



ALL INFORMATION CONTAINED HEREON SHALL BE CONSIDERED PROPRIETARY TO HLS AND THE RECIPIENT THEREOF AGREES NOT TO DISCLOSE SAID INFORMATION TO ANY PARTY NOT AUTHORIZED BY HLS AND NOT TO USE OR TO DUPLICATE SAID INFORMATION FOR ANY PURPOSE EXCEPT AS SPECIFIED BY HLS WITHOUT WRITTEN PERMISSION FROM HLS.

APPROVED	REC	12-8 93	MANDREL ASSY - UNIVERSAL PAD - MSPL-A		
ENGR CK	AKH	11/30/93			
DESIGNED					
DRAFT CK	FHM	11-29 -93			
DRAWN BY	PM	11-23 -93			
MATL CHK			SHEET 1 OF 5	CHG B	3.33175
MFG CK					

## CHANGE HISTORY

RFA03126

### PARTS LIST:

LOCATION 57 - WAS: 3.02596  
NOW: 3.11977

LOCATION 69 - WAS: 3.02599  
NOW: 3.23001

### REASON FOR CHANGE:

3.02596 BRACKET DESIGNED FOR BOURNS POT, WE ARE CURRENTLY USING DUNCAN POTS, THIS REQUIRES 3.11977 BRACKET. EITHER ACTUATING SLEEVE WILL WORK (3.02599 OR 3.23001) BUT 3.23001 IS LESS EXPENSIVE TO MANUFACTURE.

## DRAWING NOTATION

1. INSTALL THE CONTACT FINGER (LOC 3) SO THAT IT DOES NOT CROSS THE KEY SLOT.
- N2. QUANTITY - USE AS REQUIRED.
3. REPLACE WITH OIL FILL TUBE (LOC 130) TO EVACUATE AND FILL WITH OIL. USE GAGE ROD (LOC 128) TO CHECK FOR PROPER FILL LEVEL. PLACE GAGE ROD THROUGH THE SMALL HOLE IN THE CYLINDER (LOC 34) REPLACE THE PLUG (LOC 32) AND SEND THE FILL TUBE AND GAGE ROD

WITH THE MANDREL.

4. INSTALL THE CASE (LOC 47) SO THAT THE ACCESS PORT IS OVER THE CALIPER POT ADJUSTING NUTS (LOC 50).
  5. POTENTIOMETER SETTING:
    - A. REMOVE ACCESS PORT PLUG (LOC 45).
    - B. MEASURE RESISTANCE BETWEEN PINS 8 & 9 ON J1.
    - C. WITH ARMS FULLY CLOSED ADJUST THE POT TO READ 400 OHMS PLUS/MINUS 100 OHMS.
    - D. TIGHTEN THE ADJUSTING NUTS AND REPLACE THE ACCESS PLUG.
  6. USE TEFLON TAPE ON THE PIPE THREADS.
  7. USE SHRINK TUBING ON THE SOLDERED ENDS OF THE CONNECTOR (LOC 110). WHEN WIRING THE CONNECTOR LEAVE SEVERAL INCHES OF WIRE TO ACCESS THE CONNECTOR IN THE FUTURE. TWIST AND BUNDLE THE WIRE INTO THE CAVITY ON THE HOSE (LOC 86).
  8. PREASSEMBLE LOCATIONS 115, 116, 117, 118, 120, & 121 THEN INSTALL AS A UNIT.
  9. ALL WIRES TO BE 22 AWG UNLESS OTHERWISE SPECIFIED.
  10. PRELOAD SPRING BY ROTATING LOC 66, 4 TURNS CCW (LOOKING DOWNHOLE) PAST PAD CLOSED.
  11. INSTALL LOC 87 AND BOTTOM OUT THEN BACK OUT 2-1/2 TURNS TO INSTALL LOC 89.
- SEE WIRING DIAGRAM FOR ADDITIONAL NOTES.

## P A R T S L I S T

LOC	COMPONENT PART	TRC	QTY	DESCRIPTION	( DIMENSION-A	DIMENSION-B I
J0001	3.30011		1	HEAD ASSY - CONNECTOR - 37 SOCKET - 3-5/8 DITS STANDARD HARDWARE		
J0002	3.35316		1	CONNECTOR - DEUTSCH - DS00-37S-395 - MODIFIED		
J0003	3.35316		1	CONNECTOR - DEUTSCH - DS00-37S-395 - MODIFIED		
J0004	.07764		1	CONNECTOR - DAM15S - ITT CANNON		
J0005	3.35316		1	CONNECTOR - DEUTSCH - DS00-37S-395 - MODIFIED		
J0006	3.35316		1	CONNECTOR - DEUTSCH - DS00-37S-395 - MODIFIED		
J0007	3.29874		1	HEAD ASSY - CONNECTOR - 19 PIN - 3-5/8 DITS STANDARD HARDWARE		
J0008	.77273		1	CON 9 PIN D-SUB (CANNON DEM9S)		
P0001	3.35311		1	PRESSURE HEAD - 37P - BI-DIRECTIONAL - MODIFIED		
P0002	.07763		1	CONNECTOR - DAM15P - ITT CANNON		
P0003	3.35311		1	PRESSURE HEAD - 37P - BI-DIRECTIONAL -		

