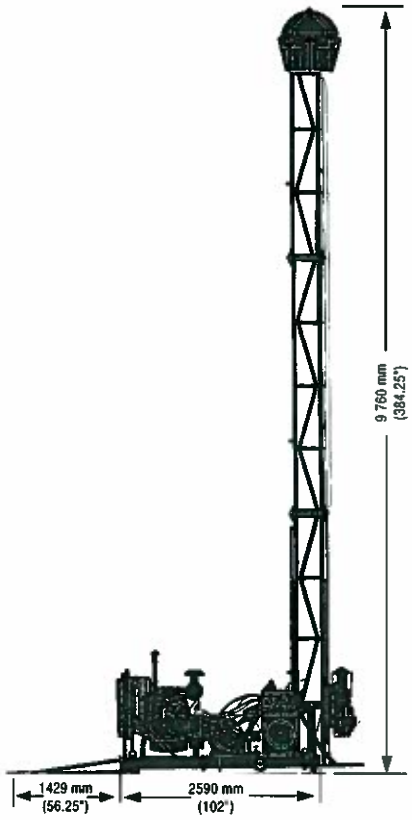
Side view of drill with mast in vertical position

Dimensions: Deduct 3 235 mm (127.4") if Middle Mast section is removed

NOTE: Base dimensions are with mechanical stabilizer legs at the uppermost position. Overall height can be increased by 24,7 cm (9-3/4") by adjusting legs downwards.

Wet Weight : 3 220 kg (6,500 lb)

Consists of: Deutz BF4L 913 Power Unit Grp.
Hydraulic Module
Draw Works Grp. c/w Cable
Lower Mast Assembly
Middle and Upper Mast Assembly
Rotational Unit Grp. c/w Auto Chuck
Base Frame Bare
Fuel Tank (Wet)
Battery
Stabilizer Legs (25 ea. x 4)
Operator Platform

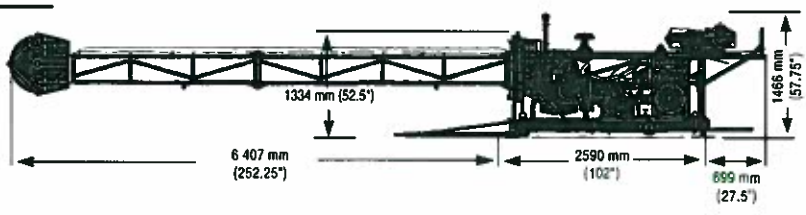


Side view of drill with mast in horizontal position

Dimensions: Deduct 3 235 mm (127.4") from overhang if Middle Mast section is removed

Wet Weight: 3 220 kg (6,500 lb)

NOTE: Base dimensions are with mechanical stabilizer legs at the uppermost position. Overall height can be increased by 24.7 cm (9-3/4") by adjusting legs downwards.



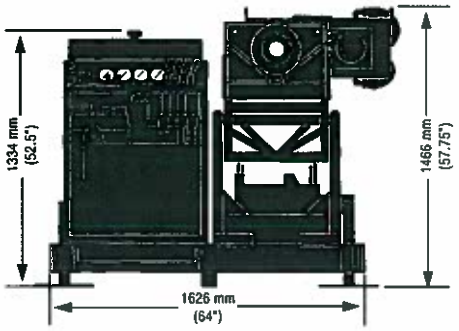
* Dimension and weights are nominal and Should be checked before crating or lifting. Conversion factors have been used to convert from Imperial to Metric measures.

