

DDT700

User Manual

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I Disclaimer

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred.

This manual does not include all of the details of design, production, or variation of the equipment nor does it cover every possible situation which may arise during installation, operation or maintenance. HyQuest Solutions shall not be liable for any incidental, indirect, special or consequential damages whatsoever arising out of or related to this documentation and the information contained in it, even if HyQuest Solutions has been advised of the possibility of such damages.

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II Scope of Delivery

DDT Barossa winch/DDT 1000 Riverian winch with:

- Banana style connections to suit most current meter counters
- Winch to counter connecting lead (2 metres long)
- 4 × 10 mm mounting bolts
- Mounting tools (allen keys)
- Breakaway kit
- Breakaway pins (5 sets)

Not included (opt. avail.):

- Post head sheave assembly for operating side post and far side post
- Traveller Block Assembly
- Traversing Cable
- Carry case for winch


III Safety Instructions

- Read the user manual including all operating instructions prior to installing, connecting and powering up the HyQuest Solutions DDT700/DDT1000. The manual provides information on how to operate the product. The manual is intended to be used by qualified personnel, i.e. personnel that have been adequately trained, are sufficiently familiar with installation, mounting, wiring, powering up and operation of the product.
- Keep the user manual on hand for later reference!
- If you encounter problems understanding the information in the manual (or part thereof), please consult the manufacturer or its appointed reseller for further support.
- HyQuest Solutions DDT700/DDT1000 is intended to be used in hydrometeorological or environmental monitoring applications.
- Before starting to work, you have to check the functioning and integrity of the system.
 - Check for visible defects on the DDT700/DDT1000, this may or may not include any or all of the following mounting facilities, connectors and connections, mechanical parts, internal or external communication devices, power supplies or power supply lines, etc.
 - If defects are found that jeopardize the operational safety, work must be stopped. This is true for defects found before starting to work as well as for defects found while working.
- Do not use the HyQuest Solutions DDT700/DDT1000 in areas where there is a danger of explosion.
- The present user manual specifies environmental/climatic operating conditions as well as mechanical and electrical conditions. Installation, wiring, powering up and operating the HyQuest Solutions DDT700/DDT1000 must strictly comply with these specifications.
- Perform maintenance only when tools or machinery are not in operation.
- If guards are removed to perform maintenance, replace them immediately after servicing.
- Never make any electrical or mechanical diagnostics, inspections or repairs under any circumstances. Return the product to the manufacturer's named repair centre. You can find information on how to return items for repair in the relevant section of the HyQuest Solutions website.



-  Disposal instructions: After taking the HyQuest Solutions DDT700/DDT1000 out of service, it must be disposed of in compliance with local waste and environmental regulations. The HyQuest Solutions DDT700/DDT1000 is never to be disposed in household waste!



-  Inputs and outputs of the device are protected against electric discharges and surges (so-called ESD). Do not touch any part of the electronic components! If you need to touch any part, please discharge yourself, i.e. by touching grounded metal parts.

1 Introduction

Thank you for choosing our product. We hope you will enjoy using the device.

HyQuest Solutions manufactures, sells, installs and operates quality instrumentation, data loggers and communication technology. Products are designed with passion for environmental monitoring and with a deep understanding of the quality, accuracy and robustness needed to fulfil the requirements of measurement practitioners in the field.

The present User Manual will help you understand, install and deploy the device. If, however, you feel that a particular information is missing, incomplete or confusing, please do not hesitate to contact us for further support!

HyQuest Solutions' DDT700 Barossa and DDT1000 Riverina winches are hand-operated double drum winches capable of handling gauging weights up to 70 kg (154 lb) using the DDT700 Barossa and 110 kg (242 lb) using the DDT1000 Riverina. The design shows two main advantages: Firstly, it enables the operator to change from sounding mode to traversing mode very quickly by engaging the drive gears on each drum. Secondly, the double drum concept eases traversing, as the forces exerted by the gauging weight are largely cancelled out. The winch can be used on small travellerways up to 60 m (200 ft) span using the DDT700 Barossa or 150 m (492 ft) using the DDT1000 Riverina winch.

2 Installation

The current meter can be fitted with a stabiliser tail fin which is attached to a hanger bar and Columbus gauging weight in sizes of 7, 14, 23, 34, 45 and 68Kg. This assembly is suspended from the gauging winch by the amergraph signal cable.

HyQuest Solutions provides a range of counters to operate with the winch. The models available are CMC20A, CMCsp, PVD200 and HydroTab/CMCbt.

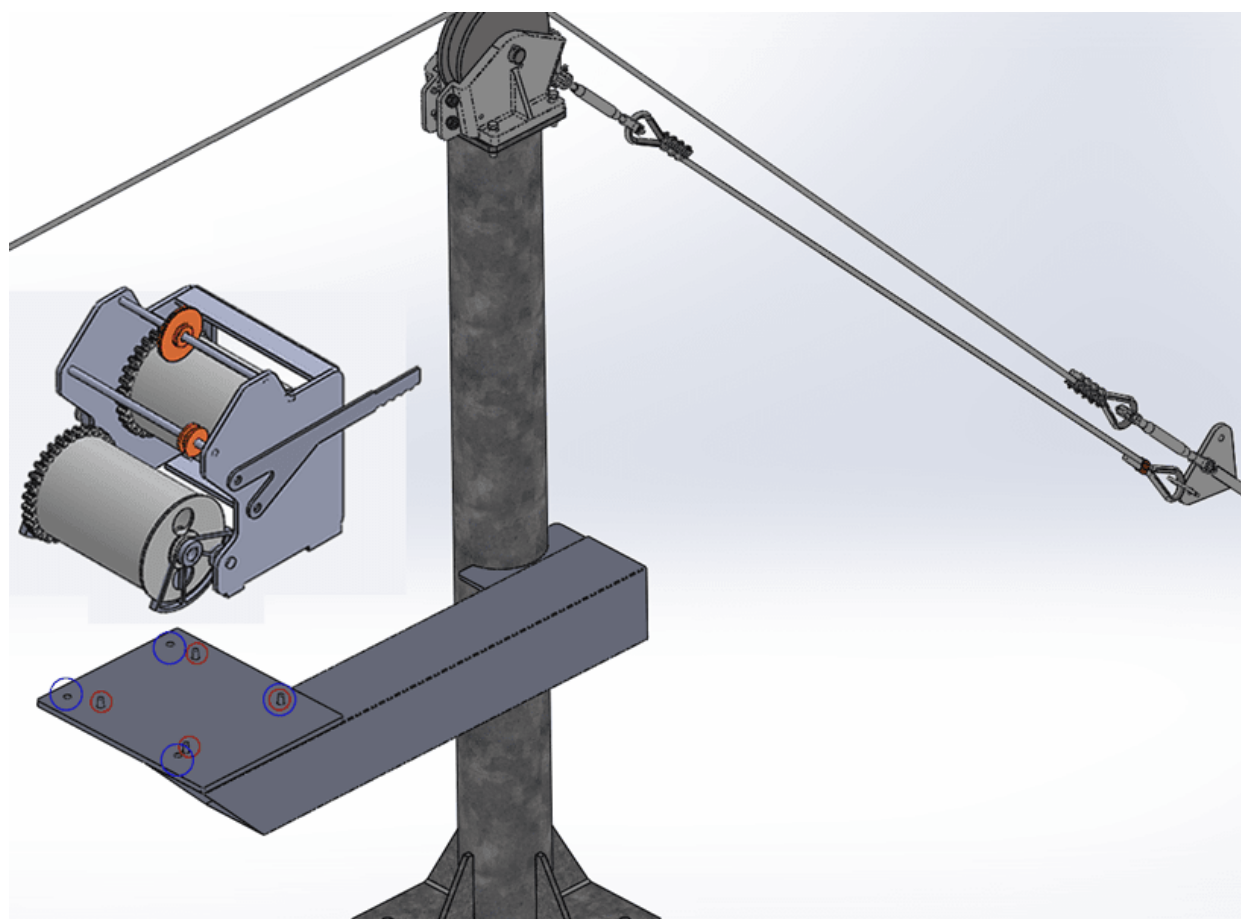
- [Initial Setup & Operational Procedure](#)

2.1 Initial Setup & Operational Procedure

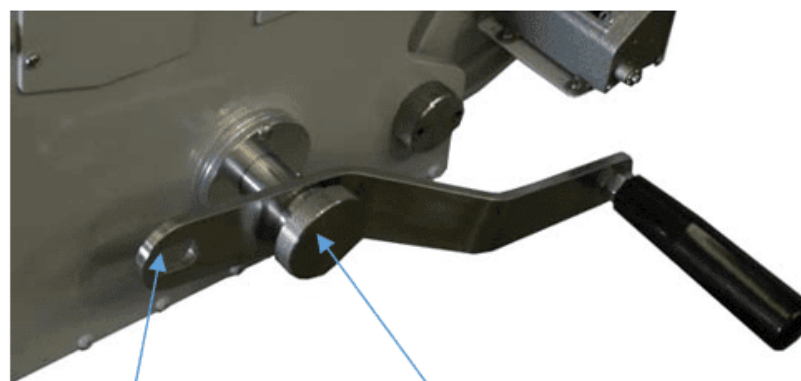
The layout shown in the next subsections is based on HyQuest Solutions standard steelwork components, all of which can be supplied ready for installation in kit form.

Alternatively, drawings can be provided for the components to be fabricated locally. However, as a minimum, the sheave block assembly should be supplied by HyQuest Solutions.

1. Using the 4 bolts supplied secure the winch base to the operating side of the post as shown below (DDT700 mounts are marked in red, DDT1000 mounts are marked in blue).



2. Fit handle, screw knob onto the shaft.

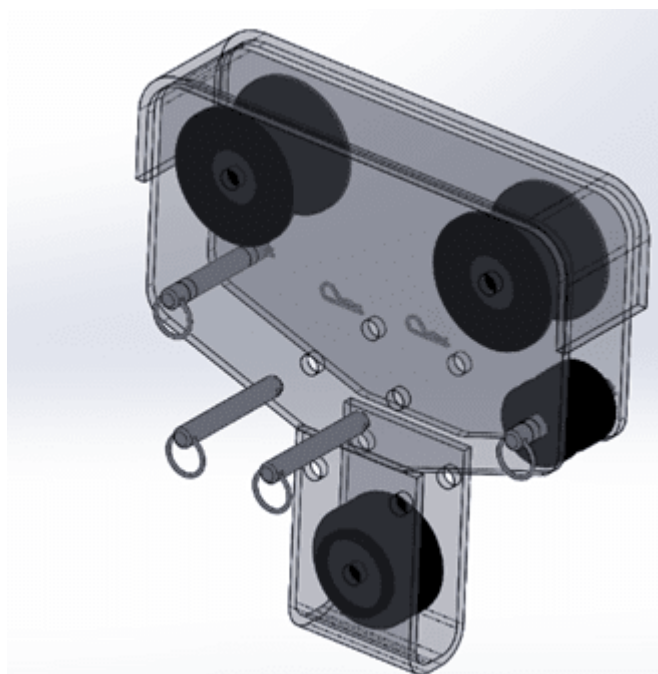


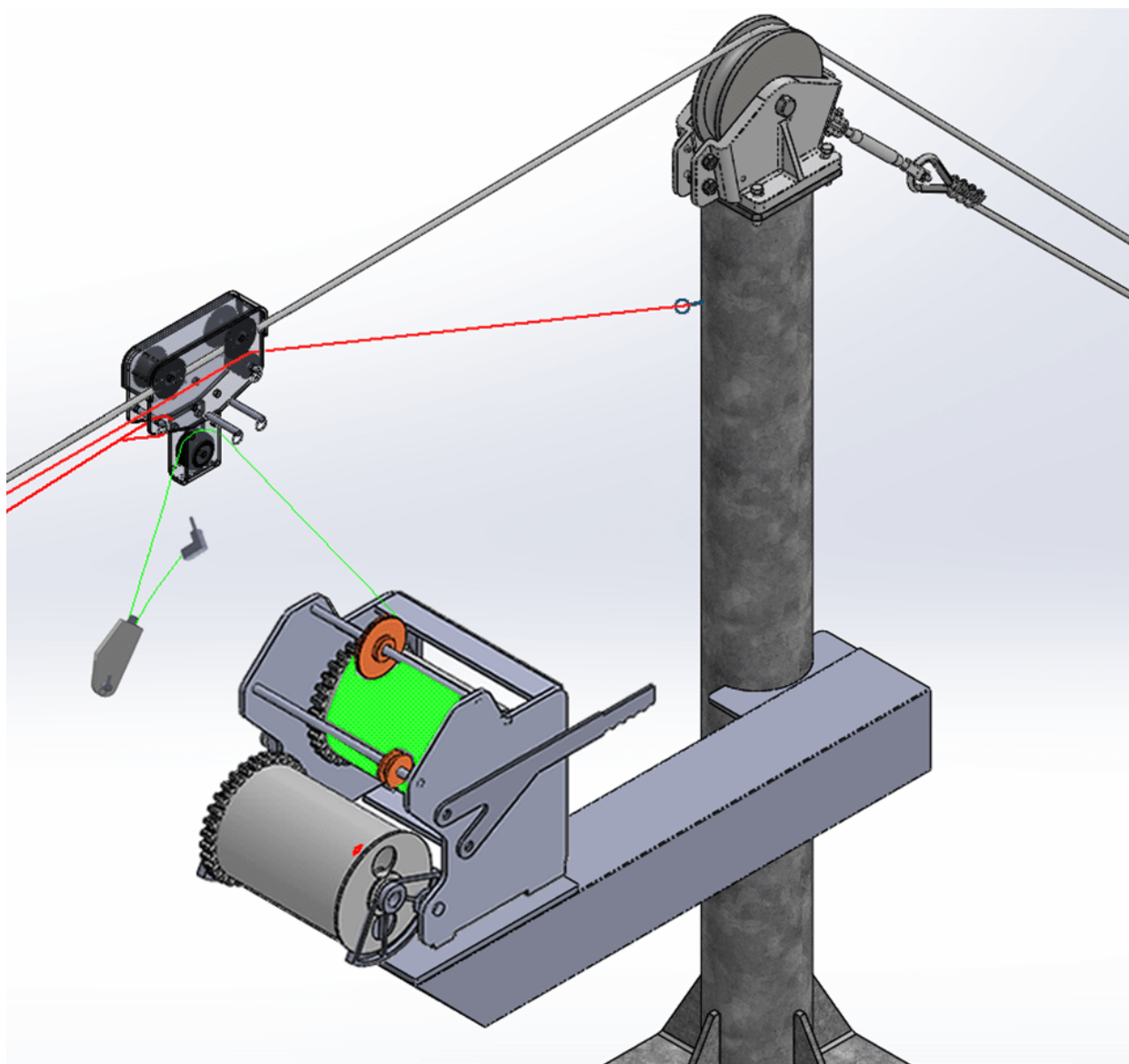
**For heavy gauging weights,
use this position on the handle
to gain more torque**

For light gauging
weights use this
position on the handle

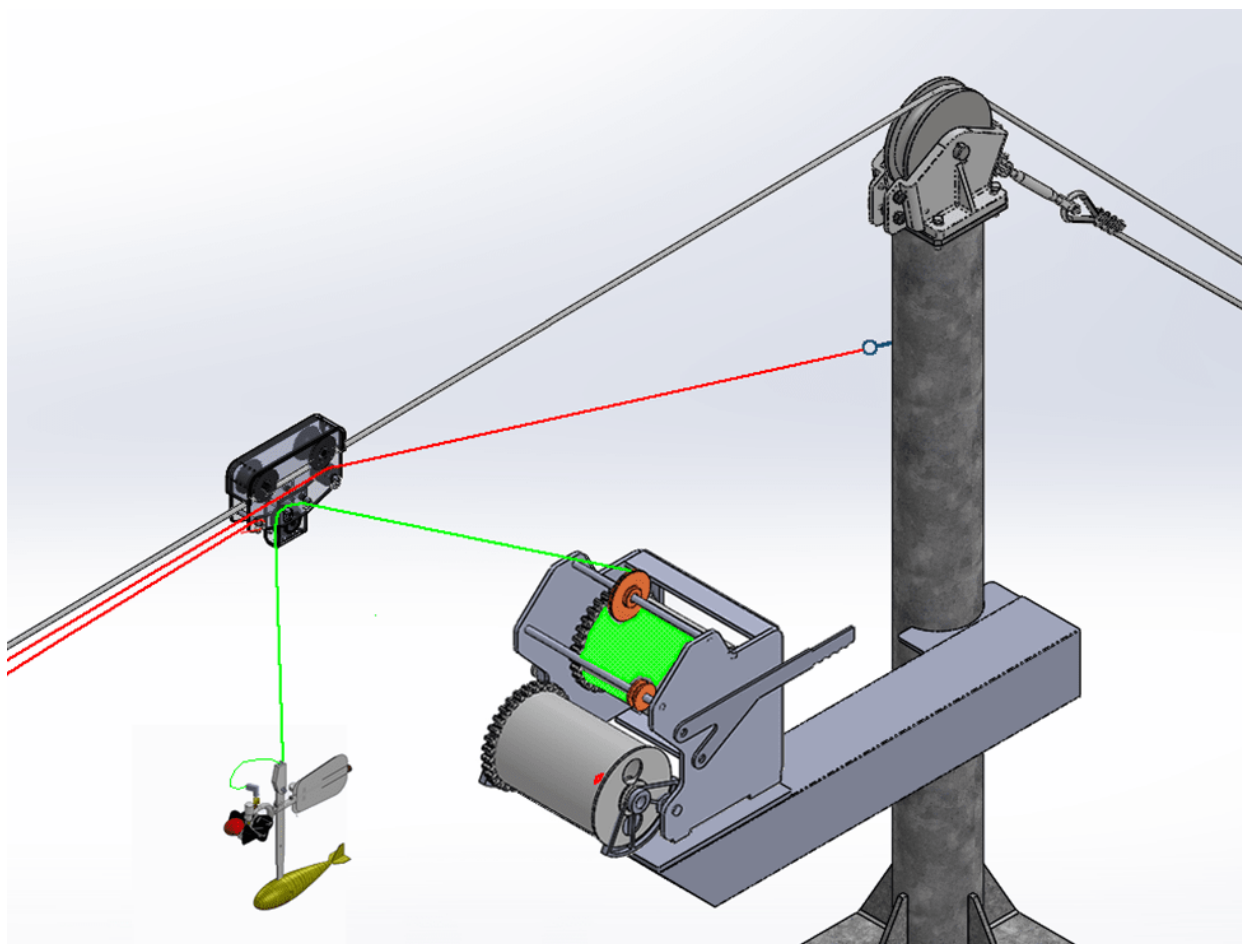
**Please Note the drive handle side could be either left or right
and can be specified by the customer at time of order**

3. Remove lower section of Traveller Block by removing the two pins (R-clips to be removed) and place top section of the Traveller Block on the main cable of the cableway (use a temporary tether connecting the Traveller Block to the Cableway post to ensure the unit does not slide away towards the stream during the set up phase).

