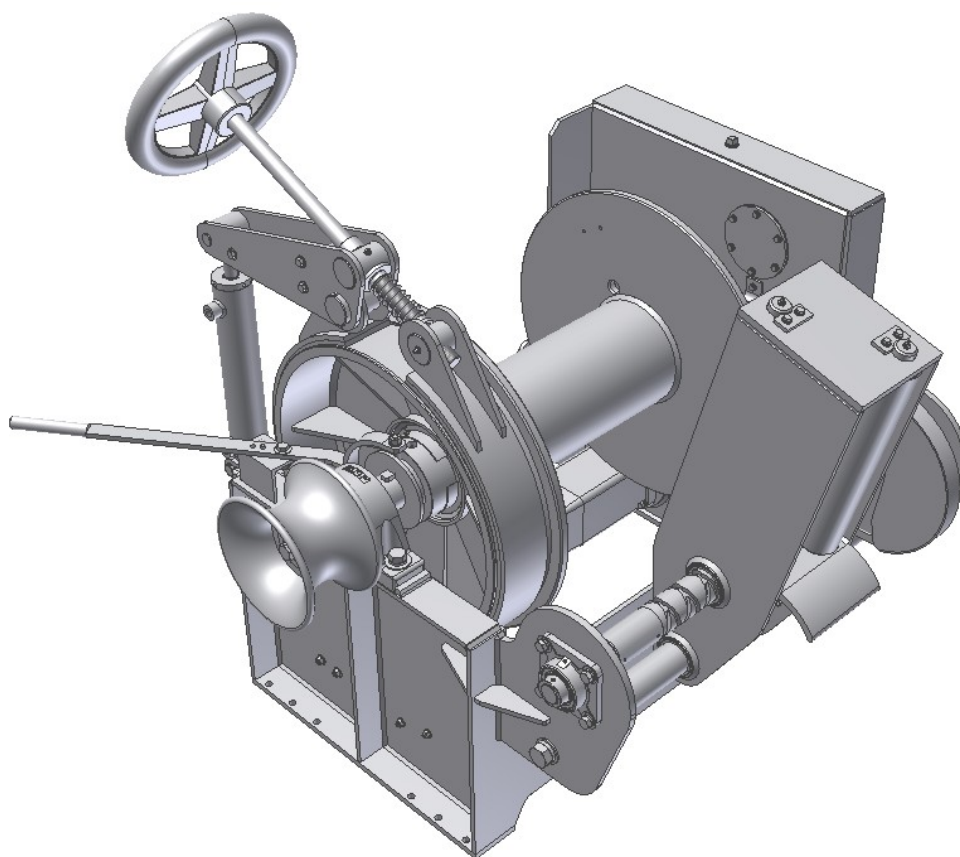




Hawboldt Industries (1989) Ltd.
P.O. Box 80 Chester, NS, B0J 1J0
Tel: (902) 275-3591
Fax: (902) 275-5014
Website: www.hawboldt.ca
e-mail: hawboldt@hawboldt.ca

HSF-2226 ANCHOR WINCH

INSTALLATION, OPERATION & MAINTENANCE MANUAL



Customer: DEPARTMENT OF FISHERIES & OCEANS	Sales Order: 31399
Purchase Order: AC07018525	Serial Number(s): 1244-1 1244-2 1244-3
Purchase Date: 19 OCT 2010	

TABLE OF CONTENTS

1.0: WARRANTY 2

2.0: SPECIFICATION 3

2.1: DESCRIPTION 3

2.2: PERFORMANCE 3

2.3: SPECIFICATIONS 3

2.4: CERTIFICATIONS 3

3.0: INSTALLATION 4

3.1: MOUNTING 4

3.2: CABLE CLAMPING 4

3.3: CABLE SPOOLING 5

3.4: SPOOLING PARAMETERS 5

3.5: PROPER WIRE DIAMETER MEASUREMENT 6

3.6: SPOOLING DIAGRAM 6

4.0: SAFETY 7

4.1: WARNINGS 7

4.2: SAFETY RECOMMENDATIONS 7

5.0: OPERATION 8

5.1: CONTROLS 8

5.2: FAILSAFE BRAKE 8

5.3: PAYING OUT AND HEAVING 8

5.4: FREE WHEELING 9

5.5: WARPING HEAD 9

6.0: MAINTENANCE 10

6.1: STORAGE 10

6.2: BRAKE TENSION 10

6.3: DECALS 10

6.4: SPARE PARTS 11

6.5: LUBRICATION 12

7.0: FACTORY ACCEPTANCE TEST 13

8.0: COMPONENT LITERATURE 14

9.0: DRAWINGS 15

1.0: WARRANTY

This section contains the Hawboldt Industries (1989) Ltd. – Standard Terms and Condition of Sale.

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:
 - (a) Fifteen percent (15%) of the total purchase price to cover Sales Administration and handling costs, plus
 - (b) 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

- A. **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.
- B. **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.
- C. **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.
- D. **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.
- E. **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.
- F. **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.
- G. **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.
- H. **FEES** - All handling and freight forwarding fees are to the account of the buyer.
- I. **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.

2.0: SPECIFICATION

2.1: DESCRIPTION

The model HSF-2226 ANCHOR WINCH is a single drum anchor winch with a warping head. It includes a levelwind for improved spooling and a clutch for freewheeling. The winch is powered by a hydraulic motor with a drive chain lubricated in an oil bath. It has a failsafe, hydraulically released brake. There is also manual control of the band brake that is actuated using a hand wheel. The winch is protected from corrosion by a hot dipped galvanized finish.

2.2: PERFORMANCE

The performance values shown below are the maximum and must not be exceeded.

Bare Drum Pull	3.5 tonnes
Bare Drum Speed	30 m/min
Warping Head Pull	1.5 tonnes
Warping Head Speed	15 m/min

2.3: SPECIFICATIONS

Hydraulic Input	24 GPM @ 2,500 PSI
Brake Capacity	4.3 tonnes @ Mid-Drum
Drum Capacity	137.5 m of 19 mm wire rope + 10 m of 19 mm chain

2.4: CERTIFICATIONS

The anchor winch is certified by BV (Bureau Veritas).

