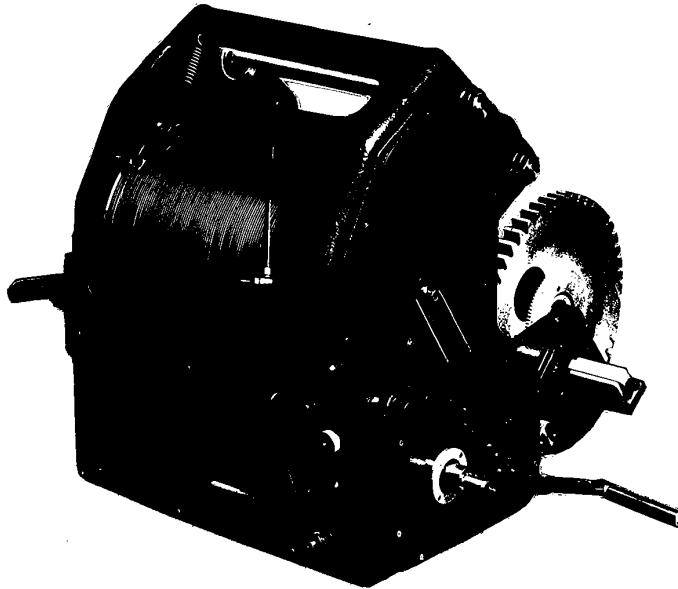


OPERATING MANUAL

LATROBE WINCH
MODEL DDT900

LAT100-01

LATROBE DOUBLE DRUM TRAVELLER



INTRODUCTION

Hydrological Services Latrobe Double Drum Travellers are 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.

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PARTS LIST - LAT110-01 - LAT110-19

LAT100-03

ISSUE 1

Specifications

Load Capacity: Designed for weights up to 90 Kgs.

Sounding Drum: Cast aluminium - capacity 100M of 3 (1/8") diameter Amergraph Cable or 125M of 2.5 (1/10") diameter Amergraph Cable, fitted with slipping and depth counter registering in centimetres.

Traversing Drum: Cast aluminium of same capacity as depth drum and fitted with counter registering in decimetres, mounted in a pivoted yolk with handle for disconnecting drum.

Geared Transmission System: Incorporates a Weston Brake, a free fall drag brake and provision for mounting a Banks Electric Drive Unit.

Traveller Block: Conventional size and shape, aluminium construction

Steelwork: The steelwork need only be a simple structure as outlined in Plan No. 7A. A lockable steel cover can be supplied attached to the mounting platform.

Banks Power Unit: 12V DC operating from automotive type batteries - batteries not normally supplied.

Dimensions:

Double Drum Unit	650 wide
	730 long
	630 high
	Weight - 50 Kgs (without cable)

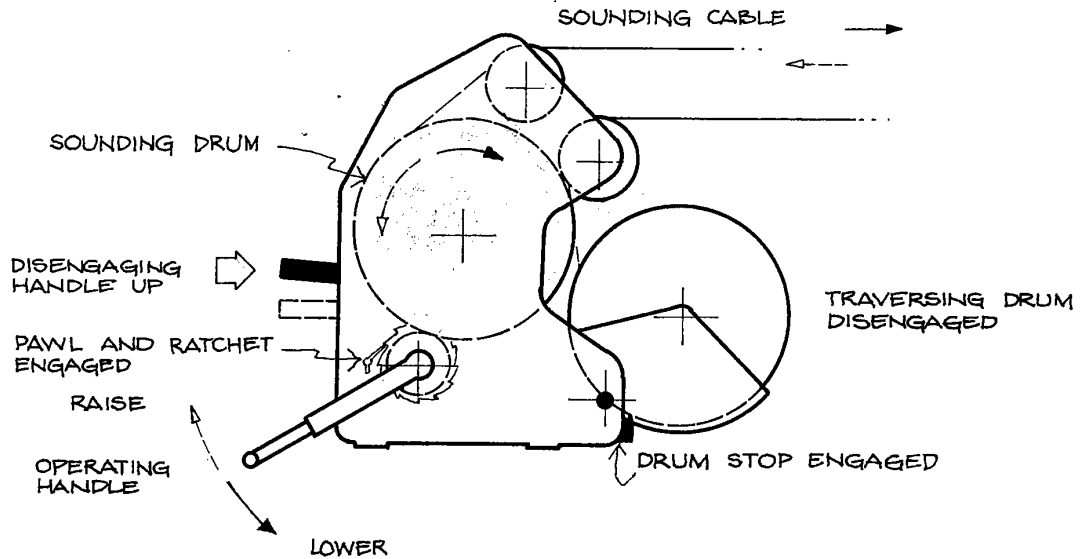
Banks Power Unit	Weight - 9 Kgs (Fits inside winch frame)
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Operating Cables:

Meter Suspension Cable (Amergraph)
Single conductor
2.5 (1/10") diameter, 2.5 Kgs/100 Metres
3.0 (1/8") diameter, 4.5 Kgs/100 Metres

Traversing Cable
2.5 (3/32") stainless steel 7/7 construction
3.0 Kgs/100 Metres

WINCH MODE

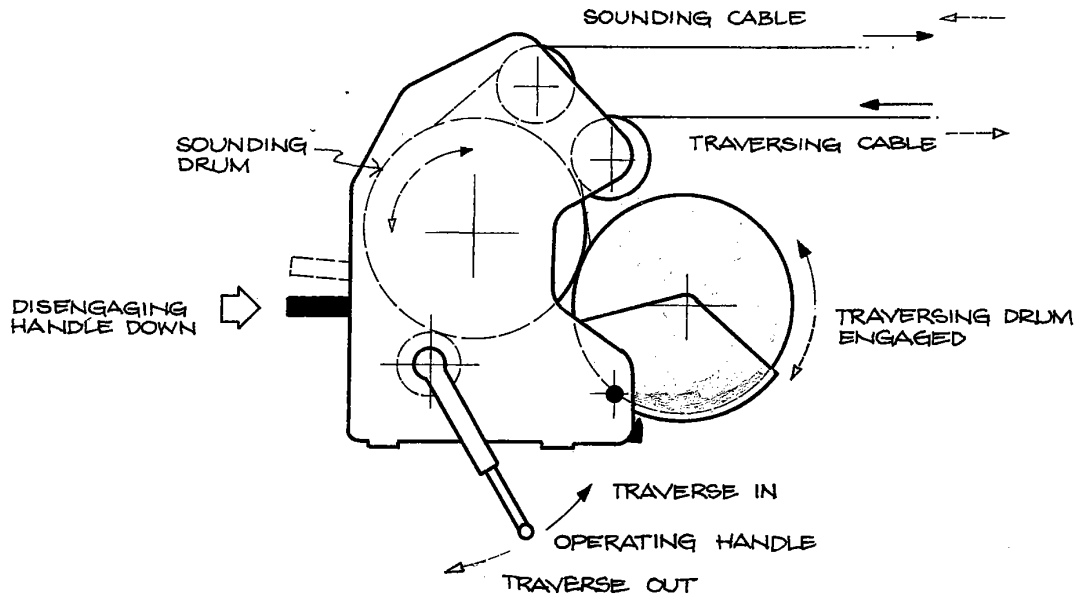


Latrobe Winch shown in "winch mode", that is, the traverse drum is out of mesh with the sounding drum and is prevented from rotating by drum stop. In this mode, the sounding weight can be raised and lowered whilst the traversing block remains stationary.

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.

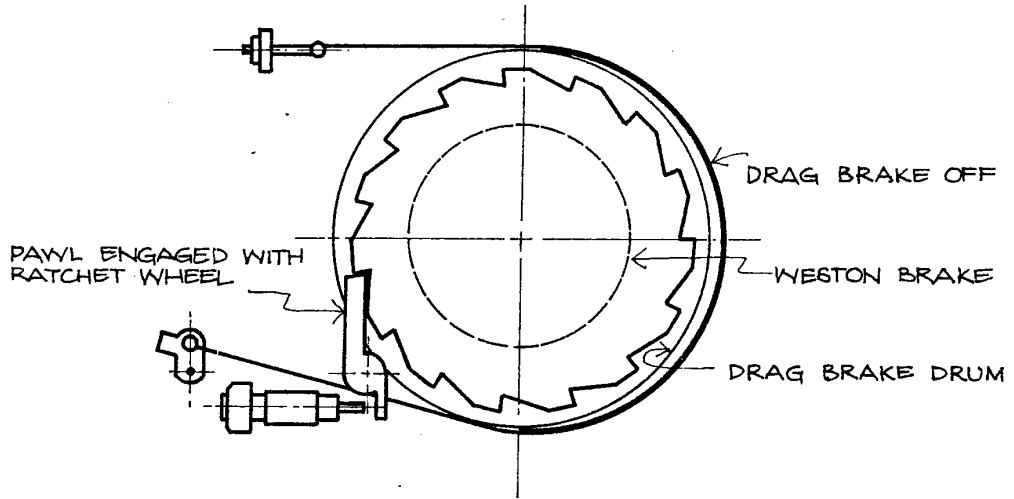
TRAVERSING MODE



Latrobe 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 - refer Diagram 7A.

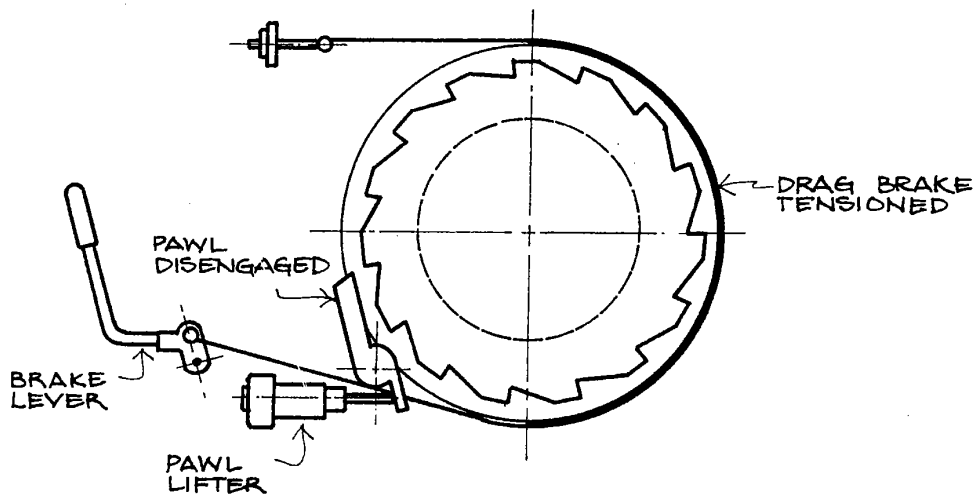
The traversing drum cradle pivots under the influence of the disengaging handle mounted on the opposite side. To engage the drum gears, release the stop pin and whilst holding the disengaging handle with the left hand, rotate operating handle slightly until gear teeth can be meshed and then move handle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

WESTON BRAKE MODE



- WESTON BRAKE MODE
- PAWL ENGAGED
 - WESTON BRAKE IN CONTROL

FREE FALL MODE



- FREE FALL MODE
- PAWL DISENGAGED
 - WESTON BRAKE HAS NO EFFECT

FREE FALL MODE

A supplementary drag brake is provided to permit a controlled "FREE FALL" of the gauging weight. To achieve "FREE FALL", it is first necessary to disengage the Weston brake. The Weston brake is essentially a screw clutch, which incorporates a plate ratchet wheel between the pressure plates. In the raise direction, the whole assembly locks up, providing a positive drive and the ratchet wheel is cut to allow it to pass the pawl without engagement. When the raising operation stops, the brake assembly unwinds sufficiently for the pawl to engage in the ratchet wheel. With the central plate ratchet wheel stationary, the brake locks up under the influence of the load. To lower, the handle must be rotated in the appropriate direction which releases pressure from one side of the screw clutch, allowing the load side to rotate in sympathy.

To disengage the Weston brake, it is only necessary to move the pawl clear of the ratchet wheel, so that it will not engage and hold the load.

The MK II Latrobe unit is fitted with a spring loaded pawl lifter. To bring into operation, rotate knob, hold handle of drag brake and rotate operating handle in raise direction until pawl springs clear of ratchet. Apply drag brake and disengage operating handle from spline.

Operate brake handle to give the desired rate of fall.

NOTE: FOR SAFETY REASONS, RE-ENGAGE PAWL AS SOON AS FREE FALL LOWERING IS COMPLETE.

COUNTERS

The winch is fitted with two counters. The TRAVERSING counter is situated to the right of the traverse drum and registers in decimetres. The SOUNDING counter is situated on the control panel and registers in centimetres.

POWER OPERATION

The MK II Latrobe is designed for operation with gauging weights up to 90 Kg. The Banks Power Unit consists of a 12V DC motor, reduction box plus circuitry for reversing the motor. All operations are controlled by a single toggle switch. In the "UP" position, "raise" and "in" are activated and in the "DOWN" position, "lower" and "out" are achieved.

INSTALLATION PROCEDURE

Introduction

A typical installation is depicted in Drawing 7A and 8. The layout shown in Drawing 7A is based on Hydrological Services 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.

Installation

1. Install winch on mounting plate using the same bolts that fixed it in the box.
NOTE: The winch is designed to sit on a flat surface. If the mounting plate is distorted, pack up under the appropriate pad before tightening - DO NOT OVERTIGHTEN.
2. Remove lower half of traveller block, re-assemble onto main cable and tie in position.
3. Fit thimble end of traversing cable through traveller block, around return sheave on far bank support post (note that the keeper pins will have to be removed temporarily to allow thimble clearance) and back to the cable anchorage, refer Drawing 8. The cable should be manually tensioned and then fixed in position, with the soft clamp, on the river side of the traveller block. Cut cable to length, then fit thimble and swage supplied.

OPERATIONAL PROCEDURE

1. Install winch and traveller block as described in "INSTALLATION PROCEDURE".
2. Disconnect C1 cable connector from tension spring on winch, wind out Amergraph cable over layer winding sheave of winch and then over sounding sheave of traveller block (it is necessary to remove lower section of traveller block for this operation). Connect to current meter hanger bar. Fit angle plug to current meter.
3. Remove end of upper traversing cable from anchorage and connect to the stream side of the traversing block. 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 gear end of the drum - refer Drawing 7A.
4. Remove soft clamp from traversing cable and main cable.
5. 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.
6. Connect the current meter revolution counter to the winch control panel terminals and check circuit operation.
7. Connect battery leads (if Banks Power Unit is fitted) and check operation.
8. Position weight over zero chainage indicator and zero traversing counter.
9. Proceed with discharge measurement.

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 Drawing 8.
6. Loosen soft clamp, remove traversing cable end from traveller block, pull cable in and attach to padlock. Tighten soft clamp.
7. Remove traveller block from main cable.
8. Disconnect current meter and weight, current meter counter and battery leads (if Banks Power Unit is fitted).
9. Wind on Amergraph cable and secure C1 connector to tension spring.
10. Remove winch from mountings.

MAINTENANCE

For the most part, the Latrobe 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 APLW 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 Hawker Pacific WD40 or equivalent can be used.
3. The drum gear teeth should be lightly lubricated every six (6) months with Ampol APLW grease or equivalent.
4. The sounding drum slipring 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.

Removal

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.

(Steps 3, 4, 7 & 9 only apply to winches fitted with Banks Power Units).

3. Take disengaging handle from side of winch after removing set screw and bolt.
4. Remove front half of winch L.H. side cover (five (5) screws) far enough to reach inside and unscrew power leads from motor.
5. Remove control panel from rear of winch (six (6) screws).
6. Remove grease nipple, washer and operating handle from brake shaft.
7. Remove two (2) set screws from transmission cover and withdraw motor.
8. Remove transmission cover (eight (8) setscrews) leaving brake shaft and bearing in position on winch.
9. Remove white nylon gear and clamp ring (four (4) screws).
10. Remove "nyloc" nut, washer, sprocket and drive chain from end of brake shaft.
11. Remove drag brake and pawl assemblies.
12. Slide brake shaft out of winch.
13. Remove Weston brake assembly.