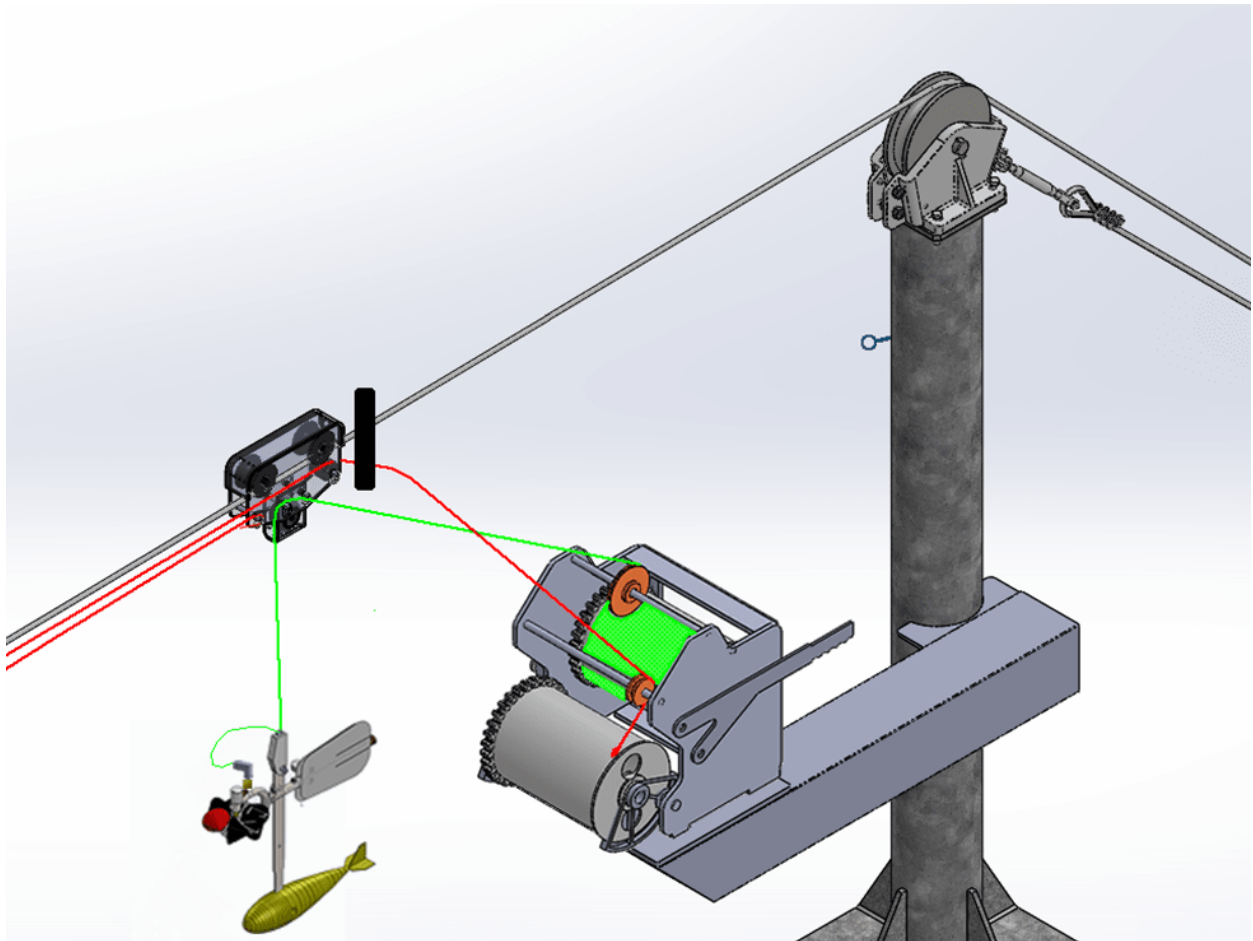




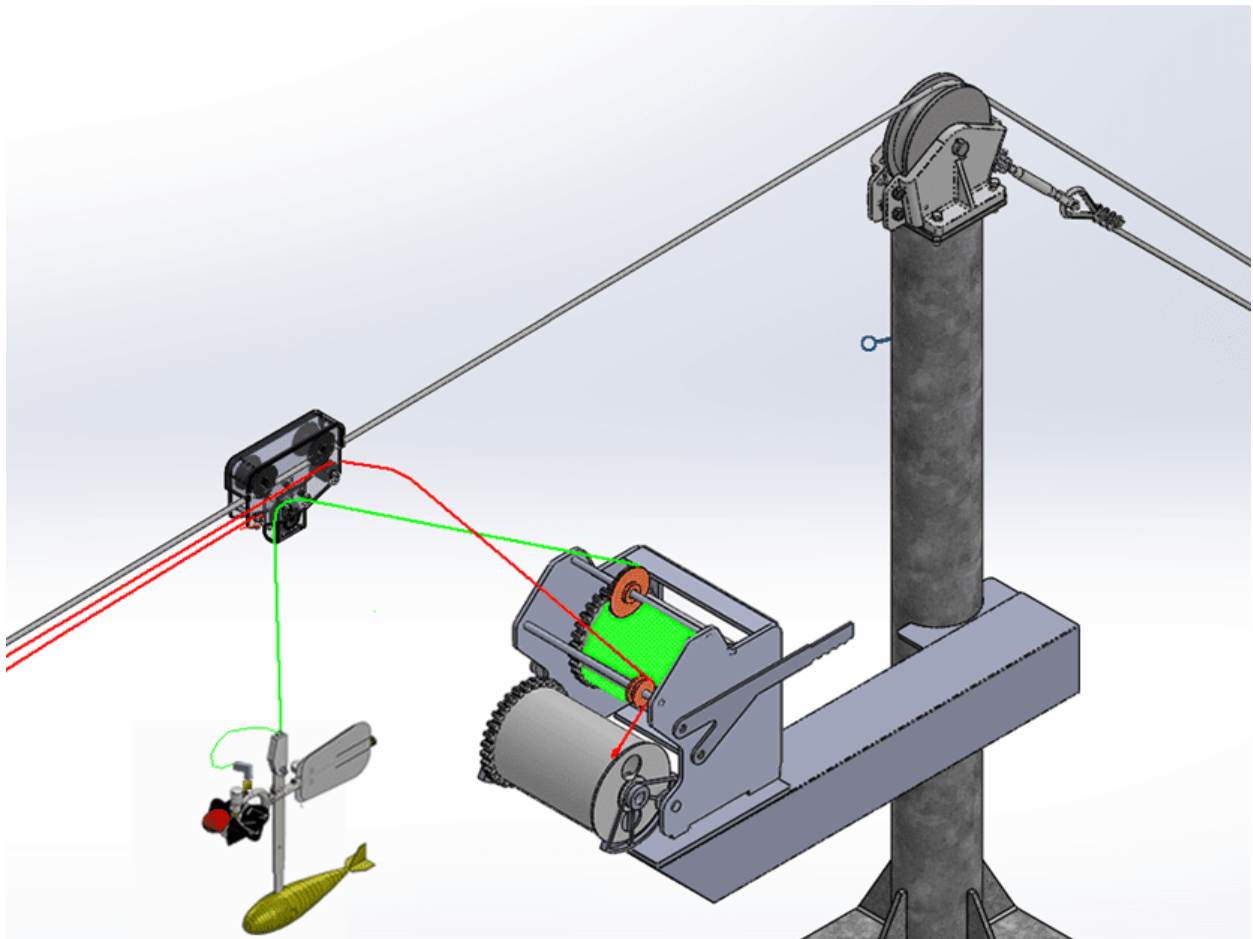
4. Disconnect C1 cable connector from tension spring on winch, wind out amergraph cable over layer winding sheave of winch and then over the sounding sheave of the Traveller Block (as shown above). The bottom section of the Traveller Block can then be re-attached to the top section using the two pins and R-clips removed earlier. Connect the C1 connector to the current meter hanger bar and insert the angle plug into the current meter with the tailfin assembly attached.



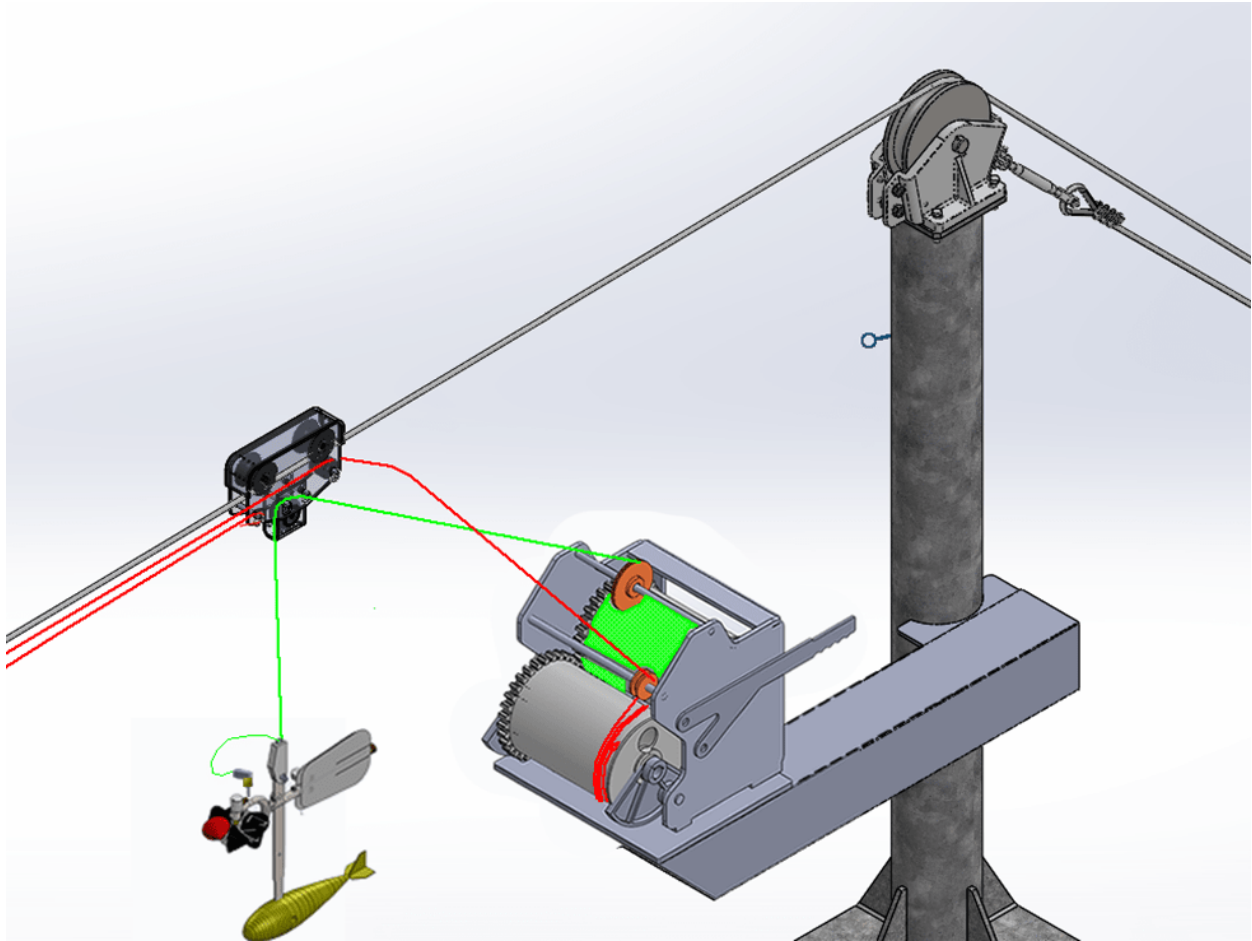
5. Remove the end of the upper traversing cable from its anchorage and connect to the stream side of the traversing block (seen in red above).
6. Similarly, release the lower traversing cable and pass end over the layer winding sheave of the traversing drum.



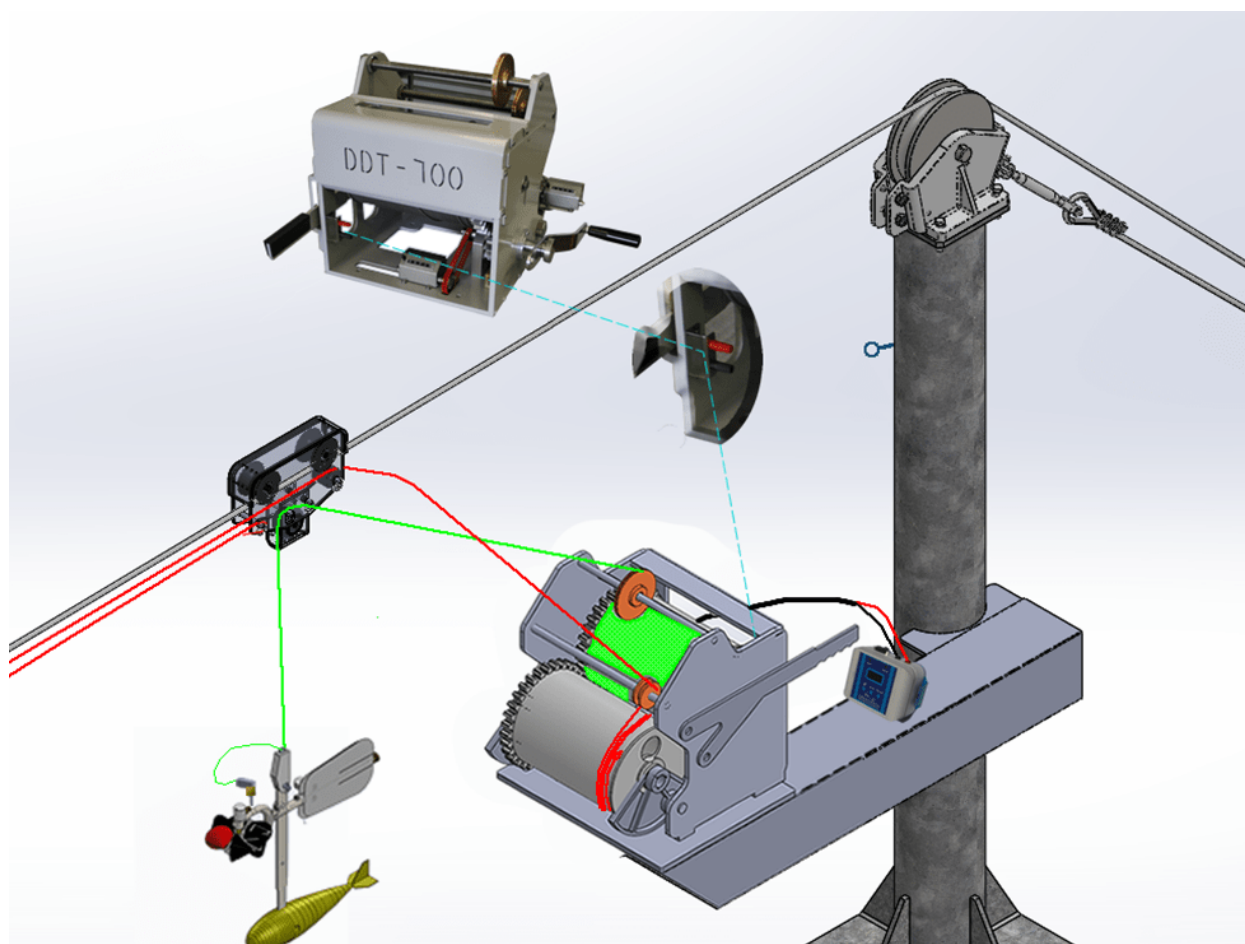
7. Remove soft clamp from traversing cable and main cable.