3.0: INSTALLATION

3.1: MOUNTING

The mounting base should allow for easy installation as well as ample drainage.

Fasten the frame to the vessel with Hex Head Cap Screws, Lock Washers and Flat Washers. See the chart below.

FASTENER	QUANTITY	TORQUE
1/2"-13 UNC Grade 8 Hex Head Cap Screw	12	80 ft-lbs (lubricated)

Refer to the General Arrangement drawing in the drawings section of this manual for footprint details.

In order to facilitate proper spooling, the centre of the winch drum must be aligned with the anchor roller.

3.2: CABLE CLAMPING

The anchor winch is delivered with the wire spooled on it. In case re-spooling is necessary, follow the procedure below.

Rotate the drum until the levelwind carriage is at the spooling screw dwell on the side of the drum with the cable clamp. Thread the cable between the levelwind rollers, then through the opening in the drum flange and clamp to the flange with the cable clamp and bolts.

3.3: CABLE SPOOLING

The anchor winch is delivered with the wire spooled on it. In case re-spooling is necessary, follow the procedure below.

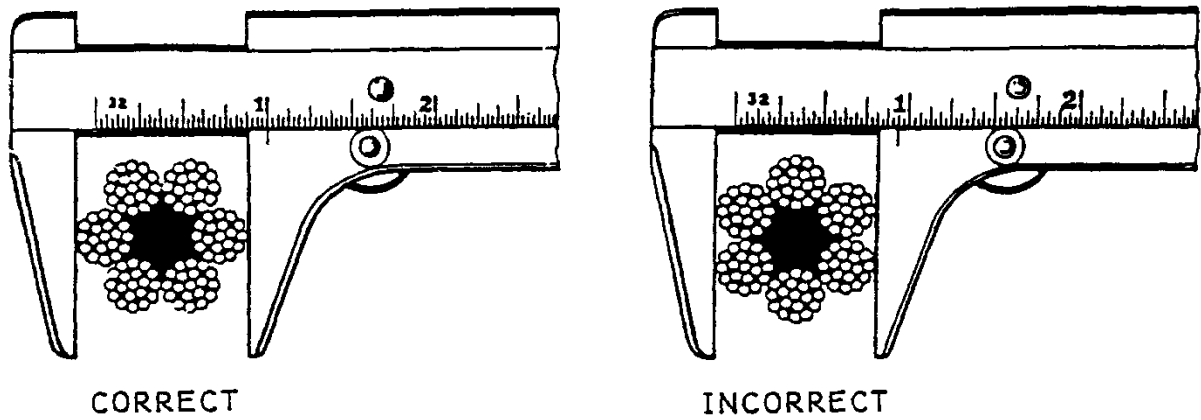
To spool the cable on the drum for the first time:

- 1 . Check the maximum diameter of the wire.
- 2 . Set the levelwind carriage in the spooling screw dwell on the cable clamp side of the drum.
- 3 . The wire tension should be between 5 – 10 % of winch pull on the first layer.
- 4 . Run the winch slowly and allow the wire to spool evenly across the drum.
- 5 . After the required number of revolutions for the first layer has been made, there should be a gap between the last wire and the flange approximately $\frac{1}{2}$ the wire diameter.
- 6 . If the gap is too small, the wire spacing on traverse is too large. Remove approximately $\frac{2}{3}$ wire and re-spool. Light tapping will cause the wire to “nest” and reduce the spacing. Never beat the wire in place. Only a slight change in wire spacing will significantly affect the gap between the wire and the flange.
- 7 . If the gap is too large, the wire spacing on traverse is too small. Remove approximately $\frac{2}{3}$ wire and re-spool. Use the blade of a screwdriver to increase spacing. Only a slight change in wire spacing will significantly affect the gap between the wire and the flange.
- 8 . The wire tension on the second layer should be between 15–20% of winch pull.
- 9 . The wire can now be automatically spooled to full drum.

3.4: SPOOLING PARAMETERS

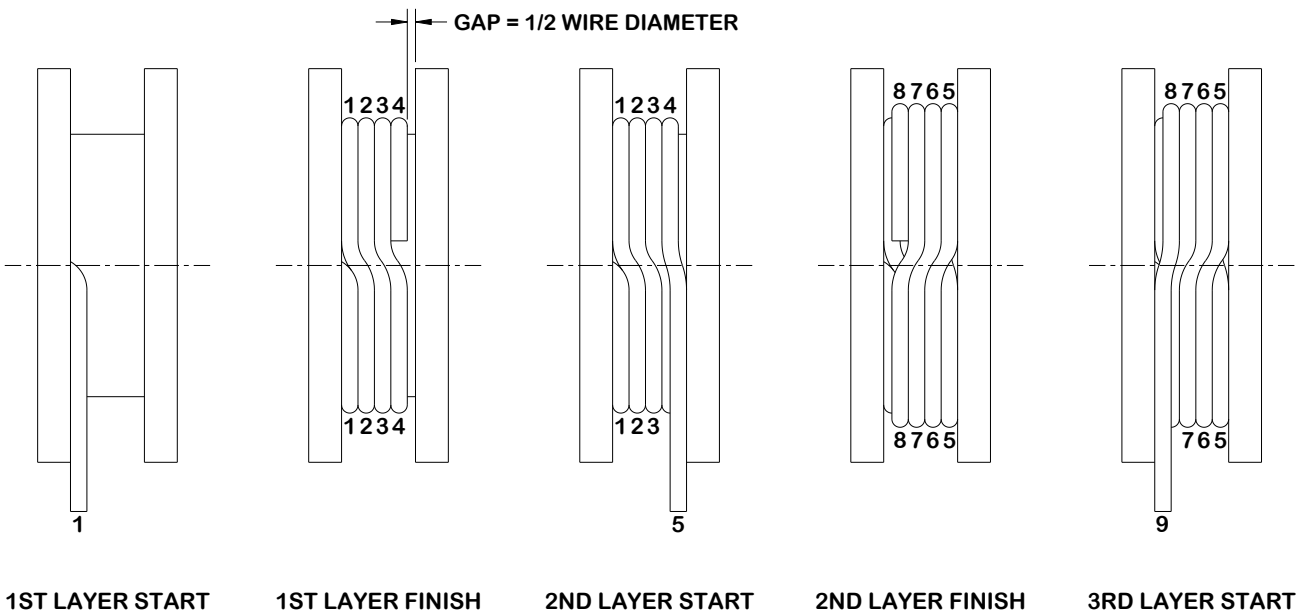
Nominal wire size	19 mm
Number of layers	7
Number of wires per layer	26
Number of drum rotations per layer	26
Number of screw pitches	10
Overall spooling ratio	26 to 10