LOC	COMPONENT PART	TRC	QTY	MODIFIED DESCRIPTION
P0004	.18899		1	CONNECTOR - DEM-9P - CANNON
1	3.29996		1	PROTECTOR - THREAD - FEMALE - 3-1/4-6 STUB ACME - 2G - 3-5/8 DITS STANDARD HARDWARE
2	.26807		1	O-RING - 568-225 - SPEC H-250-563.01 - 70D - 1-7/8 X 2-1/8 X 1/8
3	3.33952		1	CONTACT - SPRING - FINGER - ADAPTER SUB
4	.26605		3	PIN - SPIROL - 1/8 X 3/8 - STNLS - HEAVY DUTY
5	3.29989		1	RING - SNAP - 3-5/8 DITS STANDARD HARDWARE
6	3.29988		1	RING - SPLIT - BEVELED - 3-5/8 DITS STANDARD HARDWARE
7	3.29987		1	RING - THREADED - 3-1/4-6 STUB ACME - - 2G - 3-5/8 DITS STANDARD HARDWARE
8	.27883		1	O-RING - VITON - 70D - 2-5/8 X 2-7/8 X 1/8 - 568-231 - GREEN - AS568-231-70VTG - APPLE
9	3.00164		1	COLLAR - DITS - UPPER - UNITIZED FORXO
10	.00350		5	SCREW - FH MACH - 1/4 20NC X 3/8 - STNLS - SLT
11	70.44103		4	SCREW - FIL HD MACH - #4-40NC X 3/16 - BR - NI PL
12	3.30032		1	RETAINER - SPRING - 3-5/8 DITS STANDARD HARDWARE
13	3.32222		1	SPRING - CHASSIS - ADAPTER - 3-5/8 DITS STANDARD HARDWARE - SPEC
14	3.29990		1	RING - SPLIT - SPACER - 3-5/8 DITS STANDARD HARDWARE
15	3.30035		1	PIN - ALIGNMENT - REMOVABLE - 3-5/8 DITS STANDARD HARDWARE
16	.27212		1	PIN - SPIROL - HEAVY DUTY - 1/8 X 7/8
19	70.70168		10	SCREW - FH MACH - #10-32UNF X 5/16 - STNLS
20	3.29985		37	CONTACT ASSY - SOCKET - .094 DIA - 20 GA - SPEC
21	70.44290		4	SCREW - FH MACH - #8-32NC X 1/2 - STNLS
22	3.33313		1	RING - RETAINER - 37 PIN PRESSURE HEAD - MSFL-A
23	.05523		1	SCREW - BIND HD - #4-40NC X 3/16 -

LOC	3.33175	CHG B	SHEET	1	PAGE	4	(	DIMENSION-A	DIMENSION-B	L
LOC	COMPONENT PART	TRC	QTY	STNLS - SLT	DESCRIPTION					
24	3.10558		1	EXTENSION - ACTUATION PISTON - UMBILICAL - MSFL						
27	3.10527		1	FITTING - HOSE - UMBILICAL - MSFL						
29	.21630		6	SCREW - BIND HD - #4-40NC X 5/16 - STNLS - SLT						
30	.22338		4	O-RING - 568-338 - NITRILE - 90 DURO - 3-1/8 X 3-1/2 X 3/16 - SPEC 770.10221						
31	3.33173		1	COUPLING - CYLINDER TO DITS JOINT - UNITIZED - MSFL-A - STAND ALONE						
32	3.33812		1	CAP - OIL FILLER - M 407 - PRESSURE BALANCED DUAL INDUCTION TIP - MSFL-A						
33	.22012		2	O-RING - 568-012 - NITRILE - 90 DURO - 3/8 X 1/2 X 1/16 - SPEC 770.10221						
34	3.23005		1	CYLINDER - PRESSURE EQUALIZING - M322 MANDREL/DENSITY COMB TOOL						
35	.22210		1	O-RING - 568-210 - NITRILE - 90 DURO - 3/4 X 1 X 1/8 - SPEC 770.10221						
36	3.23007		1	TUBE - WIRING - PISTON - M322 MANDREL/ DENSITY COMB TOOL						
37	.33214		1	T-RING - FLUOROELASTOMER - TFE BACKUP - 121-116-731-0210 - GREENE TWEED						
38	.32891		1	T-RING ASSY - 3.250 BORE X .366 - GROOVE - PISTON TYPE						
39	3.23004		1	PISTON - PRESSURE EQUALIZING - MANDREL/DENSITY COMB TOOL						
40	.33213		1	RING - LOW FRICTION - RO6W00750-16-03 - SLYDRING						
41	.32890		1	RING - SLIDE - WEAR - 3.250 BORE X 3/8 LG - PISTON TYPE						
42	.22334		2	O-RING - 568-334 - NITRILE - 90 DURO - 2-5/8 X 3 X 3/16 - SPEC 770.10221						
43	.19860		8	STANDOFF - 0.750 - 3/16 HEX - #4-40 INT & EXT - RAF ELECTRONIC HDWE 4509-440-B-O						
44	70.42090		2	RING - RETAINING - N5000-100 - INT - TRUARC						
45	3.11962		2	PLUG - ACCESS PORT - M123 DENSITY MANDREL						
46	.22117		2	O-RING - 568-117 - NITRILE - 90 DURO - 13/16 X 1 X 3/32 - SPEC 770.10221						
47	3.23970		1	CASE - UPPER - M320 TWO PAD POWERED MANDREL						
48	3.02600		1	POWER ASSY - UNIVERSAL MANDREL -						

