



## Operation Manual

# Wireline Unit Surveyor

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## WIRELINE UNIT WARRANTY

In the event any merchandise sold hereunder (except merchandise manufactured by other persons or firms) is not in accordance with specifications shown on the order within customarily accepted tolerances, or is defective on account of workmanship or material, the Company agrees for a period of one year from date of shipment, at its option, to replace or repair the merchandise. This agreement, however, is upon condition that the customer promptly notifies the Company in writing of any claim in this respect, setting forth in detail any such claimed defect and that the Company may be afforded a reasonable opportunity to examine the merchandise and to investigate the claimed defect. The Company shall be, in no event, liable for damages beyond the price paid by the customer for such defective merchandise. This warranty does not obligate the Company to bear any transportation charges in connection with the replacement or repair of defective merchandise. As to any item manufactured by other persons or firms, the Company agrees to present the customer's claim with respect to defects to the manufacturer for adjustment, and the customer agrees that the liability of the Company shall not exceed any adjustment with respect to which such manufacturer accepts responsibility. The above warranty is in lieu of all other warranties, express or implied, and it is agreed that there is no express or implied warranty by the Company as to the fitness, merchantability, capacity, or efficiency of any merchandise sold, and that there are no oral or implied additional warranties made in connection with any sale based hereon. No modification, or additions to this agreement with respect to warranty of the Company, either before or after contract of sale, shall be made except on written authority of the President or Vice President of the Company.

# OPERATING & MAINTENANCE MANUAL ILLUSTRATED PARTS LIST

## INTRODUCTION

This guide contains general instructions for the operation and maintenance of a **TEXAS INTERNATIONAL WIRELINE UNIT**, and should be given careful consideration and study before operation of the UNIT. It does not supplant the crew check-out to which the owner of a new UNIT is entitled under the warranty policy. Failure to operate and maintain the UNIT in accordance with this guide may void the warranty covering the same. Although it is impossible to anticipate every kind of a problem or condition that may be encountered in the field, compliance with the instructions and suggestions set forth herein will materially assist the owner or operator in successfully operating this equipment. However, the information contained in this guide shall not in any way relieve the owner of the responsibility of exercising reasonable care and prudence in the operation and maintenance of this equipment.

## **OPERATING INSTRUCTIONS**

**WIRELINER UNIT MUST BE RIGIDLY ATTACHED  
TO FLOOR SURFACE PRIOR TO ANY WIRELINER OPERATION.**

### **ELECTRICAL**

Connect the electric motor in accordance with instructions on the data plate attached to the wireline unit frame. Refer to the wiring schematic inside of the electric starter box cover. The electric motor must rotate in the direction indicated by the arrow on the hydraulic pump.

### **WARNING**

**A LICENSED ELECTRICIAN SHOULD BE USED TO PROPERLY  
CONNECT THE EXPLOSION PROOF COMPONENTS.**

### **DYNAMIC BRAKING**

1. DO NOT RUN electric motor.
2. Set hand brake.
3. Engage transmission in 3<sup>rd</sup> gear for maximum, controlled, free-fall speed.
4. Check the following valves and be certain they are in the operating positions noted:  
(Refer to Hydraulic and Piping Diagrams, PG. 4).
  - A. Run-Stop Valve (ITEM 72) in STOP position.
  - B. 4-Way Valve (ITEM 68) in UP position.
  - C. Hydraulic Governor Valve (ITEM 71) closed. Turn valve handle clockwise to fully close.
5. Position the downhole tool and ZERO the measuring device counter.
6. Disengage hand brake.
7. Open Hydraulic Governor Valve; turn valve handle counterclockwise until desired wire speed is obtained. Opening or closing the Governor Valve will increase or decrease the rate of fall. Watch wire as it is spooled off and adjust speed as necessary to prevent Spool from overrunning the wire.
8. Depth or amount of wire spooled off will be indicated on the measuring device counter in FEET (METERS). The number of FEET (METERS) indicated will increase as wire is spooled off.
9. System Pressure Gauge should indicate zero system pressure.

### **RETRIEVING WIRE**

1. Make sure hand brake is engaged.
2. Determine approximate wire pull required, select appropriate transmission (XMSN) gear from the table below, and engage transmission.