3.5: PROPER WIRE DIAMETER MEASUREMENT



3.6: SPOOLING DIAGRAM

This is a generic diagram showing how cable should look as it spools onto a drum. Each layer has the same number of wraps. Refer to the Spooling Parameters section for the actual number of wires per layer for this equipment.



4.0: SAFETY

4.1: WARNINGS

Before operating this equipment familiarize yourself with all controls and their function. Equipment should only be operated by fully trained personnel.

The holding power of the brakes and proper functioning of all machine controls must be verified before the machine is operated to ensure the safe operating condition of the machine.

Do not disassemble the brake cylinder. This is very dangerous. The spring inside is under preload even when the cylinder rod is fully retracted.

4.2: SAFETY RECOMMENDATIONS

It is essential to take precautions to assure the safety of the operator and the crew while operating deck machinery. The operator is to have a thorough knowledge of the equipment's capabilities. The following recommendations are offered as a guide to safe operation:

- Deck machinery 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 components while the drum is turning.
- Never operate the controls until it is certain that all crew are aware of moving gear.
- Never exceed the maximum load ratings.
- Operate the controls smoothly to prevent shock loads to both the equipment and rigging.
- Be sure the equipment is properly lubricated before use. See the lubrication section in this manual.
- Never use this equipment to carry or lift people. It is not designed for this purpose.

5.0: OPERATION

5.1: CONTROLS

The controls are supplied by others.

5.2: FAILSAFE BRAKE

The brake cylinder contains a spring under preload. The tension is adjusted by turning the hand wheel. See maintenance section for the proper setting. Hydraulic pressure is required to release the brake. When there is a loss of pressure or the winch control lever is in the neutral position, the brake is activated.

5.3: PAYING OUT AND HEAVING

To Pay Out & Heave:

- 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.

Never pay out to the cable clamp. It is not designed to support the full load. Always leave at least three wraps of cable on the drum.

5.4: FREE WHEELING

To free wheel the drum:

- 1 . Ensure the brake is applied and the winch control lever is in the neutral position.
- 2 . Remove the clutch lock pin and disengage the clutch by pushing on the clutch lever arm.
- 3 . When the clutch is fully disengaged, insert the clutch lock pin.
- 4 . Slowly release the brake by turning the brake hand wheel counter-clockwise.

When you are done free wheeling:

- 1 . Apply the brake by turning the hand wheel clockwise. Turn until the appropriate tension is achieved. See maintenance section for details.
- 2 . Remove the clutch lock pin and engage the clutch by pulling on the clutch lever arm. You may have to jog the position of the drum to get the clutch teeth to align.
- 3 . When the clutch is fully engaged, insert the clutch lock pin.

5.5: WARPING HEAD

The warping head always turns with the drive shaft.

6.0: MAINTENANCE

6.1: STORAGE

It is the responsibility of the customer (shipyard) to assure deck machinery is properly stored and maintained once the goods are received.

The equipment 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.

6.2: BRAKE TENSION

As the braking material wears over time, the braking force will be reduced. This can be restored by setting the winch controls to neutral, then turning the hand wheel until the correct braking force is achieved. Refer to drawing 34-00022-001, Sheet 2 for a dimension showing the proper extension of the cylinder rod in the failsafe braking position.

6.3: DECALS

Your equipment was shipped from the factory with a set of decals applied.

Should any of these decals be missing, they could prevent the proper operation and/or maintenance of the unit which may result in personal injury or property damage.

If any of these decals are missing, please contact us for a replacement.

Order the decal(s) by stating decal description, number, and quantity. A complete list of decals can be found in the drawings section of this manual.

6.4: SPARE PARTS

The following is a list of recommended spare parts:

HAWBOLDT PART NUMBER	QTY	MANUFACTURER	MODEL CODE	DESCRIPTION
5400194	1	SKF	SY 2-3/4 TF	Pillow Block Bearing
5400195	1	SKF	FY 2-3/4 MTF	Flanged Unit Bearing
5402172	1	HAWBOLDT	N/A	SEAL KIT FOR 34-00012-006 (COMPLETE)
5402431	2	SKF	FY 1-1/2 TF	Flanged Unit Bearing
5402433	1 BOX	Tsubaki	RS100	10' Roller Chain + Connecting Link
5402485	1 BOX	Tsubaki	RS60LS	10' Roller Chain + Connecting Link