Assembly of these components back into the winch is a reversal of steps 1 - 13.

Inspection

1. Remove the nylon pinion (four (4) screws) and unwind the brake drum from the brake screw. 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.

Check that brake pad thickness is not less than 1.5mm.
Replace if necessary.
4. 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)
5. Coat the brake screw and bore of ratchet wheel with grease before assembly. (Ampol APlW or equivalent)
6. 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.

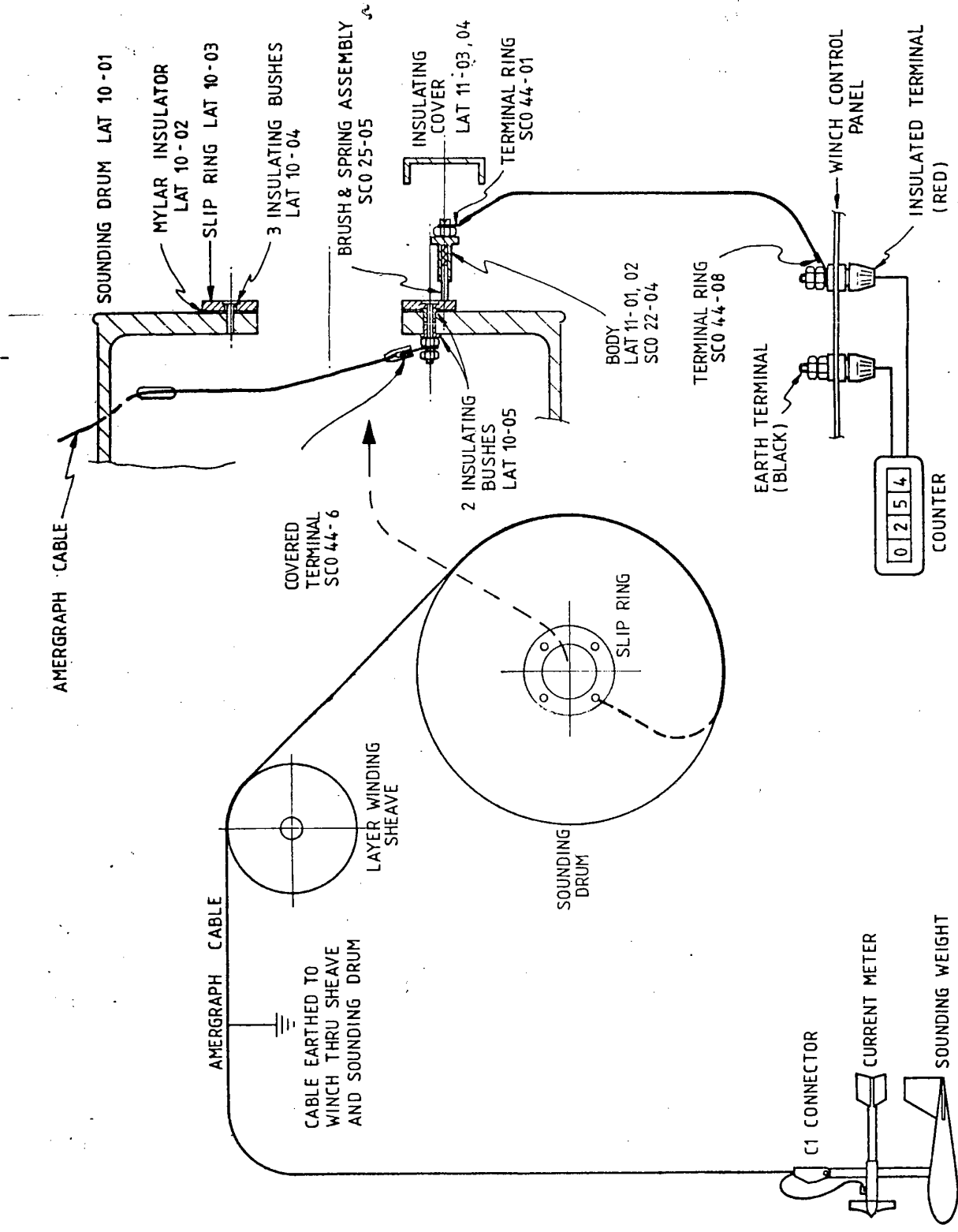
A "quick connect" terminal is located at the left hand end of the sounding drum, (accessible after removing cover plate) providing an electrical connection between the slipring and suspension cable conductor, thus allowing the cable to be fitted without removing the drum.

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.
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.
4. 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.



LATROBE WINCH DDT-900
CIRCUIT SCHEMATIC

HYDROLOGICAL SERVICES P/L

4-CORE

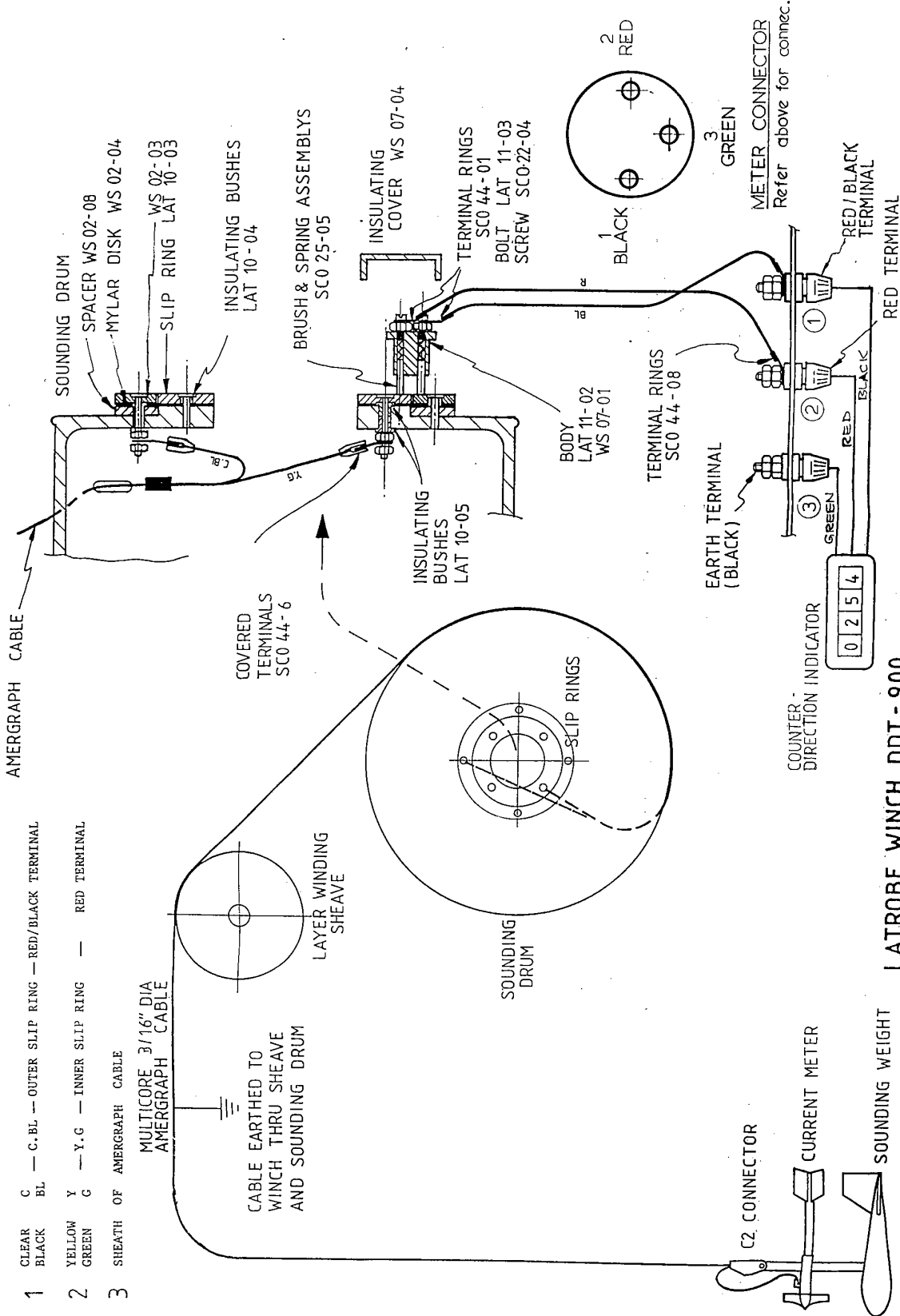
1 CLEAR C — C. BL — OUTER SLIP RING — RED/BLACK TERMINAL

2 BLACK Y — Y. G — INNER SLIP RING — RED TERMINAL

3 YELLOW G — SHEATH OF AMERGRAPH CABLE

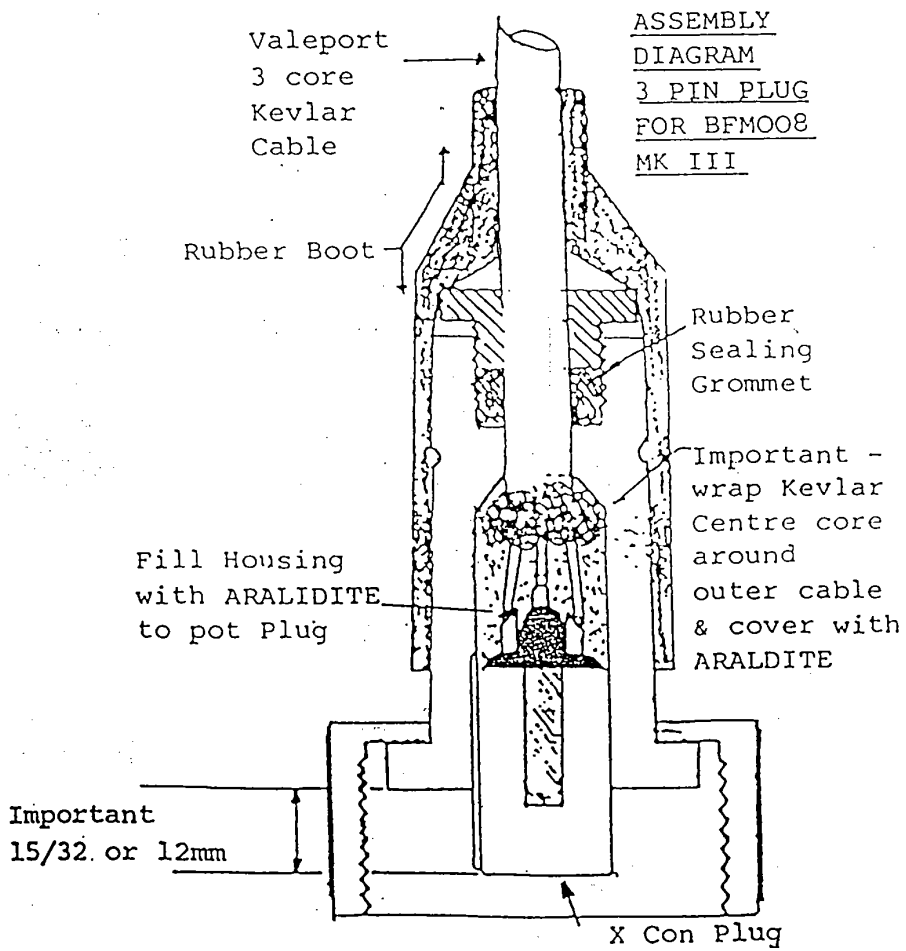
MULTICORE 3/16" DIA
AMERGRAPH CABLE

CABLE EARTHED TO
WINCH THRU SHEAVE
AND SOUNDING DRUM



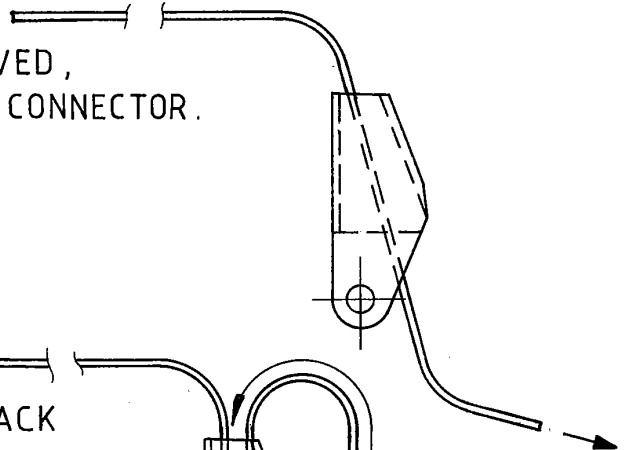
**LATROBE WINCH DDT - 900
WITH DOUBLE SLIP RING
CIRCUIT SCHEMATIC**

HYDROLOGICAL SERVICES P/L.

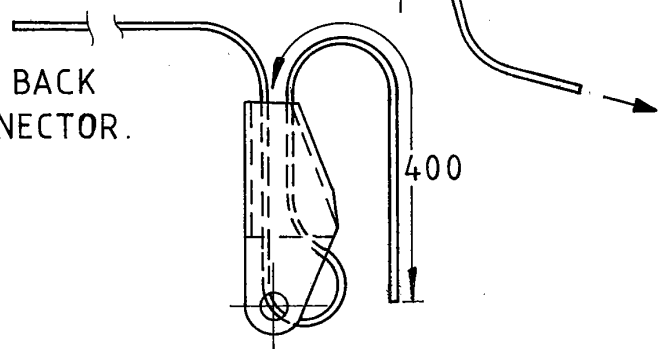


FITTING C1 CONNECTOR TO AMERGRAPH CABLE

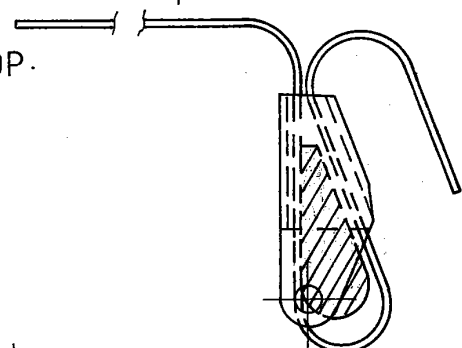
1. WITH R-CLIP AND PIN REMOVED, SLIDE END OF CABLE THRU CONNECTOR.



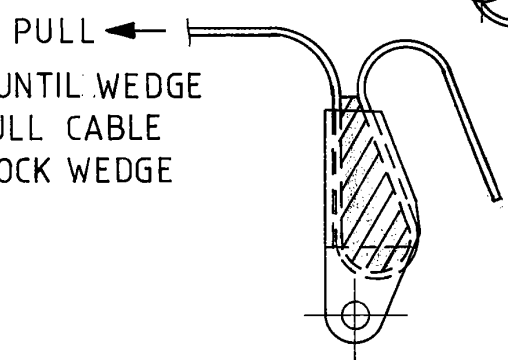
2. LOOP CABLE AND SLIDE BACK ABOUT 400mm THRU CONNECTOR.



3. FIT WEDGE INSIDE CABLE LOOP.



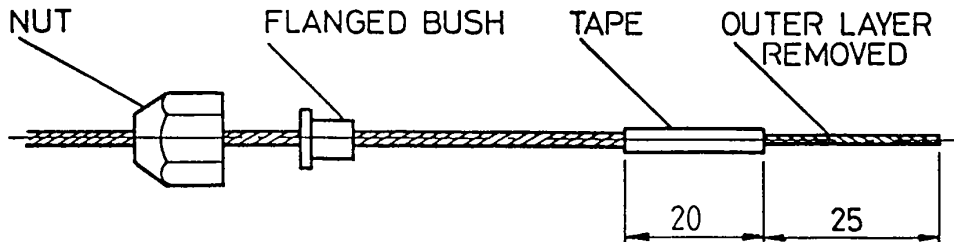
4. PULL CABLE BACK UNTIL WEDGE IS HELD AND THEN PULL CABLE AGAIN TIGHTLY TO LOCK WEDGE IN POSITION.