**FOR SYSTEM AT 2000 PSI**

XMSN GEAR	WIRE PULL-LBS.			WIRE SPEED-FPM		
	CORE	MID-SPOOL	FLANGE	CORE	MID-SPOOL	FLANGE
3 <sup>RD</sup> HIGH	1000	500	375	400	800	1100
2 <sup>ND</sup> (Int.)	1875	900	675	220	440	600
1 <sup>ST</sup> (LOW)	3175	1575	1170	130	260	350
REV.	3800	1900	1400	110	220	290

Mechanical efficiency may vary because of drag on brake bands, sprocket drives, and other mechanical components. Should system pressure tend to exceed 2000 PSI, stop wireline operation and shift transmission to a lower gear. A system pressure of 1500 PSI or less indicates that a higher transmission gear may be selected. Wire speed will tend to increase with a decrease in system pressure.

3. Check the following valves and be certain that they are in the operating positions noted:
  - A. Run- Stop Valve in STOP Position.
  - B. 4-Way Valve in UP Position.
  - C. Hydraulic Governor Valve is fully closed, then opened approximately three turns counter clockwise.
4. Start motor.
5. Move Run-Stop Valve to Run Position.
6. Disengage hand brake.
7. Slowly close Hydraulic Governor Valve. Turn handle clockwise until desired wire speed is obtained. (See table and Note above.)
8. To STOP wireline operation:
  - A. Open Hydraulic Governor Valve until spool stops by turning handle counter Clockwise.
  - B. Engage hand brake.
  - C. Move Run-Stop Valve to STOP position.
  - D. Stop electric motor unless operation was stopped to shift transmission gear.

**EMERGENCY SHUT DOWN**

1. Move Run-Stop Valve to STOP position.
2. Engage hand brake.
3. Open Hydraulic Governor valve.
4. Stop electric motor.



## **RECOMMENDATIONS**

It is recommended to select a transmission gear for either speed or line pull that will permit the wireline retrieval operation with the Hydraulic Governor Valve closed. Opening the Hydraulic Governor Valve permits hydraulic fluid to by-pass the hydraulic motor which results in lower spool RPM.

The Relief Valve should be set so that the line pull will be just slightly over the load that will be handled to insure against the possibility of hanging up in the well and breaking the line when retrieving the line and tools.

Relief Valve may be set as follows:

1. Set hand brake.
2. Shift transmission to 3<sup>rd</sup> (High) gear.
3. Place Run-Stop Valve in STOP position and 4-way valve in UP position.
4. Open Hydraulic Governor Valve approximately three turns.
5. Start electric motor.
6. Move Run-Stop Valve to RUN position.
7. Slowly close Hydraulic Governor valve.
8. Read system pressure indicated on Pressure Gauge.
9. Set Relief Valve by loosening jam nut and turning knurled knob clockwise for more Pressure and counterclockwise for less pressure.

## **MAINTENANCE INSTRUCTIONS**

### **LUBRICATION**

The wireline unit has four grease zerk fittings as follows:

1. Two spool shaft pillow block bearings (Item 38 on Surveyor Assembly Drawing).
2. Brake shaft support (Item 4) and brake shaft and ratchet support (Item 14 on Brake Assembly Drawing).

The pillow block bearings need very little lubrication, because they are sealed bearings and should not be filled to the point of rupturing the seals. One shot of good quality grease from a hand grease gun every eight months should be sufficient.

The brake shaft supports should be lubricated as needed. Once every three months is usually sufficient or normal operating conditions.

### **TRANSMISSION**

The transmission should be checked at the oil plug regularly. Use a good quality SAE90 weight transmission oil.

### **CHAIN TENSION**

Check the chain drive tension between the spool and transmission. Chain should be snug with a small amount of midspan movement/deflection in one span while the other is held taut. To adjust the idler sprocket, loosen nut and side idler sprocket in elongated slot to proper chain tension.

### **HYDRAULIC OIL**

Check frequently the oil level in the tank when the oil is cold and fill tank to about 1/4" above the bottom of filler screen or black line on sight gauge. Use a good quality, non-foaming, anti-wear hydraulic oil. When adding hydraulic oil, be certain the oil is clean and does not contain any solid particles.

Use a premium quality hydraulic oil with a minimum 100 S.U.S. and maximum 500 S.U.S.

Operating. Viscosity.

