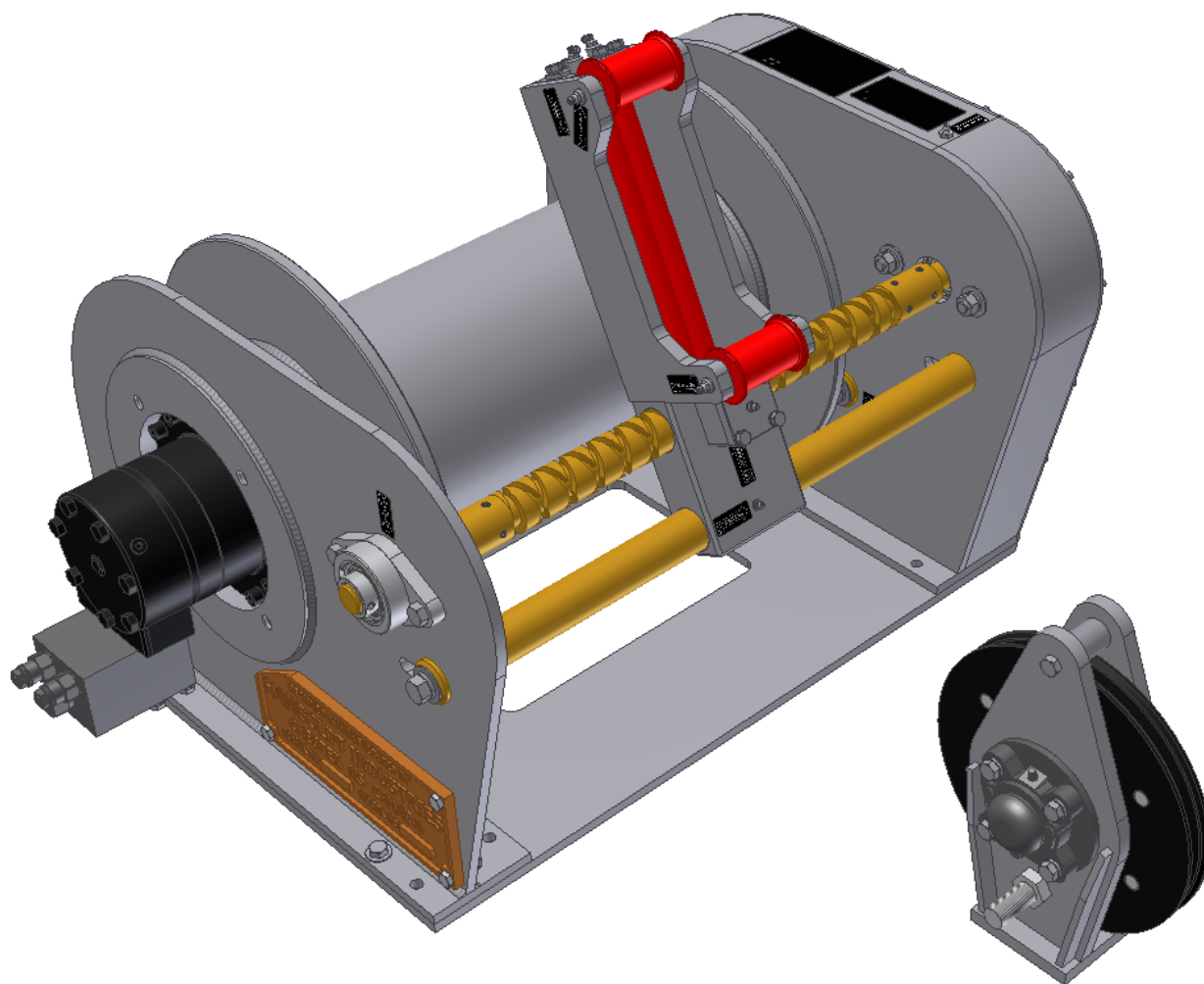


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DB-1716/S CTD Winch & Metering Sheave

Installation, Operation & Maintenance Manual



Customer	DFO
Purchase Order Number	AC07018525
Purchase Order Date	19 Oct 2010
Sales Order Number	31399