6.5: LUBRICATION

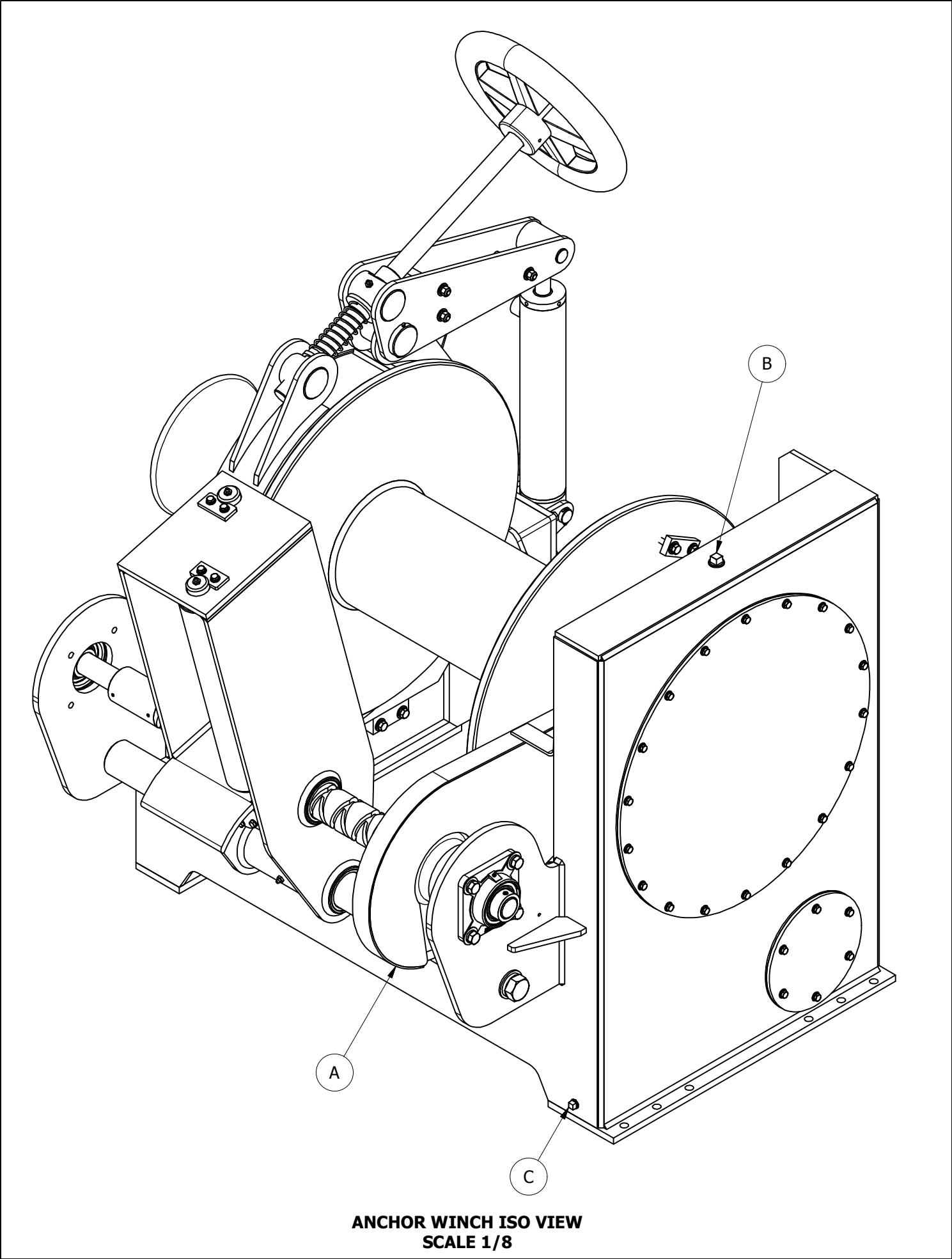
Although Hawboldt Industries uses materials and finishes well suited for use in severe marine environments it is imperative that a comprehensive lubrication maintenance program be utilized to assure long term reliability. If the unit is not used for extended periods, all points requiring periodic lubrication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

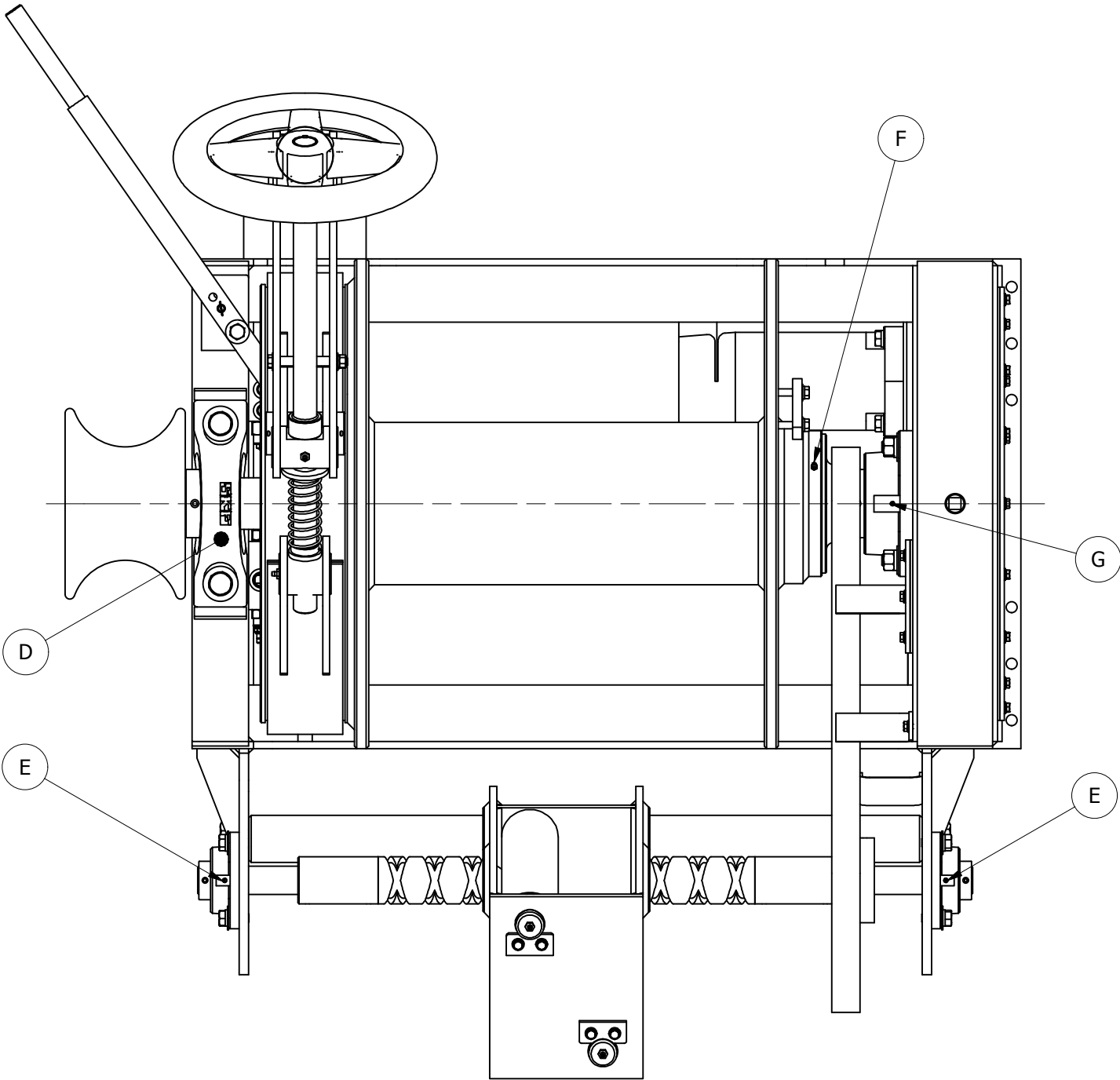
See the chart below for a lubrication schedule.