LF70-HQ Diamond Core Drill System

DIMENSIONS AND WEIGHTS *

Rear End View of Drill (Includes all mast sections)

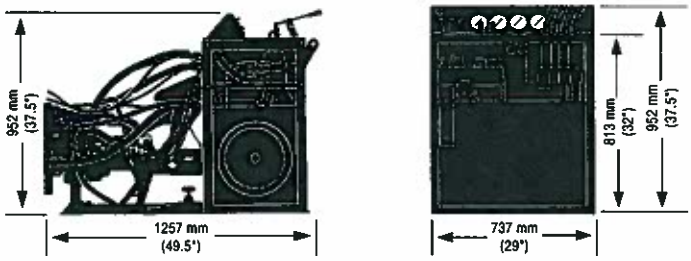
Wet Weight: 2 948 kg (6,500 lb)



NOTE: Base dimensions are with mechanical stabilizer legs at the uppermost position. Overall height can be increased by 24.7 cm (9-3/4") by adjusting legs downwards.

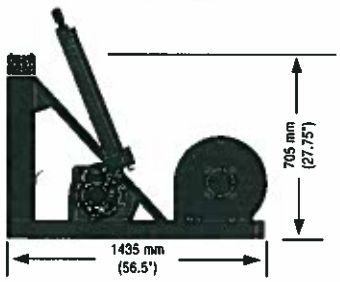
Hydraulic Module

Wet Weight: 417 kg (920 lb)



Draw Works Module (KPL12)

Weight: 360 kg (795 lb)
Without cable



Cable Weights

Main Line Hoist Cable

15.9 mm x 22.9 m (5/8" x 75 ft), single part line - 26 kg (58 lb)

Wireline Hoist Cable

4.8 mm x 1 280 m (3/16" x 4,200 ft) - 118 kg (260 lb)

(Lengths above do not represent the max. rated drum capacity, they are typical values only.)

* Dimension and weights are nominal and should be checked before crating or lifting. Conversion factors have been used to convert from Imperial to Metric measures.

LF70-HQ Diamond Core Drill System

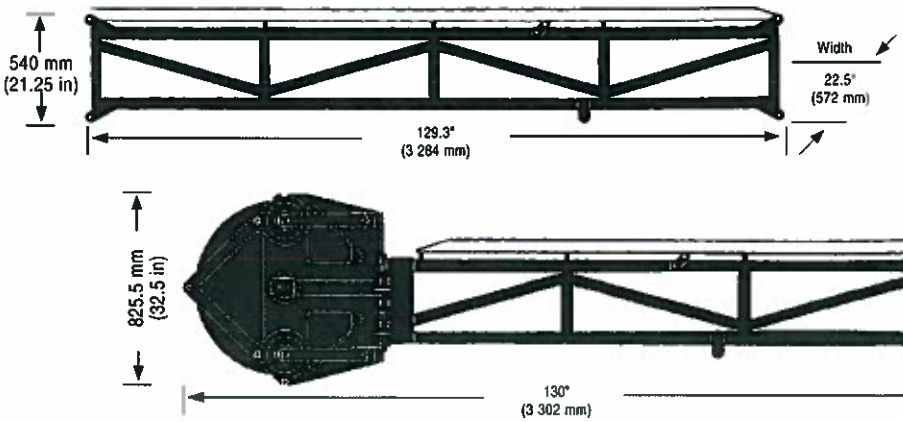
DIMENSIONS AND WEIGHTS *

Lower Mast Section

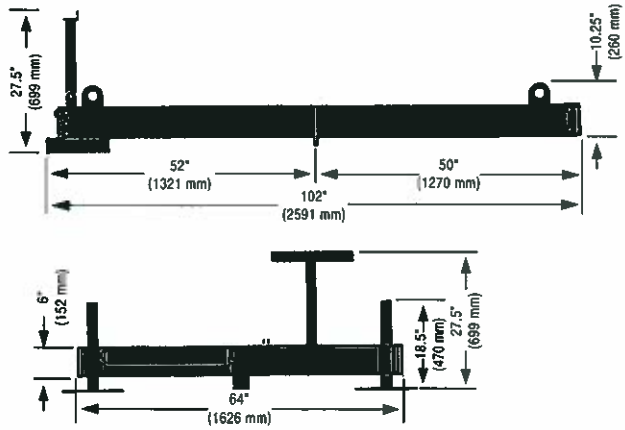
Weight: 554 kg (1,222 lb)

