

**DDT700 BAROSSA DOUBLE DRUM WINCH  
INSTRUCTION MANUAL**



QUALITY SYSTEM

ISO: 9001

**CERTIFIED**

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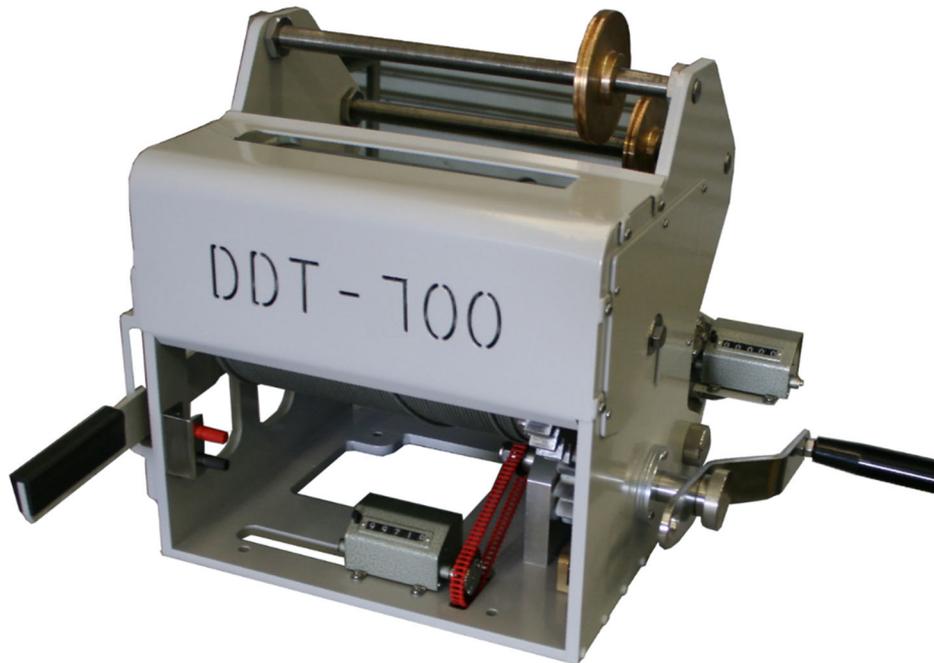
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## INTRODUCTION

The HyQuest Solutions Barossa double drum winch is based on the long established approach to obtaining current meter observations and sediment samples in streams of moderate widths. The principal advantage of the double drum concept lies with the ease of traversing, as the forces exerted by the gauging weight are largely cancelled out. The winch exhibits state-of-the-art design features, representing years of both in-house and field development. It comprises a rugged cast aluminium body and cable drums, with stainless steel shaft components and corrosion resistant fasteners throughout.



## OPERATION

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, PVD100, PVD200 and HydroTab/CMCbt.

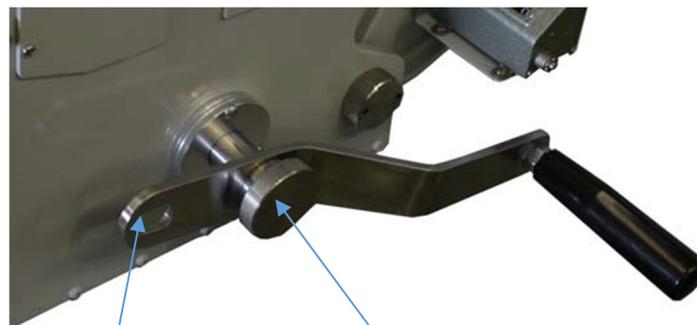
### ***Initial set up & Operational Procedure:***

A typical installation is depicted in the appendix of this manual. The layout shown in the appendix is based on HyQuest Solutions standard steelwork components, all of which can be supplied ready for installation.

Alternatively, drawings can be provided for the components to be fabricated elsewhere.

However, as a minimum, the sheave block assembly should be supplied.

1. Install winch and traveller block as shown in the appendix
2. Fit handle, screw knob onto the shaft.
3. For the first time fit the winch to the required location as shown in the appendix. Install winch and traveller block as shown in the appendix
4. Disconnect Cl 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 (it is necessary to remove lower section of traveller block for this operation). Connect to the current meter hanger bar. Fit the angle plug to current meter.
5. Remove the end of the upper traversing cable from its anchorage and connect to the stream side of the traversing block.
6. Similarly, release the lower traversing cable and pass end over the layer winding sheave of the traversing drum, and fit to the slotted hole in the slipping end of the drum refer to appendix.
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 discharge measurement.



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

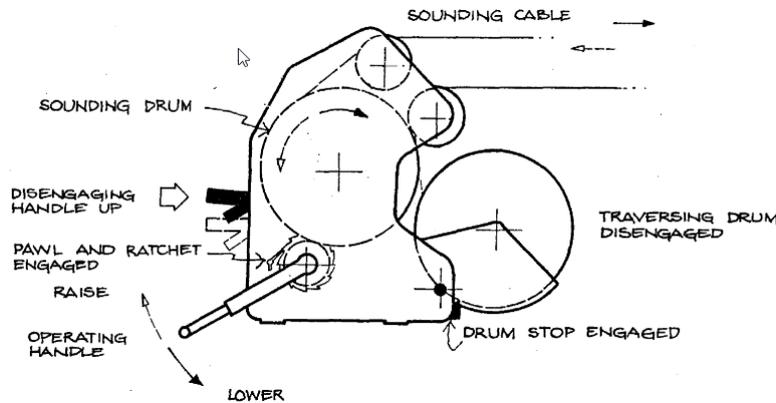
For light gauging  
weights use this  
position on the handle

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

### ***Dismantling Procedure:***

1. Traverse traveller block to operating side position.
2. Tie traveller block in position near winch.
3. Attach soft clamp to traversing cables and main cable on river side of traveller block.
4. Disengage traversing drum, then lower sounding weight to the ground (thus reducing tension in the cables).
5. Remove traversing cable from drum and connect to anchorage chain with padlock. Refer to appendix
6. Loosen soft clamp, remove traversing cable end from traveller block, pull cable in and attach to padlock.
7. Tighten soft clamp.
8. Remove traveller block from main cable.
9. Disconnect current meter, weight and current meter counter.
10. Wind on Amergraph cable and secure CI Connector to tension spring.
11. Remove winch from mountings.

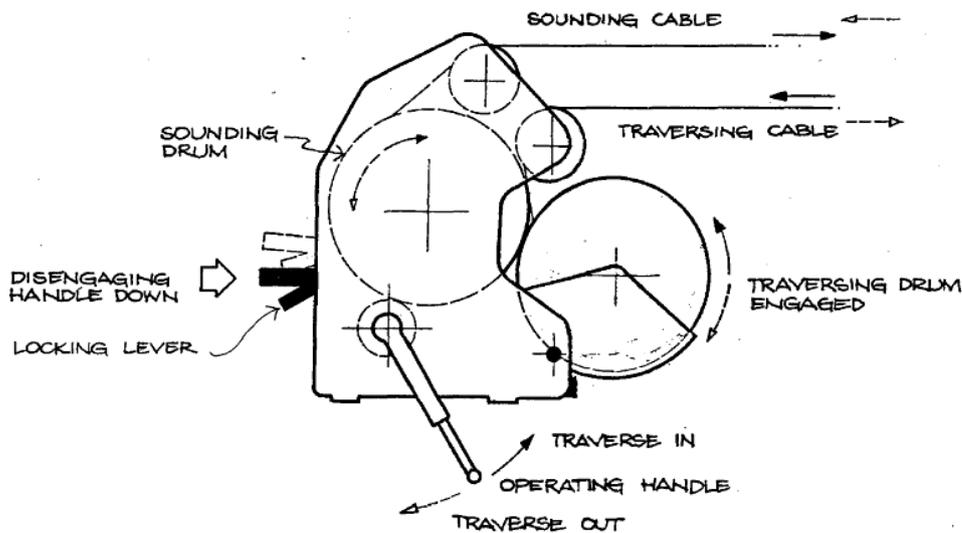
### ***Winch Mode:***



Barossa Winch shown in "winch mode", that is the traverse 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 traversing 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.

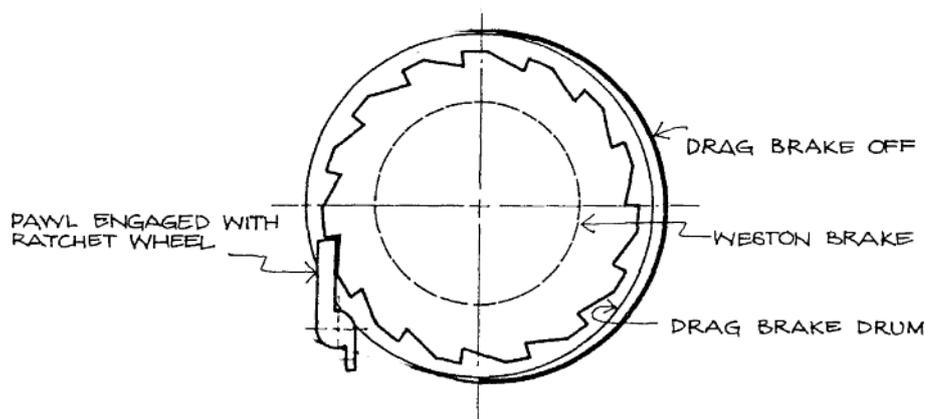
**Traversing Mode:**



Barossa 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 installation is depicted in the appendix. The layout shown in the appendix is based on HyQuest Solutions standard steelwork components, all of which can be supplied ready for installation. Alternatively, drawings can be provided for the components to be fabricated elsewhere. However, as a minimum, the sheave block assembly should be purchased, please note customer has to order the sheave block separately as it is not part of the winch order.

## **COUNTERS**

The winch is fitted with two counters. The TRAVERSING counter is situated to the right of the traverse drum and registers in in EITHER centimetre (10mm) OR decimetre (100mm) 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 (10mm) for metric and 1/10” of a foot (0.1foot) for imperial.