LOCATION	DESCRIPTION	QTY	LUBRICANT	FREQUENCY
A	Levelwind Roller Chain	1	EP-2 Grease	Maintain a layer of protective grease
B	Oil Bath Fill	1	ISO VG 32 Oil	Fill bath to center line of the motor shaft
C	Oil Bath Drain	1	N/A	N/A
D	Drive Shaft Pillow Block Bearing	1	EP-2 Grease	Every 30 hours of use
E	Levelwind Flange Bearing	2	EP-2 Grease	Every 30 hours of use
F	Drum Bushing	2	EP-2 Grease	Every 30 hours of use
G	Drive Shaft Flange Bearing	1	EP-2 Grease	Every 30 hours of use
H	Levelwind Roller	4	EP-2 Grease	Every 30 hours of use
I	Levelwind Blade & Screw Bushings	1	EP-2 Grease	Every 30 hours of use
J	Levelwind Guide Rod Bushings	1	EP-2 Grease	Every 30 hours of use
K *	Brake Pin (Plain)	1	EP-2 Grease	Every 30 hours of use
L *	Brake Pin (Threaded)	1	EP-2 Grease	Every 30 hours of use
M	Clutch Sliding Half Keyways	2	EP-2 Grease	Every 30 hours of use
N	Clutch Sliding Half Groove	1	EP-2 Grease	Maintain a layer of protective grease

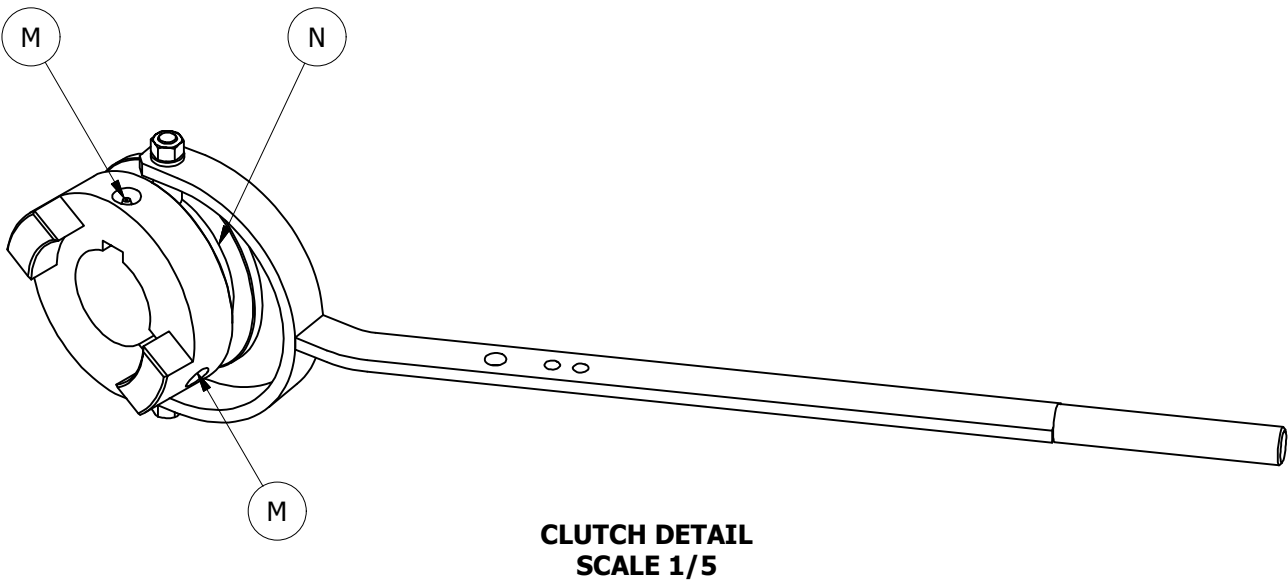
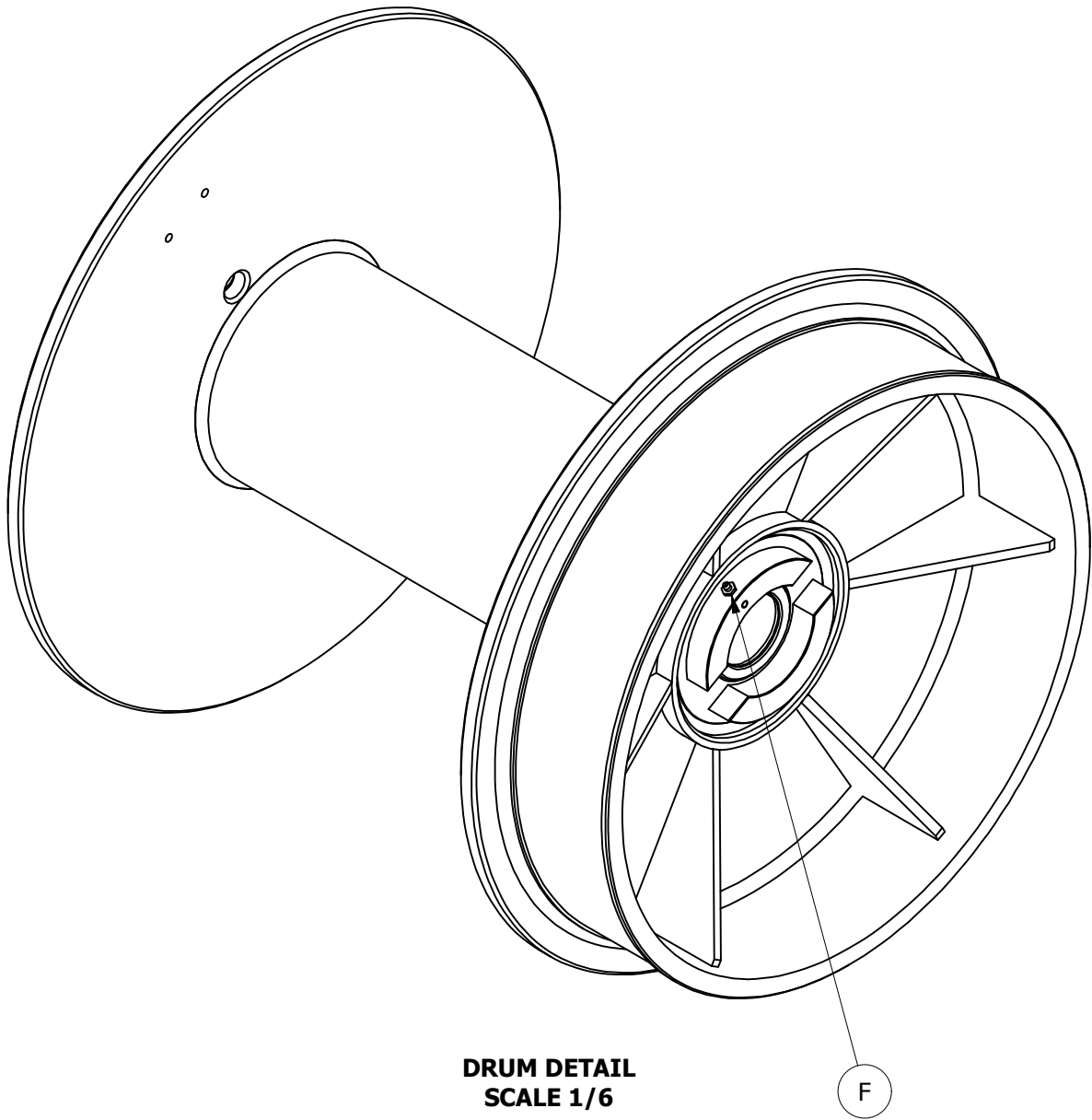
* Take special care not to get any grease on the brake drum's machined surface. This could cause the brake to slip.