Middle and Upper Mast Sections

Combined Weight: 800 lb (363 kg)



Drill Base (bare)	630 lb	(286 kg)
Wheel and Stub Axle (each)	112 lb	(51 kg)
Towing Hitch	55 lb	(25 kg)
Fuel Tank (wet)	125 lb	(57 kg)
Battery Box (inlcuding battery)	134 lb	(61 kg)
Mud Tank Outriggers (each)	26 lb	(12 kg)
Stabilizer Legs (each)	25 lb	(11 kg)
Operator Platform	26 lb	(12 kg)



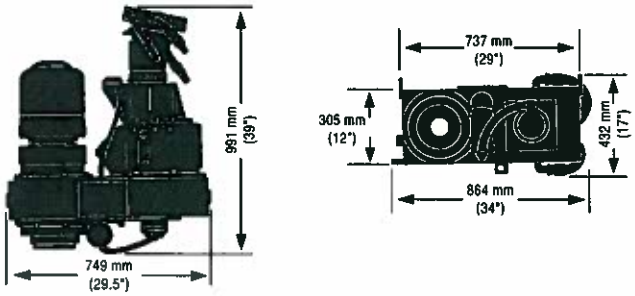
* Dimension and weights are nominal and should be checked before crating or lifting. Conversion factors have been used to convert from Imperial to Metric measures.

LF70-HQ Diamond Core Drill System

DIMENSIONS AND WEIGHTS *

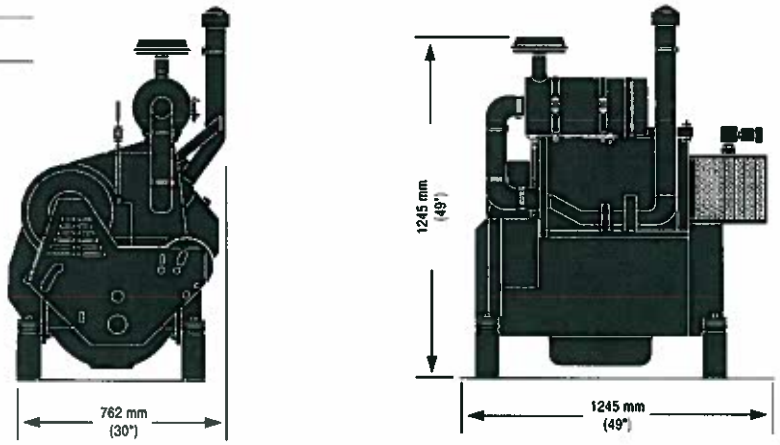
Drill Head (c/w Auto Chuck)

Dry Weight: 376 kg (830 lb)



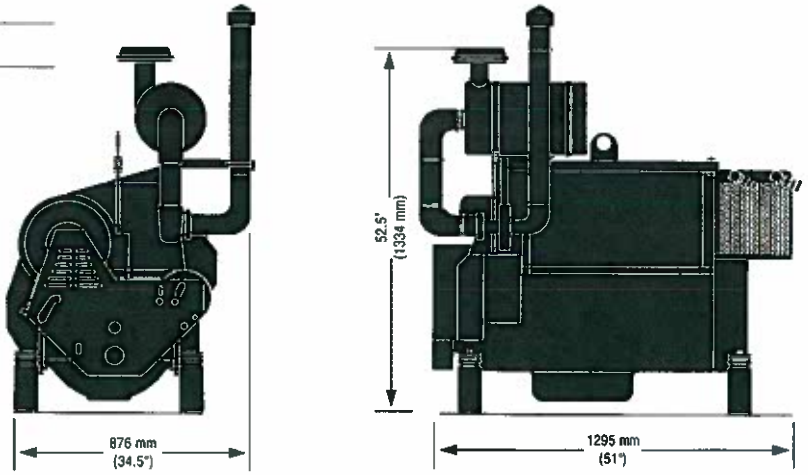
Diesel Engine Module (Deutz BF4L913)

Dry Weight: 496 kg (1,094 lb)



Diesel Engine Module (Deutz BF6L913)

Dry Weight: 646 kg (1,424 lb)



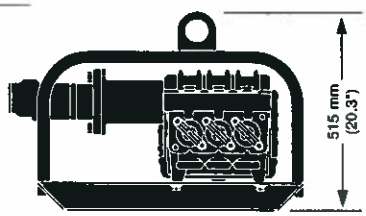
* Dimension and weights are nominal and should be checked before crating or lifting. Conversion factors have been used to convert from Imperial to Metric measures.