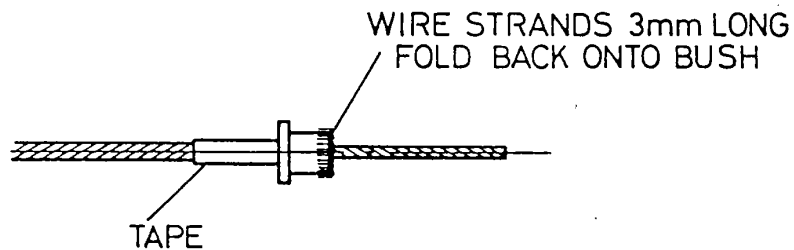
HYDROLOGICAL SERVICES P/L.
MARCH 1982.

FITTING ANGLE PLUG TO AMERGRAPH CABLE

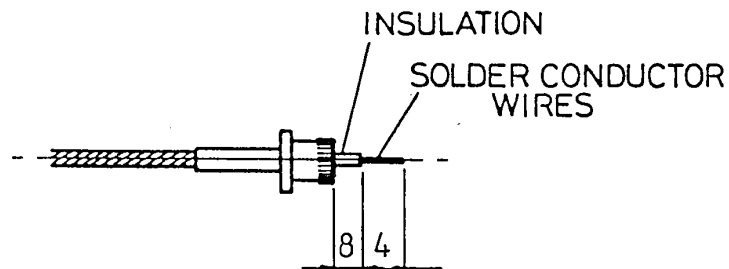
1. Slide nut and flanged bush onto Amergraph cable.
2. Wrap insulating tape around cable 25mm from end, or fit heatshrink, 20mm long.
3. Unwind outer layer of cable and cut off at tape.



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

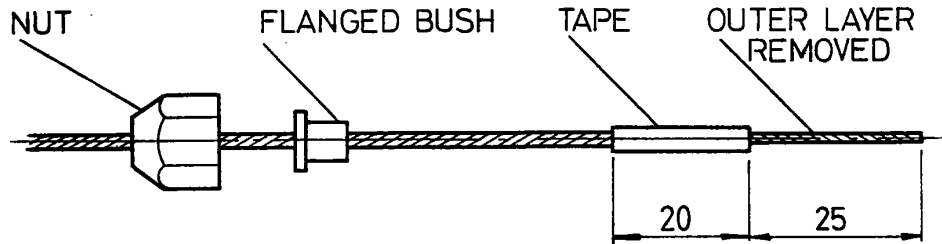


6. Strip conductor insulation back to 8mm in front of flanged bush.
7. Coat copper conductor wire with resin-cored solder. BE CAREFUL not to heat wire insulation. Cut wire back to 4mm long.

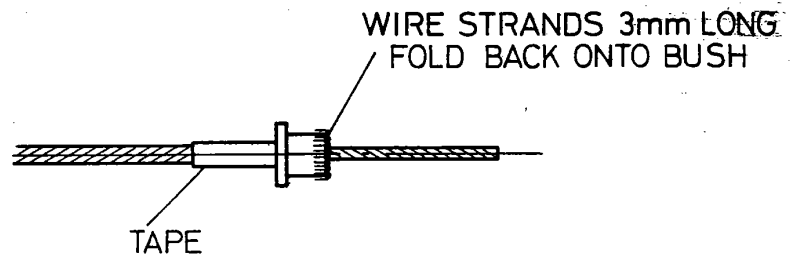


FITTING ANGLE PLUG & TEE PLUG TO FLY LEAD

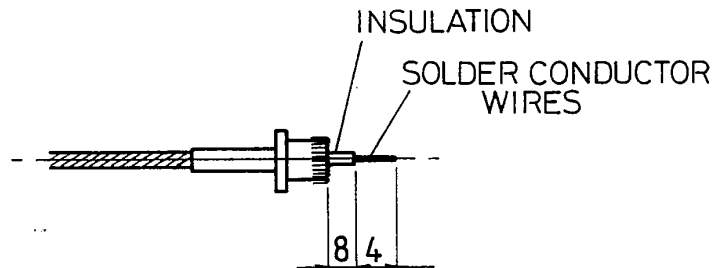
1. Slide nut and flanged bush onto a piece of Amergraph cable minimum length 330mm.
2. Wrap insulating tape around cable 25mm from end, or fit heatshrink, 20mm long.
3. Unwind outer layer of cable and cut off at tape.



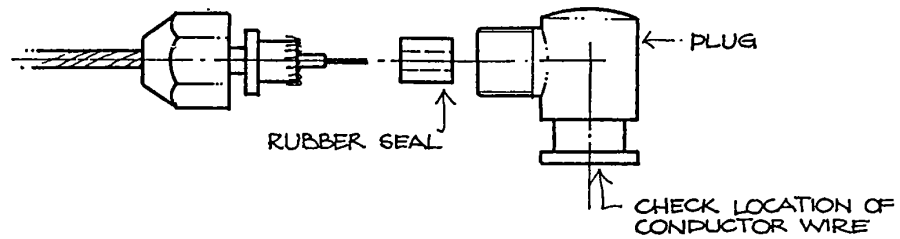
4. Unwind inner cable layer back to tape, one strand at a time and cut off 3mm in front of the insulation tape.
5. Slide flanged bush forward and bend the short inner layer strands onto the bush.



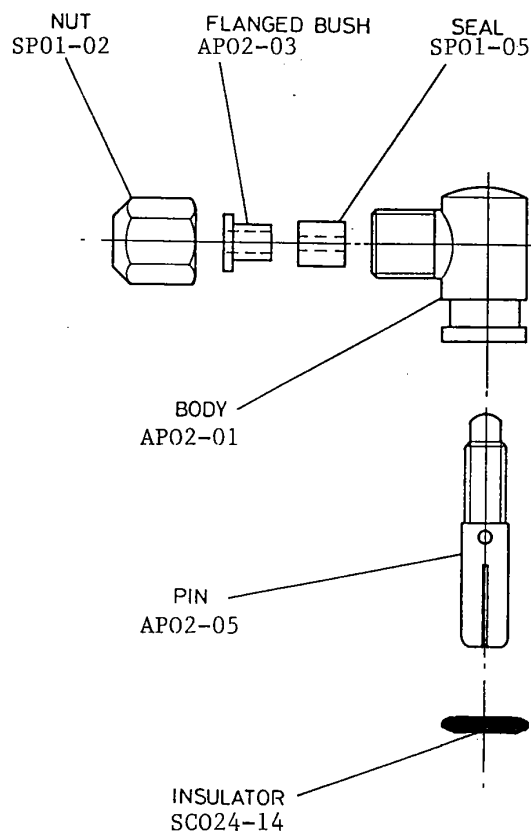
6. Strip conductor insulation back to 8mm in front of flanged bush.
7. Coat copper conductor wire with resin-cored solder. BE CAREFUL not to heat wire insulation. Cut wire back to 4mm long.



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

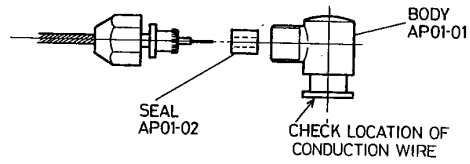


9. Screw nut onto plug and tighten with a spanner.
10. Screw pin into plug and tighten, using a 1/16" allen key as a lever.
11. Slide rubber insulator onto pin.
12. Check circuit.

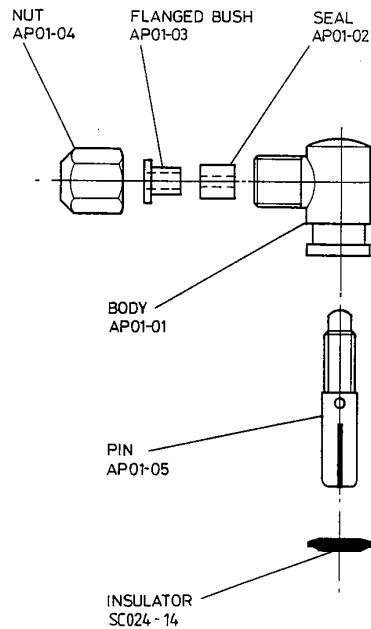


ANGLE PLUG ASSEMBLY AP 02
HYDROLOGICAL SERVICES P/L

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

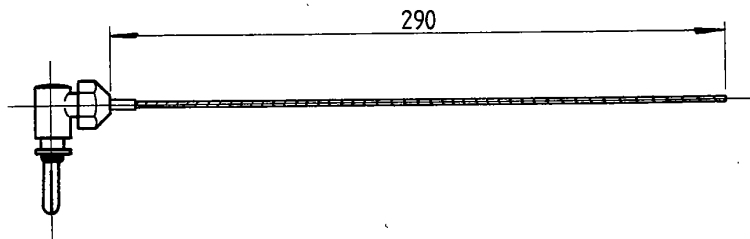


9. Screw nut onto plug and tighten with a spanner.
10. Screw pin into plug and tighten, using a 1/16" allen key as a lever.
11. Slide rubber insulator onto pin.
12. Check circuit.



ANGLE PLUG ASSEMBLY AP 01

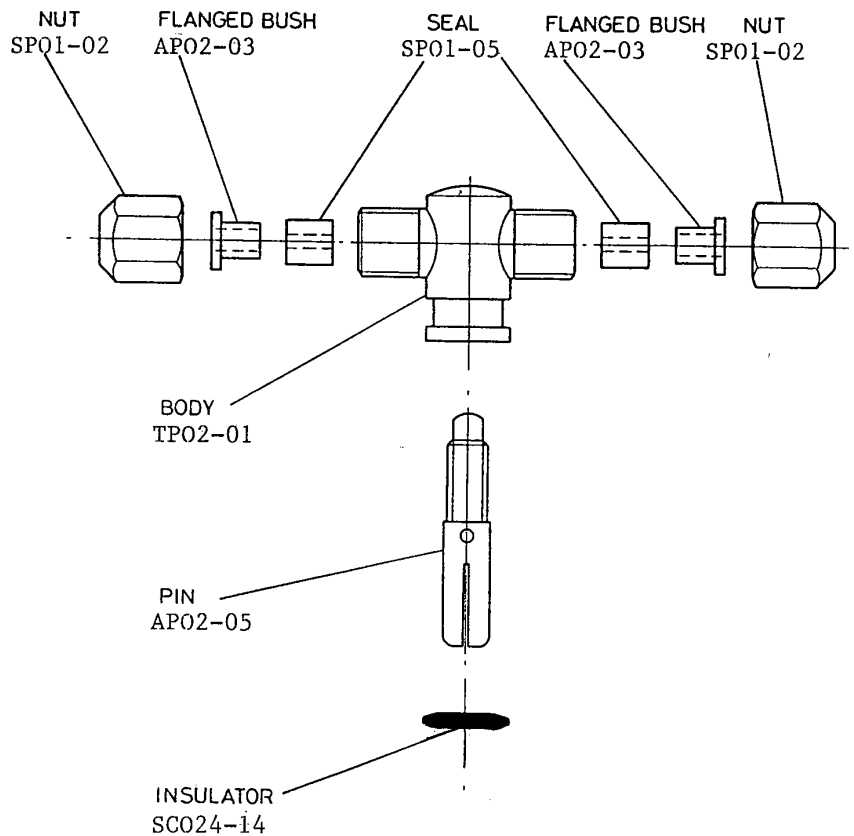
13. Cut Fly Lead to length as shown.



FITTING TEE PLUG TO AMERGRAPH CABLE

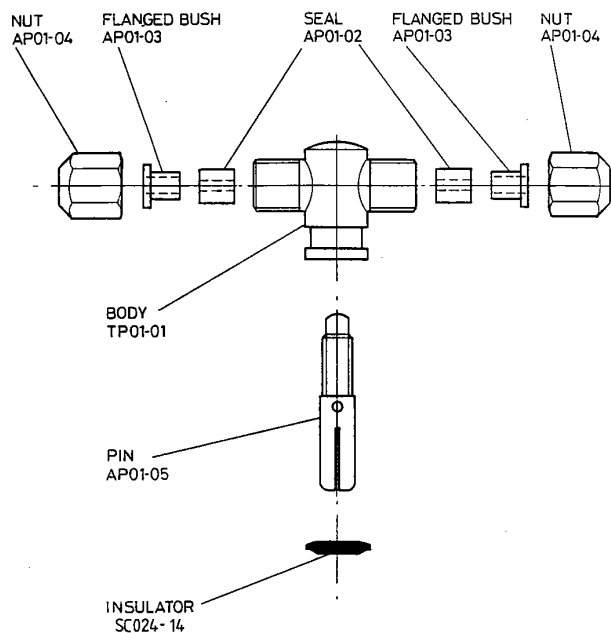
REFER INSTRUCTIONS FOR FITTING ANGLE PLUG TO AMERGRAPH CABLE

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.



TEE PLUG ASSEMBLY TP 02
HYDROLOGICAL SERVICES P/L

14. Follow steps 1 - 9 on end of cable.
15. Screw pin into plug and tighten, using 1/16" hexagon wrench as a lever.
16. Slide rubber insulator onto pin.
17. Check circuit.



TEE PLUG ASSEMBLY TP 01

Fitting Fly Lead to Amergraph Cable on Winch

1. Adjust loose end of Amergraph cable to 320mm long from C1 Connector (refer page LAT100-18).
2. Remove Pin AP01-05 from Tee Plug.
3. Using Nut, Flanged Bush and Seal from Tee Plug prepare Amergraph Cable end and fit to Tee Plug following steps 2 to 12 (fitting Angle Plug and Tee Plug to Fly Lead).

FITTING AMERGRAPH CABLE TO SOUNDING DRUM

1. Slide swage onto cable 550mm from end and clamp with swaging tool. (Refer Diagram A)
2. Slide 50mm long plastic tube insulation along wire to swage.
3. Unwind outer layer of cable 100mm and cut off.
4. Slide plastic tube insulation forward over cut ends of outer layer.
5. Unwind inner layer from around insulated core 70mm from end of cable.
6. Twist wires of inner layer together, cut off 30mm and then cover wires with 50mm long plastic tube insulation.
7. Strip conductor insulation back 5mm.
8. Coat copper conductor wires with resin-cored solder. Be careful not to melt insulation.
9. Slide 65mm long plastic tube insulation onto conductor. (Refer Diagram B)
10. Slide on terminal insulator.
11. Slide coated conductor end into spade terminal and solder in place.
12. Crimp terminal around plastic tube insulation.
13. Slide insulator forward over terminal.
14. Tape ends of cable back together.