TABLE OF CONTENTS

SECTION 1:	WARRANTY & CERTIFICATES
SECTION 2:	DESCRIPTION & SPECIFICATION
SECTION 3:	STORAGE & INSTALLATION
SECTION 4:	OPERATION
SECTION 5:	PREVENTATIVE MAINTENANCE
SECTION 6:	FACTORY ACCEPTANCE TESTING (F.A.T.)
SECTION 7:	COMPONENT LITERATURE
SECTION 8:	SPARES LIST
SECTION 9:	DRAWINGS

SECTION 1: WARRANTY & CERTIFICATES

SECTION 2: DESCRIPTION & SPECIFICATION

2.1: GENERAL

The following is a general description for the DB-1716/S CTD Winch and Metering Sheave as supplied by Hawboldt Industries to DFO as per Magneto Quebec Inc. purchase order AC07018525.

2.2: SUPPLY

1 only CTD Winch; model DB-1716/S.
1 only Metering Sheave; model 34-00019-021.

2.3: DB-1716/S CTD Winch & Metering Sheave

The Hawboldt Industries DB-1716/S CTD Winch is configured for over-wound $\varnothing 3/16"$ 7x19 wire rope. The winch is driven by a White Hydraulics direct drive hydraulic motor with internal brake. The hydraulic motor is controlled by a directional control valve (supplied by others). Dual counterbalance valves mounted on the motor provide overload protection and load holding (locked when hydraulic fluid feed is cut). The levelwind is a diamond screw type level wind that corrects for steep fleet angles between the winch and sheave. The screw is synchronized with the drum through a chain drive located at the non-drive end of the winch. The ratio is designed for $\varnothing 3/16"$ 7x19 wire rope. The following parameters may be useful:

Nominal wire size:..... $3/16"$ (0.1875")
Number of wires per layer: ... 86
Number of layers: 13
Number of screw pitches: 15
Overall spooling ratio: 86 to 15

2.4: Metering Sheave (Payout system for CTD Winch)

The Hawboldt Industries metering sheave system includes a Nylatron metering sheave with sensor, LCI-80 speed and payout displays mounted in 316SS rear enclosures and mounting brackets (master & slave). A junction box is to be mounted on the A-frame and the sensor (4-conductor shielded) is to be wired to terminal blocks inside the junction box (see component literature for details). The displays can be remotely mounted.

2.5: SPECIFICATIONS

DB-1716/S CTD Winch	
Rated Line Pull (Bare Drum)	350 Kg (770 lbs)
Rated Line Speed (Bare Drum)	60 m/min (196 ft/min)
Rated Brake Capacity (Mid Drum)	1.1 tonnes
Rope Capacity	900 m of $\varnothing 3/16"$ rope
Hydraulic Requirements (Rated)	8 GPM @ 2,000 PSI
Unit Dry Weight	465 lbs (est.)

SECTION 3: STORAGE & INSTALLATION

3.1: EQUIPMENT STORAGE

It is the responsibility of the customer to assure equipment is properly stored and maintained once the goods are received.

The CTD Winch may be stored out of doors provided that it is well greased and any damaged painted areas are repaired.

Precautions should also be taken when an installed system is shut down for long periods of time. If possible, the system should be started every two or three weeks to ensure internal parts are lubricated and to prevent the premature failure of seals and to reduce levels of condensation.

3.2: EQUIPMENT INSTALLATION

The DB-1716/S must be positioned to assure proper alignment of the drum with the over-boarding (metering) sheave. The center of the winch drum must be in line with the sheave in its deployed position.

The recommended mounting bolts are 3/8"-UNC, grade 8 for the mounting bolts that are located on the winch frame base. Frame base bolts are to be tightened in sequence in equal increments to a total of 35 foot-pounds (lubricated). Reference drawing 34-00019-000 (General Arrangement) in the drawings section of this manual for equipment footprints.

The metering sheave base is to be welded to the A-Frame so that the sheave centerline is in line with the centerline of the winch drum. The recommended weld is a 1/4" fillet all around.