## **MAINTENANCE**

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

### ***Lubrication***

1. Grease the Weston brake every six months through the grease nipple located on the outside of the main shaft. Ampol APIW or similar water-resistant grease is recommended. 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 clean rag and solvent, preferably Trichloroethylene. Inspect for damaged threads and repair as necessary. No lubrication is normally required but a light spray of WD40.
3. The drum gear teeth should be lightly lubricated every six (6) months with grease.
4. The sounding drum slipping should be wiped every three (3) months with a clean, dry rag and solvent such as Trichloroethylene, then lightly sprayed with a non-insulating lubricant such as WD40.

### ***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 the drums.
2. Engage pawl and wind operating handle quarter turn anticlockwise. This will loosen the brake screw.
3. Remove grease nipple, washer and operating handle from brake shaft.
4. Remove transmission cover (six setscrews), leaving brake shaft and bearing in position on the winch.
5. Remove nyloc nut.
6. Remove counter and mounting bracket.

7. Remove chain guard, spacer, sprocket and drive chain from end of brake shaft.
8. Remove drag brake.
9. Slide brake shaft out of winch.
10. Unscrew brake drum from Weston brake screw and remove both.
11. Assembly of these components back in to the winch is a reversal of Steps 1 - 9.

### **INSPECTION**

1. Remove nylon pinion (four setscrews) and separate the ratchet wheel and the two (2) brake pads.
2. With the brake disassembled, clean all metal components thoroughly in a solvent, such as Trichloroethylene.  
*Note: Brake pads should only be wiped with a clean, dry rag.*
3. Inspect the surfaces of the ratchet wheel and brake pads for scores. 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 wheel or pads are NOT perfectly flat.*
4. Check that 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 lubrication recommendation (Step 1)*
6. Coat the brake screw and bore of 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 conventional 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 slipping and suspension cable conductor, thus allowing the cable to be fitted without removing the drum.

## **FAULT FINDING**

The following is included to assist field staff to remedy electrical problems that can occur when taking current meter observations.

Using the counter to indicate a complete circuit, proceed as follows.

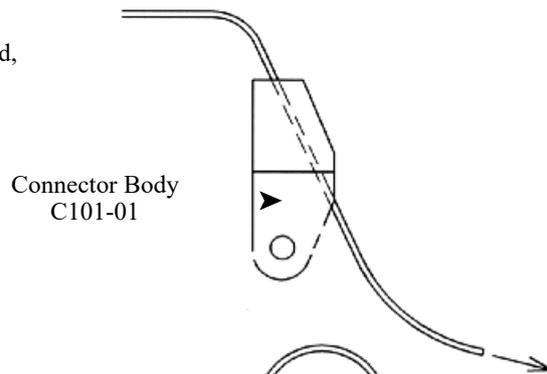
1. Bridge out red and black terminals situated on control panel. If the counter does not operate, repair or replace counter.
2. Connect the red terminal to frame. No indication shows that black terminal is not properly connected to frame. Check for corrosion under terminal, or loose mounting.
3. Bridge slipring to frame. Operation suggests the connection through brush to the red terminal is sound - proceed to step 4.
4. Failure to operate suggests either a break in red lead from brush to red terminal or broken/sticking brush. To inspect brush, remove and ensure that it moves freely in holder. If brush is broken, reclaim unbroken portion and extend the spring, thus providing a temporary connection until a replacement can be fitted.
5. Bridge out current meter terminals. Operation indicates a failure in the meter contacts - repair. No operation indicates a failure in the circuit between the slipring and the meter i.e. the circuit fault is in the suspension cable. Check quick connect terminal at winch. Check cable adjacent to meter. Check for damaged or bent cable. Repair or replace sounding cable.

## SPECIFICATIONS

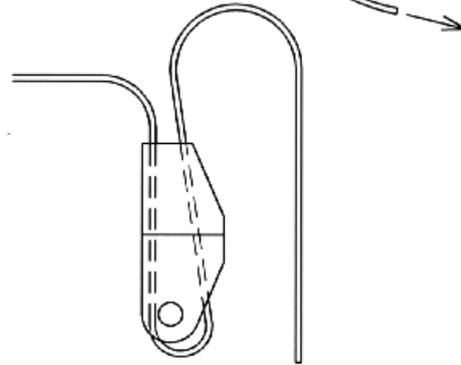
Load Capacity:	Designed for weights up to 70 Kg (154 lb)
Frame:	Robust Aluminium, Powder Coated.
Sounding Drum:	Cast Aluminium 600mm Circumference, fitted with silver plated slipring, and depth counter.
Counter (Sounding):	Six digit resettable, registering depth in centimetre (1cm resolution) for metric or 1/10 of a foot (0.1foot) for imperial.
Traversing Drum:	Cast Aluminium 600mm Circumference, fitted with traverse counter. (Detachable when not required).
Counter (Traversing):	Six digit resettable, registering distance in EITHER centimetre (10mm) OR decimetre (100mm) resolution. Imperial model available in resolutions of either 1ft or 0.1ft.
Drum Capacity:	43m of 4.0mm, 57m of 3.2mm (1/8") and 70m of 2.5mm (1/10")
Operation:	Manual
Dimensions:	Double Drum - Length 600mm (24"), Width 560mm (22"), Height 470mm (18.5"), Weight 36Kg (79.4 lb).
Packing Details:	Double Drum – 64 Kg (141 lb), 0.3m <sup>3</sup>

## FITTING C1 CONNECTOR TO AMERGRAPH CABLE

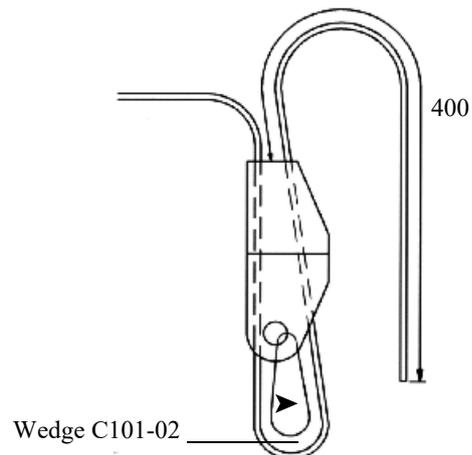
1. With R Clip SC019-01 and Pin C101-03 removed, push the end of the sounding cable through the connector body C101-01.



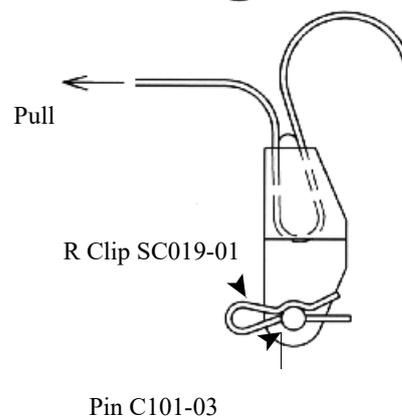
2. Loop the cable and push back through the connector for approximately 400MM.



3. Fit Wedge inside cable loop.

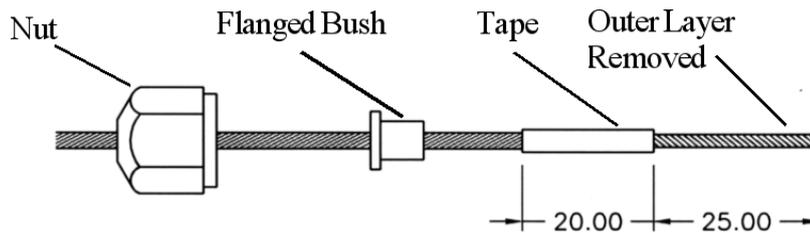


4. Pull cable back until wedge is held and then pull cable again tightly to lock Wedge in position.

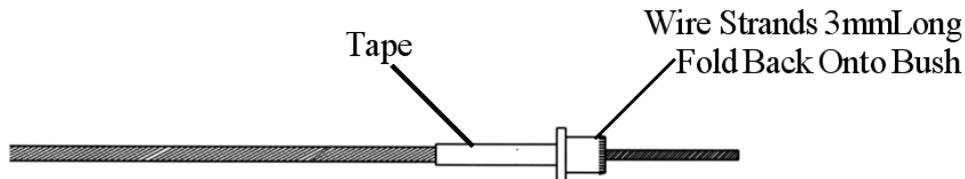


## FITTING ANGLE PLUG TO AMERGRAPH CABLE

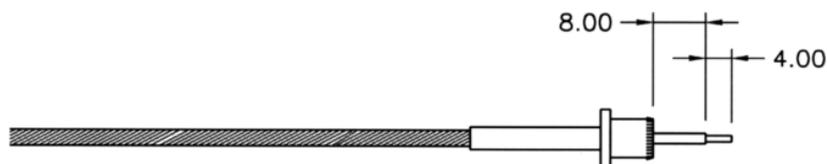
1. Slide nut and flanged bush onto Amergraph cable.
2. Wrap insulating tape around cable 25mm (1") from end, or fit heat shrink, 20mm (3/4") long.
3. Unwind outer layer of cable and cut off at tape.



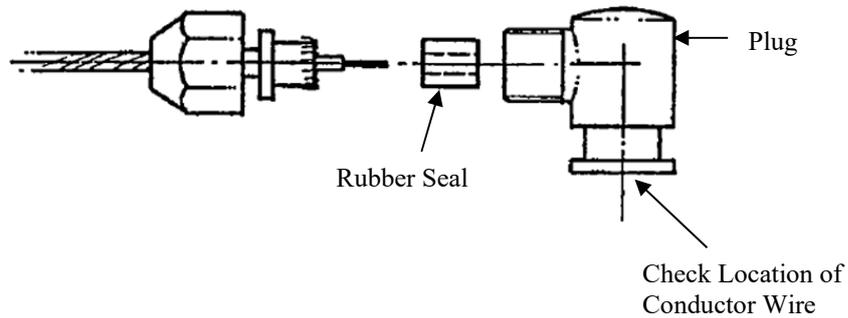
4. Unwind inner cable layer back to tape, one strand at a time and cut off 3mm (1/8") in front of the insulation tape.
5. Slide flanged bush forward and bend the short inner layer strands onto the bush.