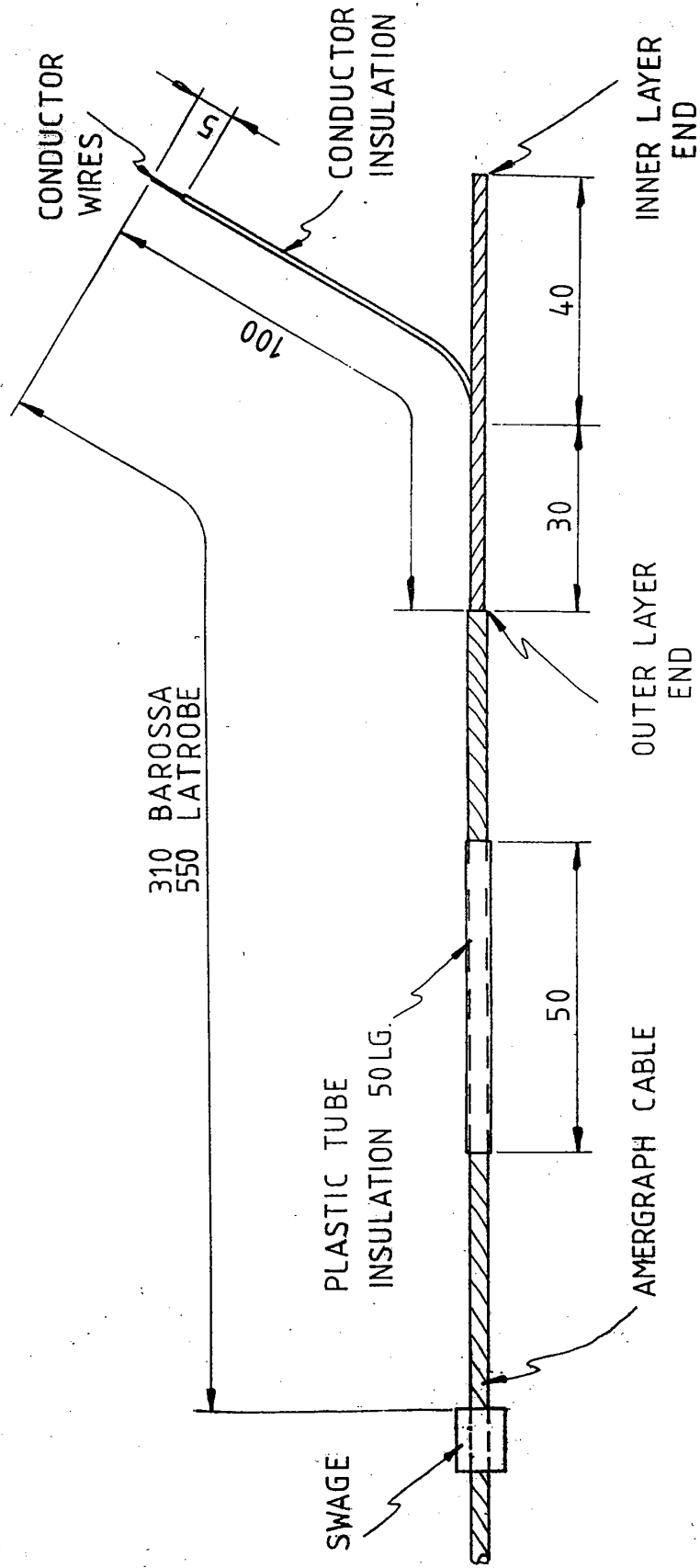
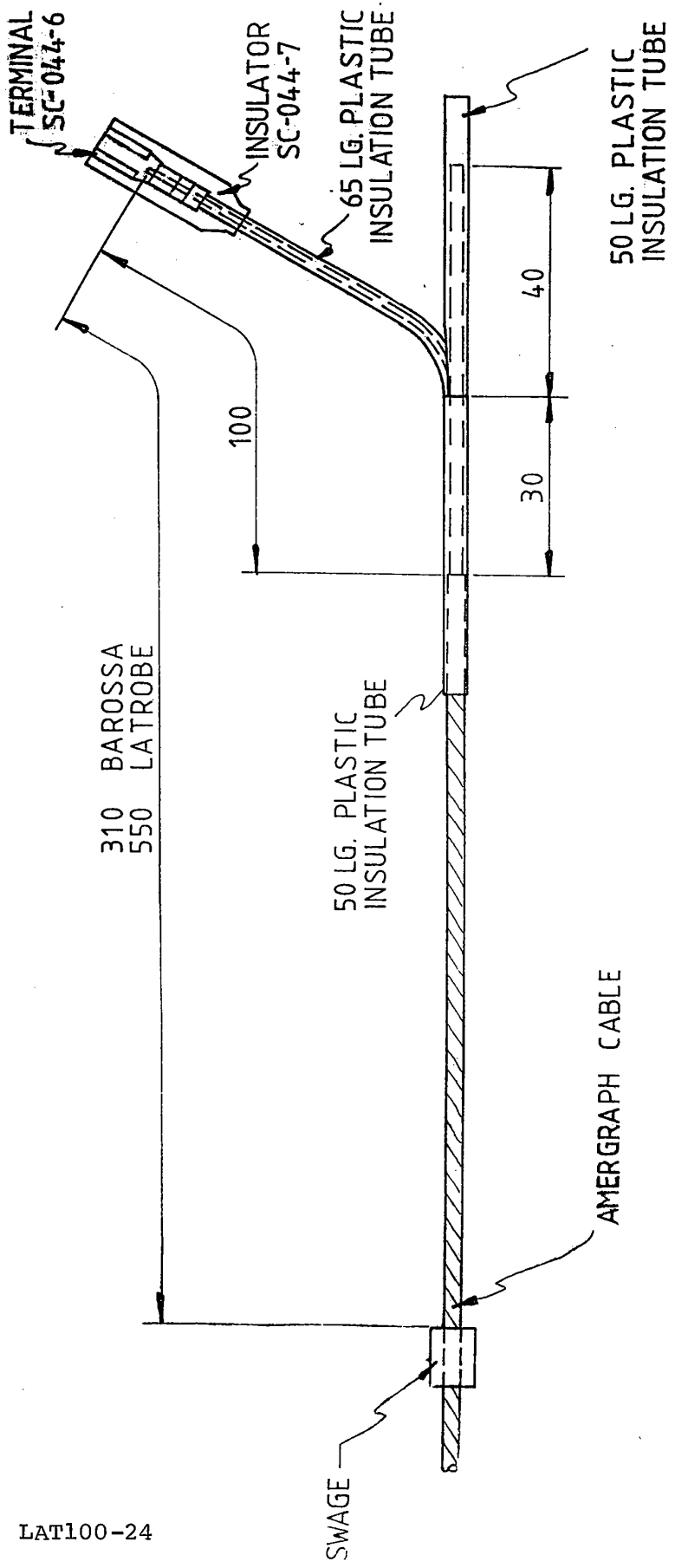


DIAGRAM A AMERGRAPH CABLE - SOUNDING DRUM END

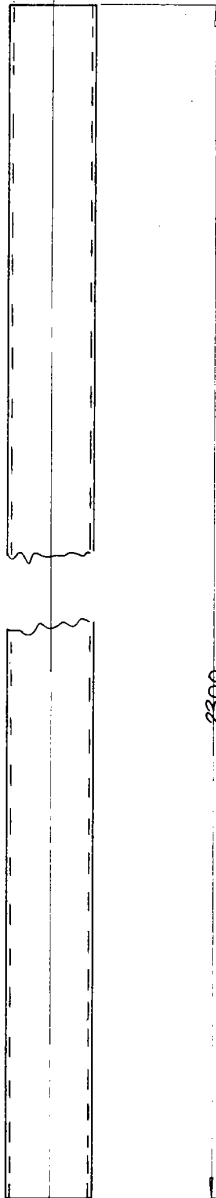
HYDROLOGICAL SERVICES P/L



LAT100-24

DIAGRAM B AMERGRAPH CABLE - SOUNDING DRUM END

HYDROLOGICAL SERVICES P/L.

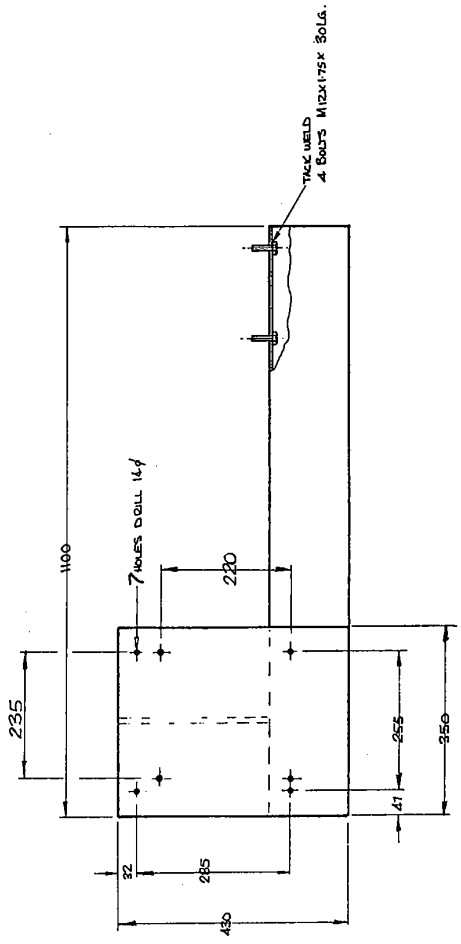
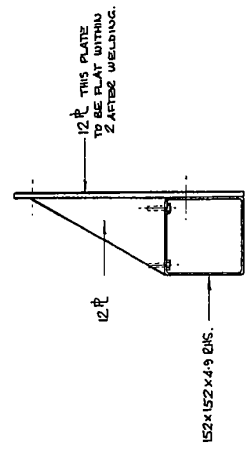
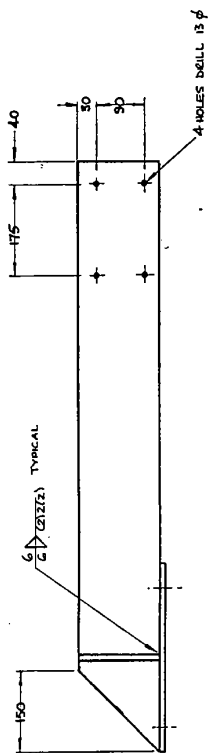


2300
 REFER TO ORDER
 FOR ALTERNATIVE
 LENGTHS.

MATL: STEEL TUBE
 ASTM A53 GRADE B
 16.8" ϕ x 4.8 E.W.
 (OR EQUIVALENT)

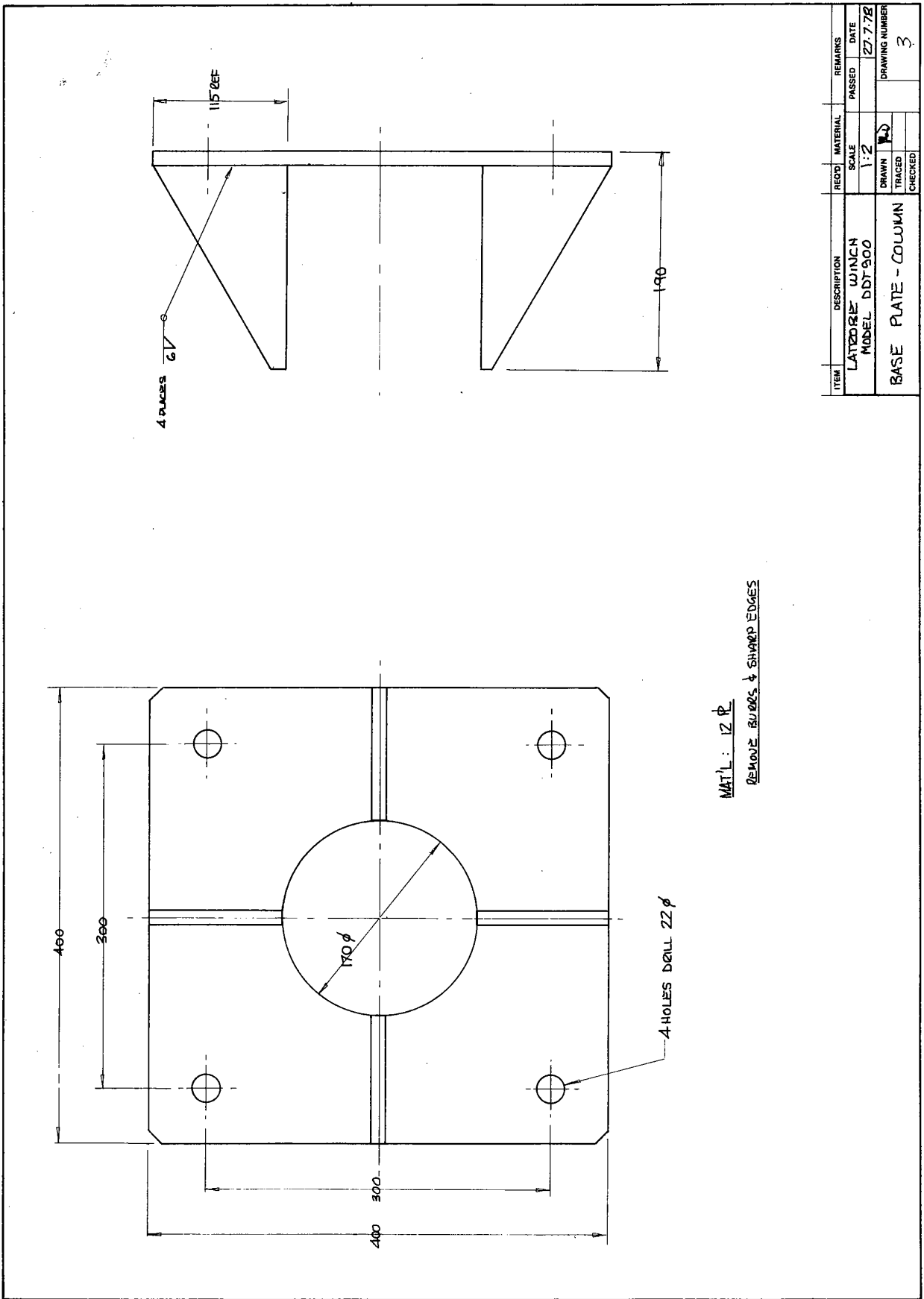
ITEM	DESCRIPTION	REQ'D MATERIAL		REMARKS	
		SCALE	PASSED	DATE	DRAWING NUMBER
	LATCOBE WINCH MODEL DDT 900	N.T.S.		27-7-72	
	COLUMN		W.D.		1
			DRAWN		
			TRACED		
			CHECKED		

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



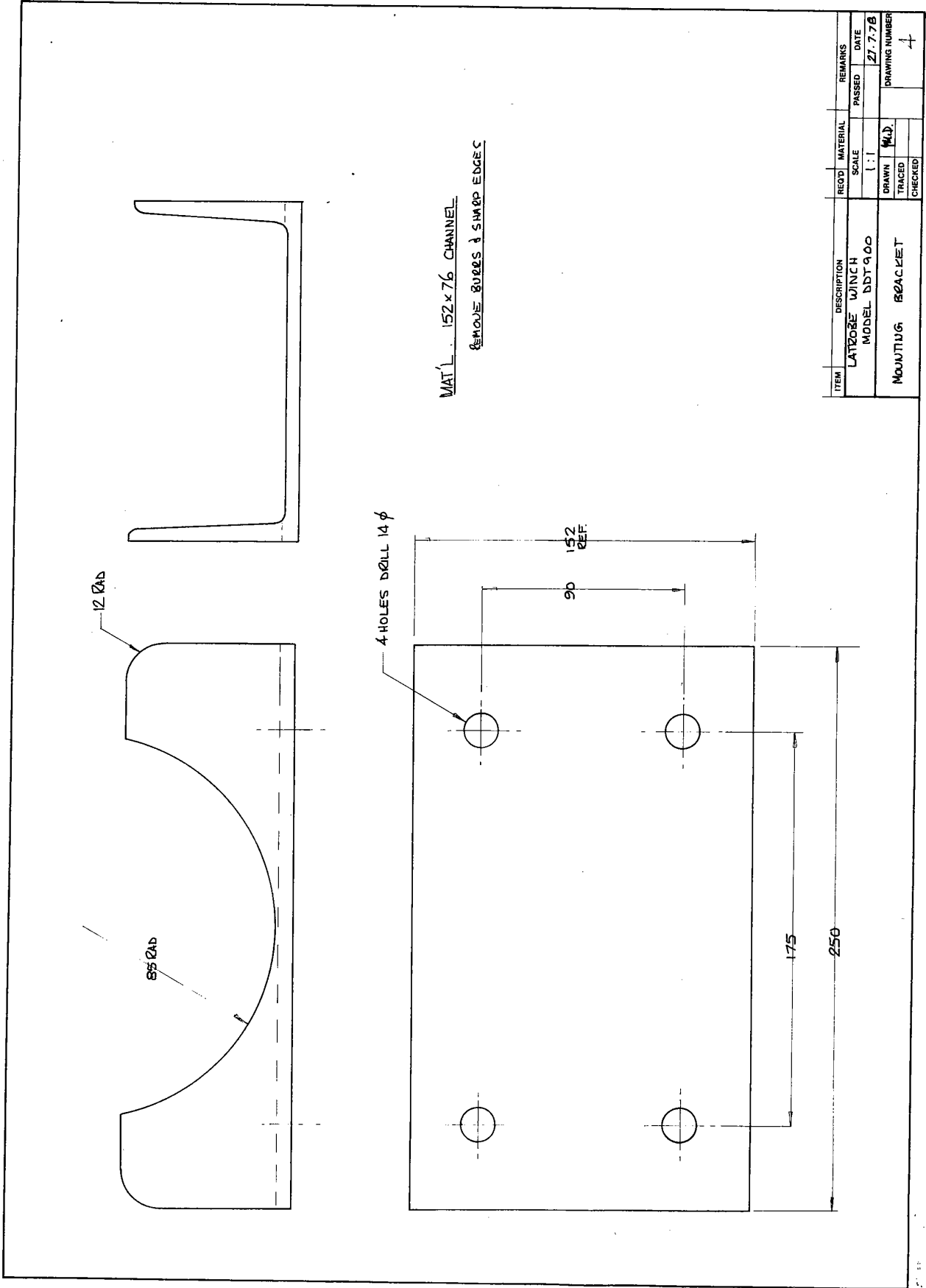
NOTE : Winch Arm is drilled to accommodate both Latrobe and Barossa Double Drum Winches.