SECTION 4: OPERATION

4.1: SAFETY RECOMMENDATIONS

It is essential to take precautions to ensure the safety of the operator and the crew while operating the CTD Winch. The operator is to have a thorough knowledge of the winch capabilities and always be present at the controls while the winch is running. The following recommendations are offered as a guide to safe operation:

- The equipment must be well maintained and be in good operating condition.
- Before starting the hydraulic system, be sure all controls move freely and are in the neutral position.
- Never attempt to clean or lubricate equipment components while the equipment is running.
- Never operate the controls until it is certain that all crew are clear of moving gear.
- Never exceed the maximum load ratings.
- Operate the controls smoothly to prevent shock loads to both the winch and rigging.
- Be sure the equipment is properly lubricated and maintained before use. See section on lubrication and maintenance.
- Never use this equipment to carry or lift people. It is not designed for this purpose.

4.2: CONTROLS

The controls are supplied by others. Dual counterbalance valves provide overload protection and load holding (locked when the hydraulic fluid feed is cut) when the joystick is centered.

4.3: LEVELWIND

The winch levelwind has a clutch system for adjustment of the levelwind spooling box position. It will generally be unnecessary to adjust the spooling box position through the use of the clutch. When first installing the cable it might be necessary to adjust the levelwind position through the use of the clutch for correct spooling. Adjustment is accomplished by first releasing the spring plunger that keeps the clutch in place, and moving the clutch towards you until the spring plunger re-engages. Once the adjustment has been made the clutch must be positioned into its engaged locked position, furthest from you. The clutch should be actuated every month or so to keep it lubricated, this should be done when the winch power is locked out.

4.4: PAYING OUT AND HEAVING

Pay Out

1. Ensure adequate oil supply and pressure.
2. Operate the winch using the lever controller. Always use smooth, gradual motion to prevent shocks to the winch and cable.
3. Pay out the cable to the desired depth.

Heaving

1. Ensure adequate oil supply and pressure.
2. Operate the winch using the lever controller. Always use smooth, gradual motion to prevent shocks to the winch and cable.
3. Heave the cable until package is retrieved.

SECTION 5: PREVENTATIVE MAINTENANCE

5.1: LUBRICATION

Although Hawboldt Industries uses materials and finishes well suited for use in severe marine environments, it is imperative that a comprehensive lubrication maintenance program be utilized to ensure long term reliability. If the unit is not used for extended periods, all points requiring periodic lubrication are to be attended every 6 months and prior to restarting. Any excess grease is to be wiped off.

Refer to the following lubrication chart, as well as drawings 34-00019-024 and 34-00019-025, for recommended service intervals and locations.

Loc.	Description	Service
A	Clutch & Drive Sprocket	30 hours
B	Vertical Rollers	30 hours
C	Horizontal Rollers	30 hours
D	Spooling Box & Blade	30 hours
E	Main Bearing	30 hours
F	Idler Sprocket	30 hours
G	Levelwind Screw	Maintain a layer of protective grease
H	Levelwind Guide Rod	Maintain a layer of protective grease
I	Levelwind Bearings	As required
J	Roller Chain	Maintain a layer of protective grease
K	Sheave Bearings	30 hours

5.2: INSPECTIONS

Hydraulic Motor:

See appropriate documentation in the component literature section of this manual.

SECTION 6: FACTORY ACCEPTANCE TESTING (F.A.T.)

SECTION 7: COMPONENT LITERATURE



COMPONENT	MANUFACTURER	MODEL NUMBER	HAWBOLDT NUMBER
Hall Effect Sensor	Electro-Sensors	775-000404 (906B)	5400091
Main Bearing	SKF	2209 ETN9	5401499
Spooling Bearing	SKF	FYTB 1 TF	5401500
Counterbalance Valve	Sun Hydraulics	CBCA-LAN	5401521
Counterbalance Valve Manifold	Sun Hydraulics	XTS/S	5401522
Sheave Bearing	NTN	CM-UCFC205-100D1	5402387
Hydraulic Motor	White Hydraulics	610300W8331AAAAA	5402395