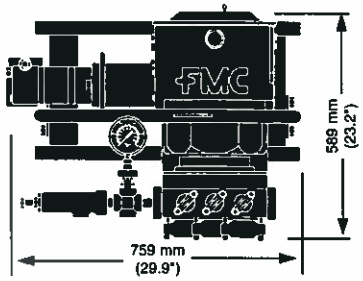
LF70-HQ Diamond Core Drill System

DIMENSIONS AND WEIGHTS *

Fluid Circulation Pump Group (L09)

Wet Weight: 145 kg (320 lb)

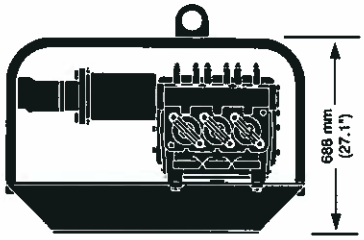


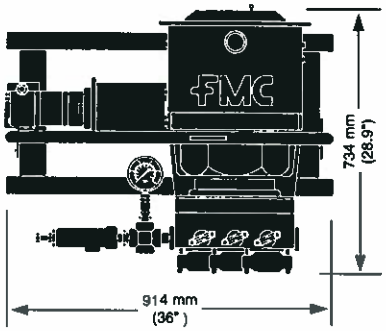


The max. output of the standard 2-speed motor for the L09 is as follows:
High vol./low pres. - 20 gpm @ 300 psi
Low vol./high pres. - 10 gpm @ 800 psi

Fluid Circulation Pump Group (W11)

Wet Weight: 254 kg (560 lb)



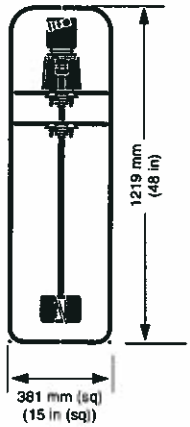


The max. output of the standard 2-speed motor for the W11 is as follows:
High vol./low pres. 35 gpm @ 300 psi 6.2 hp
Low vol./high pres. 17 gpm @ 800 psi 7.9 hp

If a higher output pressure system is required an optional 2-speed motor can be supplied with the following max. output:
High vol./low pres. 23 gpm @ 950 psi 12.7 hp
Low vol./high pres. 11 gpm @ 1000 psi 6.4 hp

Mud Mixer Assembly

Wet Weight: 31 kg (68 lb)



NOTE: Maximum speed of mud mixer shaft at full flow is 2300 rpm.