ITEM	DESCRIPTION	REQY	MATERIAL	REMARKS
	LATROBE WINCH MODEL DD1500	SOLE	U.S.	DATE 12-7-78
	WINCH MOUNTING FRAME	1	U.S.	REVISED
		DESIGNED		DRAWING NUMBER 2

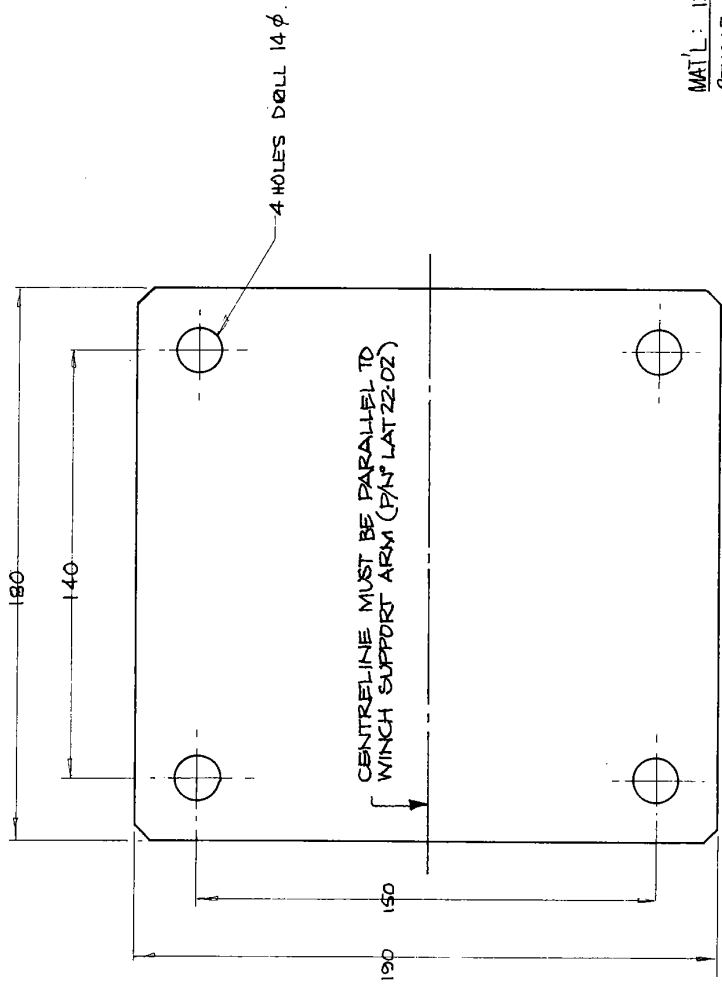


MAT'L: 12 PL
 REMOVE BURRS & SHARP EDGES

ITEM	DESCRIPTION	RECD	MATERIAL	REMARKS
	LATHE WINCH MODEL DDT-900		SCALE 1:2	PASSED
	BASE PLATE - COLUMN		DRAWN [Signature]	DATE 27.7.78
			TRACED	DRAWING NUMBER 3
			CHECKED	

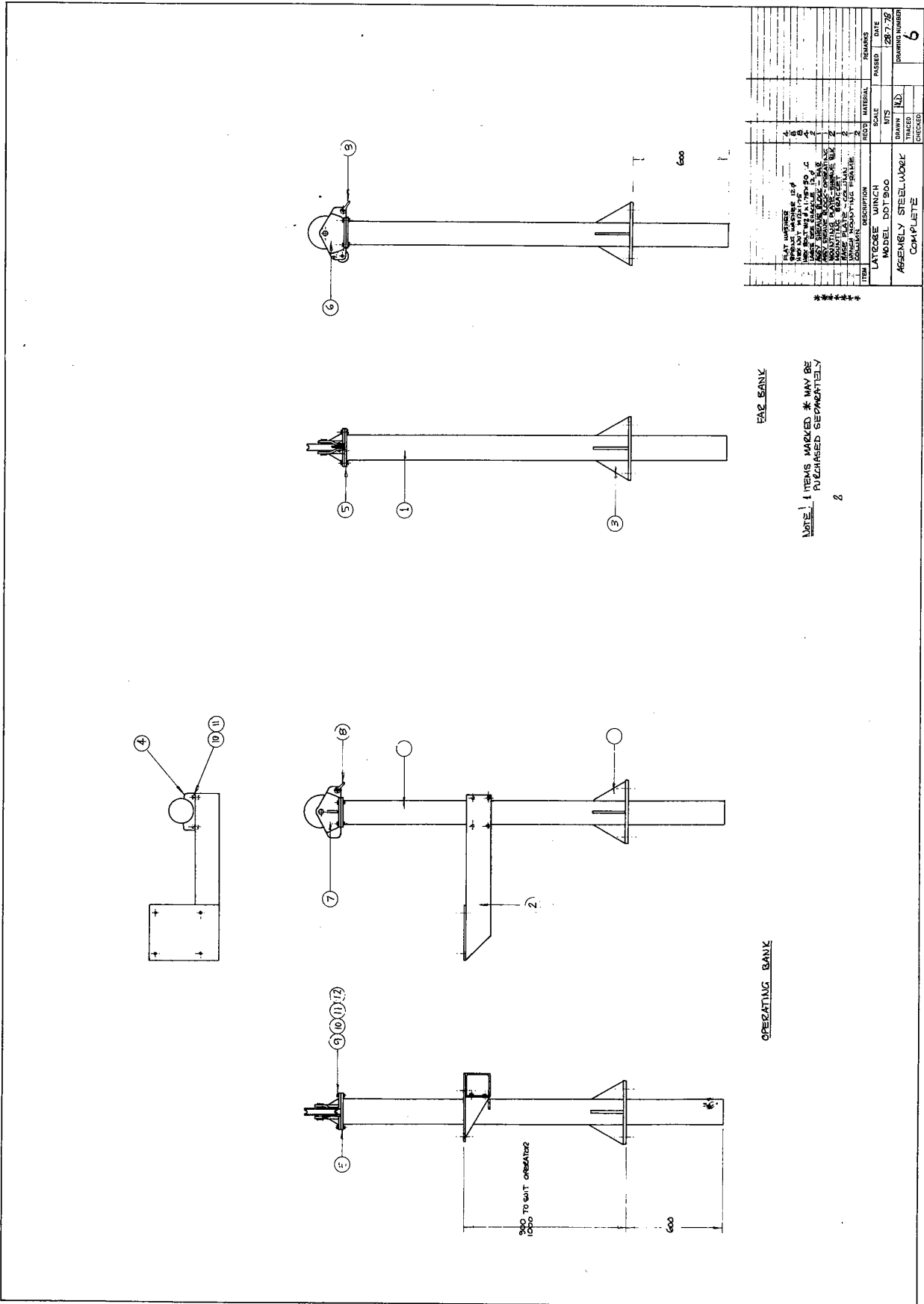


ITEM	DESCRIPTION	REQ'D	MATERIAL	REMARKS	
				PASSED	DATE
	LATZORE WINCH MODEL DDT 900		SCALE 1:1		27.7.78
	MOUNTING BRACKET		DRAWN WLD		DRAWING NUMBER
			TRACED		
			CHECKED		4



MAT'L: 12 PL
 REMOVE ALL BORDERS & SHARP EDGES

ITEM	DESCRIPTION	REQ'D	MATERIAL	REMARKS	
		SCALE	PASSED	DATE	
LATROBE	WINCH	1:1			27.7.78
MODEL	DDT 900				DRAWING NUMBER
SHEAVE	BLOCK		NO		
MOUNTING	PLATE				5
			TRACED		
			CHECKED		



OPERATING BANK

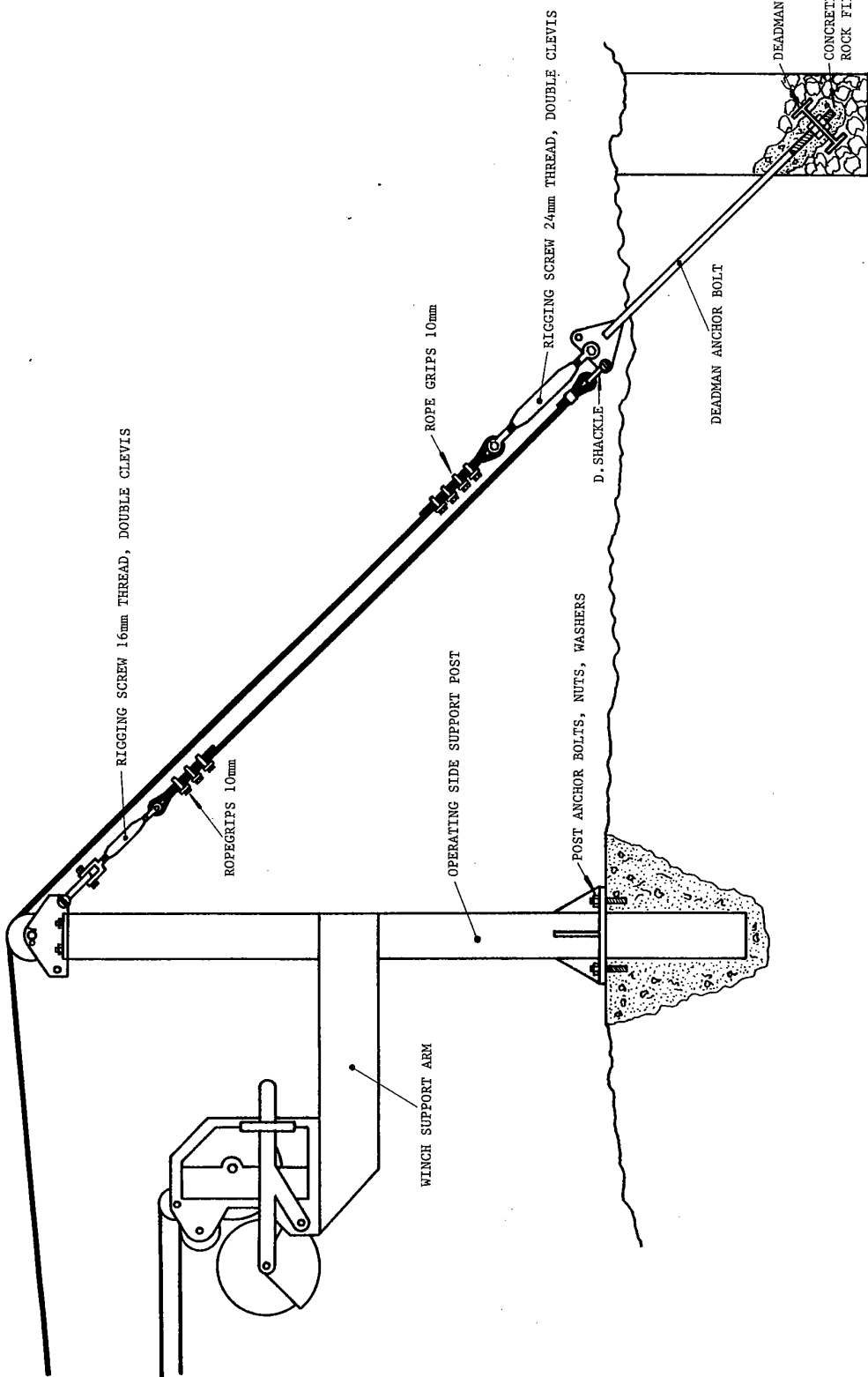
FA2 BANK

NOTE: ITEMS MARKED * MAY BE PURCHASED SEPARATELY

2

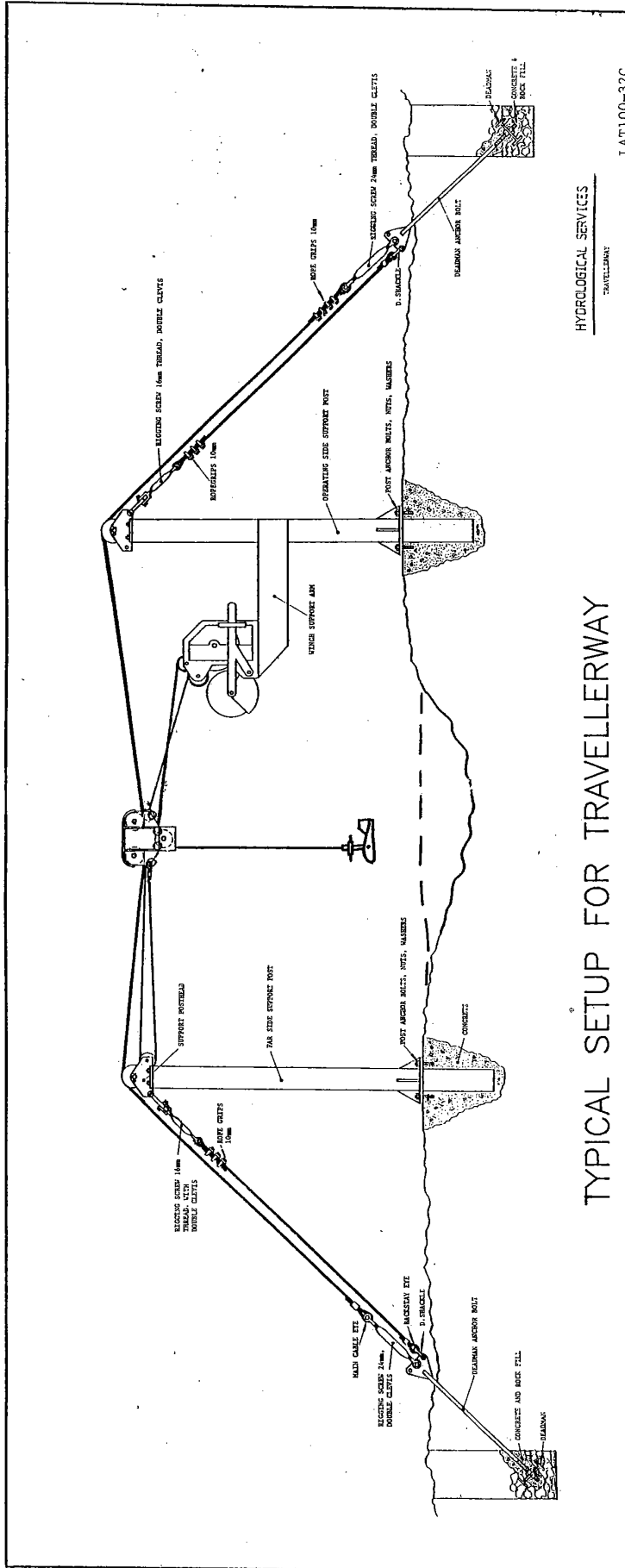
ITEM	DESCRIPTION	QTY	REMARKS
1	FLAT WARE	1	
2	SPRINT WARE	1	
3	WIRE BRUSH	1	
4	WIRE BRUSH	1	
5	WIRE BRUSH	1	
6	WIRE BRUSH	1	
7	WIRE BRUSH	1	
8	WIRE BRUSH	1	
9	WIRE BRUSH	1	
10	WIRE BRUSH	1	
11	WIRE BRUSH	1	
12	WIRE BRUSH	1	