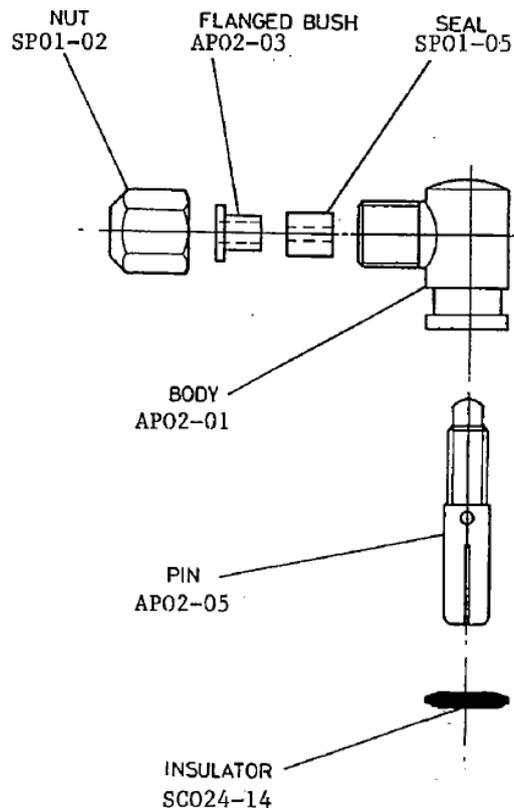
6. Strip conductor insulation back to 8mm (5/16") in front of the flanged bush.
7. Coat copper conductor wire with resin-cored solder. **BE CAREFUL** not to heat wire insulation. Cut wire back to 4mm (5/32") long.



- 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.



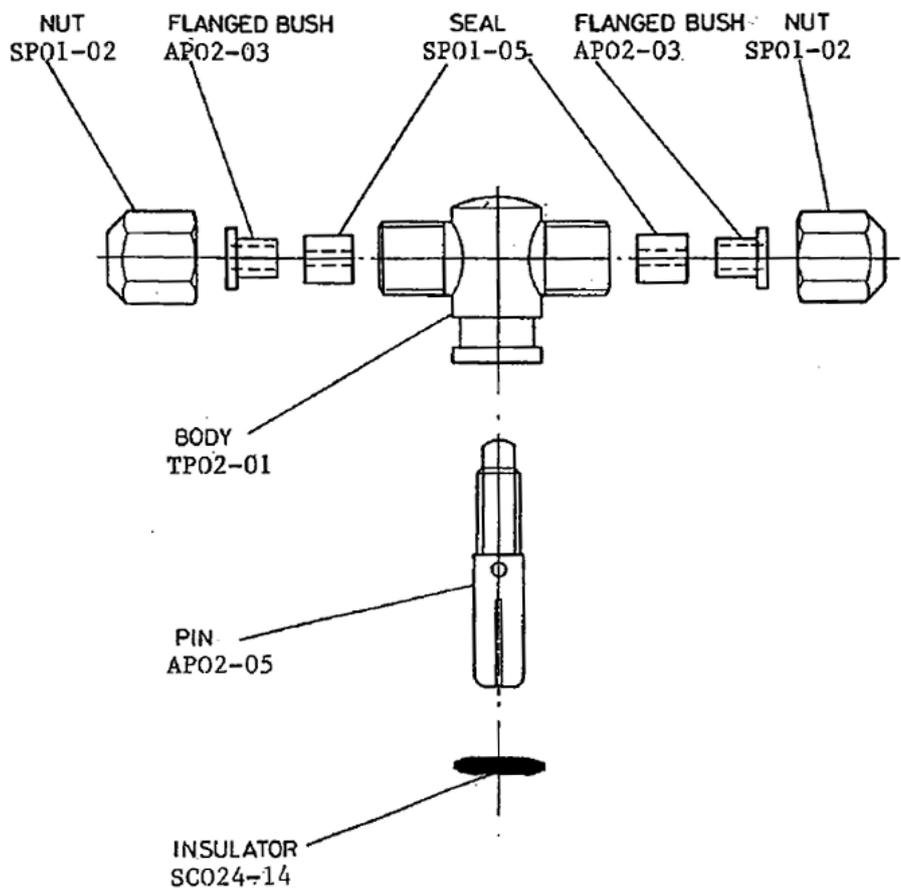
- Screw nut onto plug and tighten with a spanner.
- Screw pin into plug and tighten, using a 1/16" Allen key as a lever.
- Slide rubber insulator onto pin
- Check circuit.



### Angle Plug Assembly AP02

## 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.

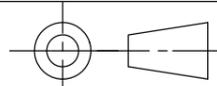
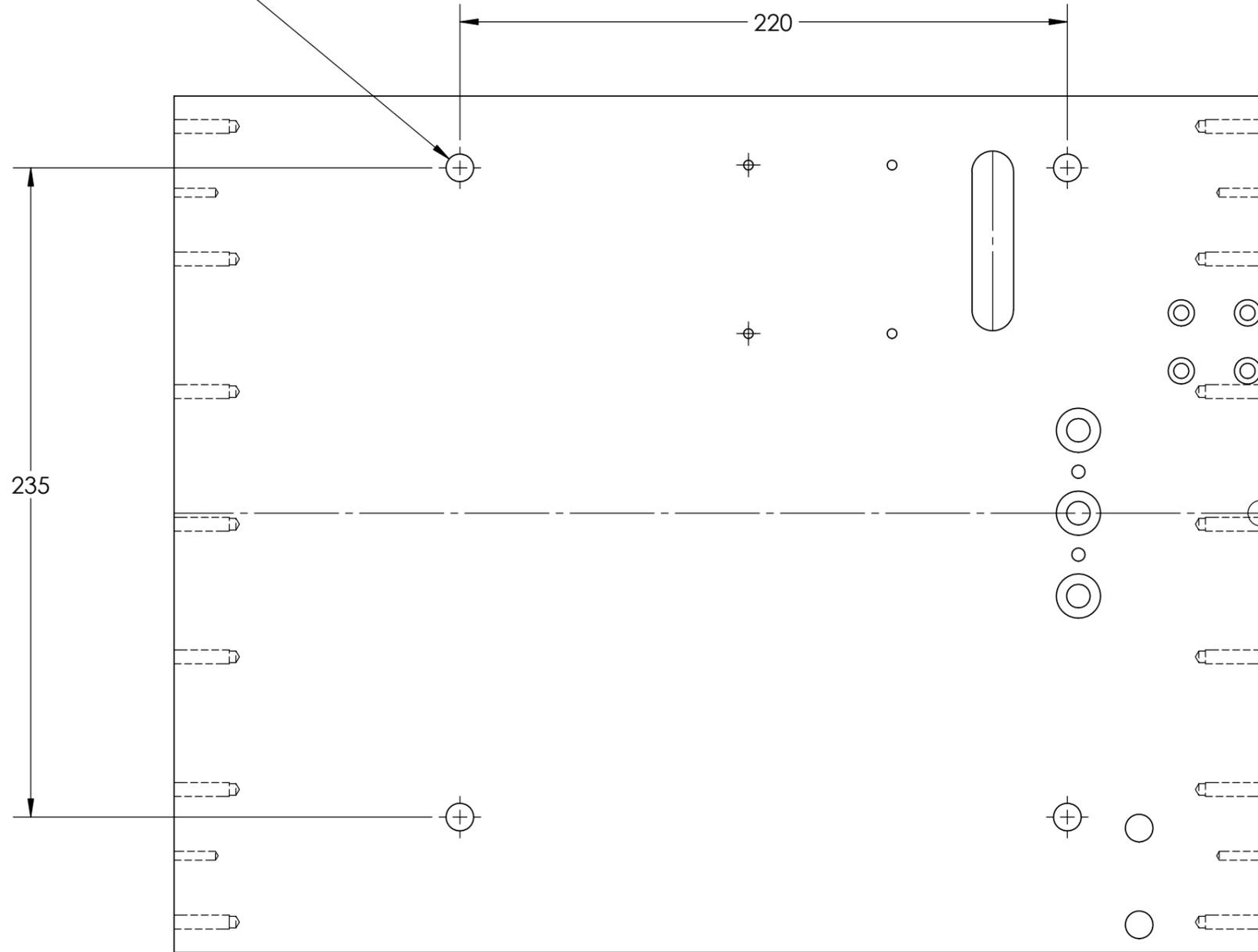


**Angle Plug Assembly TP02**

## **APPENDIX A**

### **INSTALLATION**

4X  $\phi$  8.50 THRU ALL  
M10X1.5 - 6H THRU ALL



THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED:  
DIMENSIONS ARE IN MILLIMETERS  
SURFACE FINISH:  
TOLERANCES:  
LINEAR:  $\pm 0.05$   
ANGULAR:  $0.05^\circ$

FINISH:  
POWDER COATED  
AFTER ASSEMBLY APO GREY

DEBUR AND  
BREAK SHARP  
EDGES

DO NOT SCALE DRAWING

HYQUEST SOLUTIONS PTY LTD

TITLE:

BAROSSA VERSION 2  
MOUNTING HOLE DIMENSIONS

DWG NO.

mounting holes

A3

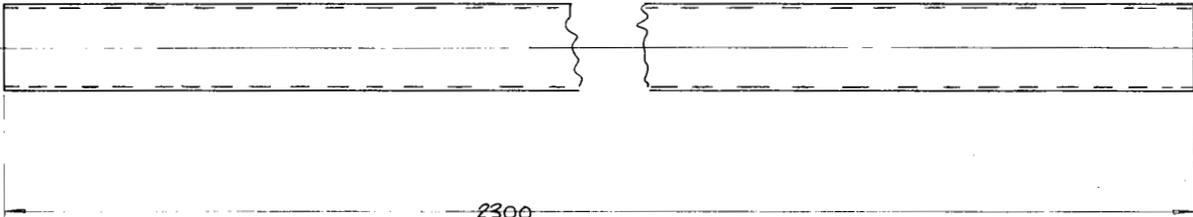
MATERIAL:  
10MM ALUMINIUM  
GRADE 5083

SCALE:1:5

SHEET 1 OF 1

REV	DESCRIPTION	DATE	NAME	SIGNATURE	DATE
A	FIRST ISSUE	8.16			
	DRAWN		FGEM		8.16
	CHK'D				
	APPV'D				
	MFG				
	Q.A				

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2300  
REFER TO ORDER  
FOR ALTERNATIVE  
LENGTHS.