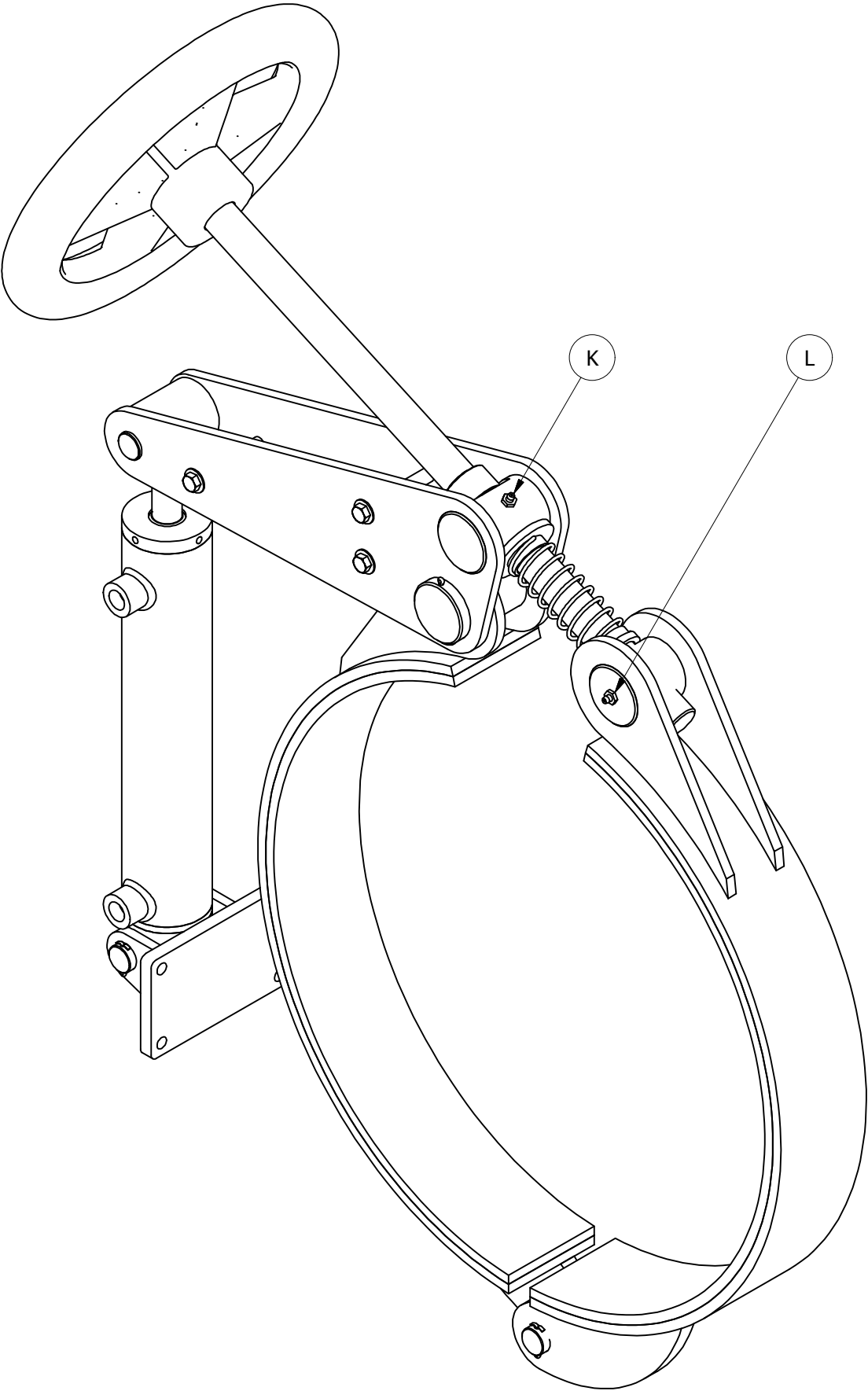
Refer to the diagrams on the following pages for locations requiring lubrication.