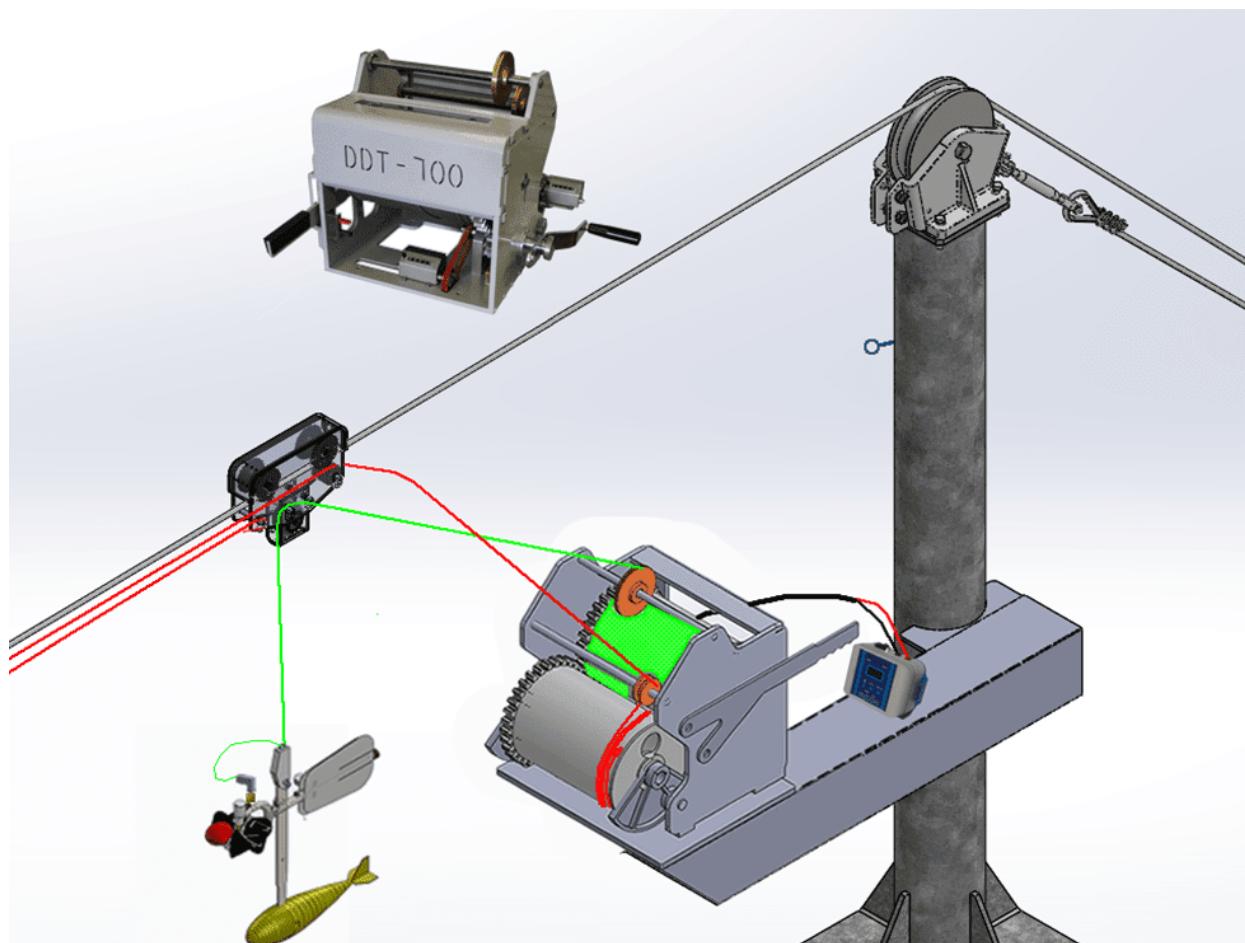
8. With traversing drum disengaged, wind the weight up to the traveller block - engage traversing drum and lower the weight to the ground. Repeat this procedure until the traversing cables are tensioned.



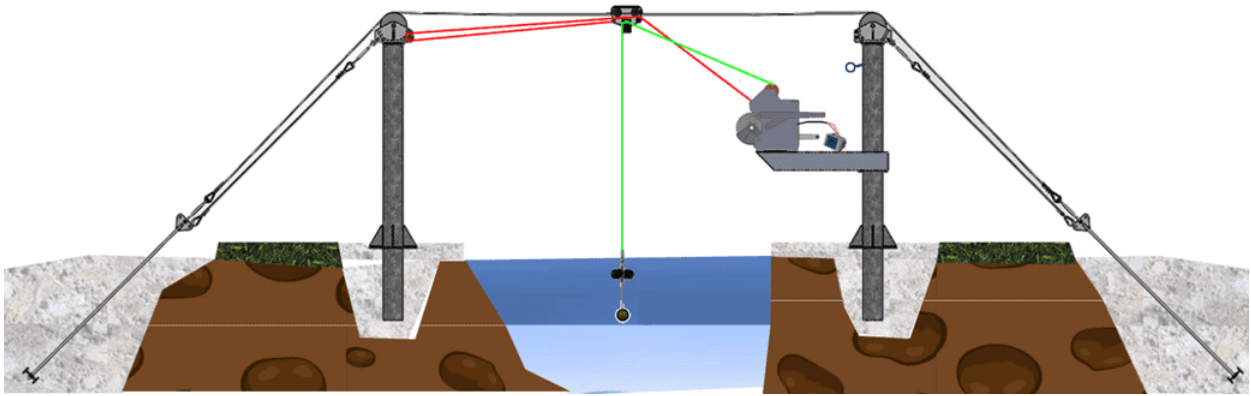
9. Connect the current meter revolution counter to the winch terminals and check circuit operation.



10. Position weight over zero chainage indicator and zero traversing counter.



11. Proceed with the discharge measurement.



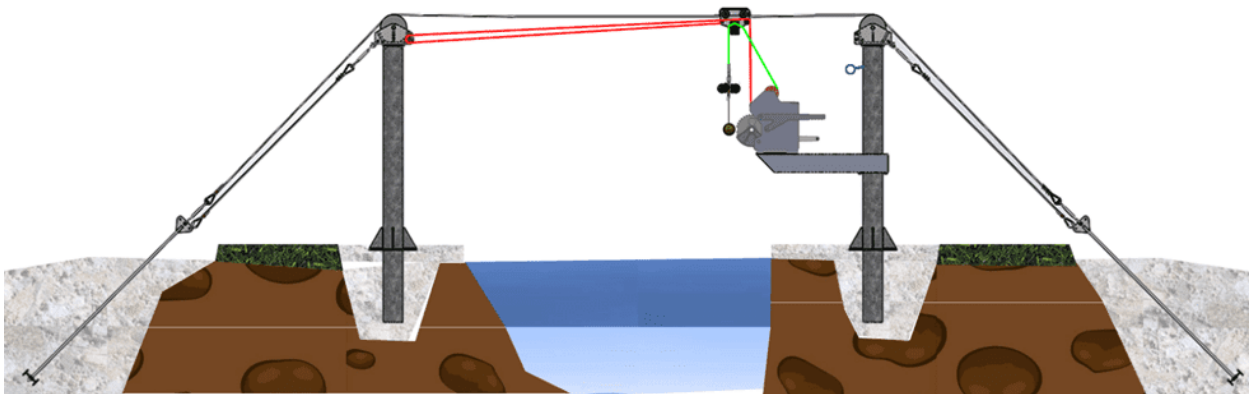
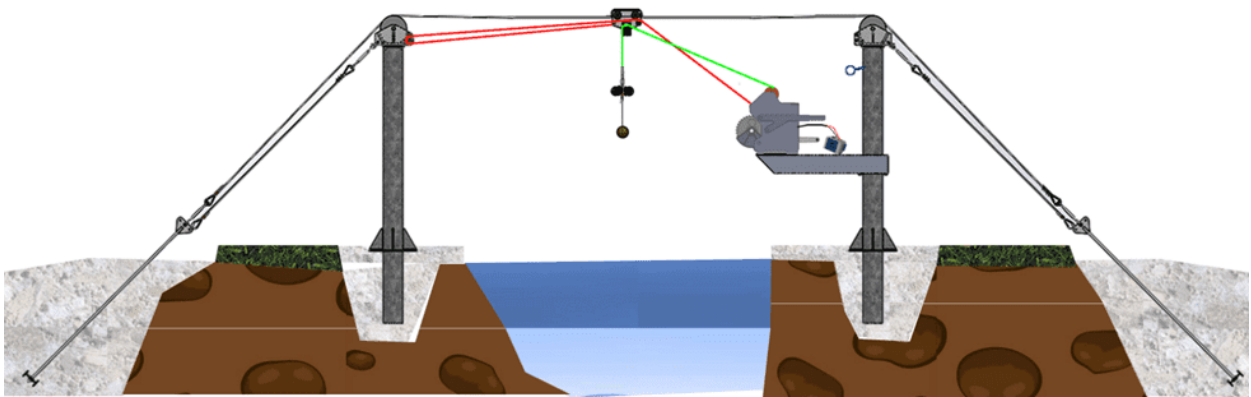
3 Operation

For the most part, the Barossa winch is maintenance free. However, periodic maintenance is required as set out below.

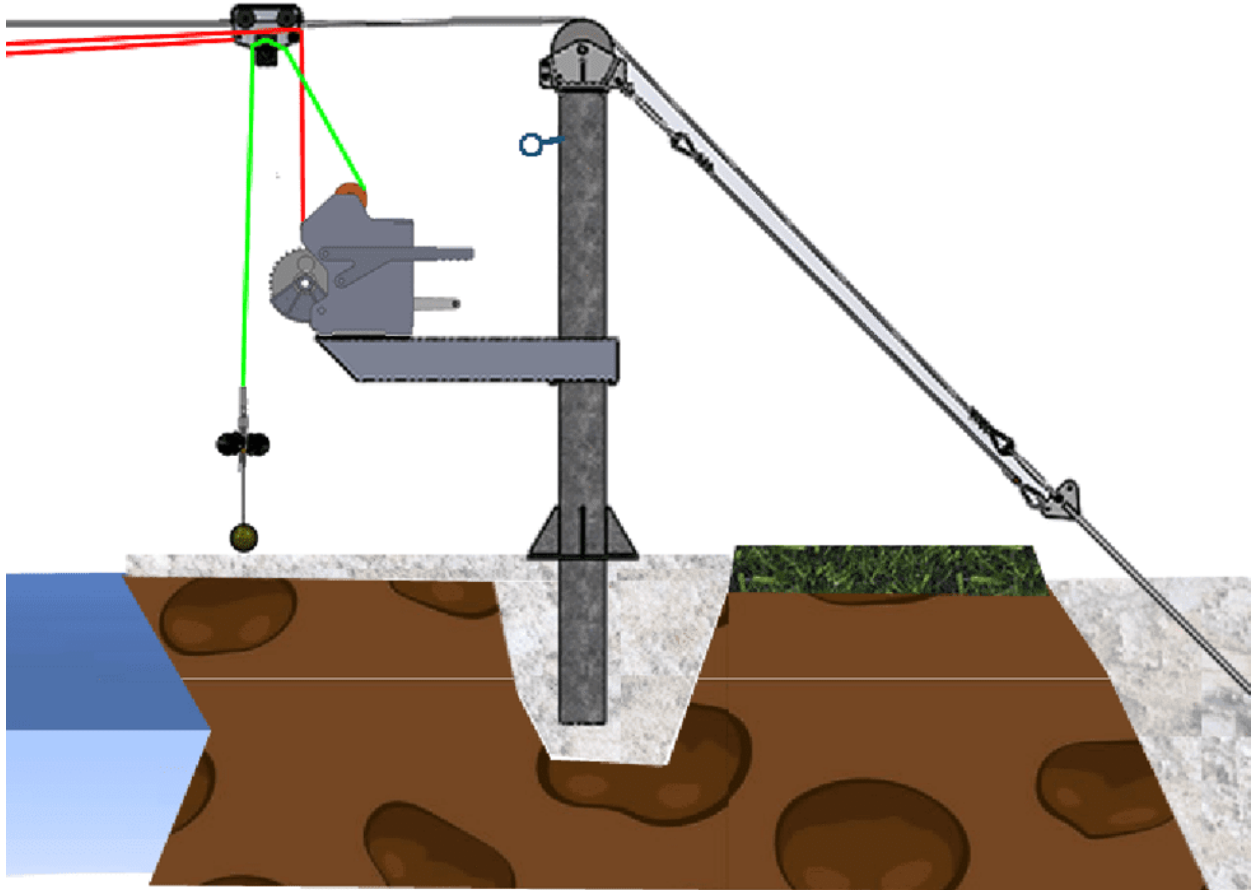
- [Dismantling Procedure](#) ¹⁵
- [Winch Mode](#) ²²
- [Traversing Mode](#) ²²
- [Counters](#) ²³

3.1 Dismantling Procedure

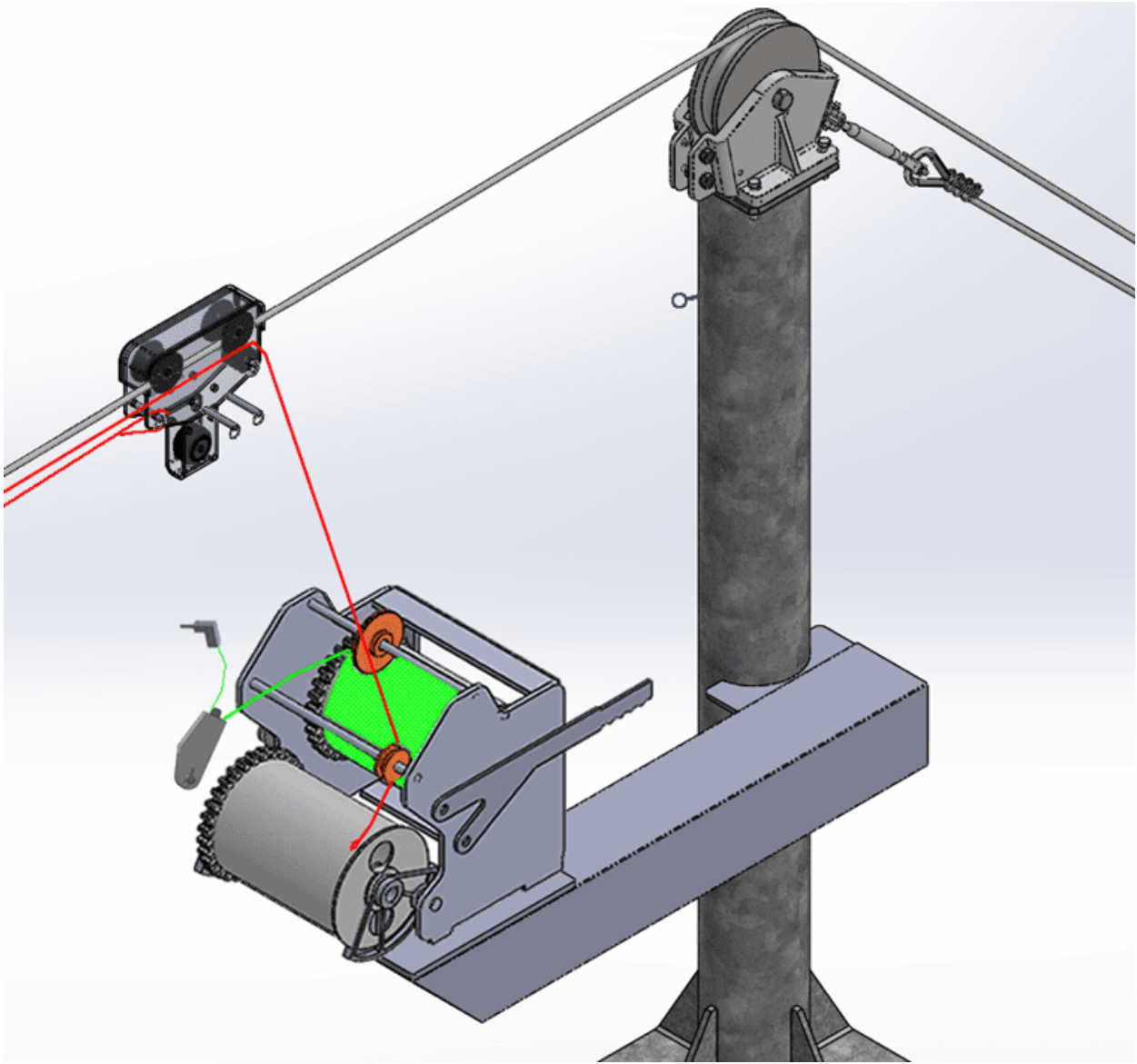
1. Lift the Gauging weight and current meter from the water and remove the current meter connecting lead and counter from the winch, remove the connecting lead and current meter counter before traversing the Traveller Block to the operating side position.