MAT'L: STEEL TUBE  
ASTM A53 GRADE B  
168 Ø x 4.8 E.R.W  
(OR EQUIVALENT)

Latrobe & Barossa Winch  
Model DDT700 & DDT900

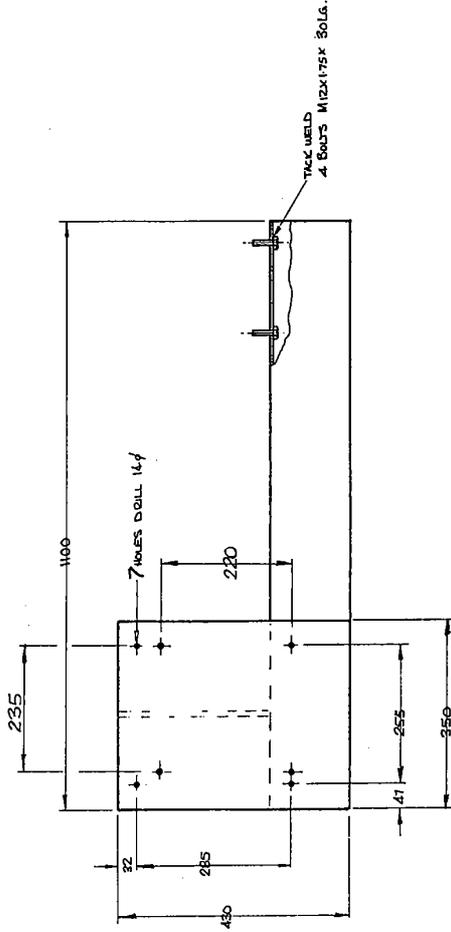
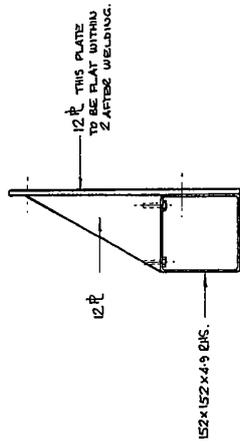
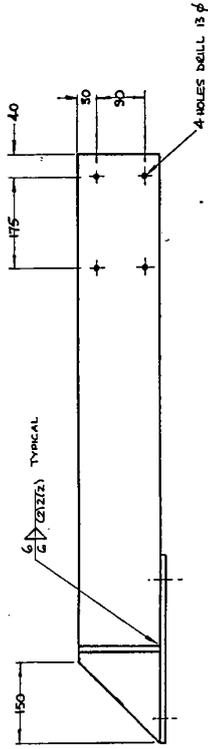
COLUMN

REQ'D	MATERIAL	REMARKS	
SCALE	PASSED	DATE	
N.T.S		27.7.78	
DRAWN	W.D.	DRAWING NUMBER	
TRACED		1	
CHECKED			

LAF100-25

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MAT'L : AS SPEC. BELOW  
 GALVANISED  
 ALL WELDS 6. FILLET



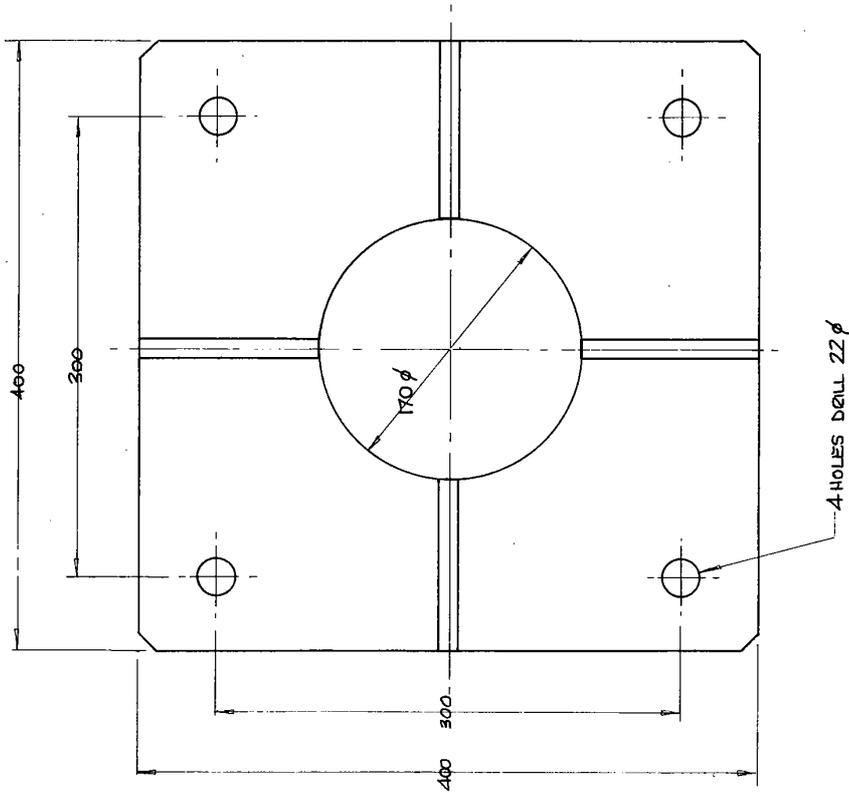
NOTE : Winch Arm is drilled to accommodate both  
 Latrobe and Barossa Double Drum Winches.

Latrobe & Barossa Winch  
 Model DDT700 & DDT900

REV#	MATERIAL	REVISION
1	AS SPEC.	ISSUED
2	AS SPEC.	DATE
3	AS SPEC.	12-7-18
4	AS SPEC.	DATE
5	AS SPEC.	DATE
6	AS SPEC.	DATE
7	AS SPEC.	DATE
8	AS SPEC.	DATE
9	AS SPEC.	DATE
10	AS SPEC.	DATE

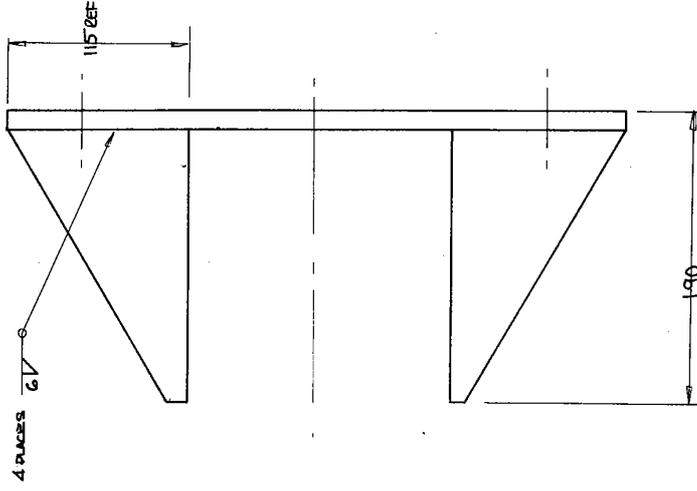
WINCH MOUNTING FRAME  
 2

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MAT'L: 12 PL

REMOVE BURRS & SHARP EDGES

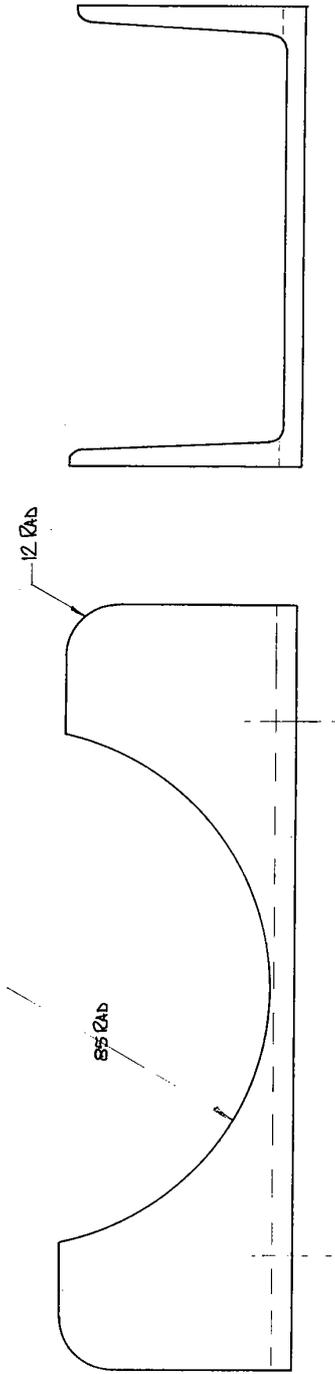


Latrobe & Barossa Winch  
Model DDT700 & DDT900

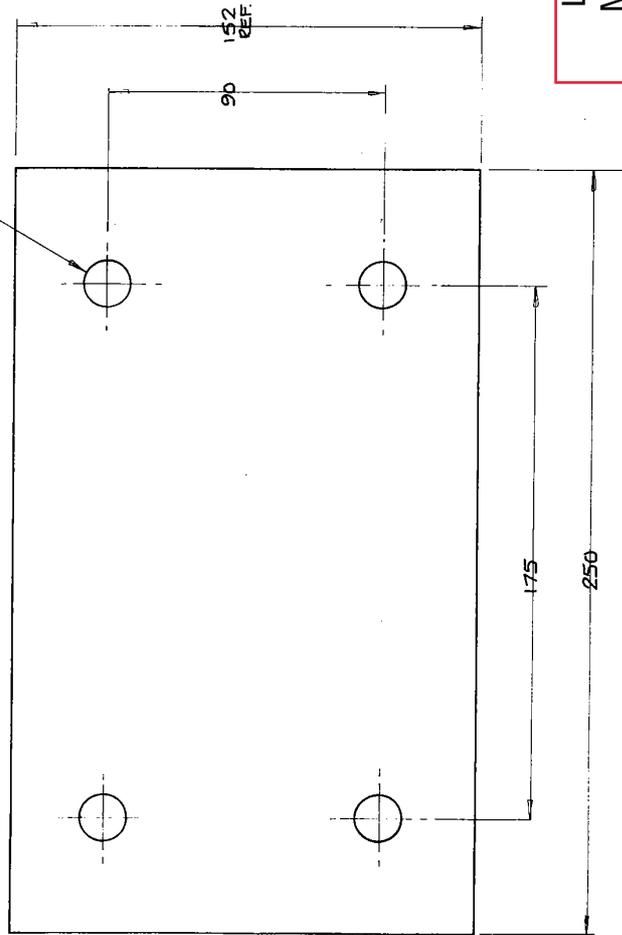
RECD	MATERIAL	REMARKS
SCALE	PASSED	DATE
1:2		27.7.78
DRAWN	TRACED	DRAWING NUMBER
		3