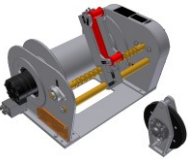
SECTION 8: SPARES LIST


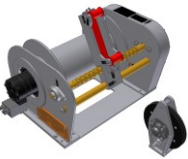
QUANTITY	DESCRIPTION	HAWBOLDT NUMBER
1	Hall Effect Sensor	5400091
2	Horizontal Roller	340035533
1	Idler Sprocket	34-00019-007
1	Levelwind Drive Sprocket	34-00019-241
1	Levelwind Knife	340035721
1	Main Bearing	5401499
1	Retaining Ring, External, 1-3/4"	5401536
1	Retaining Ring, External, 1", SS	5402418
10 ft	Roller Chain, #35, 316 SS	5401542
1	Seal, 3/4" ID X 1-1/4" OD X 1/4"	5401498
1	Seal, 2" ID X 2-3/4" OD X 5/16"	5401497
2	Sheave Bearing	5402387
2	Spooling Bearing	5401500
1	Spring Plunger	5401550
1	Sprocket Bushing for Levelwind Drive Sprocket	5402381
2	Thrust Washer	5401549
2	Vertical Roller	340035532

SECTION 9: DRAWINGS

DRAWING	DESCRIPTION
34-00019-000	DB24-1716/S CTD Winch General Arrangement
34-00019-001	DB24-1716/S CTD Winch General Assembly
34-00019-008	DB24-1716/S CTD Winch Decal Layout
34-00019-021	CTD Metering Sheave General Arrangement
34-00019-022	CTD Metering Sheave General Assembly
34-00019-024	DB24-1716/S Lubrication Diagram
34-00019-025	CTD Metering Sheave Lubrication Diagram
340035525	Spooling Box Assembly
340035536	Levelwind Clutch (sheet 1 only)

	
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Hawboldt Industries (1989) Ltd. – Standard Terms and Condition of Sale

HAWBOLDT INDUSTRIES (1989) LTD.

220 Hwy 14, Chester, NS B0J 1J0
herein referred to as "HAWBOLDT"

GENERAL CONDITIONS OF SALE

- I. Design and improvement of our equipment is a continuous process. Hawboldt, therefore, reserves the right to make design improvements after receipt of an order. Photographs and other illustrations or advertising matter represent generally the goods offered, but are not binding in detail.
- II. Delivery dates are estimated as accurately as possible, but are not guaranteed in any way unless otherwise specifically provided for in this proposal.
- III. Unless otherwise specifically provided for in this proposal, this offer does not include a penalty clause of any kind and acceptance of this offer may not create, by its terms, any such penalty clause.
- IV. Prices quoted herein are based on current duty and currency exchange rates where applicable, and Hawboldt reserves the right to adjust prices to compensate for any changes in these rates, should it be necessary to do so.
- V. Notwithstanding any conditions printed on the Purchaser's order form, in accepting this offer the Purchaser agrees to the following TERMS AND CONDITIONS OF SALE which are also detailed on the Hawboldt Acknowledgment and Acceptance of Order Form, and these Terms and Conditions only will apply unless otherwise specifically provided in this proposal.