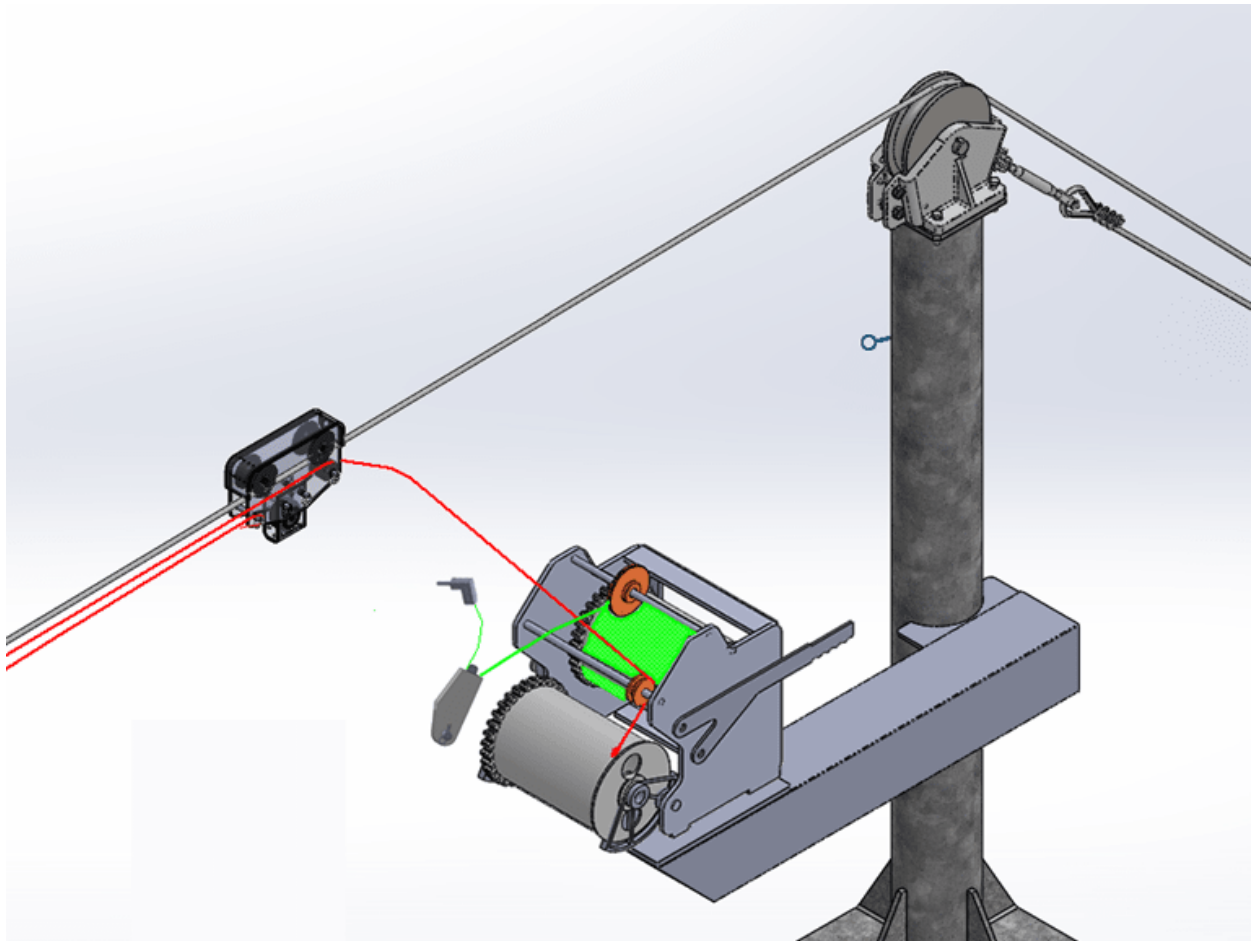
2. Disengage the winch drums and lower the Gauging Weight and Current Meter to the Ground and Detach the Hanger Bar from the C1 Connector (thus reducing tension in the cables). Unplug the Angle Plug, remove the Current Meter from the Hanger Bar and pack both the current meter and the gauging weight into their respective carry cases.



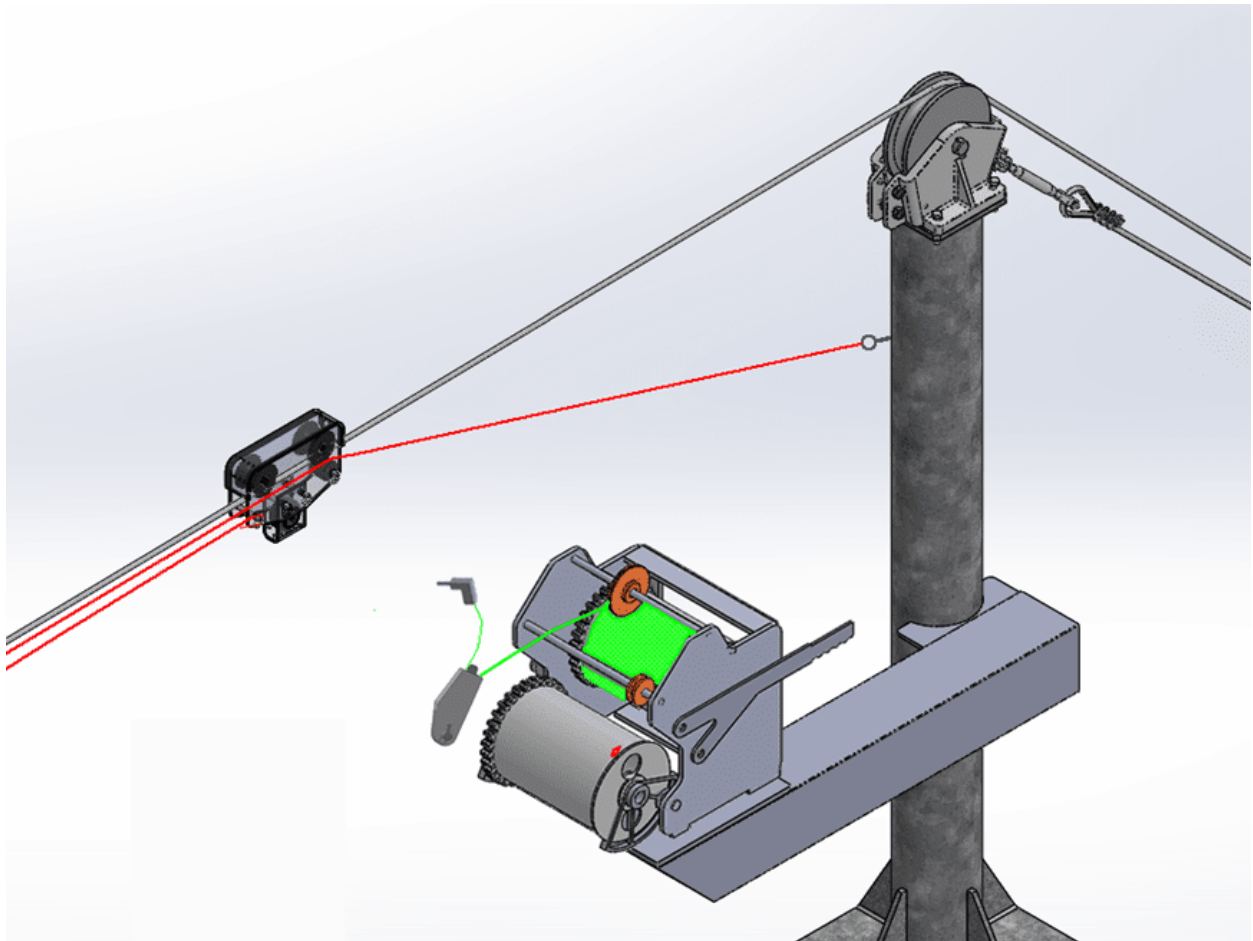
3. If the winch is to be relocated to another cableway site, attach a temporary tether to the Traveller Block and cableway support post to prevent the Traveller Block running towards the stream.
4. Remove the bottom section of the Traveller Block (removing the two pins and R-clips described earlier) allowing removal of the C1 connector from the Traveller Block.



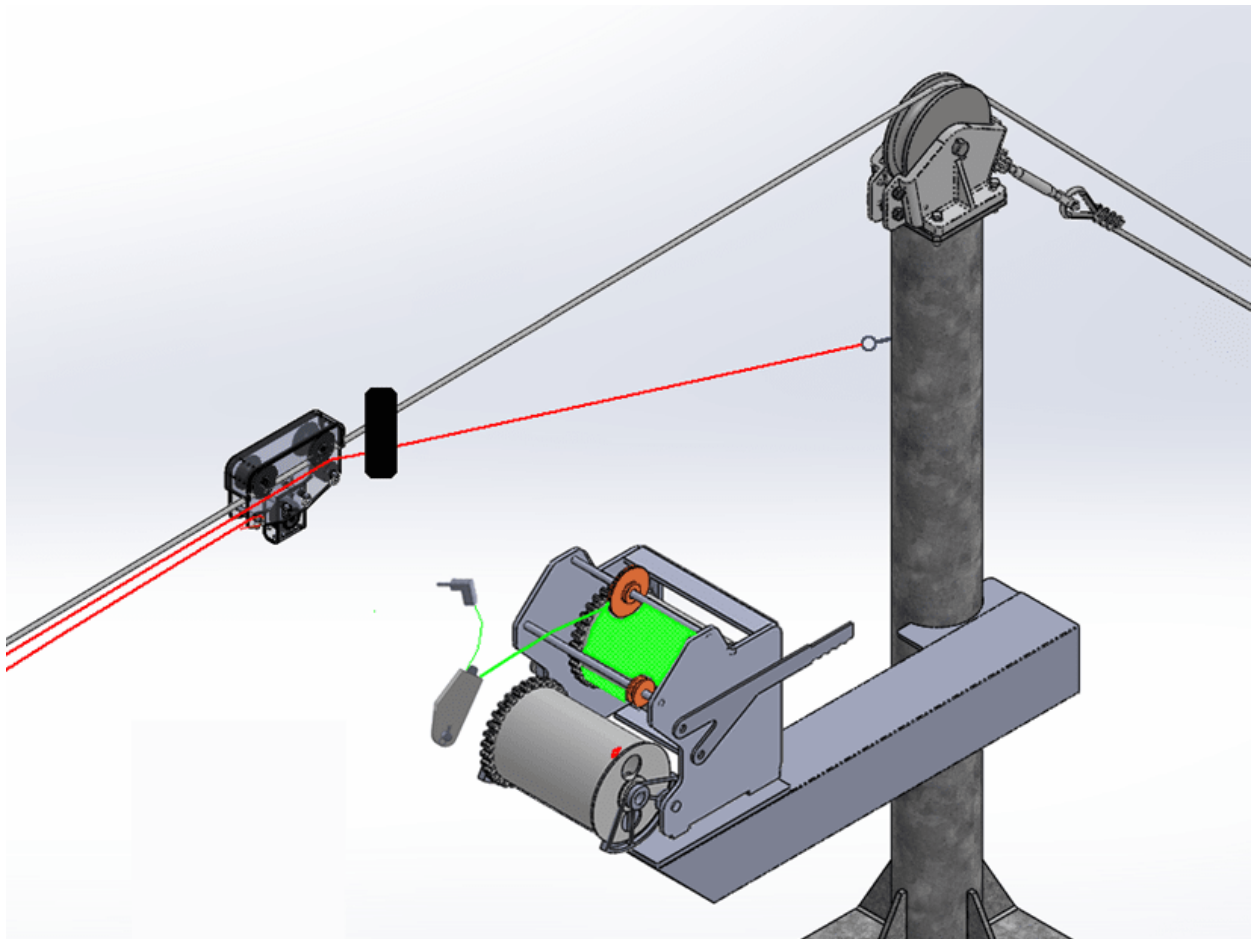
5. Re-attach the bottom section of the Traveller Block to the top section using the two pins and R-clips and attach the C1 connector to the tensioning spring on the winch.



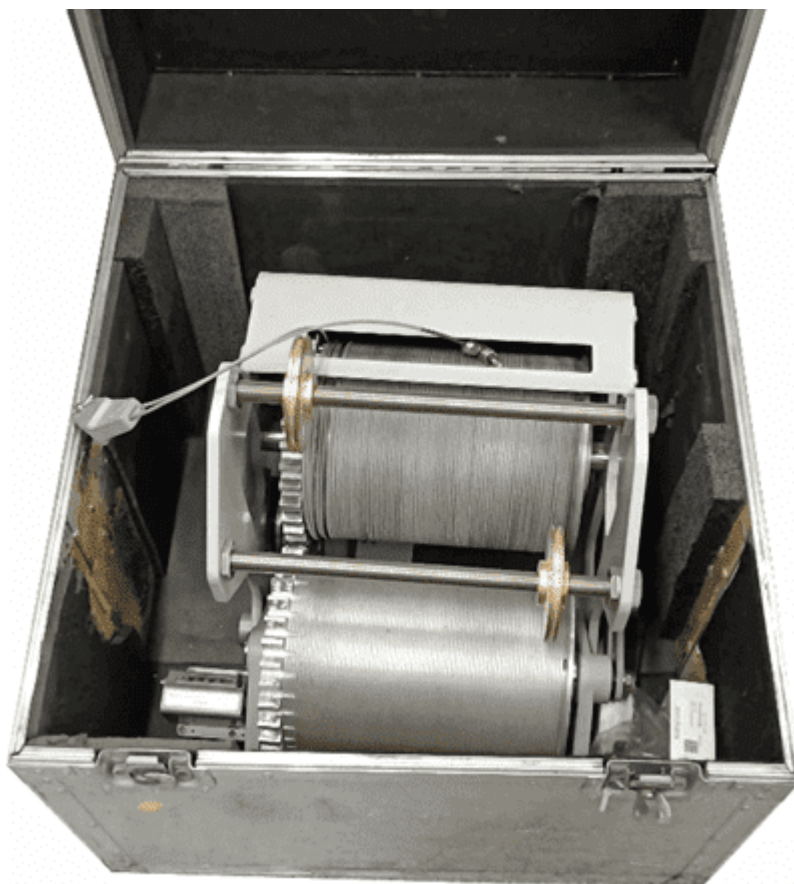
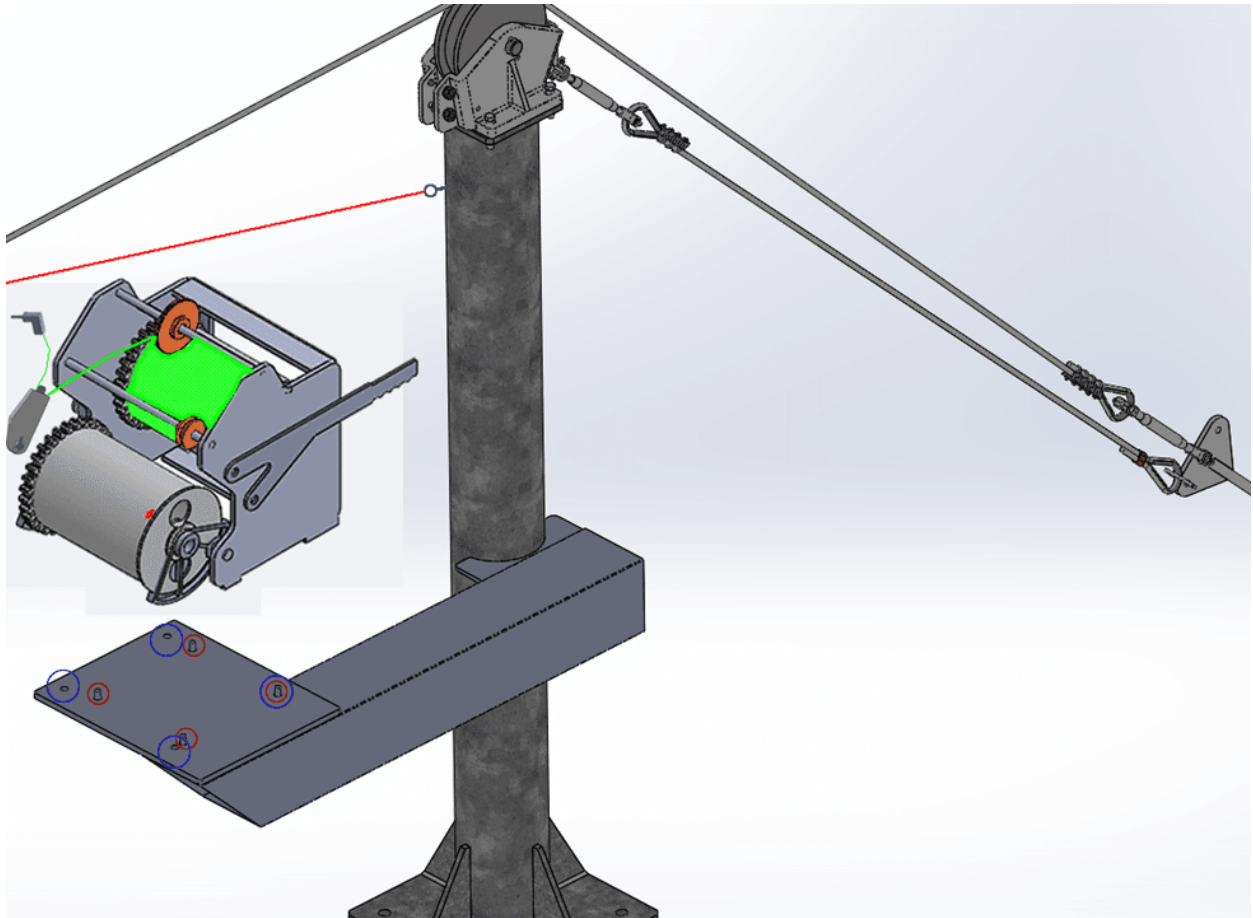
6. Remove the traversing cable from the winch drum and connect to a secure anchorage point (example shown shows an eye bolt on the main cable support post, the cable can also be padlocked for additional security).



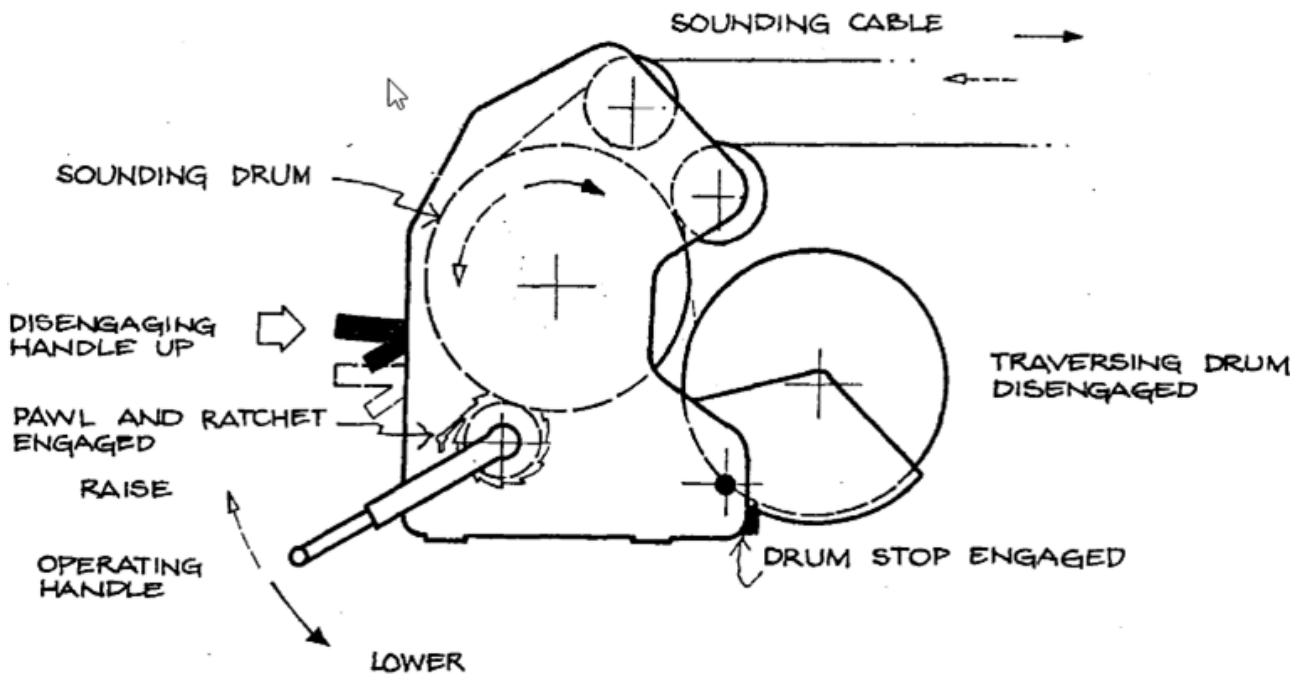
7. Attach a soft clamp to secure the traversing cable to the main cable on the cableway.