BASE PLATE - COLUMN

HyQuest Solutions Pty Ltd



4 HOLES DRILL 14 φ



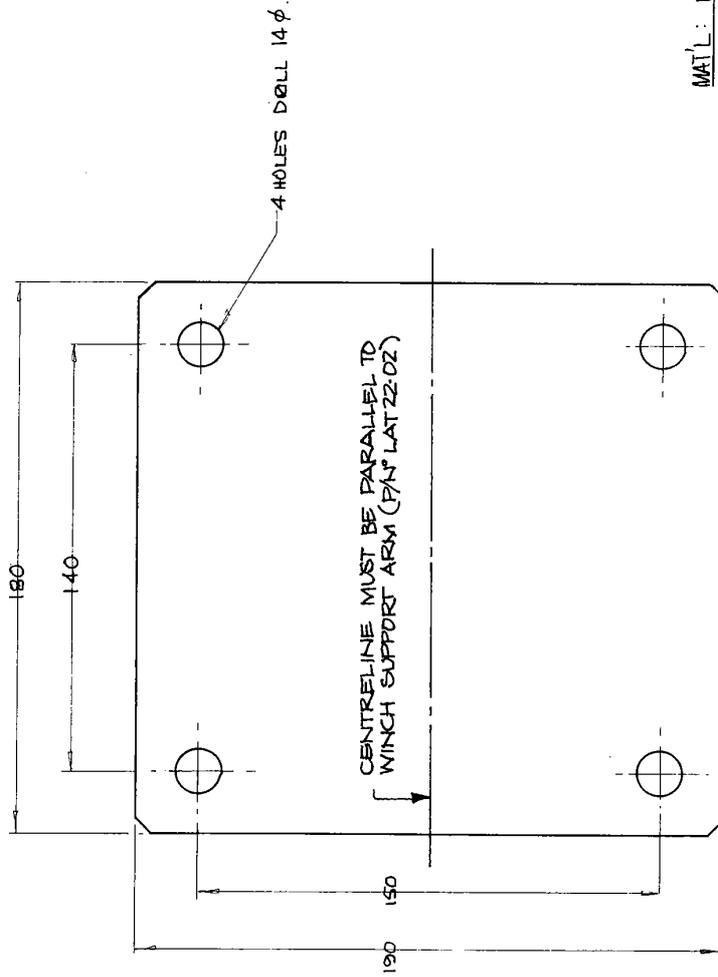
MAT'L . . 152 x 76 CHANNEL  
REMOVE BURRS & SHARP EDGES

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REQ'D	MATERIAL	REMARKS
SCALE	PASSED	DATE
1:1		27.7.78
DRAWN	WLD	DRAWING NUMBER
TRACED		
CHECKED		4

MOUNTING BRACKET

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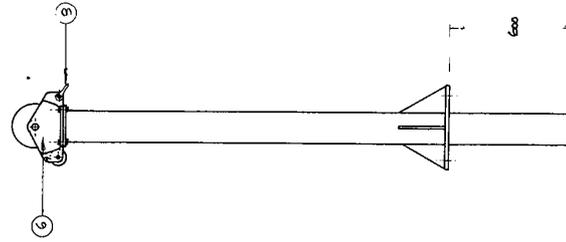
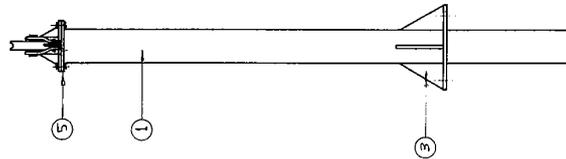
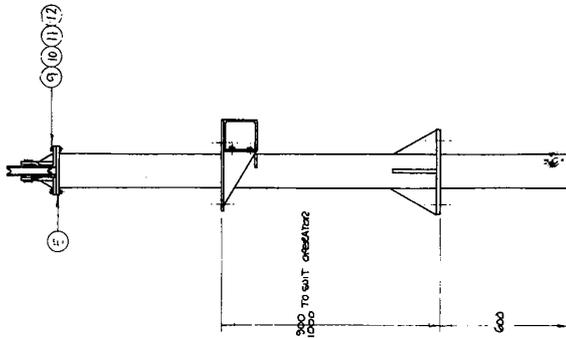
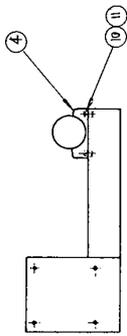
MAT'L: 12 P.  
REMOVE ALL BORDERS & SHARP EDGES

Latrobe & Barossa Winch  
Model DDT700 & DDT900

SHEAVE BLOCK  
MOUNTING PLATE

REQ'D	MATERIAL	REMARKS
	SCALE	PASSED
	1:1	
	DATE	27.7.78
	DRAWN	ND
	TRACED	
	CHECKED	
	DRAWING NUMBER	5

HyQuest Solutions Pty Ltd



OPERATING BANK

FAIR BANK

NOTE: ITEMS MARKED \* MAY BE PURCHASED SEPARATELY

2

Latrobe & Barossa Winch  
Model DDT700 & DDT900

ITEM	DESCRIPTION	QTY	UNIT	REMARKS
1	WINDING DRUM	1	PC	
2	WINDING DRUM	1	PC	
3	WINDING DRUM	1	PC	
4	WINDING DRUM	1	PC	
5	WINDING DRUM	1	PC	
6	WINDING DRUM	1	PC	
7	WINDING DRUM	1	PC	
8	WINDING DRUM	1	PC	
9	WINDING DRUM	1	PC	
10	WINDING DRUM	1	PC	
11	WINDING DRUM	1	PC	
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50	WINDING DRUM	1	PC	
51	WINDING DRUM	1	PC	
52	WINDING DRUM	1	PC	
53	WINDING DRUM	1	PC	
54	WINDING DRUM	1	PC	
55	WINDING DRUM	1	PC	
56	WINDING DRUM	1	PC	
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ITEM	DESCRIPTION	QTY	UNIT	REMARKS
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2	WINDING DRUM	1	PC	
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100	WINDING DRUM	1	PC	

ITEM	DESCRIPTION	QTY	UNIT	REMARKS
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48	WINDING DRUM	1	PC	
49	WINDING DRUM	1	PC	
50	WINDING DRUM	1	PC	
51	WINDING DRUM	1	PC	
52	WINDING DR			



HyQuest Solutions Pty Ltd

Sheave bracket assembly (no main sheave fitted)  
Main cable is shackled directly to pin  
Return sheave fitted.

Wing plate is rock bolted.  
Sheave bracket assembly  
is then fitted to plate.

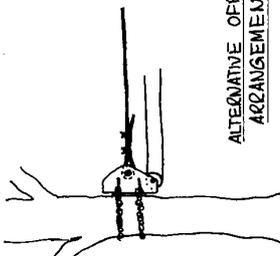
ANCHORAGE - rock bolted  
- turn buckle  
MOUNTING  
POST