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APPROVED	REC	12/8-93	MANDREL ASSY - UNIVERSAL PAD - MSFL-A		
ENGR CK	BRH	11/30/93			
DESIGNED					
DRAFT CK	FHM	11-29-93			
DRAWN BY	PM	11-23-93			
MATL CHK					
MFG CK			SHEET 2 OF 5	CHG B	3.33175

49	3.33661	MSFL-A	4 BOOT - SET - CONNECTOR - FEMALE - .325 OD - .062 DIA WIRE
50	70.33061		2 NUT - HEX - 8-32NC - PL SPEC 70.33019
51	.31022		E10047 GENERAL MOTORS 103092
52	70.43418		1 SCREW - SET - #8-32NC X 1 - STNLS - CUP - SLT
53	70.58942		6 SCREW - HEX SOC - #6-32NC X 1/2 - SPEC 70.43270
			6 WASHER - LOCK - #6 - STL - PL SPEC 70.59034
54	3.23002		E10047 GENERAL MOTORS 106495
55	.13072		1 HOUSING - BEARING - M322 MANDREL/DENSITY COMB TOOL
56	.22235		4 BEARING - BALL - 7205 BYG - SGL ROW - ANG CONT - DUPLEX MTG - SKF
57	3.11977		2 O-RING - 568-235 - NITRILE - 90 DURO - 3-1/8 X 3-3/8 X 1/8 - SPEC 770.10221
58	.13076		1 BRACKET - POTENTIOMETER MOUNT - M123 DENSITY MANDREL
			1 RING - RETAINING - N5000-206-W - INT - TRUARC
59	.13075		1 WASHER LOCK BEARING W-05
60	.13074		1 NUT - LOCK - BEARING N-05
61	3.11909		8 SCREW - SET - 7/8-14 UNF-2A - MSFL-A
62	707.99022		1 POTENTIOMETER - CALIPER - 10K - MSFL-A
63	.14741		1 SPRING - COMPRESSION - 0.300 OD X .038 WIRE X 2 IN. - 9-1/2 LB/IN. - MUSIC
			WIRE - LEE SPRING CO - LC-038D-17MW
64	70.58791		1 WASHER - FLAT - #10 - STNLS
65	70.35675		1 PIN - COTTER - 3/64 X 1/2 - STL - PL