- Remove the winch from the mounting bracket by removing the four securing bolts and pack the winch into a carry case.



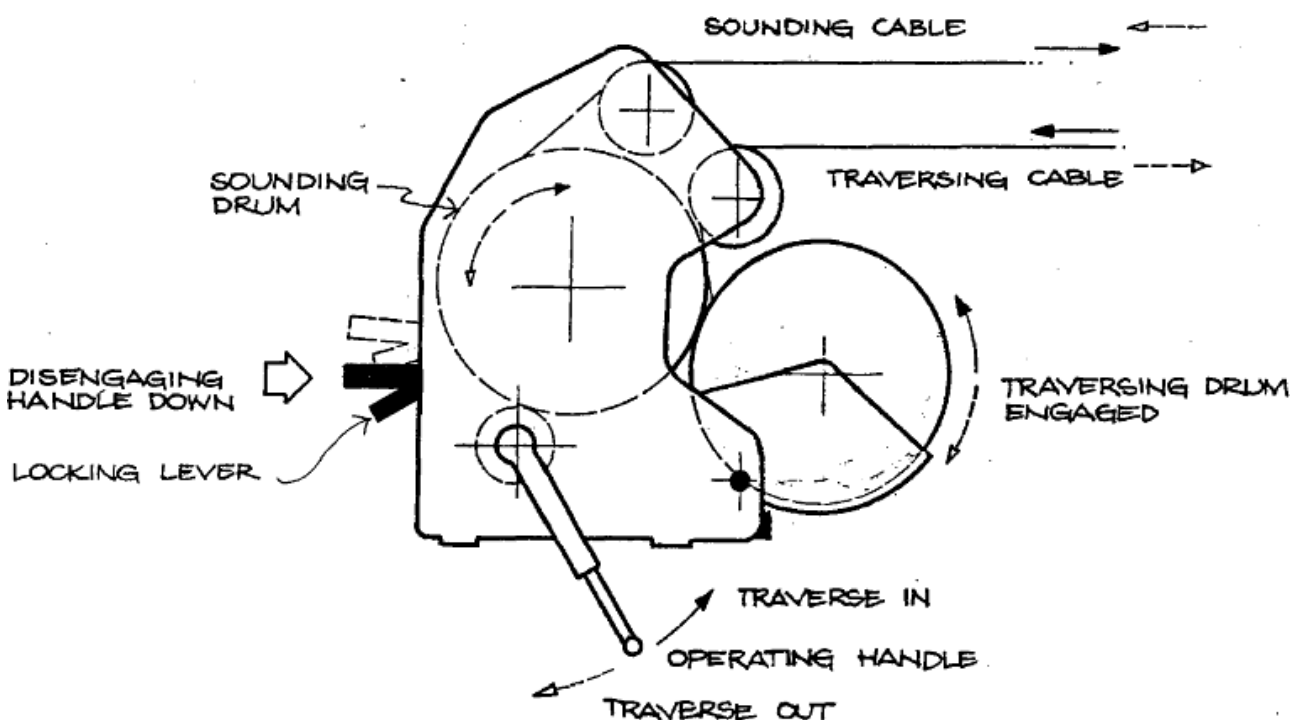
3.2 Winch Mode



Winch shown in "winch mode", that is the traversing drum is out of mesh with the sounding drum and is prevented from rotating by the drum stop. In this mode, the sounding weight can be raised and lowered whilst the Traveller Block remains stationary.

It will be observed that if the winch handle is released, the weight will be held in position - this is due to the automatic (Weston) brake. To lower, it is necessary to wind the weight down. This again is due to the influence of the Weston brake. For the brake to operate in this manner, the pawl must engage with the ratchet wheel on the operating shaft. With the pawl engaged, a loud click will be heard as the handle is rotated in a clockwise direction.

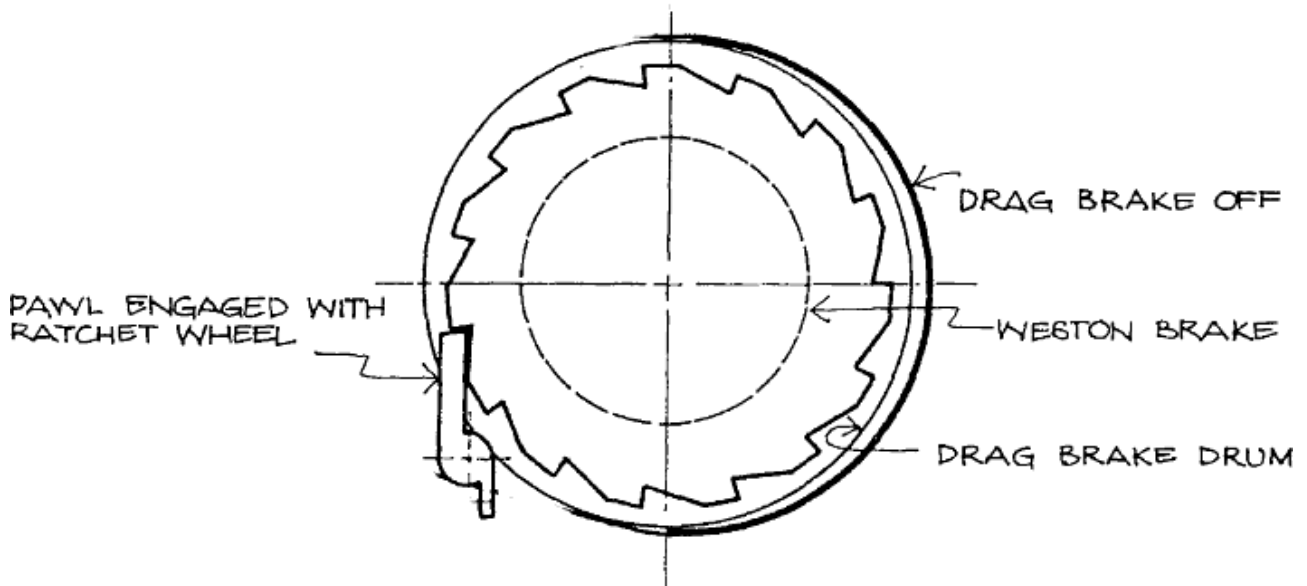
3.3 Traversing Mode



Winch shown in “traversing mode” that is the drum ring gears are in mesh and the drums rotate in opposite directions when the operating handle is moved. In this mode, the Traveller Block can be traversed in and out.

The traversing drum cradle pivots under the influence of the disengaging handle mounted on the opposite side. To engage the drum gears, release the locking handle and whilst holding the disengaging handle with the left hand, rotate operating handle slightly until gear teeth can be meshed, then move disengaging handle down with the left hand and lock it in place.

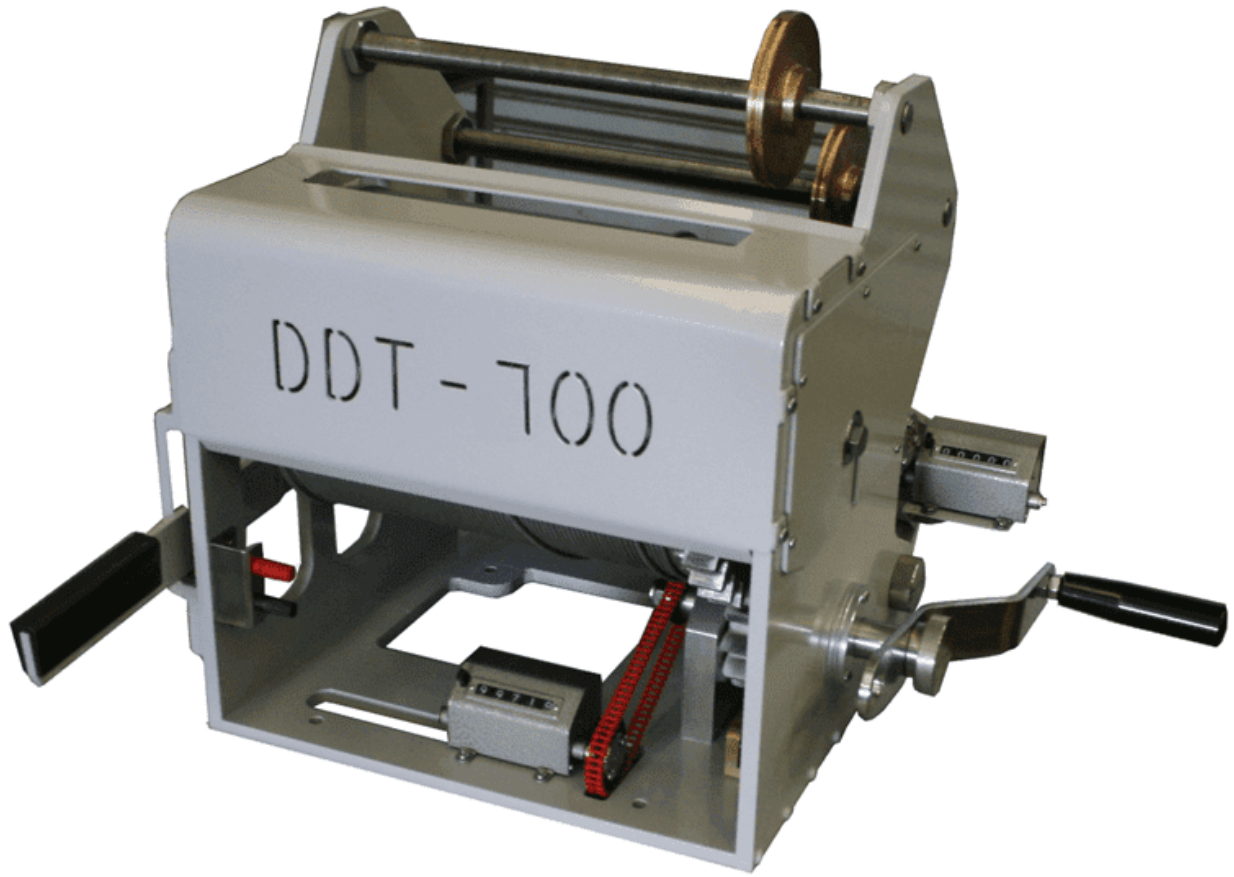
WESTON BRAKE MODE



A typical cableway installation is depicted earlier in this document. The layout shown is based on HyQuest Solutions standard steelwork components in kit form, all of which can be supplied ready for installation. Alternatively, drawings can be provided for the components to be fabricated locally. However, as a minimum, the cableway post head sheave block assemblies should be purchased from HyQuest Solutions as separate items. They are NOT included with the double drum winch products.

3.4 Counters

Each model of double drum winch is fitted with two counters. The TRAVERSING counter is situated to the right of the traverse drum and registers in EITHER centimetre (10 mm) OR decimetre (100 mm) resolution. Imperial model available in resolutions of either 1ft or 0.1ft. The SOUNDING counter is situated on the control panel and registers in centimetre resolution (10 mm) for metric and 1/10" of a foot (0.1 foot) for imperial. See image for DDT700 Barossa model below.



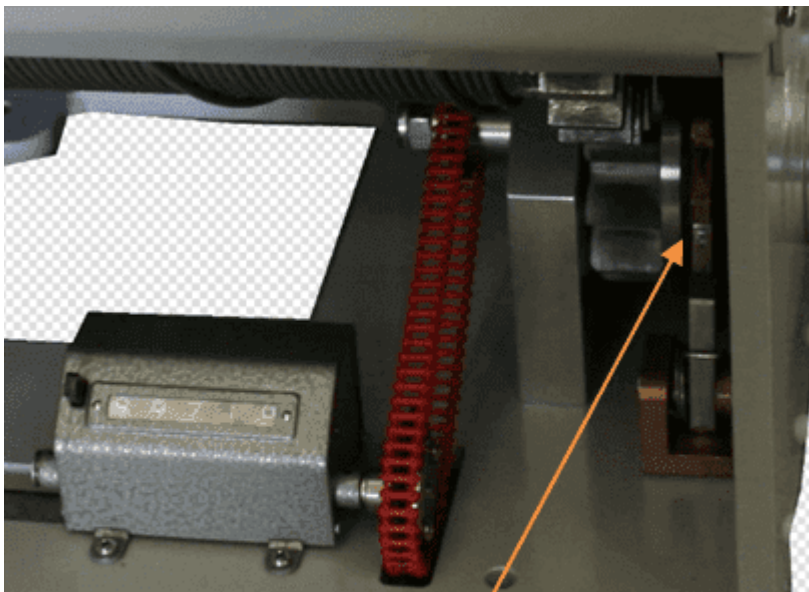
4 Maintenance

For the most part, the DDT700 Barossa and DDT1000 Riverina winches are maintenance free. However, periodic maintenance is required as set out below.

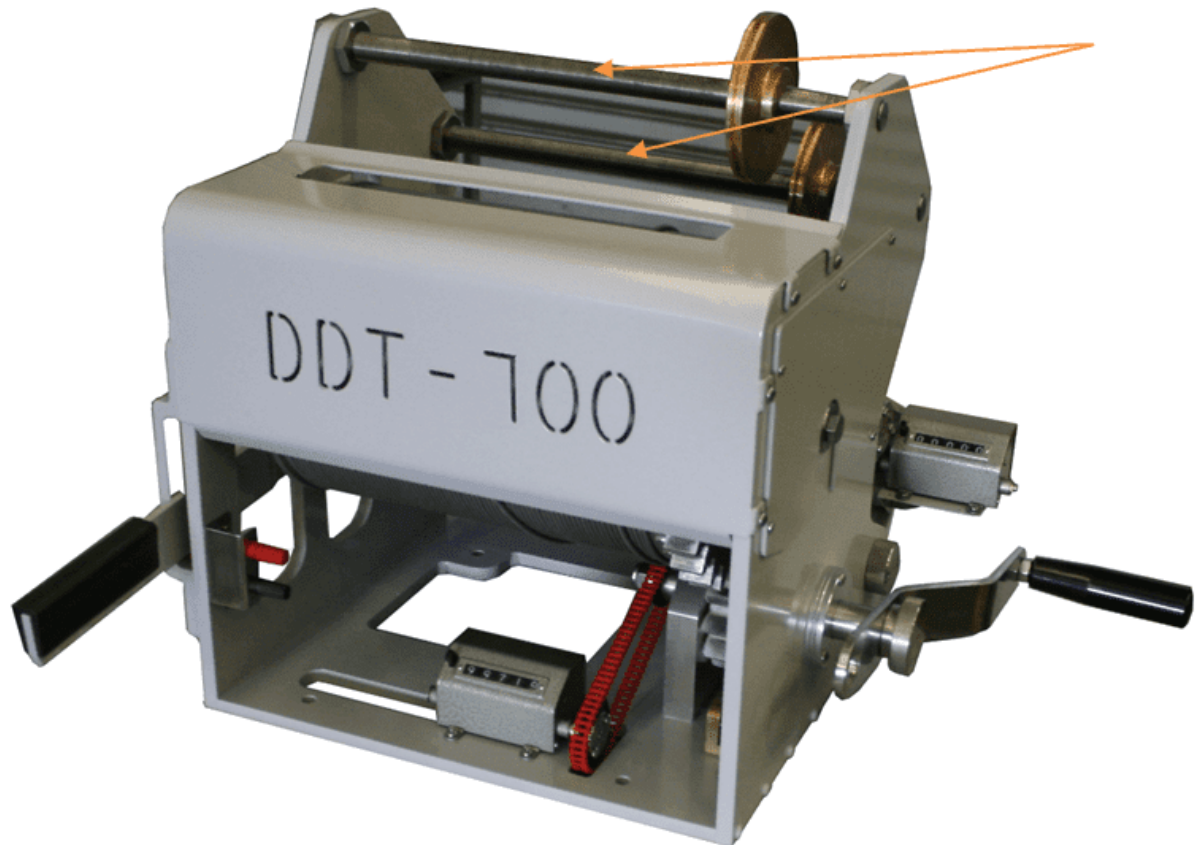
- [Lubrication](#) ²⁵
- [Weston Brake](#) ²⁷
- [Inspection](#) ³¹