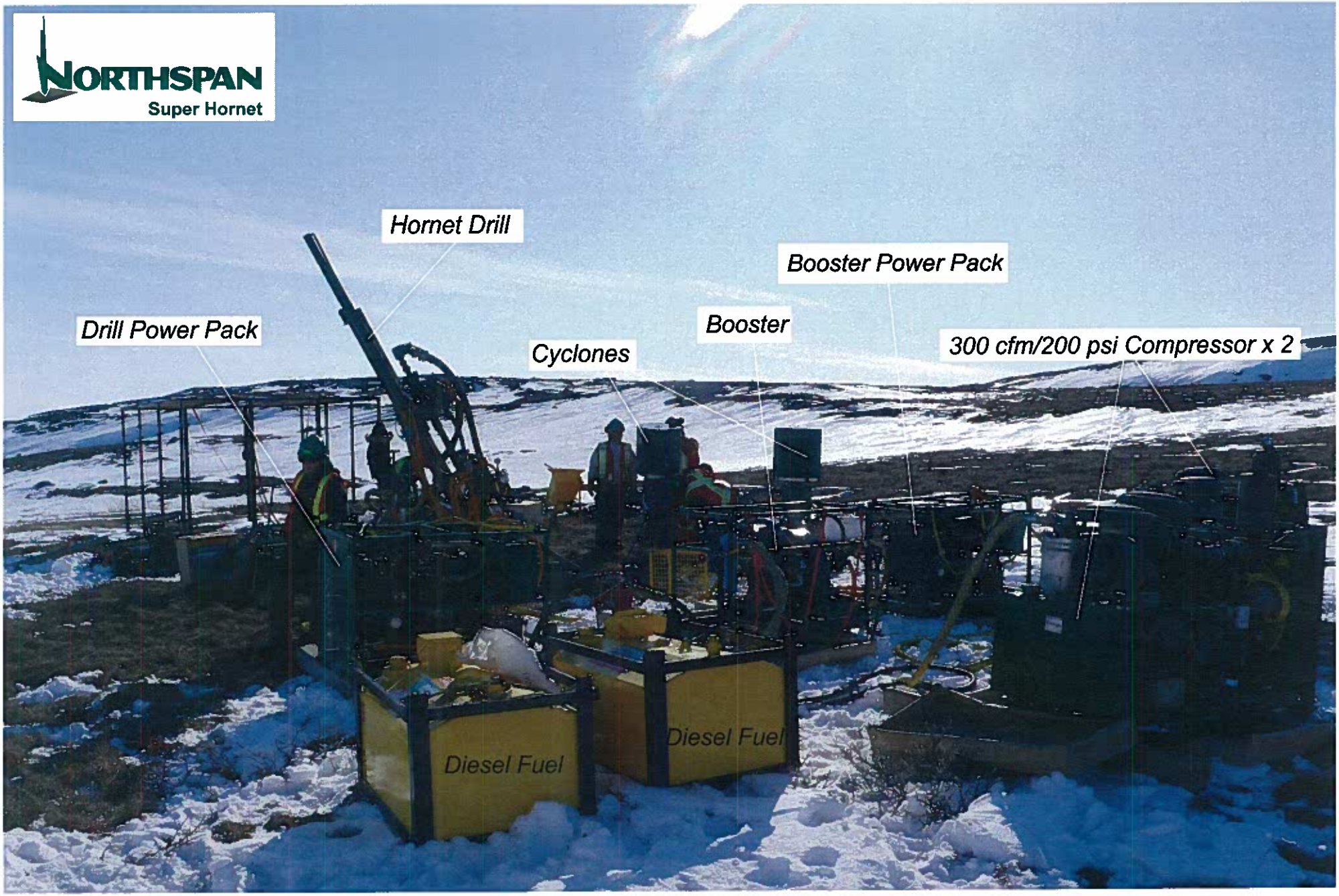
* Dimension and weights are nominal and should be checked before crating or lifting. Conversion factors have been used to convert from Imperial to Metric measures.

"Super Hornet" RC drill module weight list (200 m capacity, heli-support configuration)		
Module	*weight (lbs)*	*Comments*
Drill	1250	
Compressor	2000	Dry weight. Splits into two parts for moves.
Compressor	2000	Dry weight. Splits into two parts for moves.
Power pack	950	For drill
Power pack	950	For booster
Booster	1100	
RC Drill rod	46	per 5 ft rod
Survival shack	1000	Heated. Complete with First Aid equipm. and survival rations.
Tooling basket	1100	Cyclones, hammers, tools, etc.
Total weight approx.	16950	Dry. Including 200 m of drill rod
Number of 206L lifts	16	Excluding fuel lifts
Fuel consumption: 2 drums diesel per 12 hr shift		

Note: These weights include surface casing only. If additional casing is needed, 60 lbs/ 5ft casing must be added.
Note2: Survival shack may not be required in all jurisdictions/climates.