LATEX	UNION	SCALE	DATE
MODEL	DOT 900	1/2"	28.7.72
DRAWN	ND	TRACED	
ASSEMBLY STEEL WORK COMPLETE			DRAWING NUMBER
			6



LAT100-32A

ITEM	DESCRIPTION	REQ'D MATERIAL		REMARKS	
		SCALE	PASSED	DATE	
HYDROLOGICAL SERVICES					
	LATROBE TRAVELLERWAY		DRAWN	REV	DRAWING NUMBER
	OPERATING SIDE SUPPORT POST		TRACED		9
			CHECKED		

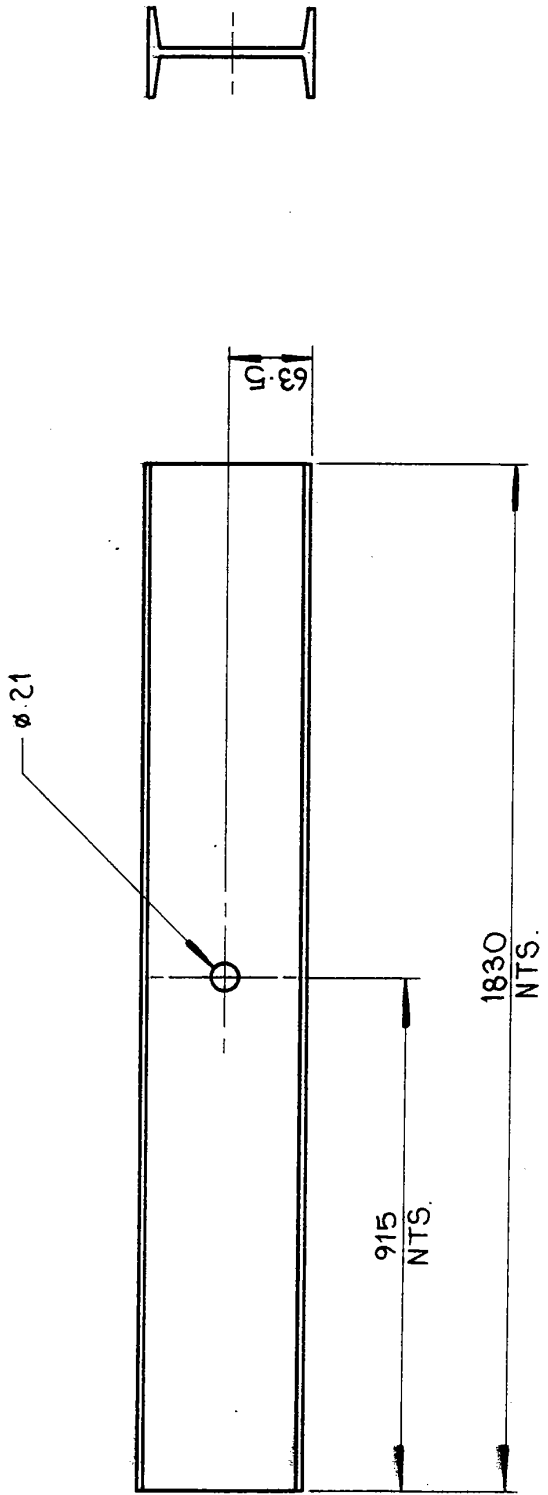


TYPICAL SETUP FOR TRAVELLERWAY

HYDROLOGICAL SERVICES
TRAVELLERWAY

LAT100-32C

REV.	DESCRIPTION	DATE

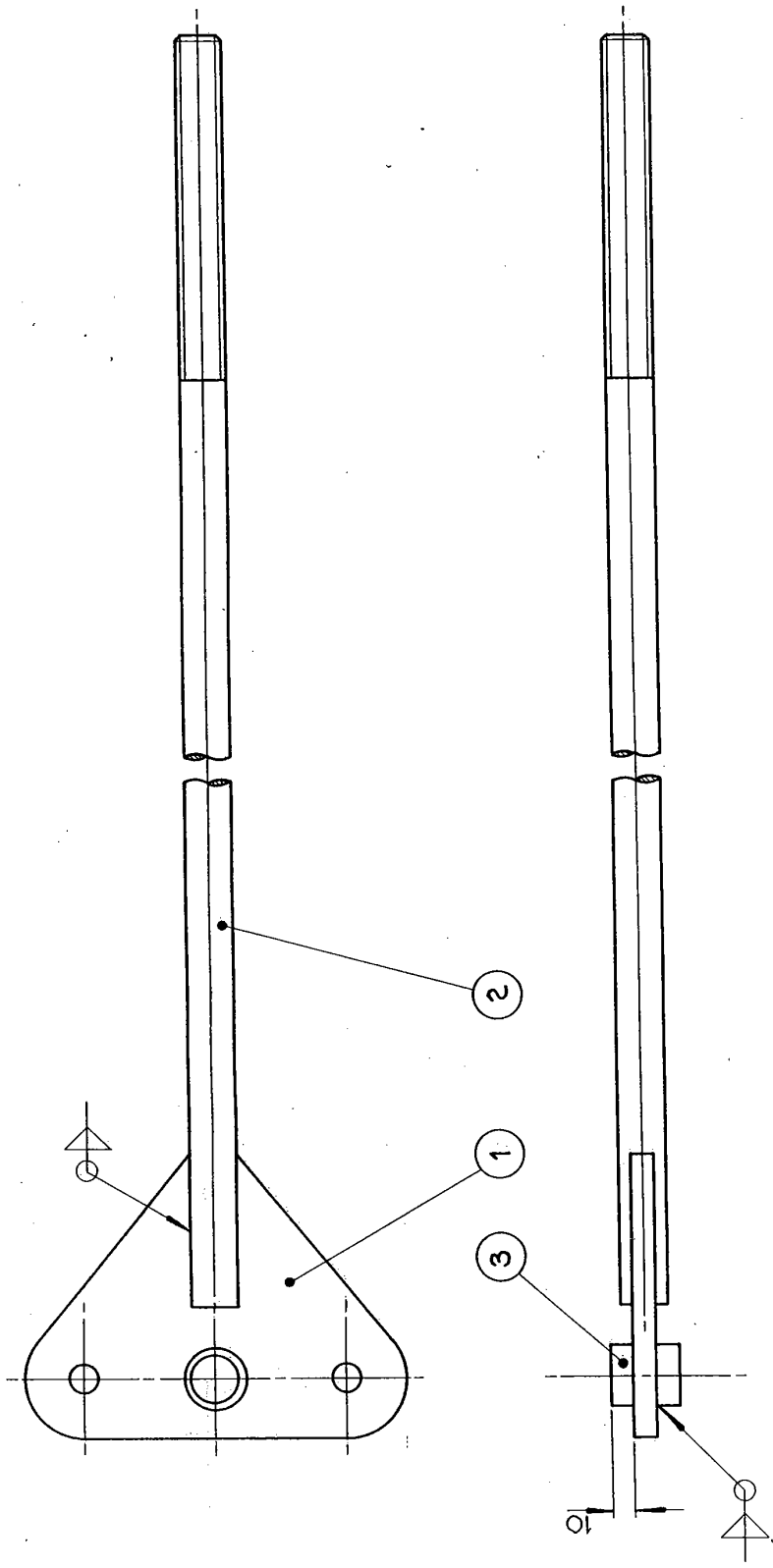


LAT100 -32D

FINISH: GALV.

DEADMAN	1	M. S.	127 x 64 TFB x 1830LG
ITEM	DESCRIPTION	REQ'D	MATERIAL
HYDROLOGICAL SERVICES		SCALE	PASSED
LATROBE WINCH		NTS.	DATE
SUPPORT POST ANCHORING - OS.			1/10/91
DEADMAN		DRAWN	REV.
		G. R.	A
		TRACED	DRAWING NUMBER
		CHECKED	11

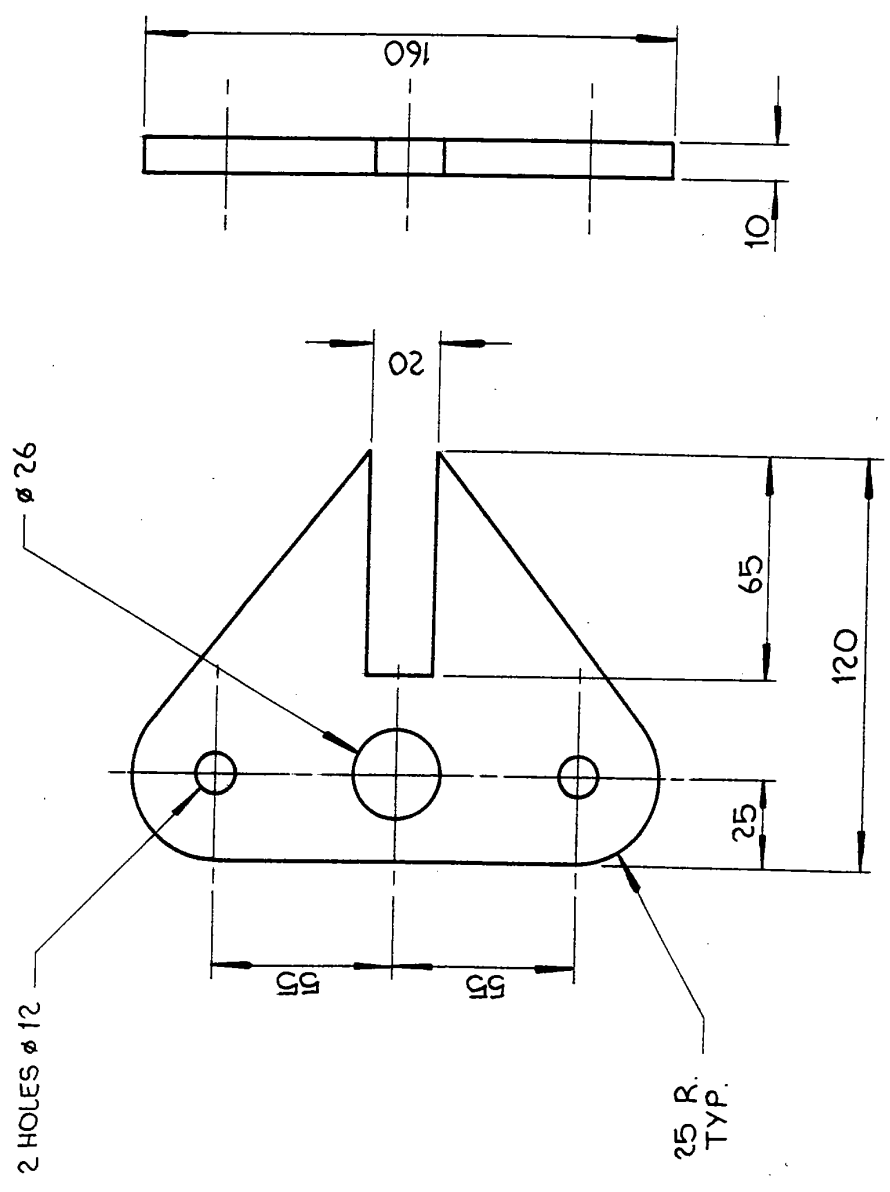
REMOVE ALL BURRS & SHARP EDGES



FINISH: GALV.

3	SPACER.	1	M.S.	LAT 30 - 05
2	BOLT.	1	M.S.	LAT 30 - 04
1	PLATE.	1	M.S.	LAT 30 - 03
REQ'D	DESCRIPTION	MATERIAL	REMARKS	
HYDROLOGICAL SERVICES				
SCALE NTS.				
DATE 1/10/91				
LATROBE WINCH		DRAWN G.R.		DRAWING NUMBER
SUPPORT POST		TRACED		A
ANCHOR BOLT ASSEMBLY		CHECKED		12

REV.	DESCRIPTION	DATE

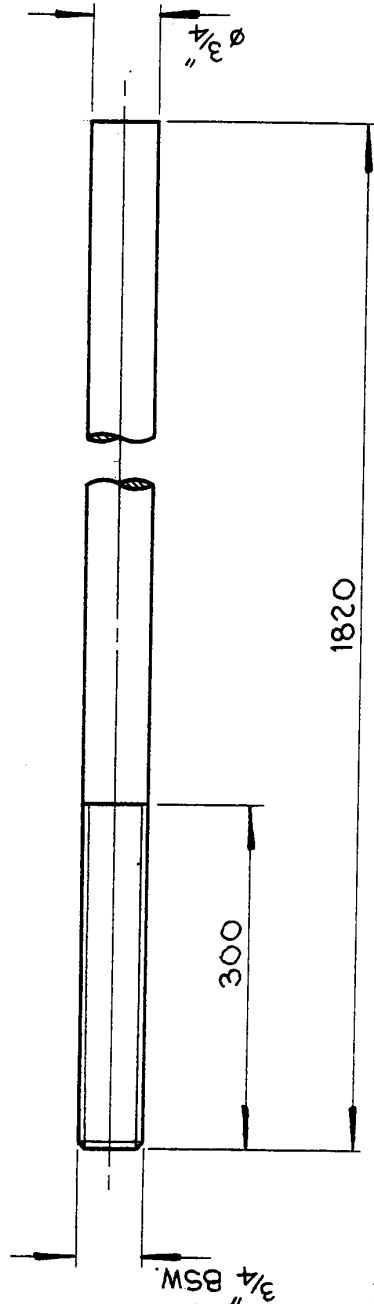


LAT100 - 32F

REMOVE ALL BURRS & SHARP EDGES

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

REV.	DESCRIPTION	DATE



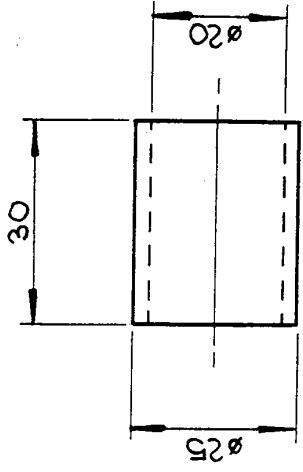
3/4" MSB

LAT100 - 32G

ANCHOR BOLT.	1	M.S.	Ø 3/4" x 1820 LG.
ITEM	DESCRIPTION	REQ'D	MATERIAL
HYDROLOGICAL SERVICES		SCALE	PASSED
LATROBE WINCH		NTS.	DATE
SUPPORT POST ANCHORING - OS.		DRAWN	REV.
ANCHOR BOLT		TRACED	DRAWING NUMBER
		CHECKED	14