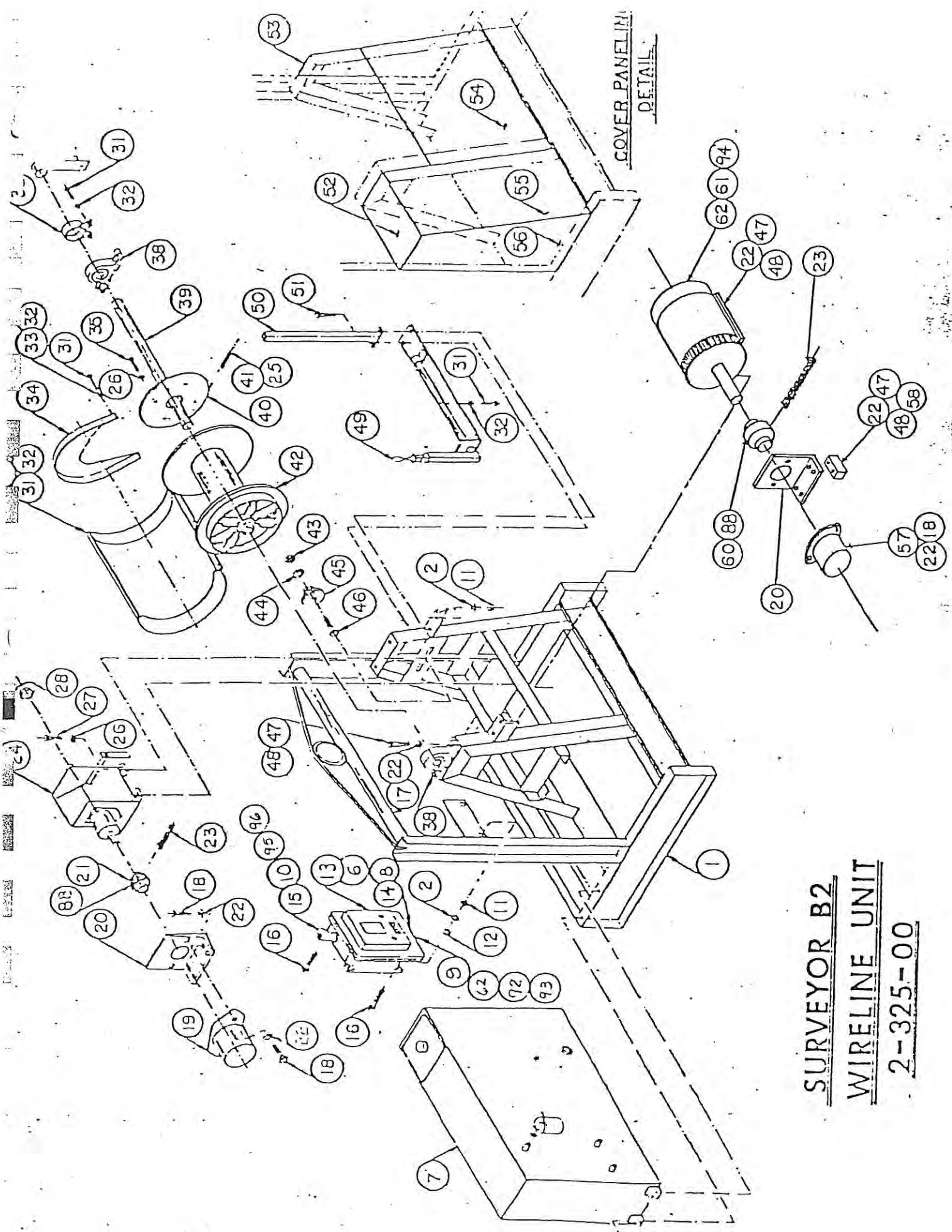
### **HYDRAULIC OIL FILTER**

The hydraulic oil filter has a color coded indicator gauge. The unit must operate in the GREEN area. Should the unit operate in the RED area, this is an indication that the filter element needs to be replaced. Under normal operating conditions, the filter should operate in the GREEN for approximately 300 hours.

**CAUTION**  
**CONSULT FACTORY REGARDING EXTREME OPERATING**  
**TEMPERATURES.**

### **COMPONENTS**

Do not attempt to field repair any hydraulic component. Consult factor for procedures or replacement parts.