Super Hornet equipped with two survival shacks drilling at Hope Bay, Nunavut

216-1289 Ellis Street, Kelowna, BC V1Y 9X6
Phone: 250-869 1795 Fax: 250-717 5901
E-mail: info@northspan.ca


NORTHSPAN
Super Hornet
Hornet Drill
Booster Power Pack
Drill Power Pack
Booster
Cyclones
300 cfm/200 psi Compressor x 2
Diesel Fuel
Diesel Fuel

25A HELICOPTER DRILL RIG WEIGHTS

Item	Unit Weight	No. of Units	Extension
1) BBS25A fly drill rig	7,000 lb.	1	7,000 lb.
2) NQ drill rods 10ft.	51 lb.	150	7,650 lb.
3) NW casing 10 ft.	70 lb.	2	140 lb.
4) NW casing 5 ft	35	2	70 lb.
5) NW casing 2 ft	14	2	28 lb.
6) HW casing 10 ft	114	10	1,140 lb
7) HW casing 2 ft	23	4	92 lb.
8) Water supply pumps	500 lb	3	1,500 lb
9) water line	0.6 lb/ft	7,000 ft.	4,200 lb.
10) hand tools	300 lb.	1 set	300 lb.
11) drill spares	500 lb.	1 set	500 lb.
12) set-up timbers	1,000 lb.	2 set	2,000 lb.
13) core boxes	6 lb.	25	150 lb
14) rod grease	50 lb.	6	300 lb.
15) Lubes/Oils	50 lb.	4	200 lb.
16) Linseed soap	50 lb.	1	50 lb.
17) Misc. Fluids for drilling	50 lb.	30	1,500 lb.
		sub total.....	26,4200 lb.
		10% contingency.....	2,640 lb.
		Total.....	29,000 lb.

1) Water consumption – using NQ tools, we would use 7-8 gallons/minute while drilling.

Heavy Equipment

1. *140M/140M AWD Motor Grader*

2. *730 Articulated Truck*

3. *320D LRR Hydraulic Excavator*

140M/140M AWD MOTOR GRADER

SPECIFICATIONS

Units: **US** | **Metric**

Engine	
Base Power (all gears) Net	183 hp
Engine Model	Cat® C7 ACERT™ VHP
Displacement	439 in3
Bore	4.3 in
Stroke	5 in
Speed @ rated power	2000 RPM
Number of cylinders	6
Derating altitude	10000 ft
Std - Fan speed - max	1450 RPM
Std - Fan speed - min	550 RPM
Std - Ambient Capability	109 ° F
Hi Ambient - Fan speed - max	1650 RPM
Hi Ambient - Fan speed - min	550 RPM
Hi Ambient Capability	122 ° F
Weights	
Gross Vehicle Weight - base	33356 lb
Gross Vehicle Weight, max	50875 lb
Gross Vehicle Wt, max - front axle	17908 lb
Gross Vehicle Wt, max - rear axle	32967 lb
Gross Vehicle Wt, base - front axle	9173 lb
Gross Vehicle Wt, base - rear axle	24183 lb
Moldboard	
Blade width	12 ft
Moldboard - height	24 in
Moldboard - thickness	0.87 in
Arc radius	16.3 in
Throat clearance	6.5 in
Cutting edge - width	6 in
Cutting edge - thickness	0.6 in
End Bit - width	6 in
End Bit - thickness	0.6 in
Blade Pull - base GVW	21765 lb
Blade Pull - max GVW	29671 lb
Blade Pull - base GVW (AWD)	31369.54 lb
Blade Pull - max GVW (AWD)	45787.75 lb

Down Pressure - base GVW	15908 lb
Down Pressure - max GVW	31057 lb

Frame	
Drawbar - width	3 in
Circle - diameter	60.2 in
Circle - blade beam thickness	1.6 in
Drawbar - height	6 in
Front axle - height to center	23 in
Front axle - wheel lean, left/right	18°
Front axle - total oscillation per side	32°