LOC	COMPONENT PART	TRC	QTY	DESCRIPTION	( DIMENSION-A	DIMENSION-B L
66	3.11974		1	SHAFT - SPRING LOADING - M123 DENSITY MANDREL		
67	70.45585		3	SCREW - BIND HD - #4-40NC X 1/4 - BRASS - NI PL		
68	3.33312		1	CASE - LOWER - MANDREL SECTION - MSFL-A		
69	3.23001		1	SLEEVE - ACTUATING SPRING - M322 MANDREL/DENSITY COMB TOOL		
70	3.24687		1	SPRING - FORXO/DENSITY MANDREL		
71	.23537		2	SCREW - FH MACH - 1/4-20NC X 5/8 - STNLS - 82 DEG		
72	.13077		1	PIN - DOWEL - .1562/.1564 DIA X 1.00 LG - ALLOY STEEL - HTTR & GND - RC 38-45		
73	3.11975		1	SCREW ASSY - BALL - M123 DENSITY MANDREL		
74	3.11979		1	FLANGE - ADAPTER - BALL SCREW - M123 DENSITY MANDREL		
75	70.44755		1	SCREW - SET - #8-32NC X 3/16 - CUP PT - HEX SOC - PL		
76	70.43351		2	SCREW - HEX SOC - 1/4-20NC X 3/4 - SPEC 70.43270		
77	3.10514		1	UMBILICAL ASSY - HYBRID - MSFL		
78	3.29042		1	CAP - OIL FILLER - M407 PRESSURE BALANCED DUAL INDUCTION TIP		
79	3.12987		1	RING - CENTRALIZING - PISTON ACTUATION - M123 DENSITY MANDREL		
80	3.23963		1	PISTON - ACTUATION - M320 FORXO POWERED MANDREL		
81	.22335		1	O-RING - 568-335 - NITRILE - 90 DURO - 2-3/4 X 3-1/8 X 3/16 - SPEC 770.10221		
82	.13756		1	RING - BACK UP - TEFLON - SPIRAL - 2107-335 - 3-1/8 X 2-3/4		
83	3.33123		1	BODY - ARM SECTION - MSFL-A		
84	.22113		2	O-RING - 568-113 - NITRILE - 90 DURO - 9/16 X 3/4 X 3/32 - SPEC 770.10221		
85	3.39391		2	KIT - FITTING - 5/8-18 UNF - 2A TO #5 FLEXIBLE HOSE - REUSEABLE FITTING - #5 HOSE - M365 DENSITY MANDREL		
87	3.33030		1	ROD - ACTUATION - MSFL-A - STAND ALONE		
88	3.09487		1	ARM - STABILIZING - 2 PAD MECH POWERED MANDREL - M91		
89	3.09517		2	SHAFT - CROSS MEMBER - 2 PAD MECH POWERED MANDREL - MOD 91		

LOC	COMPONENT PART	TRC	QTY	DESCRIPTION
90	70.42181		4	RING - RETAINING - 5100-50 - EXT E10407 TRUARC (WALDES TRUARC, IN 5100-50
91	3.09524		2	LINK - PIVOT - 2 PAD MECH POWERED MANDREL - MOD 91
92	3.09518		2	PIN - PIVOT LINK - 2 PAD MECH POWERED MANDREL - MOD 91
93	3.09530		1	LINK - DRAG - 2 PAD MECH POWERED MANDREL - MOD 91
94	.03256		2	SCREW - CAP SOC HD - 5/16-18NC X 3/4 - STNLS - ALN
95	3.09520		1	EXTENSION - SHORT HALF - PIVOT LINK - 2 PAD - MECH POWERED MANDREL - M91
96	.21338		1	PIN - DRIV-LOK - 3/8 X 1 - TYPE E
97	3.09493		1	ARM - ACTUATING - M91 2 PAD MECH PWRD MANDREL
98	.08369		2	PIN - DRIV-LOC - 5/16 X 5/8 - TYPE B - - STL
99	3.09512		1	PAD - WEAR - WEAR SHOE - 2 PAD MECH POWERED MANDREL - MOD 91
100	.08099		1	PIN - DRIV-LOK - 5/16 X 1-1/4 - TYPE E - STL - CD PL
101	3.34237		1	ARM - STABILIZING - UNITIZED FORXO PAD
102	3.51388		1	CLAMP - CABLE - UNITIZED FORXO
103	70.79075		2	SCREW - HEX SOC - #10-32 X 3/8 - STNLS
104	3.34244		1	LINK - ACTUATING ARM - UNITIZED FORXO PAD
105	3.34240		2	PIN - THREADED - ACTUATING LINK - UNITIZED FORXO
106	3.11274		1	ARM - ACTUATING - MSFL
107	.31725		1	RING - RETAINING - EXT - .810 FREE DIA X .042 THICK
108	3.34209		1	COLLAR - THREADED - UMBILICAL - UNITIZED FORXO PAD
109	3.00172		2	RETAINER - WEDGE - UNITIZED FORXO PAD
110	3.00483		1	HEAD - PRESSURE - 9 PIN - UMBILICAL - SWIVEL - PMDT-A
111	.22016		1	O-RING - 568-016 - NITRILE - 90 DURO - 5/8 X 3/4 X 1/16 - SPEC 770.10221
112	.22114		1	O-RING - 568-114 - NITRILE - 90 DURO - 5/8 X 13/16 X 3/32 - SPEC 770.10221
113	3.11258		2	SCREW - SHOULDER - PAD MOUNTING - MSFL
114	707.09866		1	MSFL PAD ASSY
				TESEL P/N: L102-0010-D
115	3.33650		1	PC BRD ASSY - PREAMPLIFIER - MSFL-A