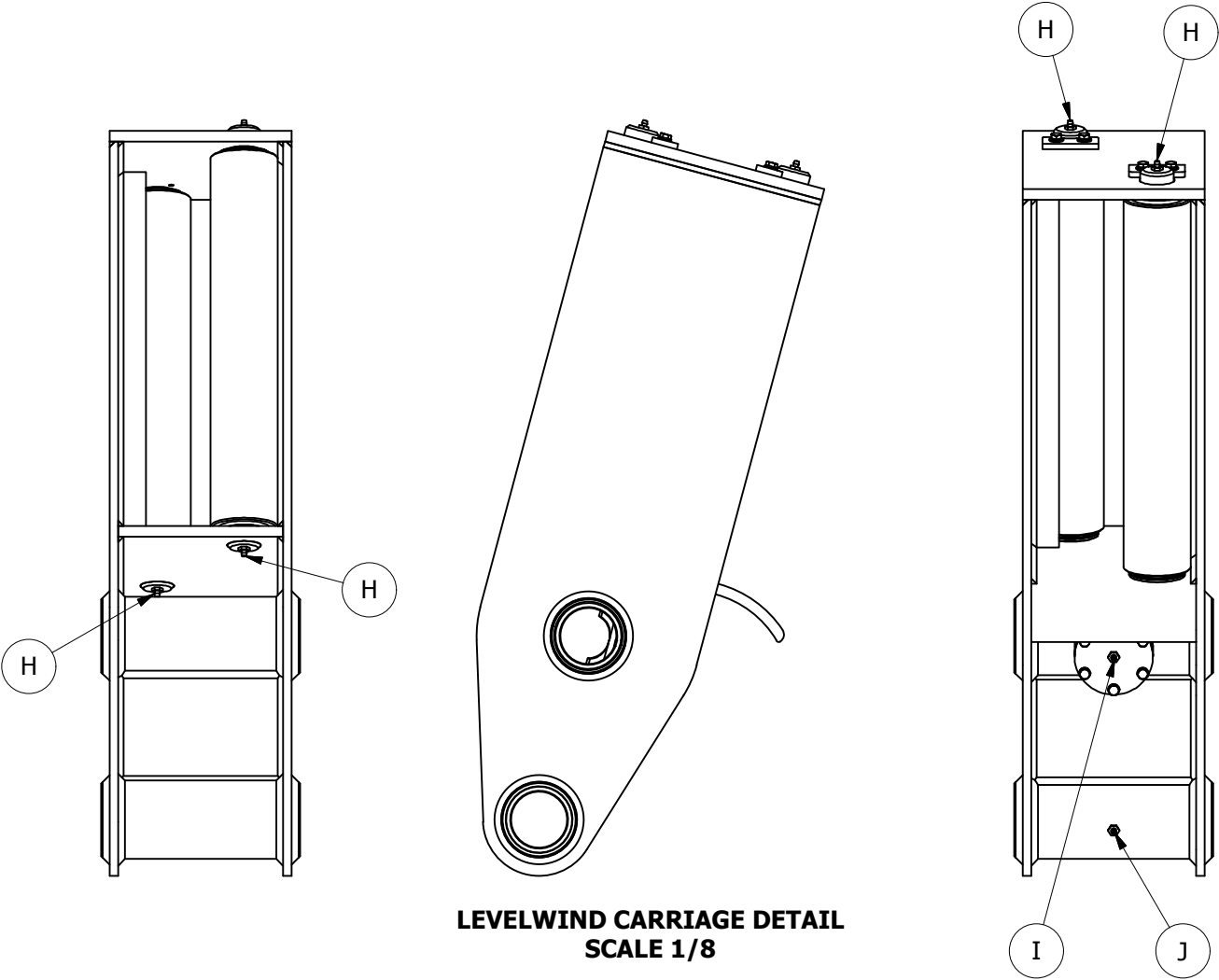


ANCHOR WINCH TOP VIEW
SCALE 1/8





BRAKE DETAIL
SCALE 1/5



7.0: FACTORY ACCEPTANCE TEST

This section contains the completed Factory Acceptance Test (FAT) reports.

8.0: COMPONENT LITERATURE

This section contains manufacturer's information for the following components:

MANUFACTURER	MODEL CODE	DESCRIPTION	HAWBOLDT PART NUMBER
Char-Lynn	112-1068	Hydraulic Motor	5400956
SKF	FY 1-1/2 TF	Flanged Unit Bearing	5402431
SKF	FY 2-3/4 MTF	Flanged Unit Bearing	5400195
SKF	SY 2-3/4 TF	Pillow Block Bearing	5400194
Sun	BGK/S	Manifold	5402432
Sun	CBEG-LCN	Counterbalance Valve	5401815
Sun	E2J	Manifold	5401655
Sun	PBDB-LBN	Pressure Reducing Valve	5400910
Tsubaki	RS100	Roller Chain	5402433
Tsubaki	RS60LS	Roller Chain	5402485

9.0: DRAWINGS

This section contains the drawings listed in the chart below.