4.1 Lubrication

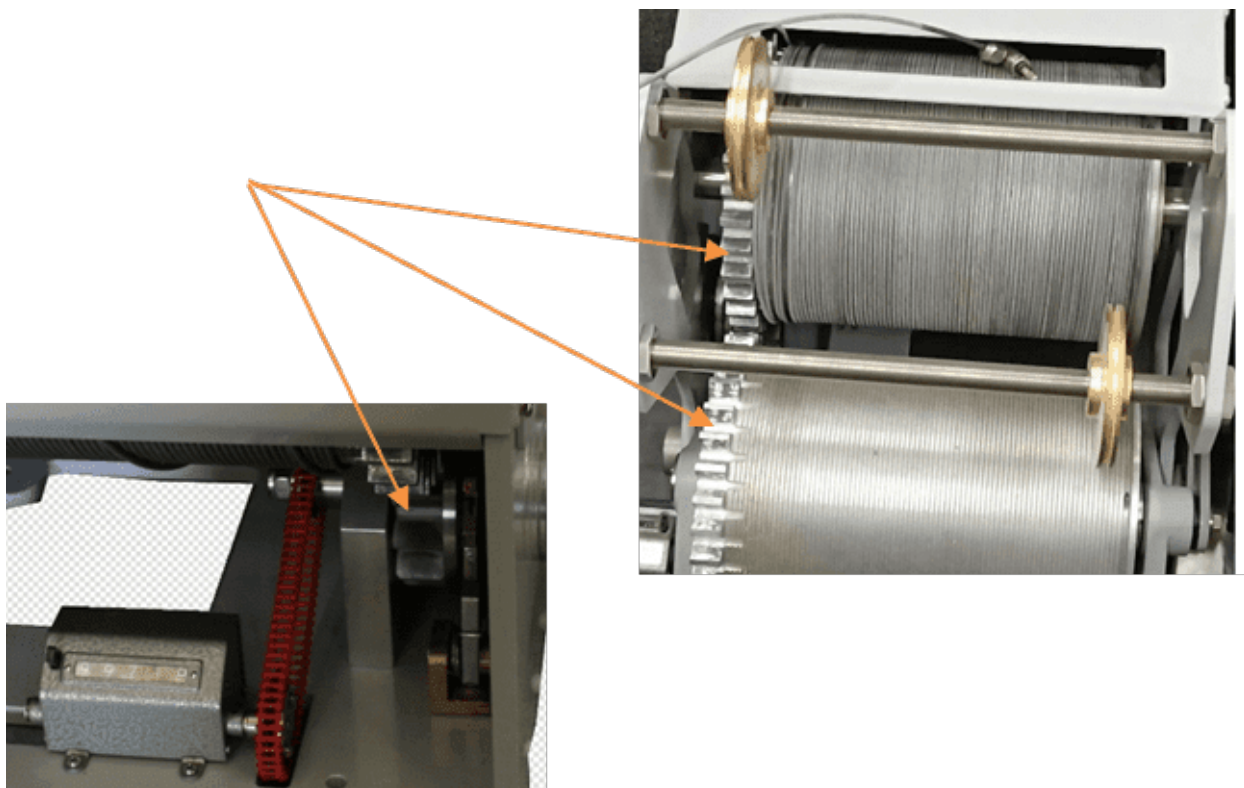
1. Grease the Weston brake every six months through the grease nipple located on the outside of the main shaft using a good quality water-resistant grease. Following this, engage pawl and wind operating handle half a turn in both directions approximately five (5) times to ensure that grease is spread on the brake screw.



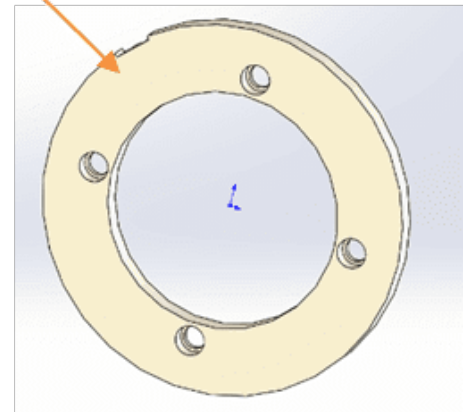
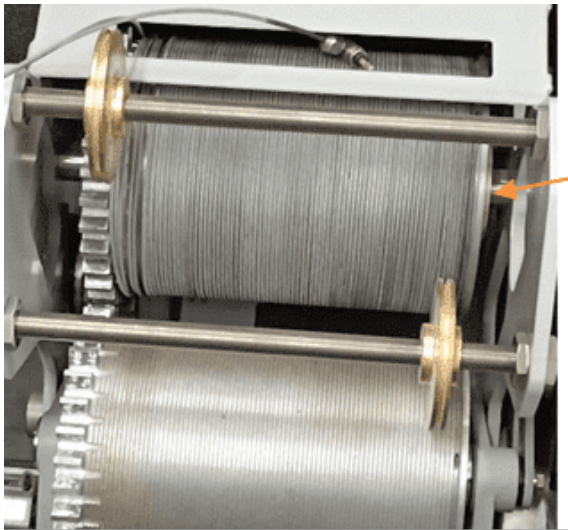
2. Wipe the layer winding screws every six (6) months with a lint free cloth and apply a light lubricating oil to the winding screw. Inspect for damaged threads and repair as necessary.



3. The drum gear teeth should be lightly lubricated every six (6) months with grease.



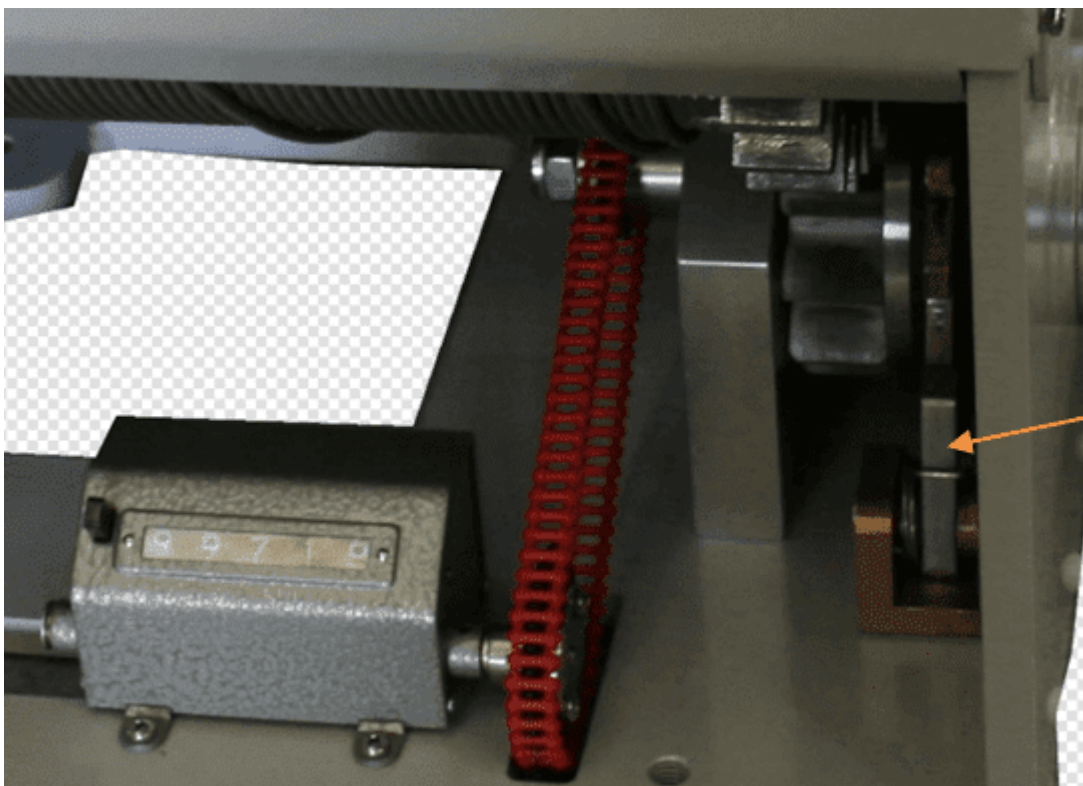
4. The sounding drum slipring should be wiped every three (3) months with a dry lint free cloth with a light lubricating oil applied.



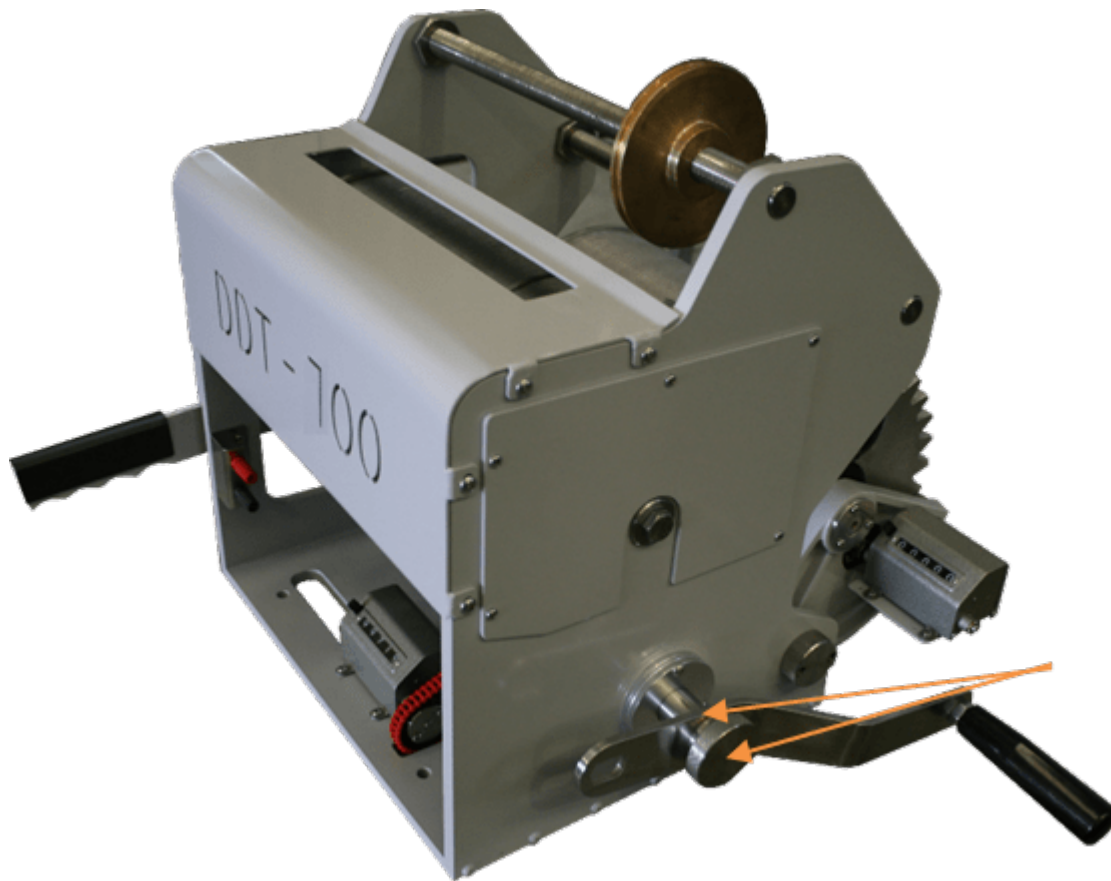
4.2 Weston Brake

The Weston brake is a proven and reliable component of the winch drive and will provide many hours of service life. However, in the event of a breakdown, the following procedure should be followed.

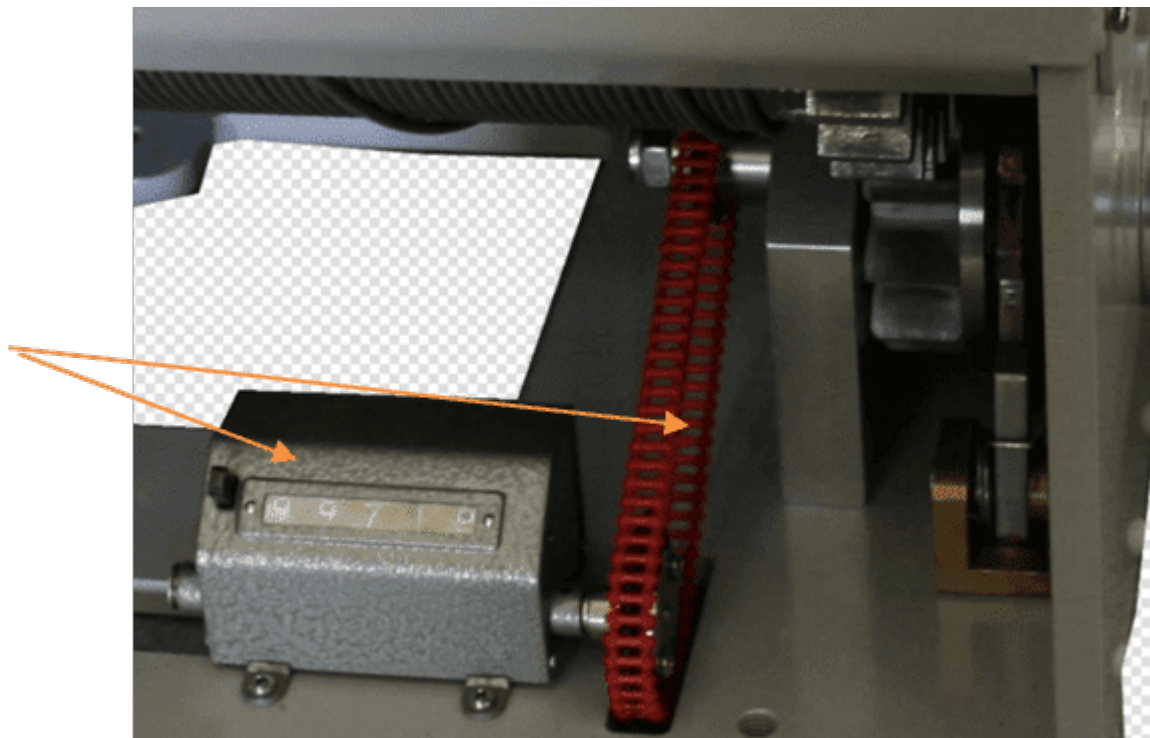
1. Remove all sources of external loading from both drums.
2. Engage pawl and wind operating handle quarter turn anticlockwise. This will loosen the brake screw.



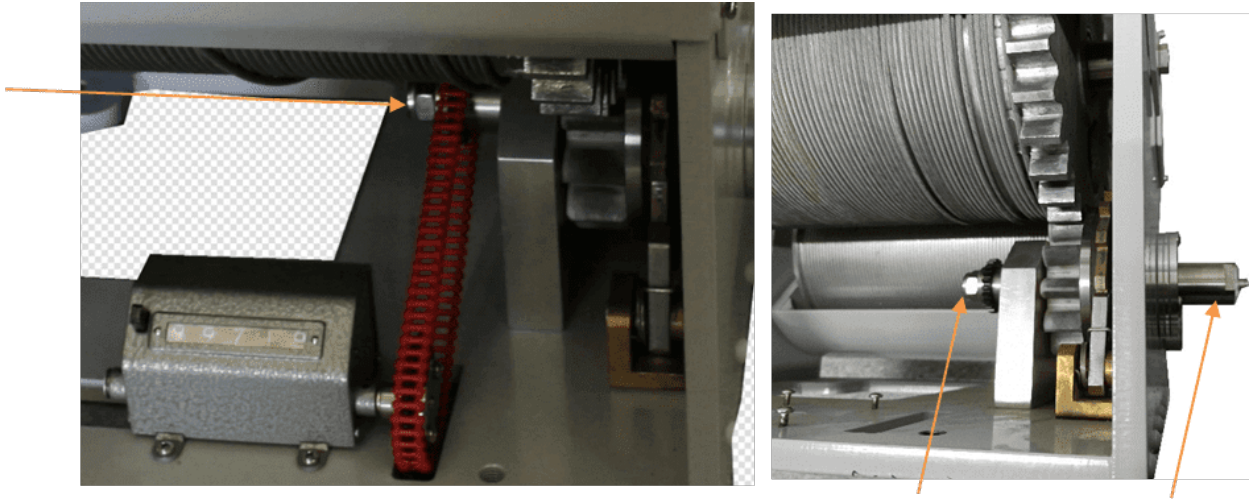
3. Remove the knob, washer and operating handle from the brake shaft.



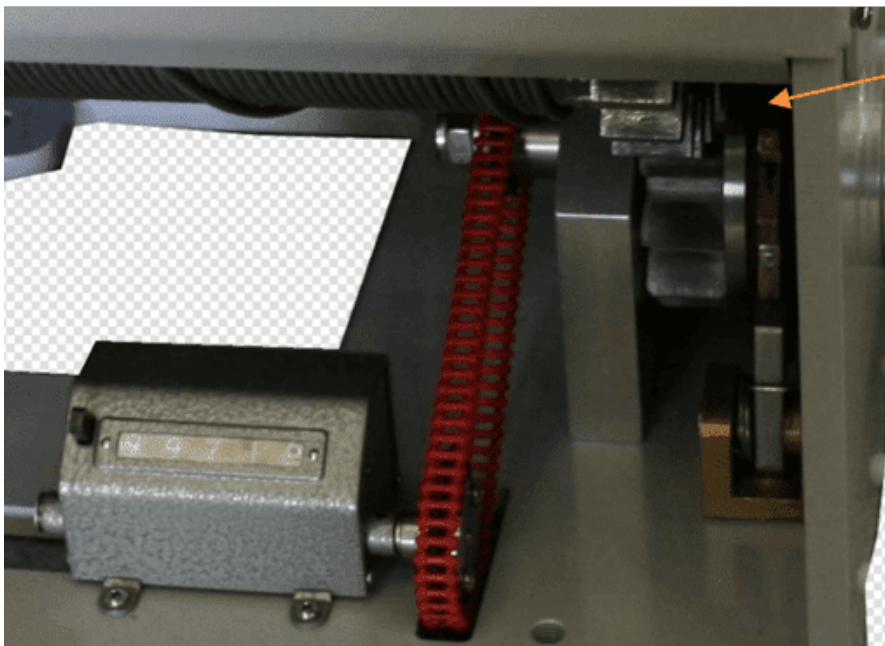
4. Remove the sounding drum counter and chain.