LOC	3.33175	CHG B	SHEET	2	PAGE	4	(	DIMENSION-A	DIMENSION-B	L
LOC	COMPONENT PART	TRC	QTY	PAD	DESCRIPTION					
116	3.33488		1		CANNISTER - PREAMP - MSFL-A					
117	3.40124		5		FEEDTHRU - CONNECTOR - METAL/CERAMIC - K20					
					OPTIONAL REPLACEMENT K-20 PLASTIC					
					3.40116					
118	3.40123		5		SOCKET - CONNECTOR - K20					
119	70.43273		2		SCREW - HEX SOC - 1/4-20NC X 3/8 - STNLS					
120	3.11271		1		PLATE - PAD MOUNTING - MSFL					
122	.07445		2		SCREW - LOCK - MALE - D-20419 - CANNON					
123	.07446		2		SCREW - LOCK - FEMALE - D-20418-2 - CANNON					
125	70.43281		6		SCREW - HEX SOC - #10-32NF X 5/16 - SPEC 70.43270					
126	.14042		4		WASHER - FLAT - 1/2 - STNLS					
127	.07656		2		LUG - TERMINAL - 1485-4 - HH SMITH					
128	3.23046		1		ROD - GAGE - PRESSURE BALANCE PISTON - M322 DENSITY COMBINATION TOOL					
129	.22231		2		O-RING - 568-231 - NITRILE - 90 DURO - 2-5/8 X 2-7/8 X 1/8 - SPEC 770.10221					
130	3.29043		1		TUBE - OIL FILLER - M407 PRESSURE BALANCED DUAL INDUCTION TIP					
131	770.10513				PROC - TEST - MSFL MANDREL					
132	3.33310		1		WIRE WAY WELDMENT - MANDREL SECTION - MSFL-A					
133	3.33302		1		BULKHEAD - PRESSURE - MSFL-A					
136	3.35341		1		HOLDER - CONNECTOR - DEUTSCH					
137	.26606		5		PIN - SPIROL - 1/8 X 1/4 - STNLS - HEAVY DUTY					
138	.30544		2		PIN - SPIROL - 1/16 X .187 - HEAVY DUTY - STNLS					
139	.30542		1		RING - RETAINING - INTERNAL - 2.910 FREE DIA X .093 THK - STNLS					
140	.29795		4		SCREW - BIND HD - #4-40NC X 1/4 - STNLS - SLT					
141	3.35412		1		ADAPTER - ARM BODY - 19 PIN DITS CONNECTOR					
142	3.39822		1		PIN - DOWEL - .400 LG					
143	3.33316		1		COUPLING - SPLIT RING - THREADED - 3-1/8 - 6 STUB ACME - MSFL-A					
144	70.43274		2		SCREW - HEX SOC - #8-32NC X 5/8 - STNLS					
145	.25231		1		O-RING - 568-231 - FLUOROC - 95 DURO -					



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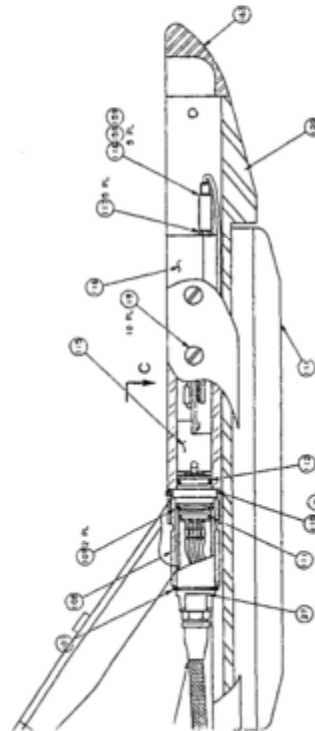
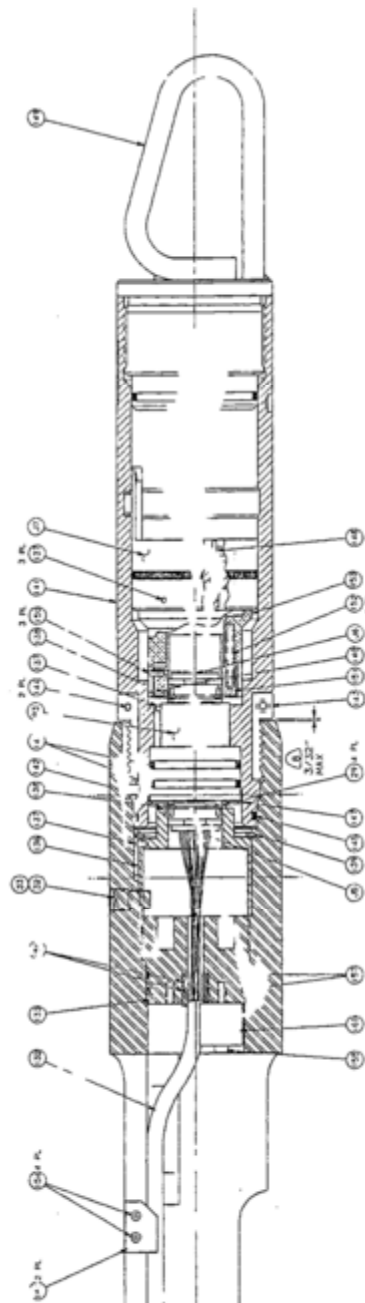
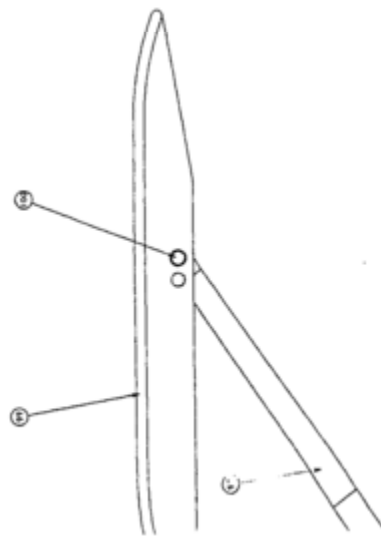
APPROVED	REC	12-8-93	MANDREL ASSY - UNIVERSAL PAD - MSFL-A		
ENGR CK	AKH	11/30/93			
DESIGNED					
DRAFT CK	FHM	11-29-93			
DRAWN BY	PM	11-23-93			
MATL CHK			SHEET	CHG	
MFG CK			3 OF 5	B	3.33175