REMOVE ALL BURRS & SHARP EDGES

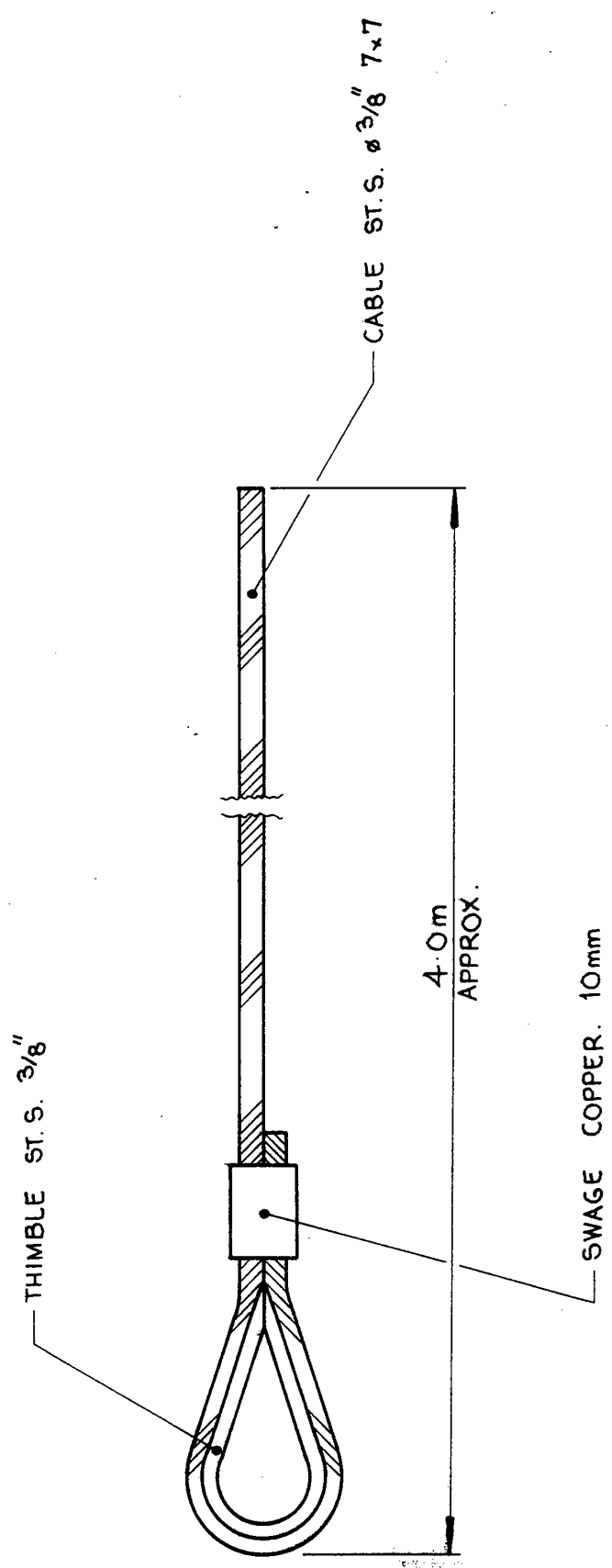
REV.	DESCRIPTION	DATE



ITEM	ANCHOR SPACER.	1	M.S.	Ø 25 x 30 LG.
	DESCRIPTION	REQ'D	MATERIAL	REMARKS
HYDROLOGICAL SERVICES		SCALE		PASSED
LATROBE WINCH		1:1		DATE
SUPPORT POST ANCHORING - OS.		DRAWN		1/10/91
ANCHOR SPACER		G.R.		REV. A
		TRACED		DRAWING NUMBER
		CHECKED		-15

REMOVE ALL BURRS & SHARP EDGES

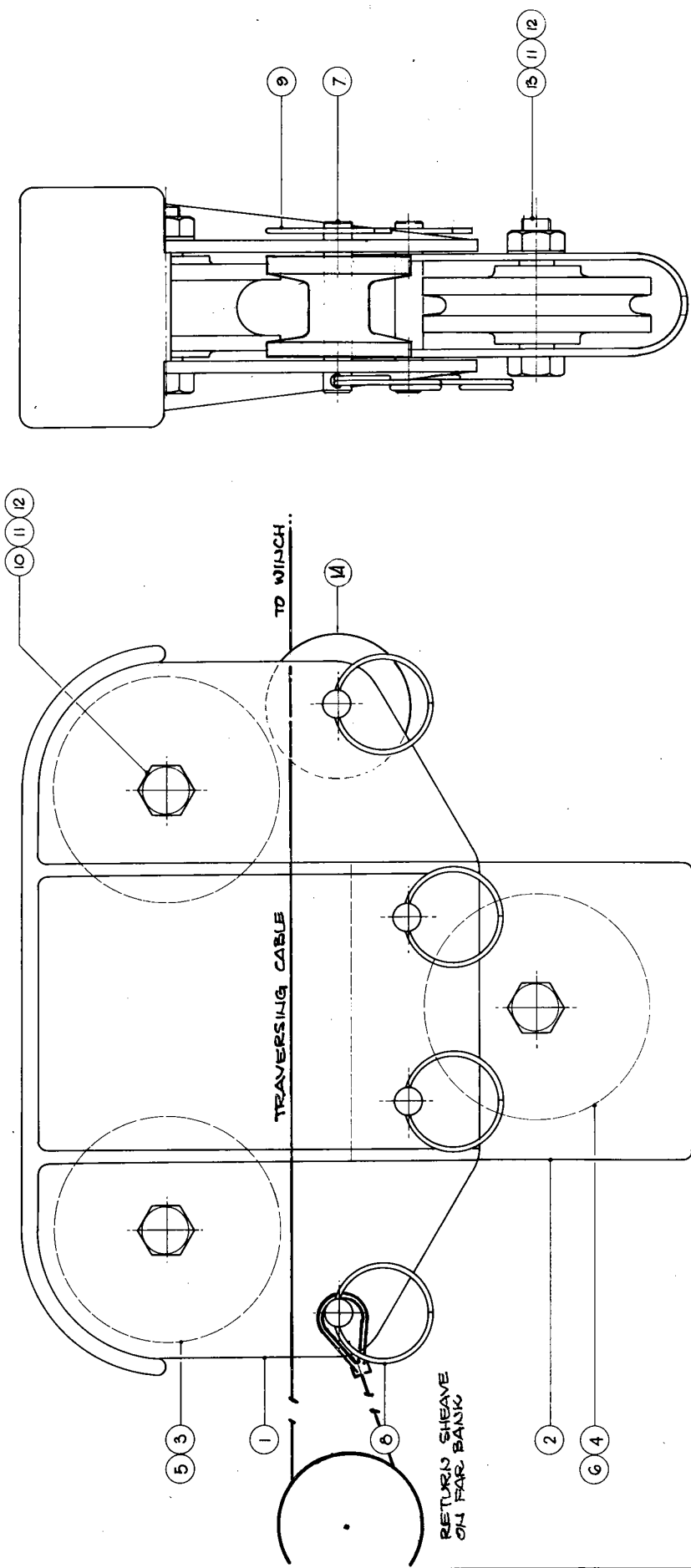
REV.	DESCRIPTION	DATE



LAT100 - 32J

REMOVE ALL BURRS & SHARP EDGES

BACKSTAY CABLE.	1	VARIOUS	BULLIVANTS
ITEM	REQ'D	MATERIAL	REMARKS
DESCRIPTION	SCALE	PASSED	DATE
HYDROLOGICAL SERVICES	NTS.		1/10/91
LATROBE WINCH	DRAWN	G.R.	REV.
SUPPORT POST ANCHORING-OS.	TRACED		A
BACKSTAY	CHECKED		16



ITEM	DESCRIPTION	QTY	MATERIAL	PART N°
14	GUIDE SHEAVE	1	AUSTON	LAT24-08
13	HEX BOLT M10x50 LG.	1	S.S. 304	
12	HEX NUT M10	3	S.S. 304	
11	STAR WASHER 10 Ø	5	M.S.	
10	HEX BOLT M10x65 LG.	2	S.S. 304	
9	R-CLIP	4	M.S.	
8	RING	4	M.S.	
7	PIN	4	S.S. 303	LAT 24-07
6	SPACER SLEEVE	1	S.S. 303	LAT 24-06
5	SPACER SLEEVE	2	S.S. 303	LAT 24-05
4	SOUNDING SHEAVE	1	PACTENS	LAT 24-04
3	MAIN SHEAVE	2	PACTENS	LAT 24-03
2	TRAVELLER BLOCK, LOWER	1	ALUM.	LAT 24-02
1	TRAVELLER BLOCK, UPPER	1	ALUM.	LAT 24-01

HYDROLOGICAL SERVICES P/L		DRAWING N°	
LATROBE WINCH MODEL DPT-900		LAT-24A	
ASSEMBLY - TRAVELLER BLOCK		SCALE	FULL SIZE
DRAWN	CHECKED	DATE	
NIN 11.5.82			

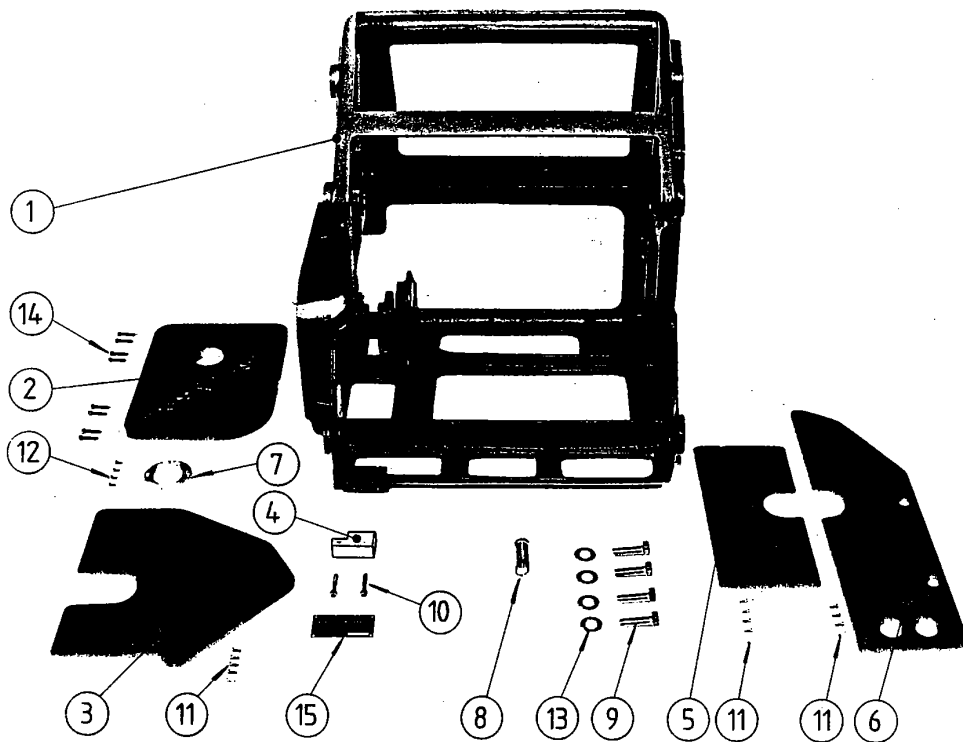
DATE	REVISION	BY

LATROBE DOUBLE DRUM TRAVELLER WINCH - DDT900

ASSEMBLY WINCH

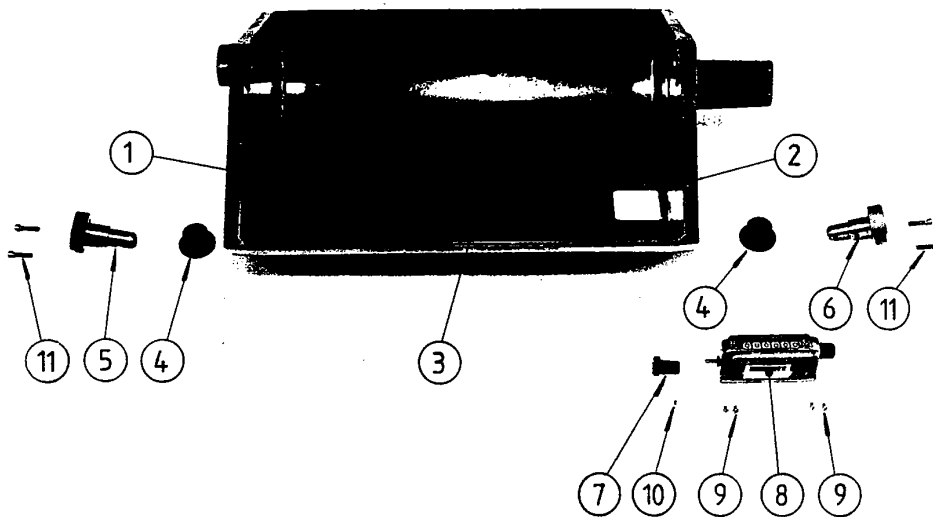
LAT01	FRAME ASSEMBLY	LAT110-02
LAT02	CRADLE ASSEMBLY	LAT110-03
LAT03	PAWL ASSEMBLY	LAT110-04
LAT05	BRAKE BANK ASSEMBLY	LAT110-05
LAT06	WESTON BRAKE ASSEMBLY	LAT110-06
LAT08	DISENGAGING HANDLE ASSEMBLY	LAT110-08
LAT09	PAWL LIFTER ASSEMBLY	LAT110-09
LAT10	SOUNDING DRUM ASSEMBLY	LAT110-10
LAT11	BRUSH HOLDER ASSEMBLY	LAT110-11
LAT12	CABLE LAYER ASSEMBLY	LAT110-12
LAT13	LOCK BRACKET ASSEMBLY	LAT110-13
LAT14	OPERATING PANEL ASSEMBLY	LAT110-14
LAT16	TRAVERSING DRUM ASSEMBLY	LAT110-15
LAT17	FLYWHEEL HOUSING ASSEMBLY	LAT110-16
LAT18	MOTOR ASSEMBLY	LAT110-17
LAT19	POWER CABLE ASSEMBLY	LAT110-18
LAT20	HANDLE OPERATING ASSEMBLY	LAT110-19