TERMS AND CONDITIONS OF SALE

1. **CONTRACT OF SALE** - This order is accepted on, and is subject to, the terms and conditions set forth on the face hereof and below, none of which may be varied or added to except in writing, signed by HAWBOLDT'S duly authorized representative. Any inconsistent matters, terms or conditions in Purchaser's order or confirmation will not be binding on Hawboldt. HAWBOLDT HEREBY EXPRESSLY OBJECTS TO ANY ADDITIONAL OR DIFFERENT TERMS IN ANY OF PURCHASER'S DOCUMENTS.
2. **COMPLETION** - Unless otherwise provided on the face hereof, time for the completion of manufacture of the machinery and equipment covered by this order (hereinafter called the "Machinery") shall be computed from the date of the Acknowledgment and Acceptance of Order, or from the date on which Hawboldt has received from the Purchaser any information, drawings, data, patterns, or other material which are to be supplied by the Purchaser and are necessary to proceed with the manufacture of the machinery, whichever is the latest. Hawboldt shall not be responsible for delays in delivery or any failure to deliver due to causes beyond its control including without limitations: acts of God or the public enemy; mobilization; blockades; embargoes; revolution; civil commotions, riots; fires; floods; winds; earthquakes; epidemics; quarantine restrictions; explosions; accidents; other catastrophes; strikes; slowdowns; lock-outs or other labour difficulties; the acts; laws or regulations of any government or governmental authority; federal, provincial, local or foreign, including safety, health and environmental regulations; unusual weather; delays of sub-contractors or suppliers; or inability to obtain shipping facilities, labour, raw materials, supplies, fuel or power.
3. **MINIMUM INVOICE** - The minimum single invoice or billing charge is \$150.00
4. **PAYMENTS** - If payment of any part of the purchase price is not made as provided on the face hereof, Hawboldt reserves the right to discontinue manufacture of the Machinery until such payment has been made and to revoke any further credit, whereupon Hawboldt shall have the right to receive payment before any further shipment of Machinery. In the case of any delay in payment or in establishing agreed security for payment, time for completion may, at Hawboldt's option, be extended for a corresponding period. When any payment is due upon shipment or delivery and shipment is delayed for any cause beyond Hawboldt's control, payment shall be made when the machinery is ready for shipment. Purchaser agrees that any letters of credit or other guarantee of payment shall be maintained fully valid until final payment has been made. IF PAYMENT IS NOT MADE WITHIN THIRTY DAYS FROM THE DATE OF SHIPMENT UNDER THE

TERMS OF THIS AGREEMENT, PURCHASER AGREES TO PAY HAWBOLDT AN ADDITIONAL SUM EQUAL TO 2% PER MONTH, 24% PER ANNUM OF THE UNPAID PURCHASE PRICE UNTIL PAYMENT IS MADE.

5. **SECURITY INTEREST** - Hawboldt retains a vendor's lien in the machinery to secure payment in full of the purchase price and any and all other payments which may be or become payable to Hawboldt hereunder. If possession of the Machinery is given to the Purchaser before full payment, the Purchaser shall execute any additional instruments including without limitation security agreements and financing statements necessary to perfect or maintain Hawboldt's vendor's lien and shall pay or reimburse Hawboldt for all filing and recording costs including without limitation, any taxes payable upon filing or recording. In the event of default in payment of any installment of the purchase price when due, the entire balance thereof shall, at Hawboldt's option, become immediately due and payable, and Hawboldt shall have and may exercise all the rights of a secured party then in force under the laws of the Province of Nova Scotia, Canada or such other province or state as may then have jurisdiction over the machinery, including without limitation the right to repossess the Machinery with or without legal process.
6. **DELIVERY AND PURCHASE PRICE** - Unless otherwise provided on the face hereof, delivery is to be made Ex-Works Hawboldt's plant, Chester, Nova Scotia, Canada. Risk of loss within the meaning of the Sale of Goods act of the Province of Nova Scotia shall pass to the Purchaser at the stated point of delivery. The purchase price includes ordinary packing for shipment, but if special packing or tie-down and blocking to anchor the machinery to the transport vehicle is required, Hawboldt is to be reimbursed for the cost thereof. The shipping charges are the responsibility of the customer. Unless otherwise stated in the purchase order, Hawboldt will select a suitable courier to deliver the goods. The goods will be delivered, with freight charges being on a "collect" basis. The goods will be insured unless otherwise specified by the customer. Any freight or insurance costs, which may be included in the purchase price, are based on rates at the date of the Acknowledgment and Acceptance of Order and any increase shall be paid by the Purchaser.
7. **WARRANTIES** - Hawboldt warrants that it will repair F.O.B. its factory or furnish without charge F.O.B. its factory, a similar part to replace any material in its machinery which, during the earlier of 1 year after the said machinery is put into operation or 18 months after the date of shipment of the machinery from its plant, is proved to the satisfaction of Hawboldt to have been defective at the time it was sold, provided that all parts claimed defective shall be returned, properly identified, to Hawboldt's factory, charges prepaid.
This Warranty to repair applies only to new and unused machinery, which, after shipment from the factory of Hawboldt, has not been altered, changed, repaired or treated in any manner whatsoever unless such alteration, change, repair or treatment has been previously authorized in writing by Hawboldt or has been performed by the authorized service representative of Hawboldt. This Warranty to repair is the only Warranty either express, implied, or statutory, upon which the said machinery is sold; the company's liability in connection with this transaction is expressly limited to the repair or replacement of defective parts, all other damages and warranties, statutory or otherwise, being hereby expressly waived by the Purchaser. Component parts and equipment not manufactured by Hawboldt are warranted only to the extent they are warranted by the supplier to Hawboldt. Hawboldt will use reputable suppliers. Hawboldt shall not be liable for any incidental or consequential damages for breach of any warranty and the Purchaser's sole remedy for breach of any warranty or for any negligence of Hawboldt shall be as set forth herein. Hawboldt makes no warranty that the machinery shall be merchantable or fit for any particular purpose nor does it make any other warranty, express or implied except as is expressly set forth herein. Hawboldt warrants that the machinery will conform to the description on the face hereof; that it will convey good title thereto; that such goods will be delivered free from any lawful security interest or other lien or encumbrance unknown to the purchaser except as otherwise expressly provided herein. No representative of Hawboldt has authority to change this Warranty or this contract in any manner whatsoever and no attempt to repair or promise to repair or improve the machinery covered by this contract by any