146	.25225	2-5/8 X 2-7/8 X 1/8 - SPEC 770.10220
147	.30543	4 O-RING - 568-225 - FLUOROC - 95 DURO - 1-7/8 X 2-1/8 X 1/8 - SPEC 770.10220
148	3.29869	1 RING - RETAINING - INTERNAL - 2.188 HOUSING DIA - MEDIUM DUTY - STNLS
149	3.29994	19 CONTACT ASSY - PIN - .094 DIA - 20 GA - SPEC
150	.26605	1 PROTECTOR - THREAD - MALE - 3-1/4-6 STUB ACME - 2G - 3-5/8 DITS STANDARD HARDWARE
151	3.51407	3 PIN - SPIROL - 1/8 X 3/8 - STNLS - HEAVY DUTY
152	.34484	1 SLIDE - CONNECTOR ADAPTER - DEUTSCH/DITS
153	3.51408	6 SPRING - COMPRESSION - 0.180 DIA X 2.000 LG - C0180-032-2000-S - STNLS - ASSOCIATED SPRING
154	.78549	1 ADAPTER - CONNECTOR - DEUTSCH/DITS
155	.78899	4 SCREW - CAP - SKT HD - #6-32UNC X 3/8 STNLS
156	.25014	1 SCREW - CAP - SKT HD - #10-32 X 1 1/4 STNLS
157	.25137	2 O-RING - 568-014 - FLUOROC - 95 DURO - 1/2 X 5/8 X 1/16 - SPEC 770.10220
158	3.10544	2 O-RING - 568-137 - FLUOROC - 95 DURO - 2-1/6 X 2-1/4 X 3/32 - SPEC 770.10220
159	3.40122	5 SLEEVE - TEFLON - .078 - WIRE DIA - K-16/K-20 BOOT
160	3.33303	5 BOOT - CONNECTOR - .052 HOLE DIA - K20 1 HOLD DOWN - WIRE WAY - MSFL-A

LOC	3.33175	CHG B	SHEET	3	PAGE	2	(	DIMENSION-A	DIMENSION-B	L
LOC	COMPONENT PART	TRC	QTY	DESCRIPTION						
161	3.33305		2	RETAINER - WIRE WAY - MSFL-A						
162	3.33311		1	HOSE ASSY - WIRE WAY - MSFL-A						
163	3.11904		1	TIP - WIRE PROTECTOR - PAD - MSFL-A						
165	.26878		8	SCREW - FH MACH - 5/16-18NC X 5/8 - STNLS - ALN						
167	.21564	N2		TUBING - HEAT SHRINK - 3						
				ID EXP 3.000 - ID REC 2.600 - 1.6:1 - SPEC 770.10225						
168	.83738	N2		TUBING - HEAT SHRINK - 3/8 -						
				ID EXP 0.375 - ID REC 0.225 - 1.6:1 - SPEC 770.10225						
169	.80928	N2		OIL, HYDRAULIC, TYPE B						
				(TEXACO CAPELLA WF68)						
207	3.30483		1	BUSHING - POTENTIOMETER - M322A						
208	3.30398		1	MANDREL-DENSITY COMBINATION-37 PIN						
209	70.43299		1	SHOE - POTENTIOMETER - M322A MANDREL-DENSITY COMBINATION-37 PIN						
			1	SCREW - HEX SOC - #10-32NF X 3/4 - STNLS						
210	707.11412	OPTN		PAD ASSY - SLIMHOLE - MSFL						
				TESEL P/N: L102-0048-2						