5. Hold shaft and bearing in position in the winch and remove the nyloc nut (using 2x spanners).



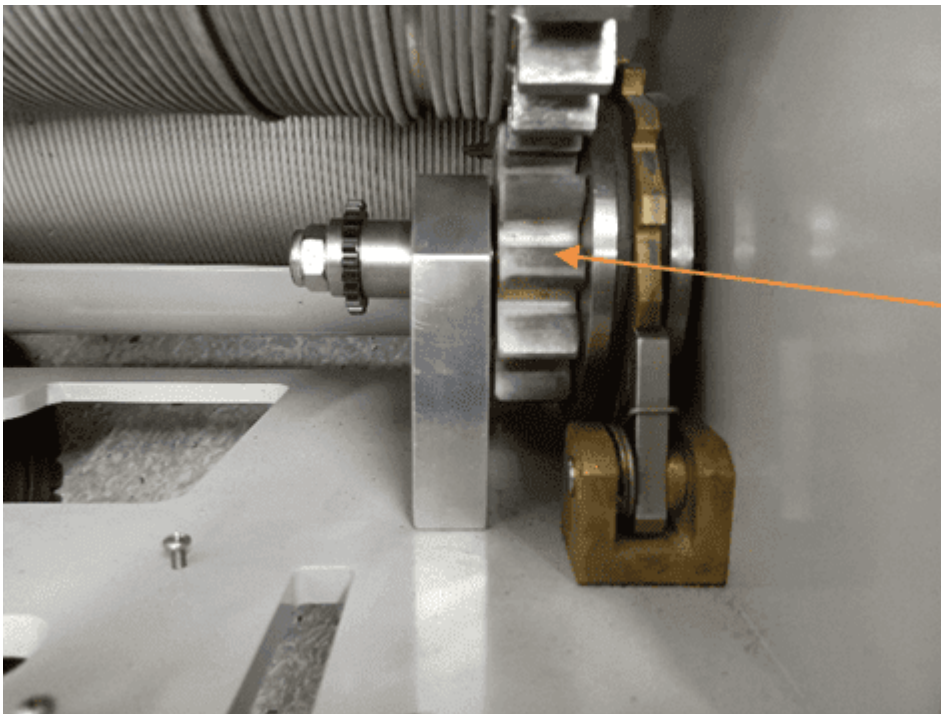
6. Remove spacers and sprocket located at each end of the brake shaft.



7. Turn the winch on its side and remove the four screws securing the pawl assembly to the winch base.



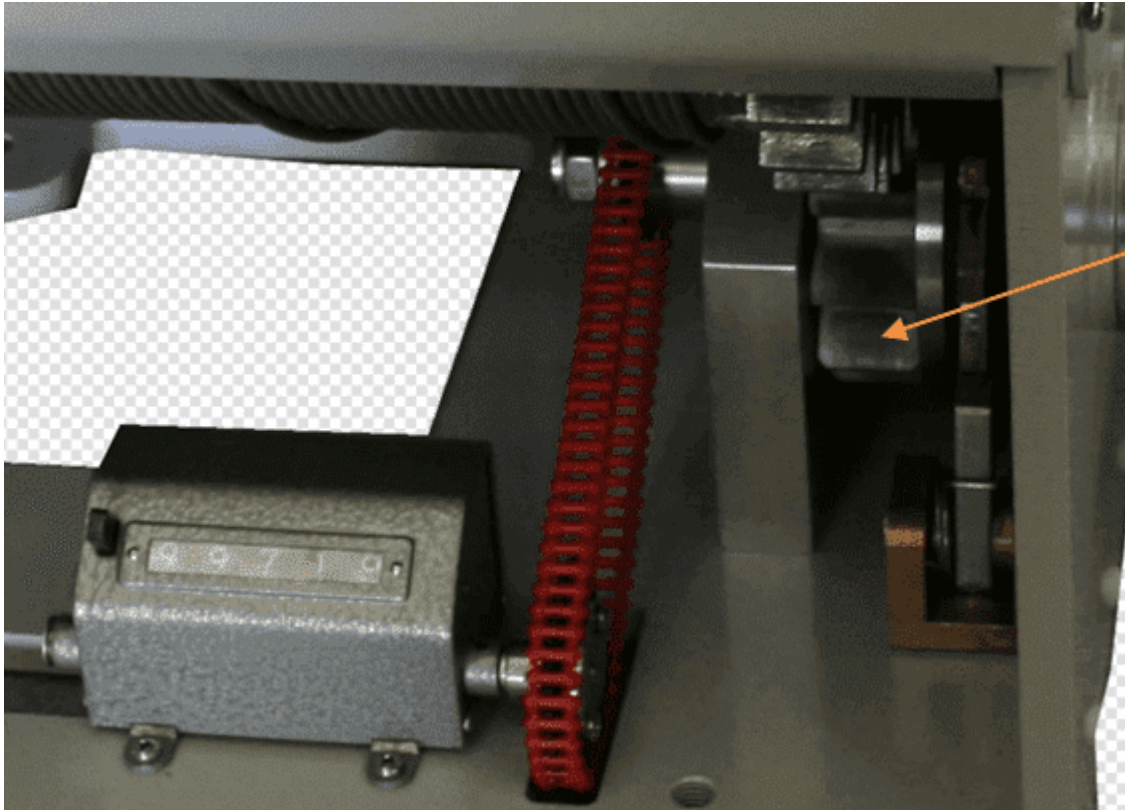
8. Unscrew the bearing cover (located adjacent to the operating handle) then unscrew the brake drum and slide the brake shaft from the winch
9. Remove pinion, Weston Brake and ratchet.



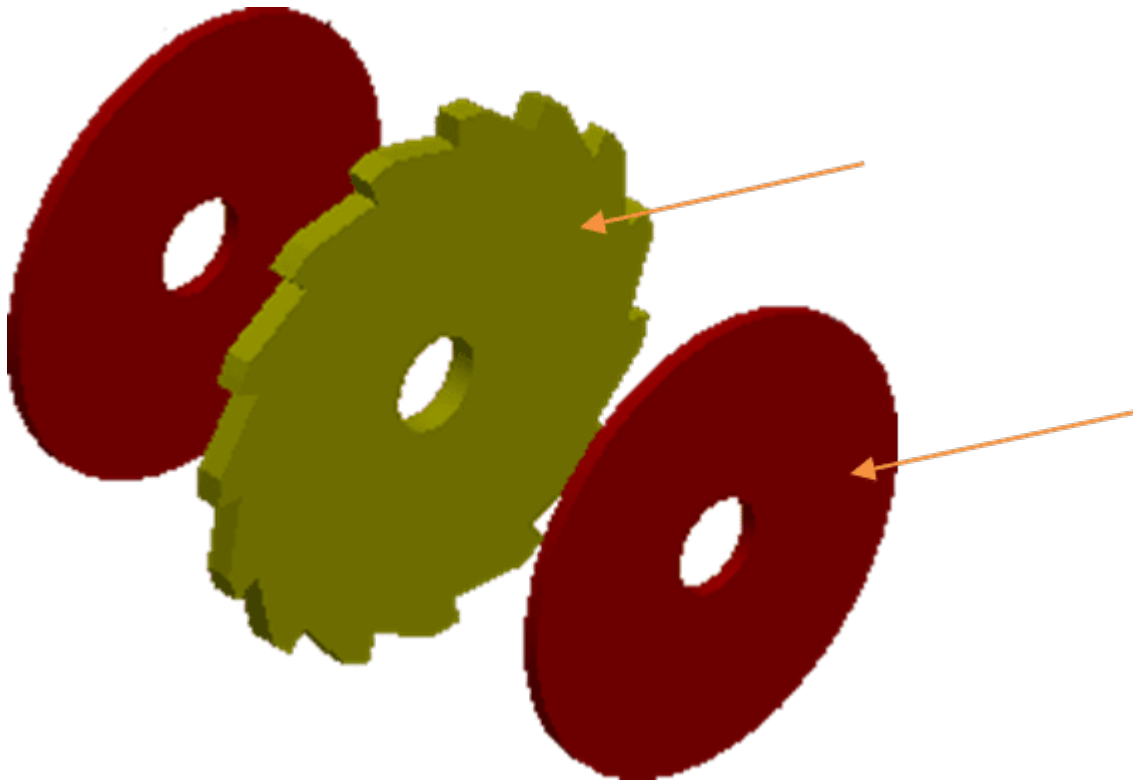
10. To re-assemble, follow the steps listed above in reverse

4.3 Inspection

1. Remove the nylon pinion (four setscrews) and separate the ratchet wheel and both brake pads.



2. With the brake disassembled, clean all metal components thoroughly using a solvent, such as Trichloroethylene.
Note: Brake pads should only be wiped with a clean, lint free, dry rag.
3. Inspect the surfaces of the ratchet wheel (shown in green below) and brake pads (shown in red below) for scoring. Repair if necessary by placing each of the components onto a sheet of fine grade emery cloth and work in a circular motion.
Note: The Weston brake will not operate smoothly if either the ratchet wheels or pads are NOT perfectly flat.
4. Check that the brake pad thickness is not less than 1.5mm Replace if necessary.



5. Check the brake screw surfaces for wear or corrosion and repair with a fine file or emery paper if necessary.
Note: Lack of use of the Weston brake could cause seizure of the brake screw. To avoid this, follow the lubrication procedure described earlier in this manual.
6. Coat the brake screw and bore of the ratchet wheel with grease before assembly.
7. Smooth any wear marks on the nylon gear and pinion teeth with a medium grade file.

Electrical System

The winch is designed for operation with mechanical type current meters using single core insulated meter suspension cable.

A "quick connect" terminal is located at the left-hand end of the sounding drum, providing an electrical connection between the slipring and suspension cable conductor, thus allowing the cable to be fitted without removing the drum.

5 Troubleshooting

Mechanical

Fault Symptom	Possible Cause	Action
Counter not registering	Counter was reset while rotating handle	Reset counter in a stop position
	Counter gear loose on shaft	Tighten Grub Screw
Weston brake will not disengage	Seizure due to prolonged period without use	Attach heavy load to cable and pull or hit the handle sharply in the lower direction (Anti-Clockwise). Repeat several time and if unsuccessful; remove brake assembly for inspection.
Weston brake slips in "raise" mode	Ratchet wheel, friction disc and drum end surfaces not "bedded-in"	Attach light load to cable and wind up and down several times with Weston brake engaged. If no improvement, dismantle and check for grease on friction surfaces.
Layer winding sheave not freely running, emitting "squealing" noise or lead screw dry	Shaft dirty	Remove from winch and clean sheave and shaft separately. Lightly oil or grease after re-installing
	Thread damaged	Repair damaged thread with file. Lightly oil or grease after re-installing
	Thread Dry	Lightly oil or grease

Electrical

Fault Symptom	Possible Cause	Action
Current meter counter not registering	Counter faulty	Bridge positive and negative terminals on counter. If no signal, repair counter
	Lead damaged	Connect lead to counter and bridge other end. If no signal, lead faulty. Replace or repair ends.
	Earth (Black) terminal is faulty	With lead connected to winch, bridge red terminal to frame. If no signal terminal loose or corroded.
	Damaged brush or terminal wire	Bridge slipping to winch frame. If signal emits that means proper circuit between brush and red terminal. If no signal, loose red terminal connection, broken, or brush sticking. To check condition of brush remove signal adaptor by unscrewing the black

Fault Symptom	Possible Cause	Action
		terminal and the mounting screw. Ensure that brush and spring move freely in signal adaptor housing or repair with file and extend the spring.
	Wiring to slipring break	Check the wire on the slipring if loose or broken. If broken see section fitting amegraph cable to slipring.
Current meter counter registering continuously	Faulty lead	Fit lead to counter only. Signal shows internal short circuit in lead. Inspect for break or damage.
	Current meter or angle plug are faulty	Disconnect meter. If signal still emitting continuously. Check the earth inside angle plug or damage to cable between meter and gauging weight. If signal stops emitting continuously repair the current meter.
	Meter suspension cable is damaged, or slipring wires earthing to drum end	With lead connected to winch, bridge red terminal to frame. If no signal terminal loose or corroded.

6 Repair

HyQuest Solutions precision instruments and data loggers are produced in quality-controlled processes. All HyQuest Solutions production and assembly sites in Australia, New Zealand and Europe are ISO 90001 certified. All equipment is factory tested and/or factory calibrated before it is shipped to the client. This ensures that HyQuest Solutions products perform to their fullest capacity when delivered.

Despite HyQuest Solutions most rigorous quality assurance (QA), malfunction may occur within or outside of the warranty period. In rare cases, a product may not be delivered in accordance with your order.

In such cases HyQuest Solutions' return and repair policy applies. For you as a customer, this means the following:

1. Contact HyQuest Solutions using the Repair Request Form made available online:
https://cdn.hyquestsolutions.eu/fileadmin/Services/Downloads/HS-RepairRequestForm_EU.pdf
In response you will receive a reference number that must be referenced on all further correspondence and on the freight documents accompanying your return shipment.
2. Please provide as much information and/or clear instructions within the return paperwork. This will assist our test engineers with their diagnosis.
3. Please do not ship the goods prior to obtaining the reference number. HyQuest Solutions will not reject any equipment that arrives without reference number; however, it may take us longer to process.

Custom requirements for items sent to HyQuest Solutions for warranty or non-warranty repairs: Check with your national customs/tax authorities for details, processes and paperwork regarding tax exempt return of products. Typically, special custom tariff codes are available (such as HS Code = 9802.00) that verify the item is being returned for repair and has no commercial value. Please note that the customs invoice / dispatch documents should also clearly state: "Goods being returned to manufacturer for repair - No Commercial value". It is mandatory to have any returned goods accompanied by a commercial invoice on headed paper. HyQuest Solutions reserves the right to charge the customer for time spent rectifying incorrect customs documents.

Note: Please ensure that your goods are packed carefully and securely. Damage that occurs during transit is not covered by our warranty and may be chargeable.

7 Technical Data

	Barossa DDT700	Riverina DDT1000
Load Capacity	70 kg (154 lb)	100 kg (220lb)
Frame	Robust Aluminium, Powder Coated	Robust Aluminium, Powder Coated
Sounding Drum	Cast Aluminium 600mm Circumference, fitted with silver plated slipring, and depth counter	Cast Aluminium 1000mm Circumference, fitted with silver plated slipring, and depth counter
Counter Sounding	Mechanical, six digits resettable, registering depth in centimetre (1 cm resolution) for metric or 1/10 of a foot (0.1foot) for imperial	Mechanical, six digits resettable, registering depth in centimetre (1 cm resolution) for metric or 1/10 of a foot (0.1foot) for imperial
Traversing Drum	Cast Aluminium 600 mm Circumference, fitted with traverse counter. (Detachable when not required)	Cast Aluminium 1000 mm Circumference, fitted with traverse counter. (Detachable when not required)
Counter Traversing	Mechanical, six digits resettable, registering distance in EITHER centimetre (10 mm) OR decimetre (100 mm) resolution. Imperial model available in resolutions of either 1 ft or 0.1 ft.	Mechanical, six digits resettable, registering distance in EITHER centimetre (10 mm) OR decimetre (100 mm) resolution. Imperial model available in resolutions of either 1 ft or 0.1 ft.
Drum Capacity Sounding	<ul style="list-style-type: none"> ▪ 55m (180ft) for 3.2mm (1/8") Amergraph ▪ 70m (229 ft) for 2.5mm (1/10") Amergraph 	<ul style="list-style-type: none"> ▪ 118m (387ft) for 3.2mm (1/8") Amergraph ▪ 152m (498ft) for 2.5mm (1/10") Amergraph
Drum Capacity Traversing	<ul style="list-style-type: none"> ▪ 43m (141ft) for 4.0mm (5/32") Wire Rope ▪ 55m (180ft) for 3.2mm (1/8") Wire Rope ▪ 70m (229 ft) for 2.5mm (1/10") Wire Rope 	<ul style="list-style-type: none"> ▪ 93m (305ft) for 4.0mm (5/32") Wire Rope ▪ 118m (387ft) for 3.2mm (1/8") Wire Rope ▪ 152m (498ft) for 2.5mm (1/10") Wire Rope
Operation	Manual	Manual
Dimensions	Approx. Length 600 mm (24"), Width 560 mm (22"), Height 470 mm (18.5")	Approx. Length 735 mm (29"), Width 800 mm (31.5"), Height 700 mm (27.6")
Packed Dimensions	Approx. 64 Kg (141 lb), 0.3m ³	Approx. 100 Kg (220 lb), 0.6m ³

8 Obligations of the Operator and Disposal

This chapter contains the following subsections:

- [Obligations of the Operator](#) ³⁷
- [Dismantling / Disposal](#) ³⁷

8.1 Obligations of the Operator

European Union

In the Single European Market it is the responsibility of the operator to ensure that the following legal regulations are observed and complied with: national implementation of the framework directive (89/391/EEC) and the associated individual directives, in particular 2009/104/EC, on minimum safety and health requirements for the use of work equipment by employees at work.

Worldwide

Regulations: If and where required, operating licences must be obtained by the operator. In addition, national or regional environmental protection requirements must be complied with, regardless of local legal provisions regarding the following topics:

- Occupational safety
- Product disposal

Connections: Local regulations for electrical installation and connections must be observed.

8.2 Dismantling / Disposal

When disposing of the units and their accessories, the applicable local regulations regarding environment, disposal and occupational safety must be observed.

Before dismantling

- Electrical Devices:
 - Switch off the units.
 - Disconnect electrical appliances from the power supply, regardless of whether the appliances are connected to the mains or to another power source.
- Mechanical devices:
 - Fix all loose components. Prevent the device from moving independently or unintentionally.
 - Loosen mechanical fastenings: Please note that appliances can be heavy and that loosening the fastenings may cause them to become mechanically unstable.

Disposal

Operators of old appliances must recycle them separately from unsorted municipal waste. This applies in particular to electrical waste and old electronic equipment.