Hawboldt Industries (1989) Ltd. – Standard Terms and Condition of Sale

representative of Hawboldt shall waive any consideration of the contract or change or extend this Warranty in any manner whatsoever.

8. **LIABILITY** - Purchaser agrees to hold Hawboldt harmless from, and to indemnify it against, any and all claims, demands, actions, and causes of action of any nature whatsoever, and any expenses incident to the defence thereof, for injury to or death of persons and loss of or damage to property arising in connection with the Machinery or the assembly, erection, operation, or use thereof.

Hawboldt shall be under no obligation after shipment to assemble, erect or test the machinery unless specifically provided for on the face hereof. If the contract provides for instruction or installation services, Hawboldt's sole obligation with respect thereto shall be to provide the purchaser at his expense, (unless otherwise provided herein) an experienced person or persons, who shall become the agent or agents of the Purchaser and remain such for the period provided. Hawboldt shall under no circumstances be liable to the Purchaser or anyone else for any acts or omissions of any such person or persons.

9. **TAXES** - All present and future sales, use, excise and similar taxes imposed by any federal, provincial, local or foreign government which Hawboldt may be required to pay or collect with respect to the machinery or the sale, transportation, storage, use or consumption thereof shall be for the account of the Purchaser to the extent permitted by law. Unless otherwise stated in the proposal, Federal and Provincial sales taxes are not included in prices quoted for domestic sale. With the exception of the province of Nova Scotia, the purchaser is responsible for remittance of Provincial taxes.

10. **NON-CANCELLABLE** - This order is not subject to cancellation or revision by the Purchaser except with Hawboldt's written consent. Cancellation charges will be:

- Fifteen percent (15%) of the total purchase price to cover Sales Administration and handling costs, plus
- The cost of all unfinished material and the shop labour with overhead plus component cancellation charges from Hawboldt's vendors if any, plus Engineering costs incurred with overhead, plus profit in proportion to the state of completion of the product at the time of cancellation of the order. Upon payment to Hawboldt as above provided, all equipment manufactured under the contract will become the property of the Purchaser.

11. **NON-ASSIGNABLE** - Neither this contract nor any interest herein is assignable or transferable without the express written consent of Hawboldt.

12. **WAIVER** - Any waiver by either the Purchaser or Hawboldt of a breach by the other of any provision of this contract of sale shall not be deemed a waiver of future compliance therewith, and all provisions shall remain in full force and effect, notwithstanding any such waiver.