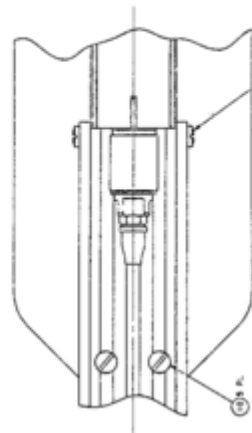
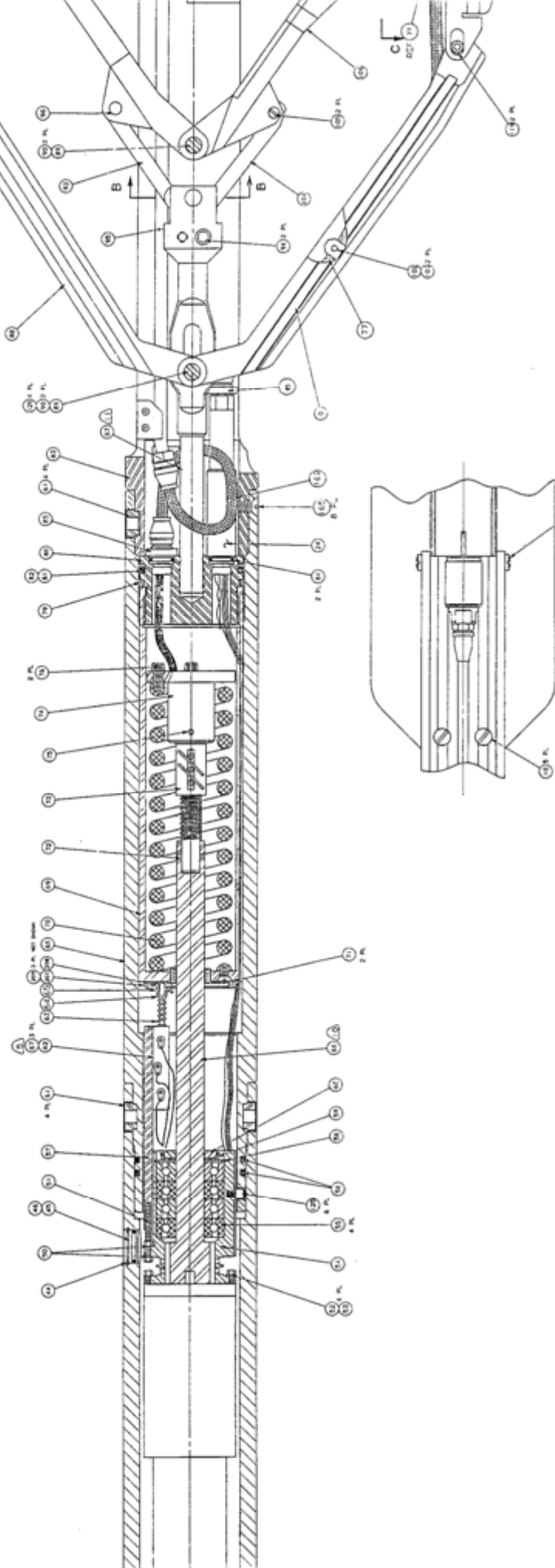
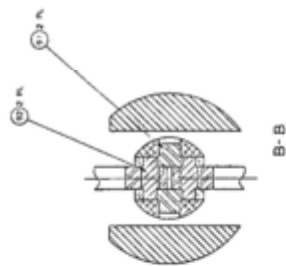
END OF PRINT