LAT110-01



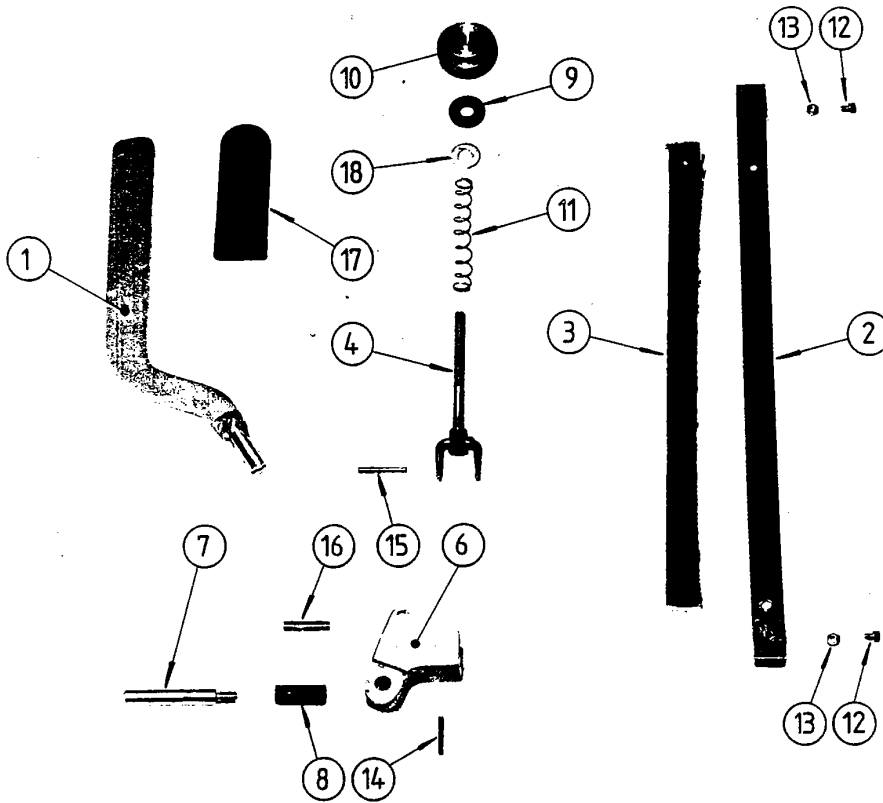
LATROBE WINCH

ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT01		FRAME ASSEMBLY
1	LAT01-01/A	1	FRAME MACHINED
	LAT01-01/B		FRAME MACHINED
	LAT01-01/C		FRAME MACHINED
	LAT01-01/D		FRAME MACHINED
	LAT01-01/E		FRAME MACHINED
2	LAT01-02	1	TRANSMISSION COVER
3	LAT01-03	1	RH SIDE COVER
4	LAT01-04	1	DRUM STOP
5	LAT01-05	1	LH SIDE COVER No.1
6	LAT01-06	1	LH SIDE COVER No.2
7	LAT01-07	1	BEARING COVER
8	LAT01-08	1	SPRING
9	SC017-01	4	HEX HD. BOLT
10	SC045-25	2	SOC. HD. CAPSCREW
11	SC022-08	14	PAN HD. SCREW
12	SC007-06	4	CSK. SCREW
13	SC065-05	4	FLAT WASHER
14	SC045-07	8	SOC. HD. CAPSCREW
15	SC100-01	1	IDENT. PLATE



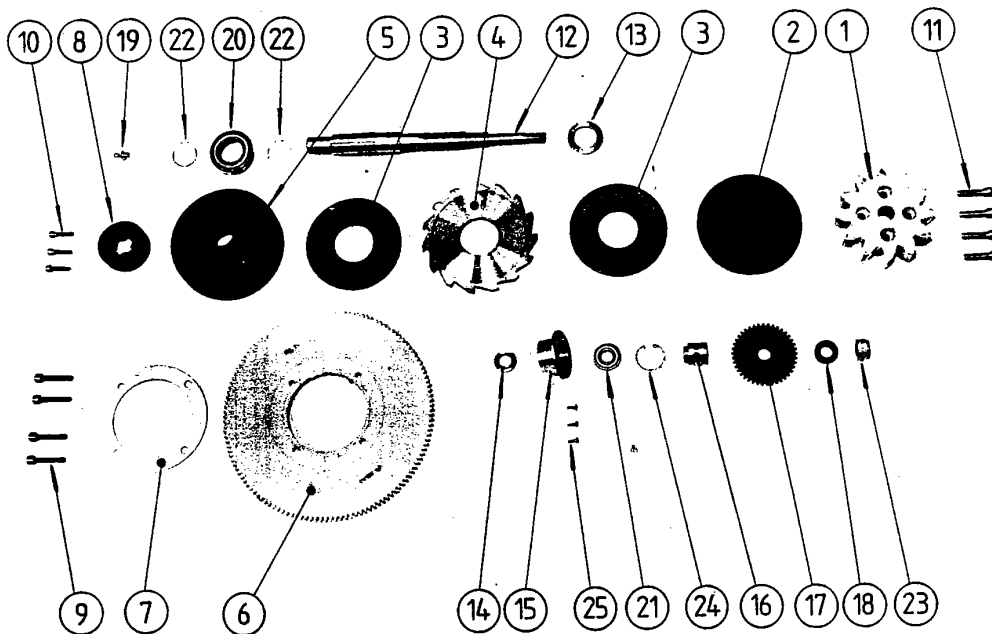
LATROBE WINCH

ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT02		CRADLE ASSEMBLY
1	LAT02-01	1	LH. SIDE PLATE
2	LAT02-02	1	RH. SIDE PLATE
3	LAT02-03	1	BACKING PLATE
4	LAT02-04	2	BUSH
5	LAT02-05	1	LH. PIVOT PIN
6	LAT02-06	1	RH. PIVOT PIN
7	LAT02-07	1	PINION 10T
8	SC047-03	1	COUNTER
9	SC056-02	4	RND. HD. SCREW
10	SC039-06	1	SOC. HD. GRUB SCREW
11	SC045-04	4	SOC. HD. CAPSCREW



LATROBE WINCH

ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT05		BRAKE BAND ASSEMBLY
1	LAT05-01	1	HANDLE
2	LAT05-02	1	BACKING STRIP
3	LAT05-03	1	FERRODO STRIP
4	LAT05-04	1	ANCHOR
5	LAT05-05	1	YOKE
6	LAT05-06	1	LEVER
7	LAT05-07	1	AXLE
8	LAT05-08	1	SPACER
9	LAT05-09	1	FLAT WASHER
10	LAT05-10	1	KNOB
11	LAT05-11	1	SPRING
12	SC022-03	2	PAN HD. SCREW
13	SC008-06	2	HEX.
14	SC042-06	1	ROLL PIN
15	SC042-13	1	ROLL PIN
16	SC042-14	1	ROLL PIN
17	SC040-04	1	GRIP
18	SC065-08	1	FLAT WASHER



LATROBE WINCH

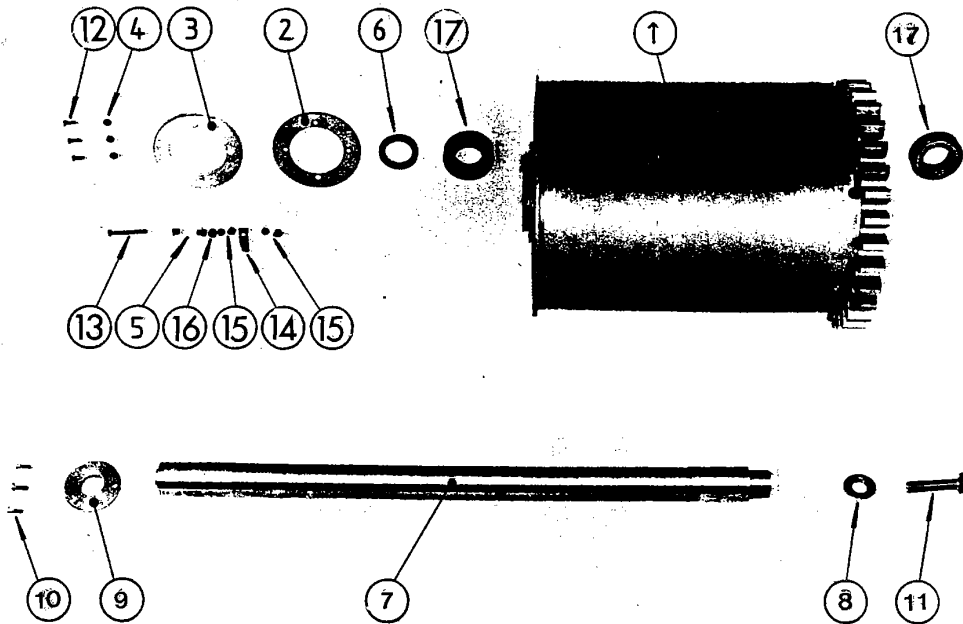
ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT06/07		WESTON BRAKE ASSEMBLY
1	LAT06-01	1	PINION 12T
2	LAT06-02	1	BRAKE SCREW
3	LAT06-03	2	FERRODO PAD
4	LAT06-04	1	RATCHET WHEEL
5	LAT06-05	1	BRAKE DRUM
6	LAT06-06	1	GEAR 132T
7	LAT06-07	1	CLAMP RING
8	LAT06-08	1	HUB
9	SC045-17	4	SOC.HD. CAPSCREW
10	SC045-4	3	SOC.HD. CAPSCREW
11	SC045-22	4	SOC.HD. CAPSCREW
12	LAT07-01	1	SHAFT
13	LAT07-02	1	SPACER
14	LAT07-04	1	INNER SPACER
15	LAT07-05	1	BEARING HOLDER
16	LAT07-06	1	OUTER SPACER
17	LAT07-07	1	SPROCKET 41T
18	LAT07-09	1	FLAT WASHER
19	SC023-03	1	GREASE NIPPLE

CONTINUED OVER PAGE

LAT110-06

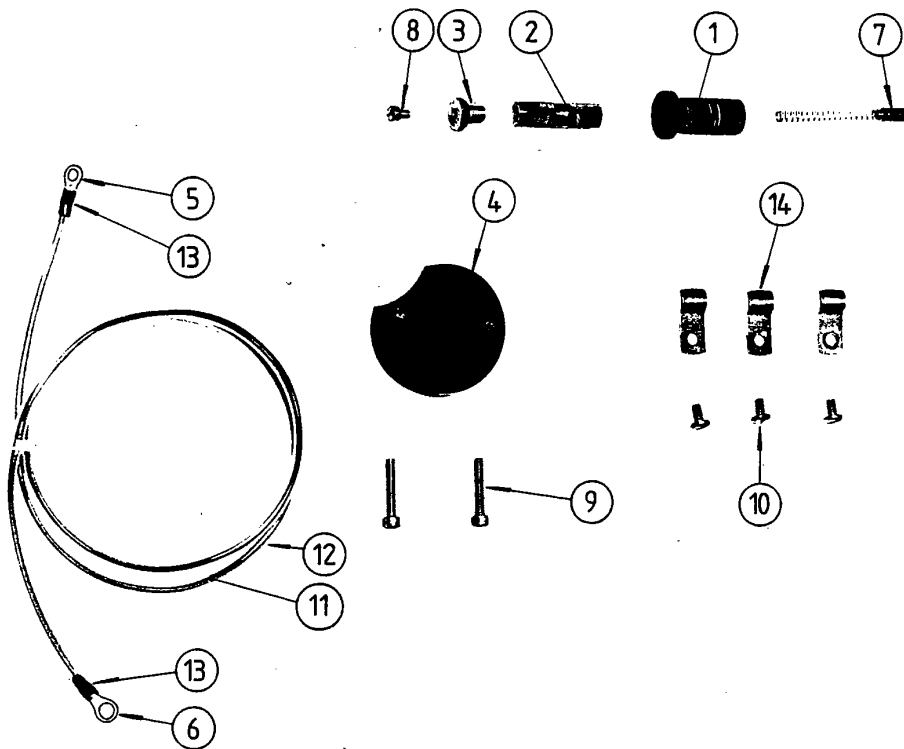
LATROBE WINCH

ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT08		DISENGAGING HANDLE ASSEMBLY
1	LAT08-01	1	OPERATING HANDLE
2	LAT08-02	1	BUSH
3	LAT08-03	2	WASHER
4	LAT08-04	1	SPACER
5	LAT08-05	1	LOCATING PIN
6	LAT08-06	1	LOCKING BLOCK
7	LAT08-07	1	SPRING
8	LAT08-08	1	LOCATING WASHER
9	SC045-20	1	SOC. HD. CAPSCREW
10	SC017-09	1	HEX. HD. BOLT
11	SC022-24	1	PAN HD. SCREW



LATROBE WINCH

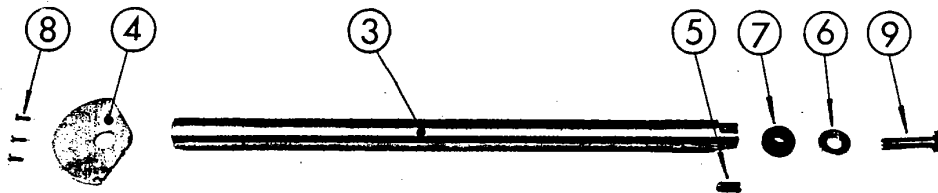
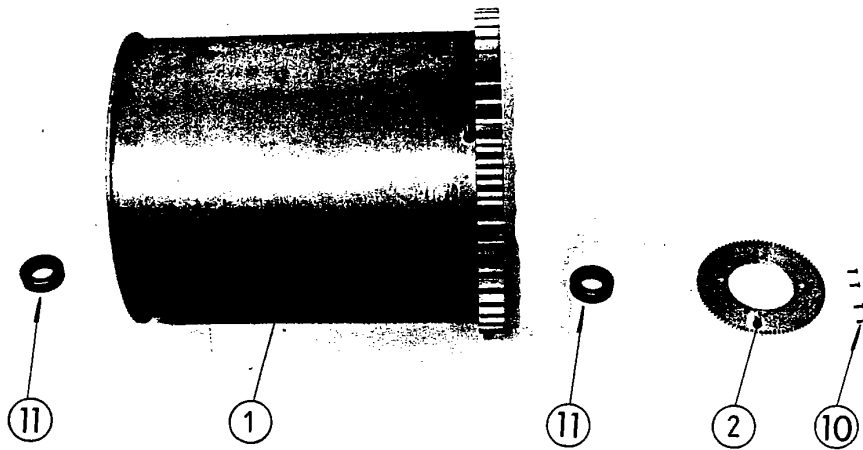
ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT10		SOUNDING DRUM ASSEMBLY
1	LAT10-01	1	DRUM MACHINED
2	LAT10-02	1	MYLAR DISC
3	LAT10-03	1	SLIPRING
4	LAT10-04	3	INSULATING BUSH
5	LAT10-05	2	INSULATING BUSH
6	LAT10-06	1	SPACER
7	LAT10-07	1	SHAFT
8	LAT10-08	1	FLAT WASHER
9	LAT10-09	1	RETAINER
10	SC022-08	3	PAN HD. SCREW
11	SC045-19	1	SOC.HD. CAPSCREW
12	SC016-05	3	CHEESE HD. SCREW
13	SC056-27	1	RND. HD. SCREW
14	SC044-06	1	SPADE TERMINAL
15	SC008-01	4	HEX. NUT
16	SC065-18	1	FLAT WASHER
17	SC058-03	2	BEARING



LATROBE WINCH

ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT11		BRUSH HOLDER ASSEMBLY
1	LAT11-01	1	BODY
2	LAT11-02	1	SLEEVE
3	LAT11-03	1	PLUG
4	LAT11-04	1	COVER
5	SC044-01	1	SOLARSTRAND RING
6	SC023-08	1	SOLARSTRAND RING
7	SC023-05	1	BRUSH & SPRING
8	SC016-11	1	CHEESE HD. SCREW
9	SC045-01	2	SOC.HD. CAPSCREW
10	SC022-03	3	PAN HD. SCREW
11	SC032-04	1	CABLE RED
12	SC033-09	1	INSULATION TUBE CLEAR
13	SC033-07	2	INSULATION TUBE RED
14	SC006-09	3	CABLE CLAMP

LAT14 ASSEMBLY OPERATING PANEL



LATROBE WINCH

ITEM No.	PART No.	QTY.	DESCRIPTION
	LAT16		TRAVERSING DRUM ASSEMBLY
1	LAT16-01	1	DRUM MACHINED
2	LAT16-02	1	GEAR 90T
3	LAT16-03	1	SHAFT
4	LAT16-04	1	RETAINER
5	LAT16-05	1	KEY
6	LAT16-06	1	FLAT WASHER
7	LAT16-07	2	SPACER
8	SC022-02	3	PAN HD. SCREW
9	SC045-20	1	SOC.HD. CAPSCREW
10	SC007-06	4	CSK SCREW
11	SC058-03	2	BEARING

LAT18 ASSEMBLY MOTOR

LAT110-17

LAT19 ASSEMBLY POWER CABLE