LATROBE WINCH

H.S. traveller block

Main cable

INSTALLATION IN OPERATION



ALTERNATIVE OFF-SIDE  
ARRANGEMENT

Tension cables

Traversing Cables

Anchorages

Fix to main cable  
anchorage

Padlock or equivalent

SUGGESTED DETAILS FOR ANCHORING  
TRAVERSING CABLES

Traversing cable anchorage

Traversing cable

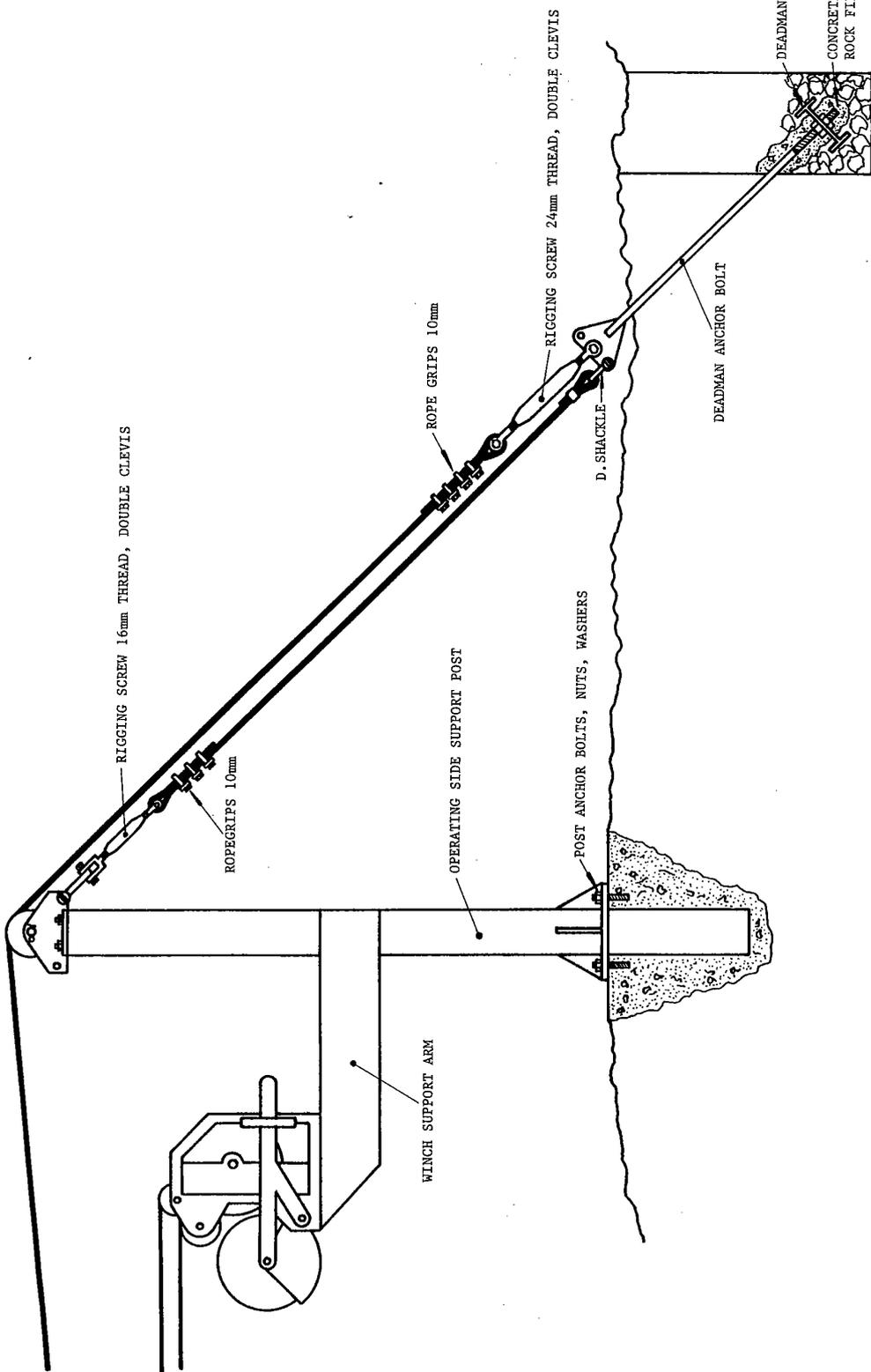
INSTALLATION - DDT900 WINCH REMOVED

REFER DRAWING

**Latrobe & Barossa Winch  
Model DDT700 & DDT900**

DDT 900 INSTALLATION  
ALTERNATIVE ARRANGEMENT

REQD	MATERIAL	REMARKS
SCALE	NTS	DATE 9-8-78
DRAWN	MD	DRAWING NUMBER
TRACED		
CHECKED		8



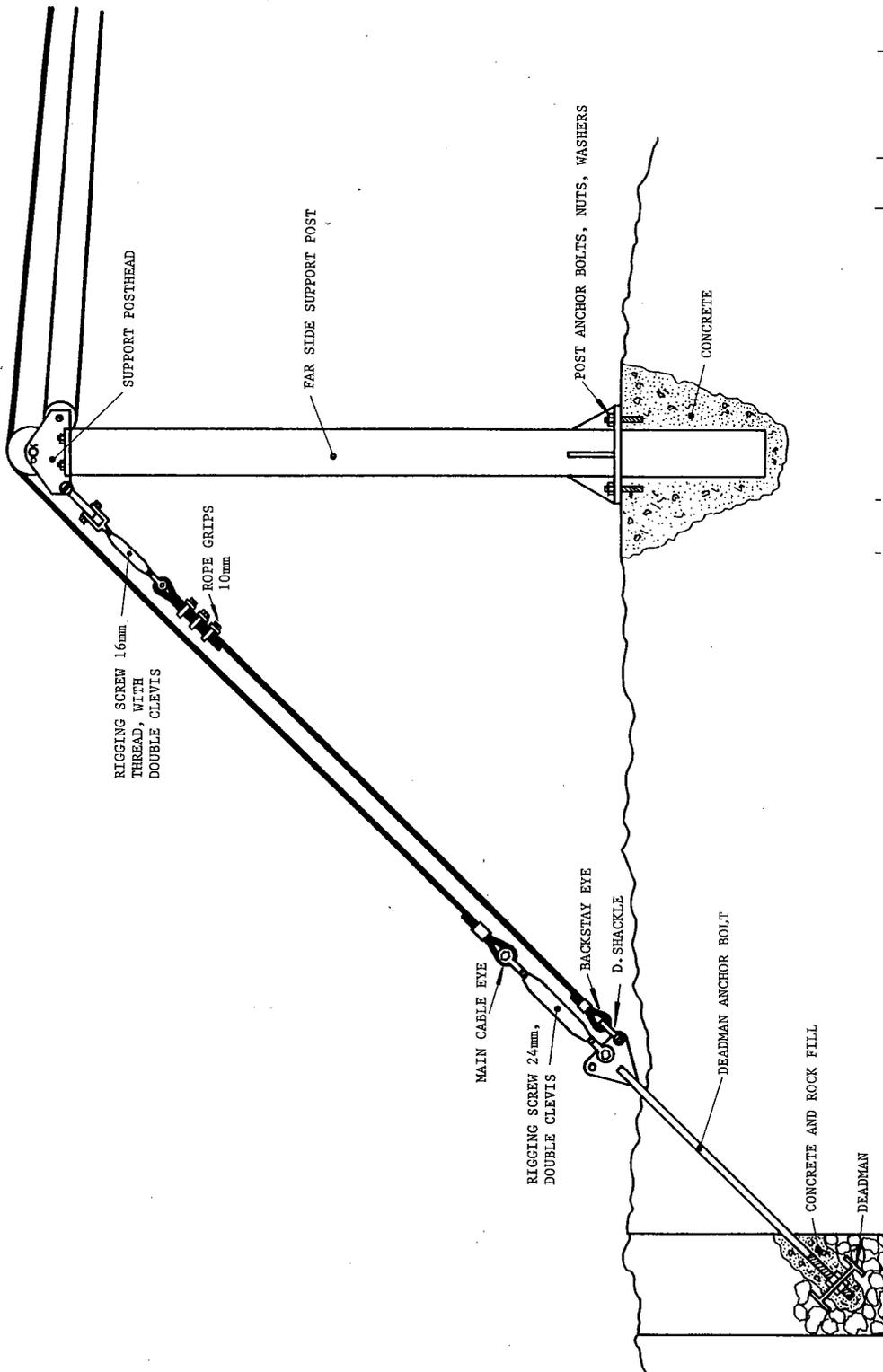
LAT100-32A

HyQuest Solutions Pty Ltd

Latrobe & Barossa Winch  
Model DDT700 & DDT900

LATROBE TRAVELLERWAY  
OPERATING SIDE SUPPORT POST

REQ'D		MATERIAL		REMARKS	
SCALE		PASSED		DATE	
DRAWN		REV		DRAWING NUMBER	
TRACED					9
CHECKED					