SURVEYOR B2  
WIRELINE UNIT  
2-325-00



SURVEYOR B2 WIRELINE UNIT MODEL 325			02-0325-000
ITEM NO.	QUAN.	DESCRIPTION	PART NO.
1	1	FRAME	02-0325-001
2	11	WASHER, Lock-3/8" External	12-0038-E00
3	4	SCREW, Cap -Hex Hd. - 3/8"- 16 NC x 3/4"	10-38C0-034
4	1	GROUND WIRE	
5	3	WIRE JOINTS - 3' (#8, 7 Strand, 600V THN	
6	3	HEATER, Electric	
7	1	HYDRAULIC TANK ASSEMBLY	02-0124-001
8	1	ELEC. FTG. - Bushing, Reducing - 3/4" - 1/2" NPT (RE21)	01-0332-004
9	1	ELEC. FTG. - Bushing, Reducing - 1 1/2" - 3/4" (RE52)	01-0332-011
10	2	ELEC. FTG. - Bushing, Reducing - 1 1/2" - 1" (RE53)	01-0332-012
11	7	NUT, Hex Hd. - 3/8" - 16 NC	1H-38C0-000
12	3	WASHER, Flat - 3/8"	12-0038-F00
13	1	STARTER BOX (Square D)	01-0149-005
14	1	BREATHER - 1/2" (ECD 15)	01-0412-001
15	2	DRAIN SEAL - 1" (EYS 3)	01-0413-001
16	3	SCREW, Cap - Hex Hd. - 3/8" - 16 NC x 1 1/4"	10-38C0-114
17	4	WASHER, Flat - 1/2"	12-0012-F00
18	8	SCREW, Cap - Hex Hd. - 1/2" - 13 NC x 1 1/4"	10-12C0-114
19	1	MOTOR, Hydraulic (HPI M2A-339-12T-20XB)	01-0145-003
20	2	BRACKET, Foot Mounting - Hyd. Motor	01-0153-002
21	1	COUPLING HALF, Chain - Transmission (1" Bore x 1/4 Key)	01-222-004
22	20	WASHER, Lock - 1/2" External	12-0012-E00
23	2	CHAIN, Coupling - Double (5/8 #50 x 16 Pitches)	01-0501-014
24	1	TRANSMISSION (Ramsey IM-CS)	01-0221-001

SURVEYOR B2 WIRELINE UNIT MODEL 325			02-0325-000
ITEM NO.	QUAN.	DESCRIPTION	PART NO.
25	1	CHAIN LINK, Master - # 50	1-0261-002
26	10	WASHER, Lock - 7/16" External	12-0076-E00
27	4	SCREW, Cap - Hex Hd. - 7/16" - 14 NC x 1 1/2"	10-76C0-112
28	1	SPROCKET, Drive	01-0178-010
29	1	GUARD, Splash	02-0111-014
30	2	BRACE, Splash Guard	02-0111-017
31	10	SCREW, Cap - Hex Hd. - 1/4" - 20 NC x 1 1/2"	10-14C0-112
32	10	WASHER, Lock - 1/4" External	12-0014-E00
33	3	NUT, Hex Hd. - 1/2" - 20 NC	1H-12C0-000
34	1	GUARD, Chain	02-0111-002
35	6	Screw, Cap - Hex Hd. - 7/16" - 14 NC x 1"	10-76C0-100
36	1	GUARD, Spool Crank	02-0106-011
37	1	CRANK HANDLE ASSEMBLY - Spool	02-0139-001
38	2	BEARING, Pillow Block	01-0115-002
39	1	SPOOL SHAFT ASSEMBLY	02-0102-004
40	1	SPROCKET, Driven	02-0133-002
41	1	CHAIN, Drive (5/8 x 49 Pitches)	01-0501-004
42	1	SPOOL ASSEMBLY	02-0104-000
43	1	NUT, Hex Hd. - 5/8" - 11 NC	1H-58C0-000
44	2	WASHER, Flat - 5/8"	12-0058-F00
45	1	SPROCKET, Idler	01-0132-002
46	1	SCREW, Cap - Hex Hd. - 5/8" - 11 NC x 2 1/4"	10-58C0-214
47	12	NUT, Hex Hd. - 1/2" - 13NC	1H-12C0-000
48	12	SCREW, Cap - Hex Hd. - 1/2" - 13 NC x 2 1/2"	10-12C0-212