Electrical waste and electronic equipment must not be disposed of as household waste!

Instead, these old appliances must be collected separately and disposed of via the local collection and return systems.

Integrated or provided batteries and accumulators must be separated from the appliances and disposed of at the


designated collection point. At the end of its service life, the lithium-ion battery must be disposed of according to legal provisions.

EU WEEE Directive

As players in the environmental market, KISTERS AG and HyQuest Solutions are committed to supporting efforts to avoid and recycle waste. Please consider:

- Avoidance before recycling!
- Recycling before disposal!



This symbol  indicates that the scrapping of the unit must be carried out in accordance with Directive 2012/19/EU. Please observe the local implementation of the directive and any accompanying or supplementary laws and regulations.

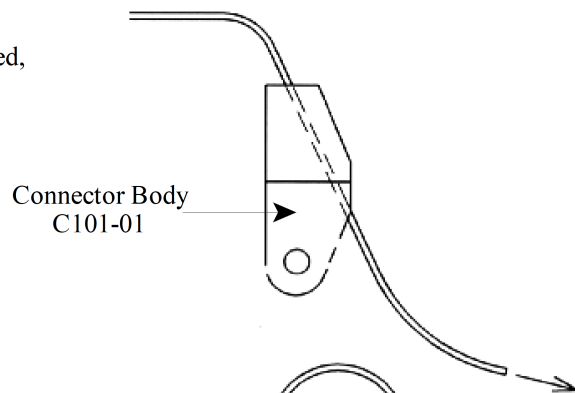
9 Appendices

This chapter contains the following subsections:

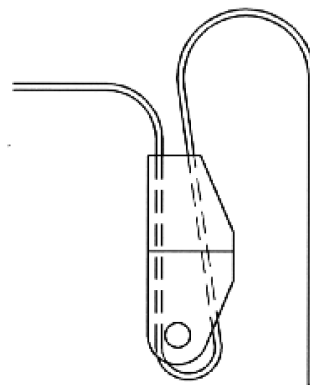
- [Fitting C1 Connector to Amergraph Cable](#)⁴⁰
- [Fitting Angle Plug to Amergraph Cable](#)⁴¹
- [Fitting Tee Plug to Amergraph Cable](#)⁴²
- [Break-away kit manual](#)⁴³

9.1 Fitting C1 Connector to Amergraph Cable

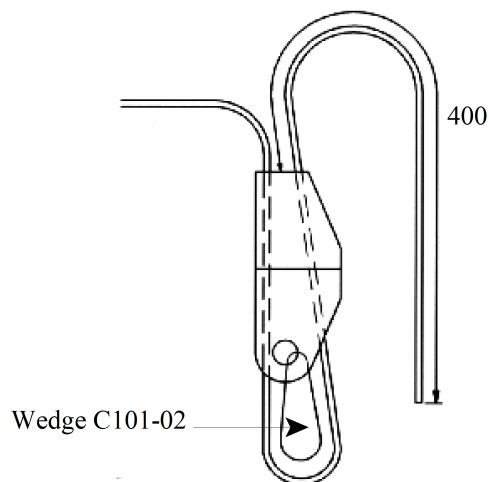
1. With R Clip SC019-01 and Pin C101-03 removed, push the end of the sounding cable through the connector body C101-01.



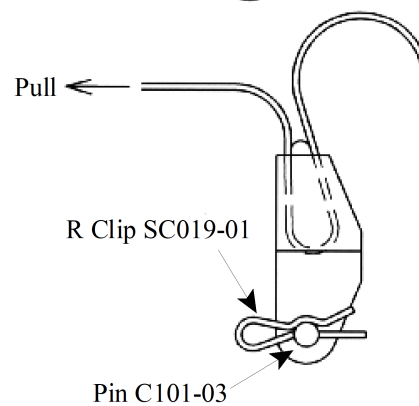
2. Loop the cable and push back through the connector for approximately 400MM.



3. Fit Wedge inside cable loop.

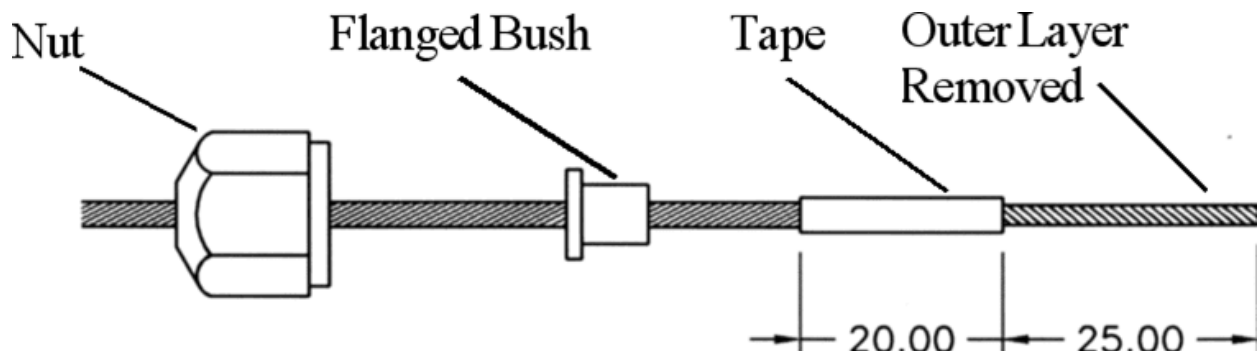


4. Pull cable back until wedge is held and then pull cable again tightly to lock Wedge in position.

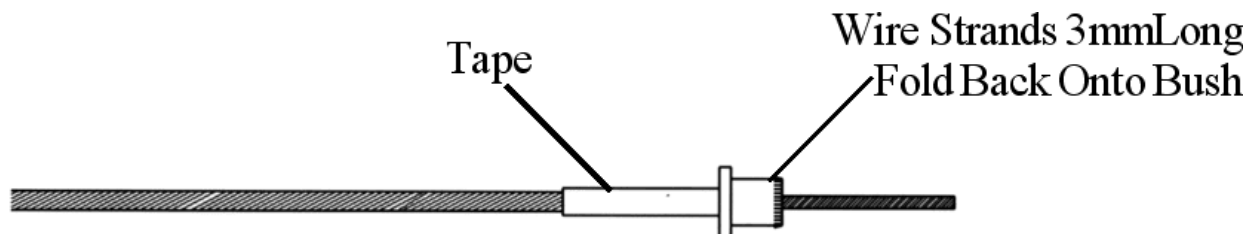


9.2 Fitting Angle Plug to Amergraph Cable

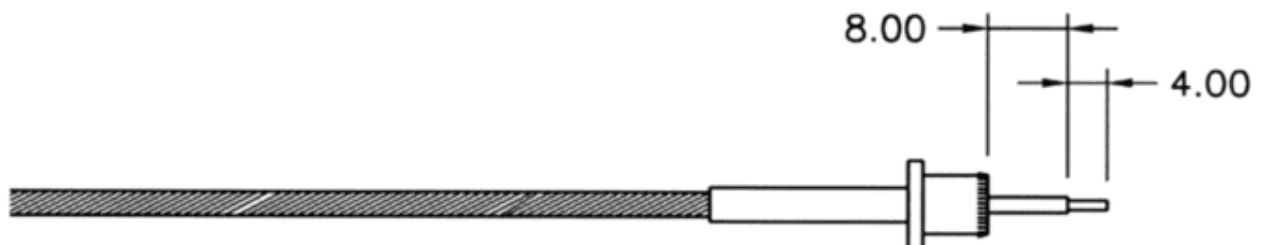
1. Slide nut and flanged bush onto Amergraph cable.
2. Wrap insulating tape around cable 25mm (1") from end, or fit heat shrink, 20mm (3/4") long.
3. Unwind outer layer of cable and cut off at tape.



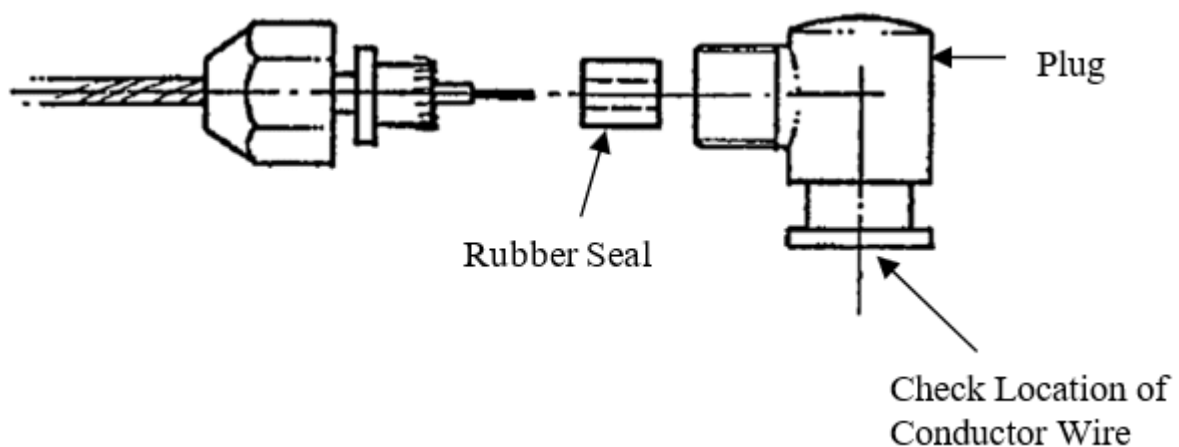
4. Unwind inner cable layer back to tape, one strand at a time and cut off 3mm (1/8") in front of the insulation tape.
5. Slide flanged bush forward and bend the short inner layer strands onto the bush.



6. Strip conductor insulation back to 8mm (5/16") in front of the flanged bush.
7. Coat copper conductor wire with resin-cored solder. **BE CAREFUL** not to heat wire insulation. Cut wire back to 4mm (5/32") long.



8. Slide rubber seal onto conductor and then push cable into plug. Look into the other end of the plug and check that the conductor wire is in the centre of the plug hole.



9. Screw nut onto plug and tighten with a spanner.
10. Screw pin into plug and tighten, using a 1/16" Allen key as a lever.
11. Slide rubber insulator onto pin
12. Check circuit.

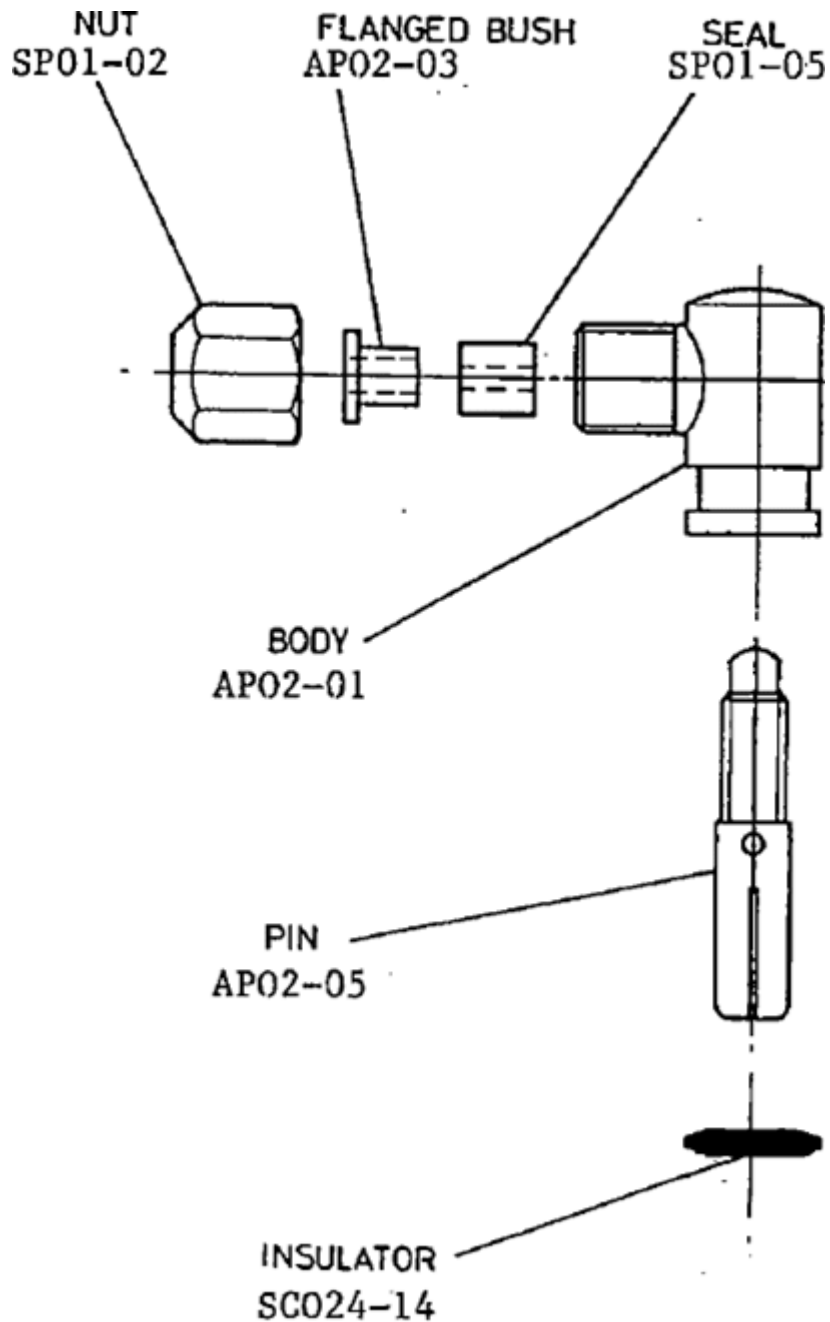


Figure 1 - Angle Plug Assembly AP02

9.3 Fitting Tee Plug to Amergraph Cable

1. Proceed steps 1-9 on both sides of plug.
2. Screw pin into plug and tighten, using 1/16" hexagon wrench as a lever.
3. Slide rubber insulator onto pin.
4. Check circuit.

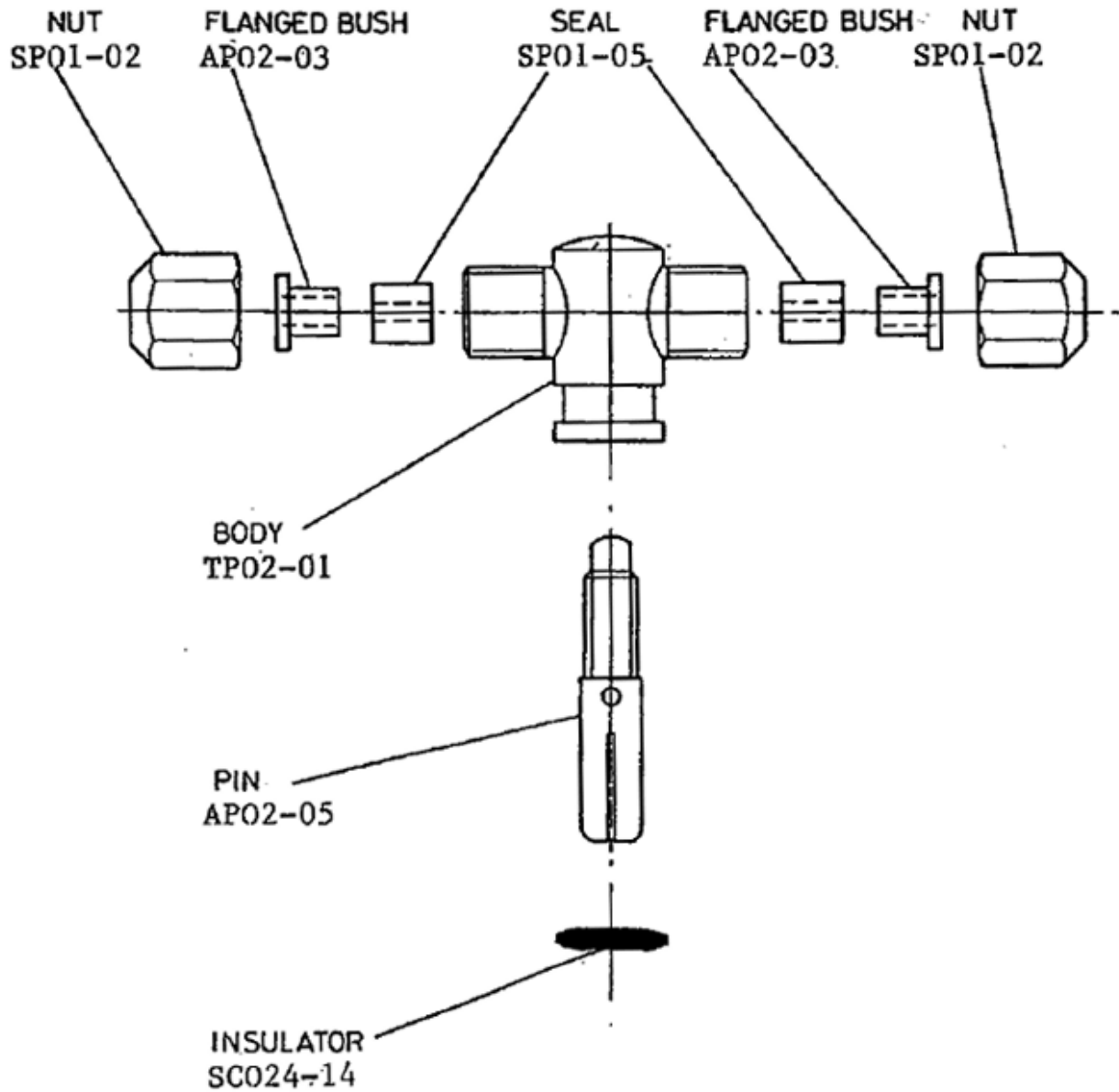

















Figure 2 - Angle Plug Assembly TP02

9.4 Break-away kit manual

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