LAT100-32B

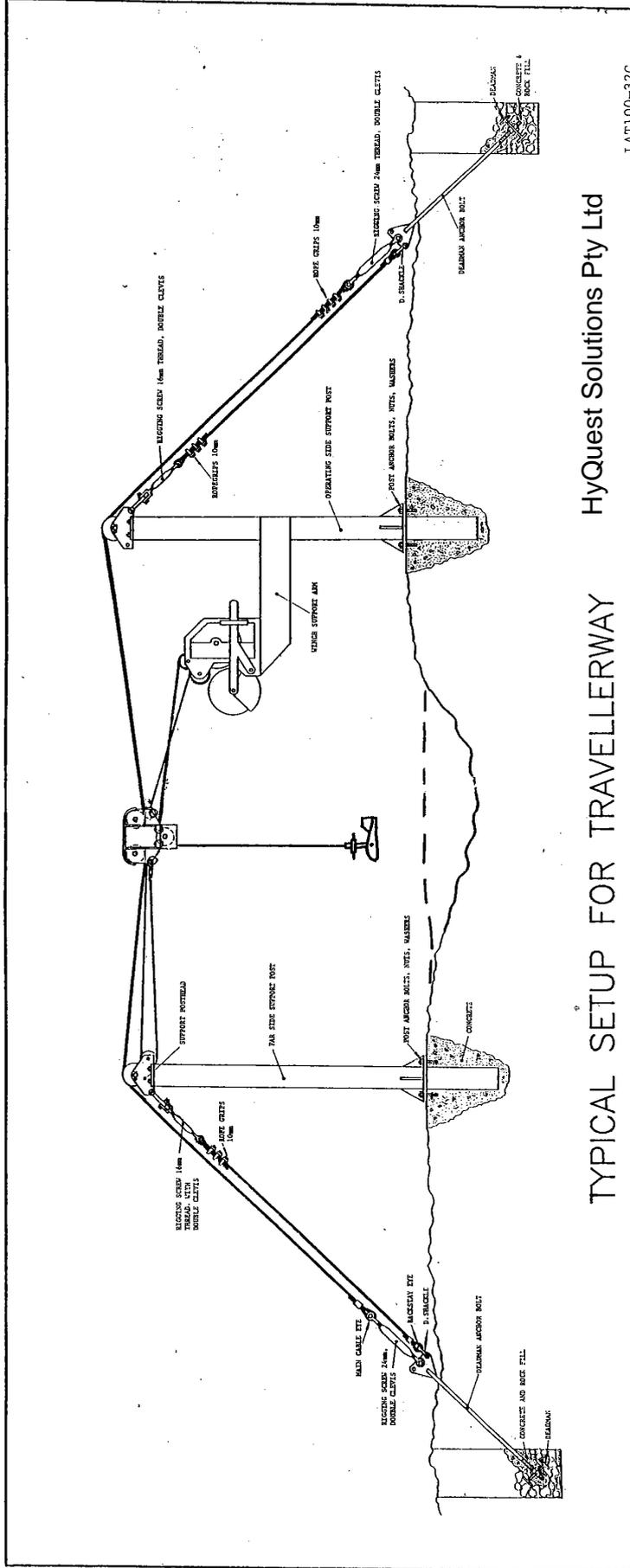
HyQuest Solutions Pty Ltd

Latrobe & Barossa Winch  
Model DDT700 & DDT900

FAR SIDE SUPPORT POST

REQ'D	MATERIAL	SCALE	PASSED	DATE	REMARKS

DRAWN	REV	DRAWING NUMBER
		10



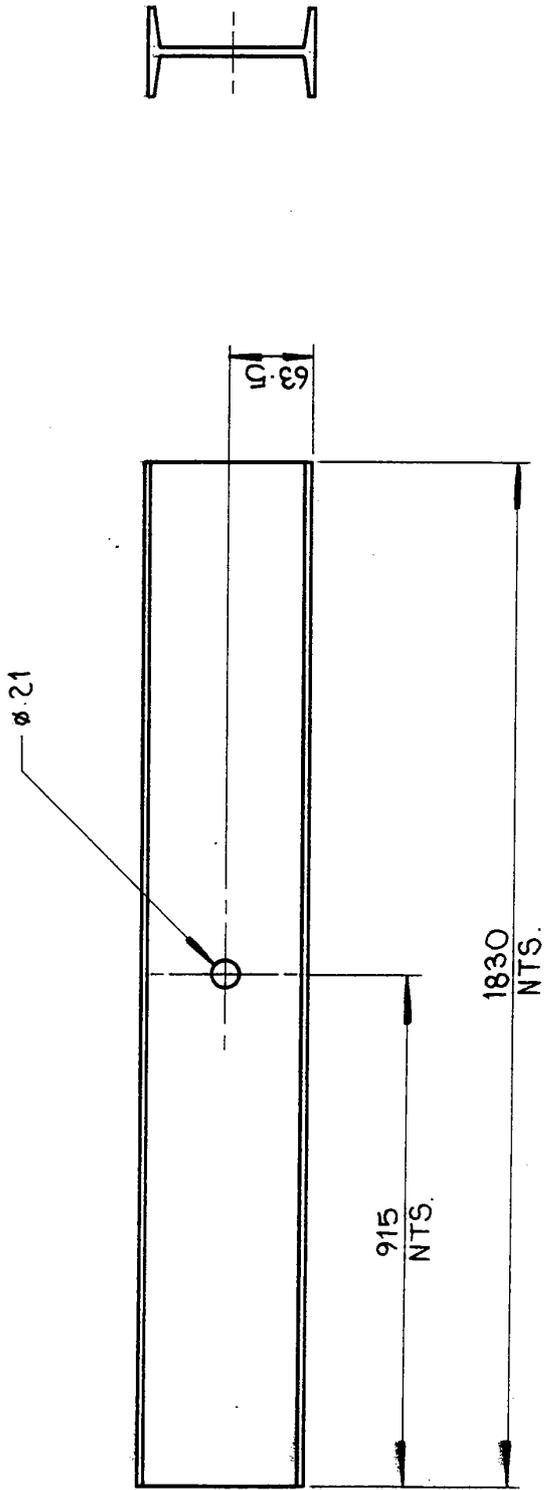
LAT100-32C

HyQuest Solutions Pty Ltd

TYPICAL SETUP FOR TRAVELLERWAY

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REV.	DESCRIPTION	DATE



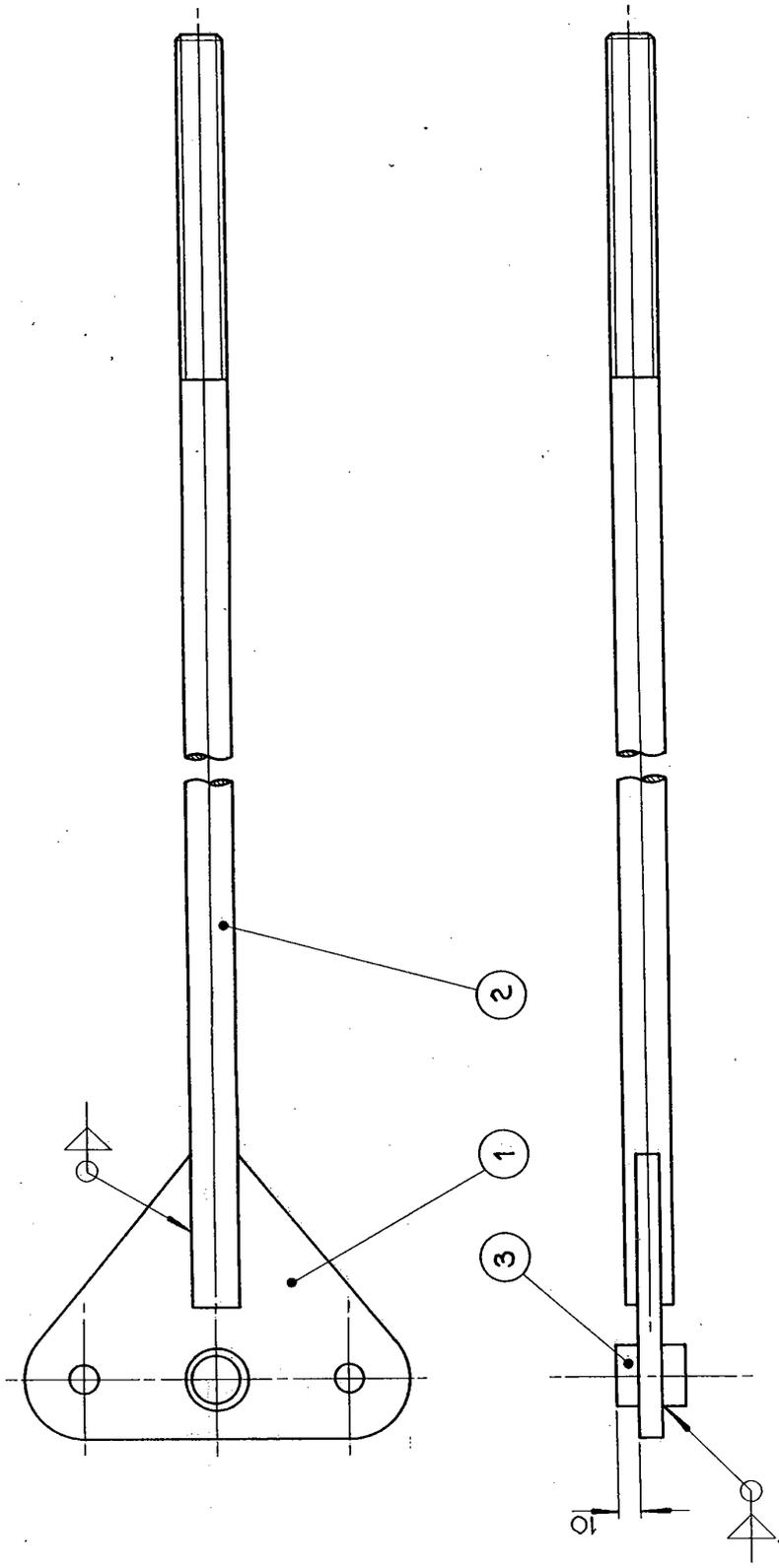
LAT100 -32D

FINISH: GALV.

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REMOVE ALL BURRS & SHARP EDGES

DEADMAN	1	M. S.	12.7 x 64 TFB x 1830LG
ITEM	DESCRIPTION	REQ'D	MATERIAL
	HyQuest Solutions Pty Ltd		
	LATROBE WINCH		
	SUPPORT POST ANCHORING - OS.		
	DEADMAN		
		SCALE	PASSED
		NTS.	
		DRAWN	REV.
			A
		TRACED	DRAWING NUMBER
		CHECKED	11
			DATE
			1/10/91

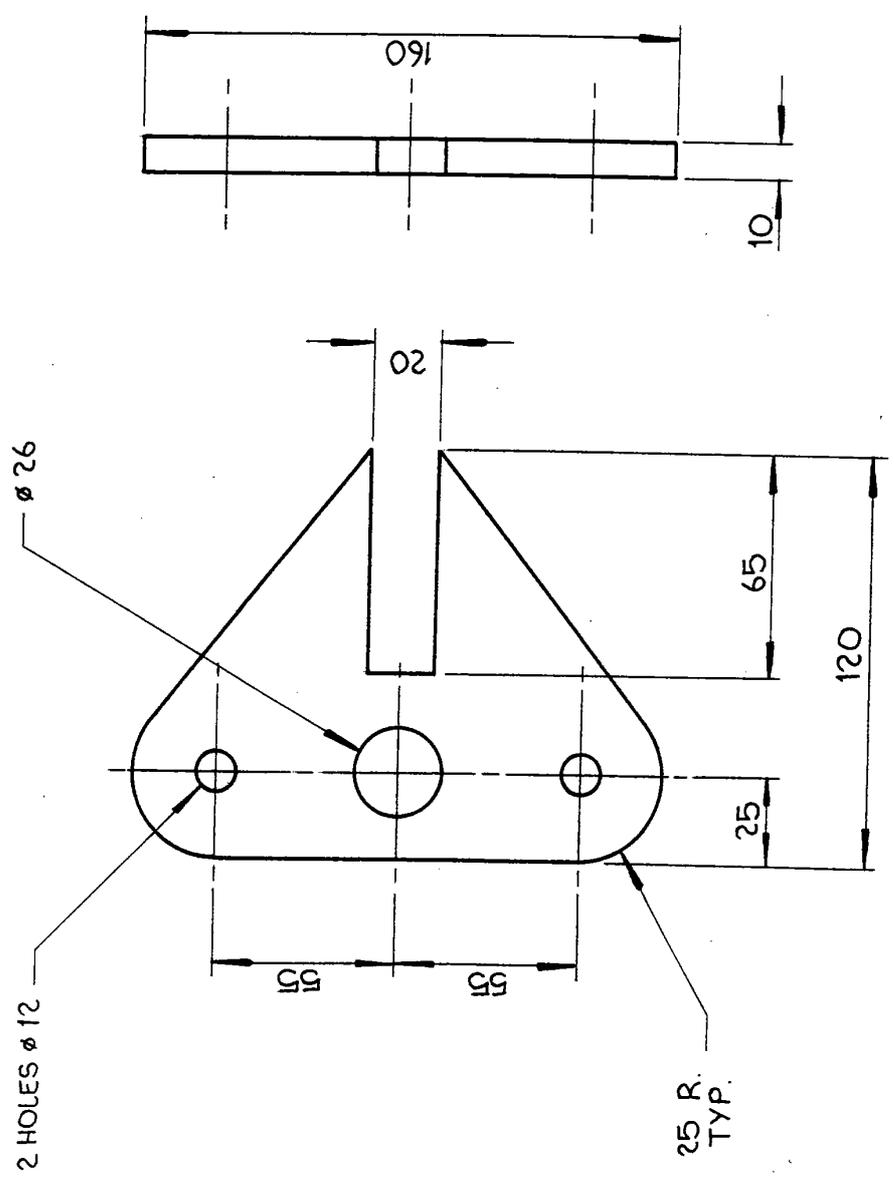


FINISH: GALV.