SURVEYOR B2 WIRELINE UNIT MODEL 325			02-0325-000
ITEM NO.	QUAN.	DESCRIPTION	PART NO.
49	1	BRAKE ASSEMBLY	02-0118-000
50	1	POST, Rack Arm	01-0211-001
51	4	SCREW, Cap – Hex Hd. – 3/8” – 16 NC x 1 1/2”	10-38c0-112
52	1	PANEL, Top	02-0325-003
53	1	PANEL, End – Right	02-0325-007
54	1	PANEL, Front – Transmission	02-0325-004
55	1	PANEL, Front – Valve	02-0325-005
56	1	PANEL, End – Left	02-0325-006
57	1	PUMP, Hydraulic – (HPI P2B-254-16-T20-B)	01-0107-002
58	1	SPACER, Motor Bracket	02-0111-019
59			
60	1	COUPLING HALF, Chain – Electric Motor (1 5/8” Bore)	01-0222-001
61	1	MOTOR, Electric – 15 H.P.	01-0249-001
62	1	CONDUIT, Flexible – Explosion Proof – 24” Long	1-0152-001
63	4	FITTING – Adapter, Tubing – Straight – 3/4” NPT	01-0254-021
64	1	VALVE, Diverter	01-0123-015
65	2	FITTING – Adapter, Tubing – 45° – 3/4” NPT	01-0253-017
66	2	FITTING – Tee, 3/4” NPT – 3000#	
67	1	FITTING – Elbow, Straight – 3/4” NPT – 3000#	
68	1	VALVE, 4-way	01-0123-014
69	1	FITTING – Ell, Street – 90° 3/4” NPT – 3000#	
70	3	FITTING – Nipple, Close – 3/4” NPT- 3000#	
71	1	VALVE, Hydraulic Governor – (3/4” Parker MV-1200-S)	01-0127-001
72			