Operating Specifications	
Top Speed - Fwd.	29 mph
Top Speed - Rev.	22.9 mph
Turning radius, outside front tires	25.43 ft
Steering range - left/right	47.5°
Articulation angle - left/right	20°
Fwd. 1st	2.5 mph
Fwd. 2nd	3.4 mph
Fwd. 3rd	5 mph
Fwd. 4th	6.8 mph
Fwd. 5th	10.6 mph
Fwd. 6th	14.5 mph
Fwd. 7th	19.9 mph
Fwd. 8th	29 mph
Rev. 1st	2 mph
Rev. 2nd	3.7 mph
Rev. 3rd	5.4 mph
Rev. 4th	8.4 mph
Rev. 5th	15.7 mph
Rev. 6th	22.9 mph

Service Refill	
Fuel Capacity	110 gal
Cooling system	12.4 gal
Hydraulic system - tank	15.9 gal
Engine Oil	7.9 gal
Trans./Diff./Final Drives	17.2 gal
Tandem housing (each)	16.9 gal
Front wheel spindle bearing housing	0.24 gal
Circle drive housing	1.8 gal

Power Train	
Forward/Reverse Gears	8 Fwd / 6 Rev
Transmission	Direct drive, power shift, Countershaft
Brakes - Service	Multiple oil-disc

Brakes - Service, surface area	3565 in2
Brakes - Parking	Multiple oil disc
Brakes - Secondary	Dual circuit control system

Hydraulic System

Circuit type	Electro-hydraulic load sensing, closed center
Pump type	Variable piston
Pump output	55.7 gal/min
Maximum system pressure	3500 psi
Reservoir tank capacity	15.85 gal
Standby Pressure	450 psi

All-Wheel Drive System (Optional)

Motor Type	2 infinitely variable axial piston
Pump Type	2 variable piston
Torque - max	10324.39 ft-lb
Operational Gears - forward	1-7
Operational Gears - reverse	1-5

Blade Range

Circle centershift - right	28.7 in
Circle centershift - left	27.4 in
Moldboard sideshift - right	26 in
Moldboard sideshift - left	20.1 in
Maximum blade position angle	90°
Blade tip range - forward	40°
Blade tip range - backward	5°
Maximum shoulder reach outside of tires - right	77.9 in
Maximum shoulder reach outside of tires - left	70.5 in
Maximum lift above ground	18.9 in
Maximum depth of cut	28.1 in

Ripper

Ripping depth, maximum	16.8 in
Ripper shank holder spacing	21 in
Ripper shank holders	5
Penetration force	19900 lb
Pryout force	18861 lb
Machine length increase, beam raised	36.2 in

Scarifier

Rear: Working width	91 in
Rear: Scarifier shank holders	9
Rear: Scarifier shank holder spacing	10.5 in

Tandems

Height	19.9 in

Width	7.9 in
Sidewall thickness - inner	0.6 in
Sidewall thickness - outer	0.7 in
Drive chain pitch	2 in
Wheel axle spacing	60 in
Tandem oscillation - front up	15°
Tandem oscillation - front down	25°

Dimensions

Height - top of cab	129.6 in
Length - counterweight to ripper	399.4 in
Width - outside front tires	98.1 in
Length - front axle to mid tandem	241 in
Length - front tire to rear of machine	343 in
Length - front axle to moldboard	100.5 in
Length - between tandem axles	60 in
Width - outside rear tires	98.1 in
Width - tire center lines	83.7 in
Height - front axle center	22.5 in
Height to exhaust stack	123 in
Height to top of cylinders	119.7 in
Ground clearance at rear axle	13.4 in