DRAWING NUMBER	TITLE
34-00012-006	BRAKE CYLINDER
34-00022-000	HSF-2226 ANCHOR WINCH GENERAL ARRANGEMENT
34-00022-001	HSF-2226 ANCHOR WINCH GENERAL ASSEMBLY
34-00022-005	DRUM ASSEMBLY
34-00022-006	LEVELWIND CARRIAGE ASSEMBLY
34-00022-018	CLUTCH YOLK ASSEMBLY
34-00022-019	BRAKE SCREW ASSEMBLY
34-00022-023	HSF-2226 ANCHOR WINCH DECAL LAYOUT

WARRANTY & CERTIFICATES

SPECIFICATION

INSTALLATION

SAFETY

OPERATION

MAINTENANCE

FACTORY ACCEPTANCE TESTS

COMPONENT LITERATURE

DRAWINGS

APPENDIX

	MANUAL	HSF-2226 ANCHOR WINCH Installation, Operation & Maintenance Manual	Customer: DEPARTMENT OF FISHERIES & OCEANS PO: AC07018525 SN: 1244-1, 1244-2, 1244-3	Date: 19 OCT 2010 Sales Order: 31399
--	--------	--	---	---

	MANUAL	HSF-2226 ANCHOR WINCH Installation, Operation & Maintenance Manual	Customer: DEPARTMENT OF FISHERIES & OCEANS PO: AC07018525 SN: 1244-1, 1244-2, 1244-3	Date: 19 OCT 2010 Sales Order: 31399
--	--------	--	---	---

	MANUAL	HSF-2226 ANCHOR WINCH Installation, Operation & Maintenance Manual	Customer: DEPARTMENT OF FISHERIES & OCEANS PO: AC07018525 SN: 1244-1, 1244-2, 1244-3	Date: 19 OCT 2010 Sales Order: 31399
--	--------	--	---	---

	MANUAL	HSF-2226 ANCHOR WINCH Installation, Operation & Maintenance Manual	Customer: DEPARTMENT OF FISHERIES & OCEANS PO: AC07018525 SN: 1244-1, 1244-2, 1244-3	Date: 19 OCT 2010 Sales Order: 31399
--	--------	--	---	---

	MANUAL	HSF-2226 ANCHOR WINCH Installation, Operation & Maintenance Manual	Customer: DEPARTMENT OF FISHERIES & OCEANS PO: AC07018525 SN: 1244-1, 1244-2, 1244-3	Date: 19 OCT 2010 Sales Order: 31399
--	--------	--	---	---

	MANUAL	HSF-2226 ANCHOR WINCH Installation, Operation & Maintenance Manual	Customer: DEPARTMENT OF FISHERIES & OCEANS PO: AC07018525 SN: 1244-1, 1244-2, 1244-3	Date: 19 OCT 2010 Sales Order: 31399
--	--------	--	---	---


MANUAL

<div>HSF-2226 ANCHOR WINCH</div> <div>INSTALLATION, OPERATION & MAINTENANCE MANUAL</div>
<div>Customer:</div> <div>DEPARTMENT OF FISHERIES & OCEANS</div>
<div>PO:</div> <div>AC07018525</div>
<div>Date:</div> <div>19 OCT 2010</div>
<div>SN:</div> <div>1244-1</div> <div>1244-2</div> <div>1244-3</div>
<div>Sales Order:</div> <div>31399</div>


MANUAL

<div>HSF-2226 ANCHOR WINCH</div> <div>INSTALLATION, OPERATION & MAINTENANCE MANUAL</div>
<div>Customer:</div> <div>DEPARTMENT OF FISHERIES & OCEANS</div>
<div>PO:</div> <div>AC07018525</div>
<div>Date:</div> <div>19 OCT 2010</div>
<div>SN:</div> <div>1244-1</div> <div>1244-2</div> <div>1244-3</div>
<div>Sales Order:</div> <div>31399</div>


MANUAL

<div>HSF-2226 ANCHOR WINCH</div> <div>INSTALLATION, OPERATION & MAINTENANCE MANUAL</div>
<div>Customer:</div> <div>DEPARTMENT OF FISHERIES & OCEANS</div>
<div>PO:</div> <div>AC07018525</div>
<div>Date:</div> <div>19 OCT 2010</div>
<div>SN:</div> <div>1244-1</div> <div>1244-2</div> <div>1244-3</div>
<div>Sales Order:</div> <div>31399</div>


MANUAL

<div>HSF-2226 ANCHOR WINCH</div> <div>INSTALLATION, OPERATION & MAINTENANCE MANUAL</div>
<div>Customer:</div> <div>DEPARTMENT OF FISHERIES & OCEANS</div>
<div>PO:</div> <div>AC07018525</div>
<div>Date:</div> <div>19 OCT 2010</div>
<div>SN:</div> <div>1244-1</div> <div>1244-2</div> <div>1244-3</div>
<div>Sales Order:</div> <div>31399</div>


MANUAL

<div>HSF-2226 ANCHOR WINCH</div> <div>INSTALLATION, OPERATION & MAINTENANCE MANUAL</div>
<div>Customer:</div> <div>DEPARTMENT OF FISHERIES & OCEANS</div>
<div>PO:</div> <div>AC07018525</div>
<div>Date:</div> <div>19 OCT 2010</div>
<div>SN:</div> <div>1244-1</div> <div>1244-2</div> <div>1244-3</div>
<div>Sales Order:</div> <div>31399</div>


MANUAL

<div>HSF-2226 ANCHOR WINCH</div> <div>INSTALLATION, OPERATION & MAINTENANCE MANUAL</div>
<div>Customer:</div> <div>DEPARTMENT OF FISHERIES & OCEANS</div>
<div>PO:</div> <div>AC07018525</div>
<div>Date:</div> <div>19 OCT 2010</div>
<div>SN:</div> <div>1244-1</div> <div>1244-2</div> <div>1244-3</div>
<div>Sales Order:</div> <div>31399</div>

HAWBOLDT INDUSTRIES - HSF-2226 ANCHOR WINCH

HAWBOLDT INDUSTRIES - HSF-2226 ANCHOR WINCH



OPERATION, INSTALLATION & MAINTENANCE MANUAL

DEPARTMENT
OF FISHERIES &
OCEANS

PO#
AC07018525

19 OCT 2010

SO# 31399

Serial Number(s):
1244-1
1244-2
1244-3

HSF-2226 ANCHOR WINCH

HAWBOLDT INDUSTRIES - HSF-2226 ANCHOR WINCH

HAWBOLDT INDUSTRIES - HSF-2226 ANCHOR WINCH



OPERATION, INSTALLATION & MAINTENANCE MANUAL

DEPARTMENT
OF FISHERIES &
OCEANS

PO#
AC07018525

19 OCT 2010

SO# 31399

Serial Number(s):
1244-1
1244-2
1244-3

HSF-2226 ANCHOR WINCH