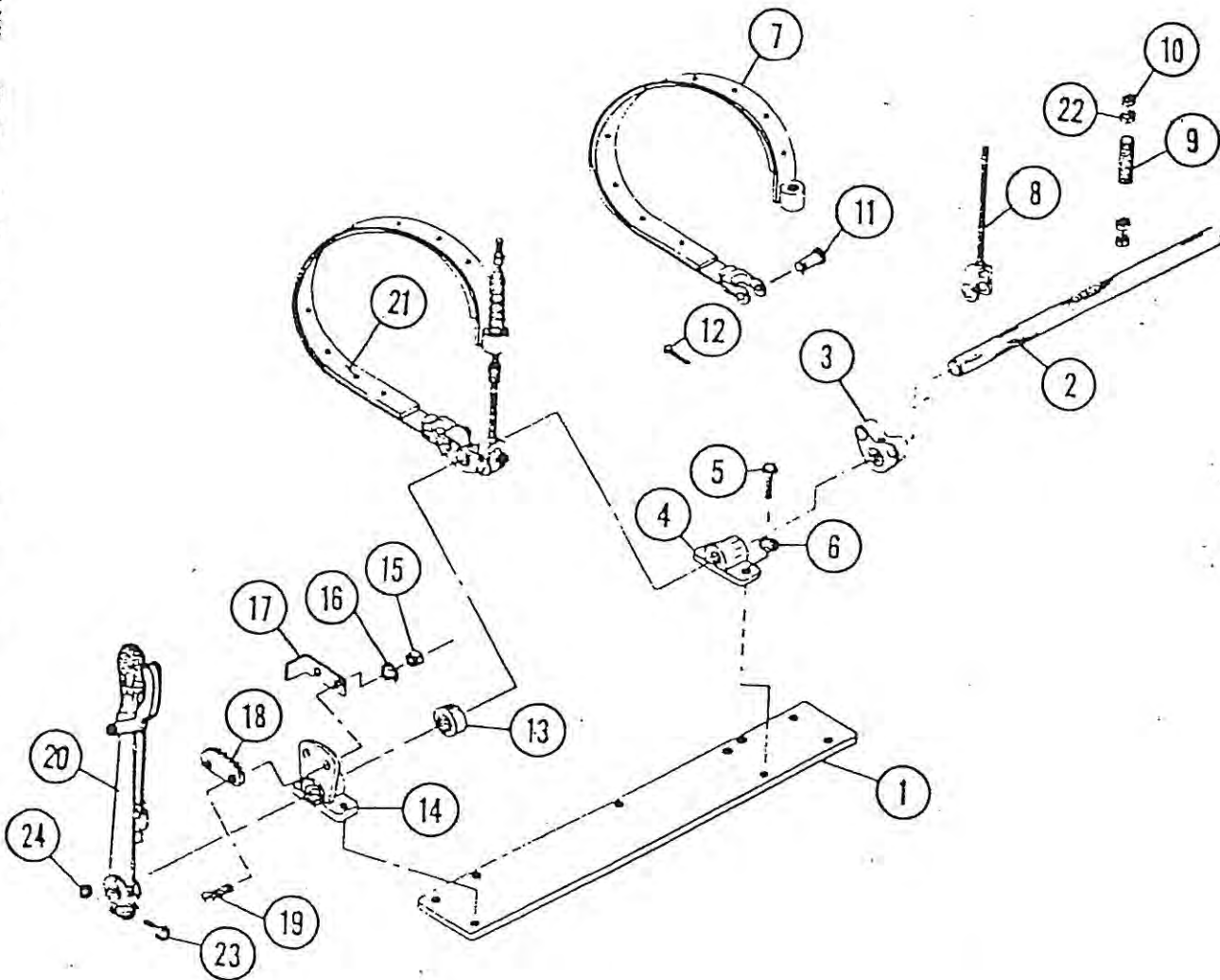
SURVEYOR B2 WIRELINE UNIT MODEL 325			02-0325-000
ITEM NO.	QUAN.	DESCRIPTION	PART NO.
73	1	FITTING – Nipples, Long – ¼” NPT x 2” – 3000#	
74	1	FITTING – Ell, 90° - ¼” NPT – 3000#	
75	1	FITTING – Nipple, Long- ¾” NPT x 2” – 3000#	
76	1	FITTING – Nipple, Long – ¾” NPT x 6” – 3000#	
77	1	GAUGE, Pressure	01-0114-002
78	1	HOSE, Intake – LP – Hyd. Tank to Hyd. Pump -	
		SAE 100 R1 1” x 34” – 1 NPT x 1” JIC Swivel	01-0151-228
79	1	HOSE, Supply – HP – Hyd. Pump to Diverter Valve	
		SAE 100R2 ¾” x 30” – ¾ NPT x ¾” JIC Swivel	01-0151-414
80	1	HOSE, Return – LP – Hyd. Governor to Filter -	
		SAE 100R1 ¾” x 21 – ¾” NPT x ¾” JIC Swivel	01-0151-415
81	1	HOSE, Supply – HP – 4-way Valve to Hyd. Motor-	
		SAE 100R2 ¾” x 24” – ¾” NPT x ¾” JIC Swivel	01-0151-107
82	1	HOSE, Supply – HP – 4-way Valve to Hyd. Motor-	
		SAE 100R2 ¾” x 22” – ¾” NPT x ¾” NPT x JIC Swivel	01-0151-416
83	1	HOSE, Vent – LP - 4-way Valve to Tank-	
		SAE 100R1 ¼” x 34” – ¼” NPT x ¼” JIC Swivel	01-0151-417
84	1	HOSE, Return – LP – 4-way Valve to Tank-	
		SAE 100r1 ¾” x 34” – ¾” NPT x JIC Swivel	01-0151-109
85	1	HOSE, Return – LP- Relief Valve to Tank-	
		SAE 100R1 ¾” x 28” – ¾” NPT x ¾” JIC Swivel	01-0151-100
86	31	SCREWS, Hex-Head – Self Tapping, Lock	