13. **LIMITATION OF ACTION** - No action shall be brought by the Purchaser for any alleged breach by Hawboldt of this Contract of Sale more than one (1) year after the occurrence of the cause of such alleged breach of contract.

14. **APPLICABLE LAW** - This contract shall be governed and construed according to the law of the Province of Nova Scotia, Canada.

15. **DELAY IN SHIPMENT** - Prices quoted are based on shipment dates indicated. If shipment is delayed at the request of the customer, or because of incomplete shipping information/documentation, or a delay in receipt of customers order confirmation, or because of delay in receipt of Letter of Credit (if applicable), Hawboldt reserves the right to review extra costs resulting from delay and increase prices accordingly.

16. **INSPECTION AND TESTING** - The equipment quoted will be subject to standard Hawboldt inspection and testing before shipment. Any other inspection or testing required by the customer must be specified at time of the order and shall be at the customer's expense unless otherwise stated in the proposal. Customer will be responsible for costs of inspection and tests requested after Hawboldt's acceptance of the order and any costs resulting from delay in shipment.

17. **QUANTITIES** - Prices quoted are based on the purchase of the quantities indicated. Prices may be adjusted by Hawboldt if quantities other than those quoted are actually purchased.

SPECIAL CONDITIONS FOR EXPORT SALES

- EXPORT LICENSE** - If any Canadian regulation requires an export license, Hawboldt will apply for such license at its expense, and Purchaser agrees to furnish all information required for such license application. In case Hawboldt is unable to secure an export license, the contract between the parties shall be cancelled without liability on either party.
- IMPORT LICENSE** - If an import license is required, it is to be provided by Purchaser who will see that it remains valid and effective until the import has been completed.
- REGULATIONS** - The making and performance of the contract between the parties are subject to compliance with all applicable laws and regulations of the Canadian Government and agencies thereof, and in case any such law or regulation should prevent Hawboldt from performing or completing the contract in accordance with the terms thereof, then the contract may be terminated by Hawboldt upon written notice to the Purchaser. In such event, Hawboldt and any surety for Hawboldt will be relieved of all further obligation to proceed; any guaranty deposit or surety bond furnished by Hawboldt shall immediately be returned to Hawboldt and Hawboldt is to be paid the proportion of the contract price, including profit, represented by the expenditure made and the obligations contracted to the date of such termination. Upon return to Hawboldt of any guaranty deposit or surety bond and payment to Hawboldt as above provided, all equipment manufactured under the contract will become the property of the Purchaser.
- PAYMENT TERMS** - Unless other mutually agreed to payment terms are arranged in advance in writing, payment will be by Irrevocable Letter of Credit Confirmed by any Chartered Canadian Bank, payable at sight. Unless otherwise stated in the body of this proposal, equipment will be supplied ex-works (not including shipping preparation and loading) INCO International Chamber of Commerce, 2000 Revision, Publication 560, with payment to be made against the Confirmed Irrevocable Letter of Credit upon presentation of shipping documents. The Letter of Credit shall be established with Hawboldt's bank, all charges for the account of the Buyer.
- SHIPMENT DATE** - Equipment offered in this proposal is "estimated" to be ready for shipment in the time frame indicated on the proposal. Shipment date is based on receipt of firm order, a Letter of Credit acceptable to Hawboldt, and down payment (if required) at our Chester, Nova Scotia Office. Shipping date will be confirmed at time of order.
- CURRENCY AND TAXES** - Unless otherwise stated prices quoted are in Canadian funds, and do not include any import duties, customs fees or taxes of country of import. No Canadian taxes are applicable or included.
- PACKAGING** - Unless otherwise stated prices quoted are on shipment in suitable ocean containers. However, Hawboldt has the facilities to partial crate or full crate the equipment quoted. Prices for this service can be quoted at the customer's request.
- FEES** - All handling and freight forwarding fees are to the account of the buyer.
- DOCUMENTATION REQUIREMENTS** - Received for Shipment Ocean Bills of Lading or Freight Forwarders Certificate of Receipt in cases where customer has specified use of a freight forwarder.