730 ARTICULATED TRUCK

SPECIFICATIONS

Units: **US** | **Metric**

Engine	
Engine Model	Cat® C11 ACERT™
Gross Power - SAE J1995	325 hp
Net Power - SAE J1349	317 hp
Net Power - ISO 9249	321 hp
Net Power - EEC 80/1269	321 hp
Bore	5.1 in
Stroke	5.5 in
Displacement	680 in3
Weights	
Rated Payload	31 tons
Body Capacities	
Heaped SAE 2:1	22.1 yd3
Struck	17.1 yd3
Tailgate Heaped SAE 2:1	24 yd3
Tailgate Struck	18 yd3
Transmission	
Forward 1	5 mph
Forward 2	9 mph
Forward 3	14 mph
Forward 4	21 mph
Forward 5	29 mph
Forward 6	34 mph
Reverse 1	5 mph
Operating Weights	
Front Axle - Empty	28969 lb
Center Axle - Empty	11023 lb
Rear Axle - Empty	10384 lb
Total - Empty	50376 lb
Front Axle - Rated Load	5997 lb
Center Axle - Rated Load	27999 lb
Rear Axle - Rated Load	27999 lb
Total - Rated Load	61994 lb
Front Axle - Loaded	34965 lb

Center Axle - Loaded	39022 lb
Rear Axle - Loaded	38382 lb
Total - Loaded	112370 lb

Body Plate Thickness	
Front	0.31 in
Scow	0.55 in
Side	0.47 in
Base	0.55 in

Service Refill Capacities	
Fuel Tank	94 gal
Cooling System	18 gal
Hydraulic System	49 gal
Engine Crankcase	11 gal
Transmission	9.5 gal
Final Drives/Differential	43.3 gal
Output Transfer Gear Box	4.8 gal

Sound Levels	
Interior Cab	76 dB(A)

Body Hoist	
Raise time	12 Seconds
Lower time	8 Seconds

Standards	
Brakes	ISO 3450 – 1996
Cab/FOPS	ISO 3449 Level II – 2005
Cab/ROPS	ISO 3471 – 2008
Steering	ISO 5010 – 2007

320D LRR HYDRAULIC EXCAVATOR

Overview | Specifications | Benefits & Features | Standard / Optional Equip. | Work Tool Attachments | Machine Comparison

SPECIFICATIONS

Units: **US** | **Metric**

Engine	
Engine Model	Cat® C6.4 ACERT™
Net Flywheel Power	148 hp
Net Power - ISO 9249	148 hp
Net Power - SAE J1349	148 hp
Net Power - EEC 80/1269	148 hp
Bore	4.02 in
Stroke	5.12 in
Displacement	389 in3
Weights	
Operating Weight	52249 lb
Operating Weight-Minimum	46755 lb
Operating Weight-Maximum	55093 lb
Hydraulic System	
Main Implement System - Maximum Flow (2x)	54 gal/min
Max. pressure - Equipment	5076 psi
Max. pressure - Heavy Lift	5221 psi
Max. pressure - Travel	5076 psi
Max. pressure - Swing	3626 psi
Pilot System - Maximum flow	9 gal/min
Pilot System - Maximum pressure	566 psi
Boom Cylinder - Bore	4.7 in
Boom Cylinder - Stroke	49.6 in
B1 Family Bucket Cylinder - Bore	4.7 in
B1 Family Bucket Cylinder - Stroke	43.5 in
Drive	
Maximum Drawbar Pull	46311 lb
Maximum Travel Speed	3.5 mph
Track	
Number of Shoes Each Side - Long Undercarriage	49
Number of Track Rollers Each Side - Long Undercarriage	8
Number of Carrier Rollers Each Side - Long Undercarriage	2
Service Refill Capacities	

320D LRR Hydraulic Excavator

Fuel Tank Capacity	77 gal
Cooling System	6.6 gal
Engine Oil	8 gal
Swing Drive	2.1 gal
Final Drive (each)	2.1 gal
Hydraulic System (including tank)	56 gal
Hydraulic Tank (Including suction pipe)	41 gal

Sound Performance	
Performance	ANSI/SAE J1166 APR 90

Standards	
Brakes	SAE J1026 APR90
Cab/FOGS	SAE J1356 FEB88

Swing Mechanism	
Swing Speed	11.5 RPM
Swing Torque	45612 lb ft

Dimensions	
Transport width	125.2 in


320D