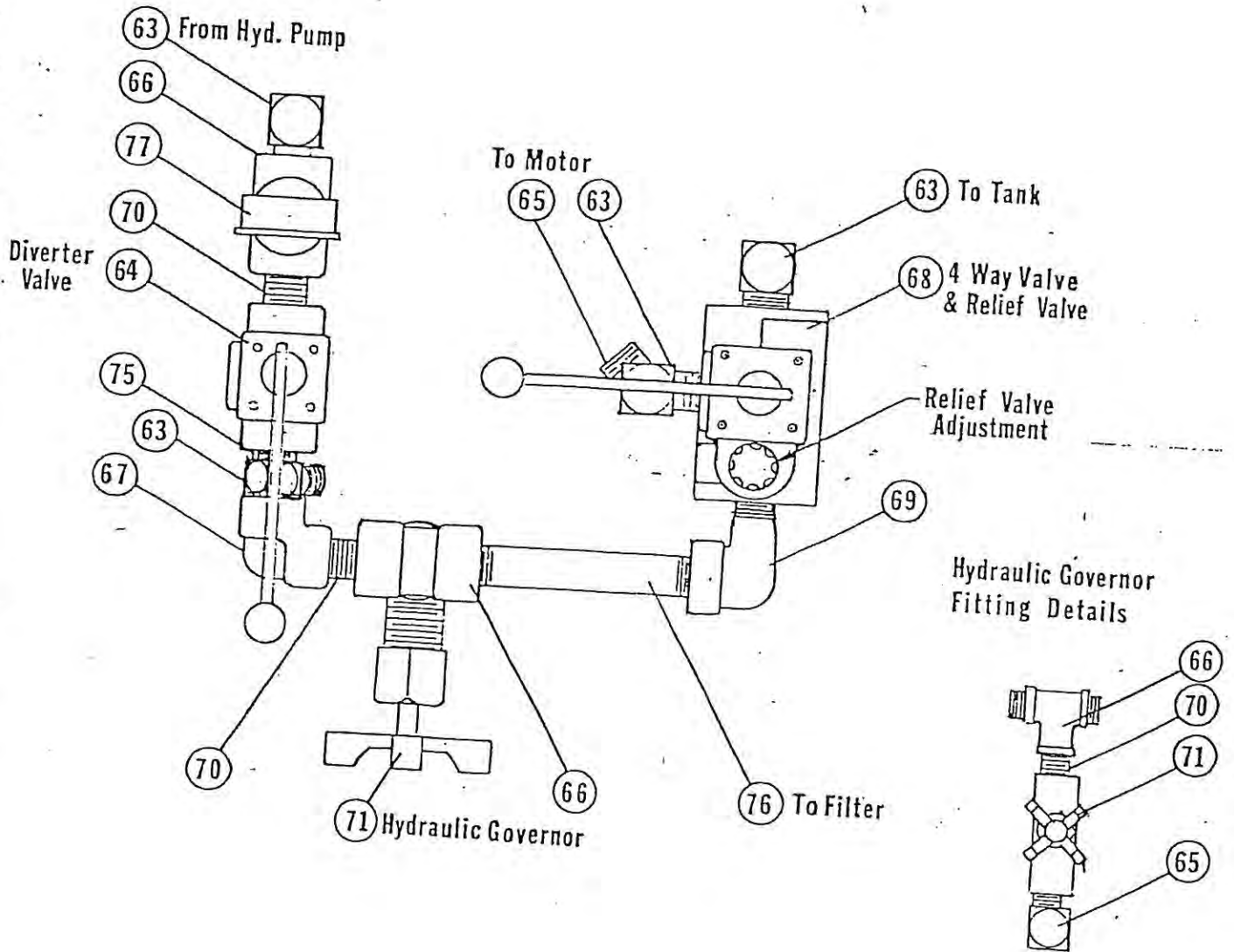
# BRAKE ASSEMBLY

2-118-00



## Brake Assembly

ITEM NO.	QUAN.	DESCRIPTION	PART NO.
1	1	Base Plate	2-118-01
2	1	Brake Shaft Including Keys	2-118-02
3	2	Bell Crank	1-171-01
4	1	Brake Shaft Support	1-170-01
5	4	3/8" – 16 Hex Head Bolt x 1 1/2" Long	
6	4	3/8" Internal Lock Washer	
7	2	Brake Band with Lining (Includes Items 11, 12, & 21)	2-113-01
8	2	Brake Adjustment Rod (Includes Items 11 & 12)	2-118-03
9	2	Band Adjustment Spring	1-183-01
10	6	1/2" – 13 Hex Head Nut	
11	4	Clevis Pin 1/2" x 1 5/8" Long	
12	4	Cotter Pin	
13	1	Shaft Collar	1-185-01
14	1	Brake Shaft & Ratchet Support	1-172-01
15	2	5/16" – 18 Hex Nut	
16	2	5/16" Internal Lock Washer	
17	1	Stop for Brake Lever	1-187-01
18	1	Ratchet	1-169-01
19	2	5/16" – 18 NC Flat Head Machine Screw 1 1/4" Long	
20	1	Brake Level Assembly	1-191-03
21	2	Brake Lining with Rivets	1-116-02
22	2	Spring Guide Nut 1/2" – 13 NC	1-192-01
23	1	Hex Head Cap Screw 3/8" – 16 NC x 1 3/4"	
24	1	Nut 3/8" – 16 NC	



PIPING DIAGRAM