ITEM	DESCRIPTION	REQ'D	MATERIAL	REMARKS
3	SPACER.	1	M.S.	LAT 30 - 05
2	BOLT.	1	M.S.	LAT 30 - 04
1	PLATE.	1	M.S.	LAT 30 - 03
		SCALE	PASSED	DATE
		NTS.		1/10/91
<b>HyQuest Solutions Pty Ltd</b> <b>LATROBE WINCH</b> <b>SUPPORT POST ANCHORING - 05.</b> <b>ANCHOR BOLT ASSEMBLY</b>				
		DRAWN	G.R.	DRAWING NUMBER
		TRACED		A
		CHECKED		12

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REV.	DESCRIPTION	DATE



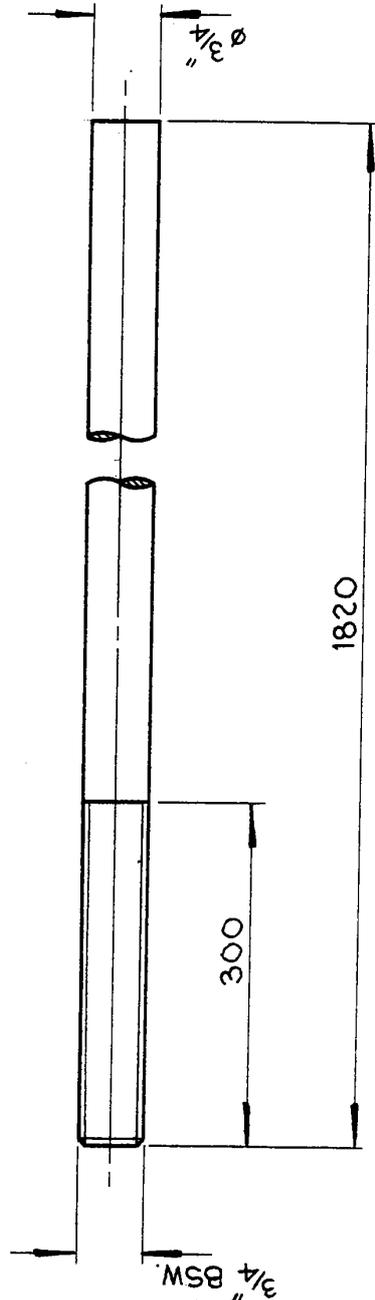
LAT100 - 32F

ITEM	ANCHOR PLATE	1	M.S.	160 x 10 x 120 LG.
DESCRIPTION				
HyQuest Solutions Pty Ltd		REQ'D	MATERIAL	REMARKS
LATROBE WINCH		SCALE		PASSED
SUPPORT POST ANCHORING - OS.		1:2		DATE
ANCHOR PLATE		G.R.		1/10/91
		DRAWN	REV.	DRAWING NUMBER
		TRACED	A	13
		CHECKED		

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REMOVE ALL BURRS & SHARP EDGES

REV.	DESCRIPTION	DATE

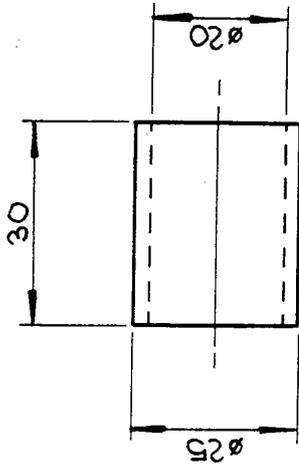


LAT100 - 32G

ITEM	ANCHOR BOLT.	1	M.S.	$\phi$ 3/4" x 1820 LG.
	DESCRIPTION	REQ'D	MATERIAL	REMARKS
	HyQuest Solutions Pty Ltd			
	LATROBE WINCH	SCALE	PASSED	DATE
	SUPPORT POST ANCHORING - OS.	NTS.		1/10/91
	ANCHOR BOLT	DRAWN	G.R.	REV. <b>A</b>
		TRACED		DRAWING NUMBER
		CHECKED		14

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REMOVE ALL BURRS & SHARP EDGES



LAT100 - 32H

Latrobe & Barossa Winch  
Model DDT700 & DDT900

REMOVE ALL BURRS & SHARP EDGES

11

REV.	DESCRIPTION	DATE

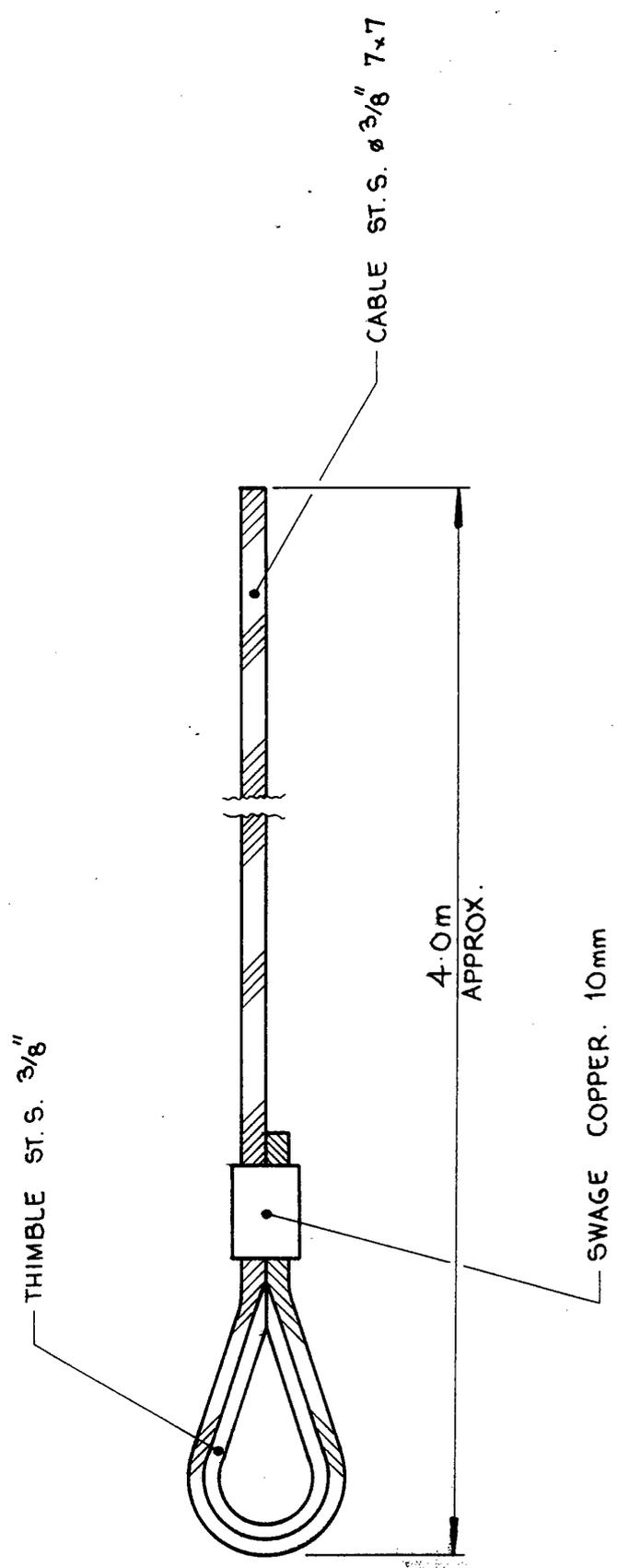
  

1	M.S.	ø 25 x 30 LG.
REQ'D	MATERIAL	REMARKS
SCALE	PASSED	DATE
1:1		1/10/91
DRAWN	G.R.	REV.
TRACED		<b>A</b>
CHECKED		DRAWING NUMBER
		-15

ANCHOR SPACER.	
DESCRIPTION	
HyQuest Solutions Pty Ltd	
LATROBE WINCH	
SUPPORT POST ANCHORING - OS.	
ANCHOR SPACER	

REV.	DESCRIPTION	DATE



LAT100 - 32J

Latrobe & Barossa Winch  
Model DDT700 & DDT900

**REMOVE ALL BURRS & SHARP EDGES**

BACKSTAY CABLE.	1	VARIOUS	BULLIVANTS
ITEM	REQ'D	MATERIAL	REMARKS
DESCRIPTION	SCALE	PASSED	DATE
HyQuest Solutions Pty Ltd	NTS.		1/10/91
LATROBE WINCH	DRAWN	G.R.	REV.
SUPPORT POST ANCHORING-05.	TRACED		<b>A</b>
BACKSTAY	CHECKED		16