1 2 3 4 5 6 7 8



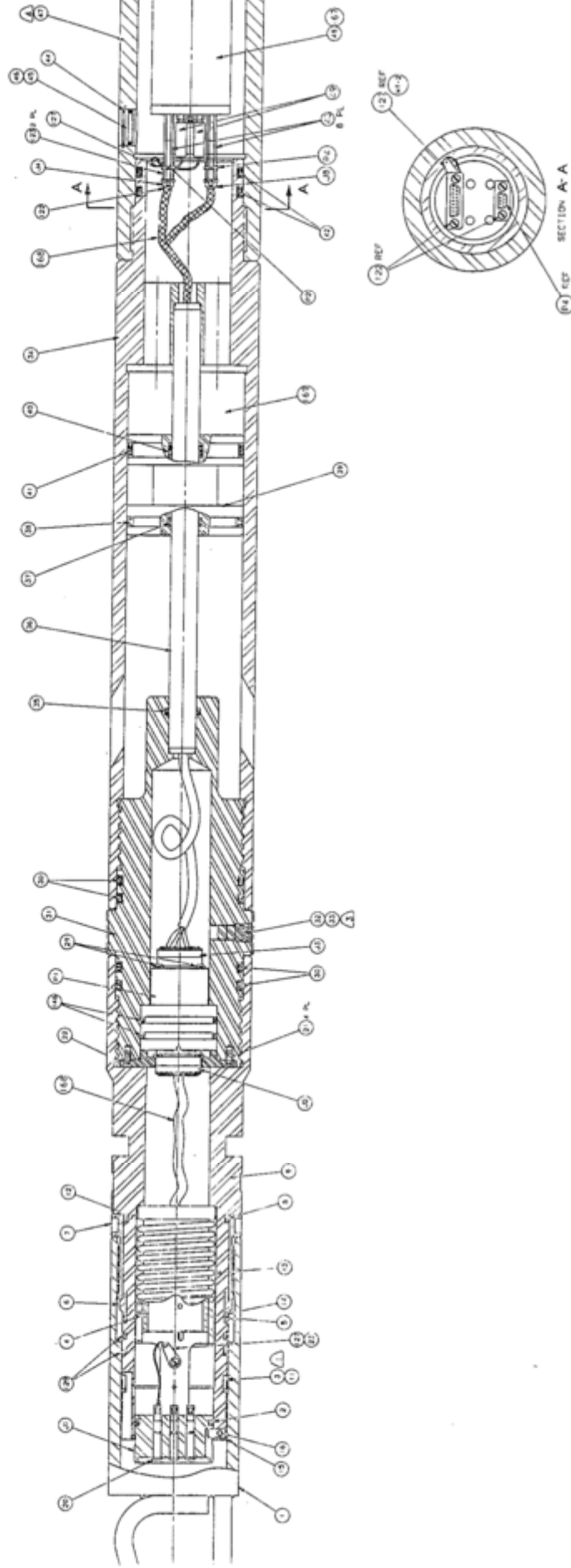
MANDREL ASSY -		3.33175	1
UNIVERSAL PAD -		3.33175	1
MSFL-A		3.33175	1
REV		1	1
DATE		10/1/75	1
BY		10/1/75	1
CHKD		10/1/75	1
APP'D		10/1/75	1
E-200-217-200		10/1/75	1
3.33175		10/1/75	1

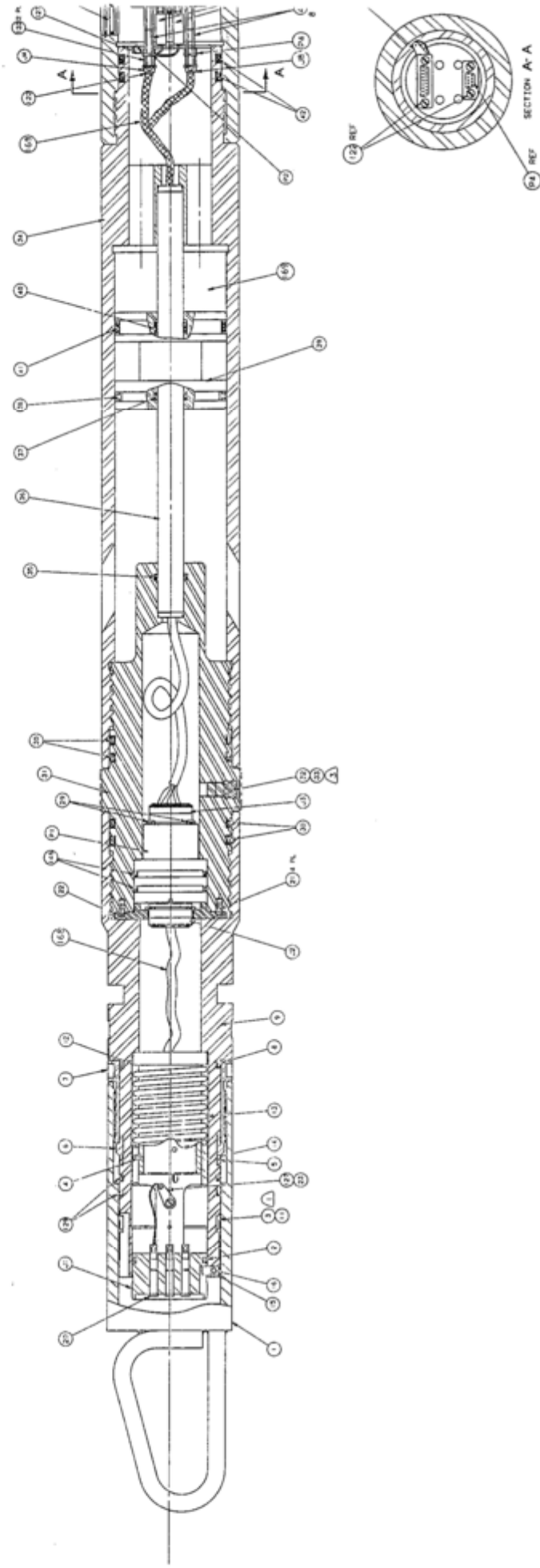
17 16 15 14 13 12 11 10

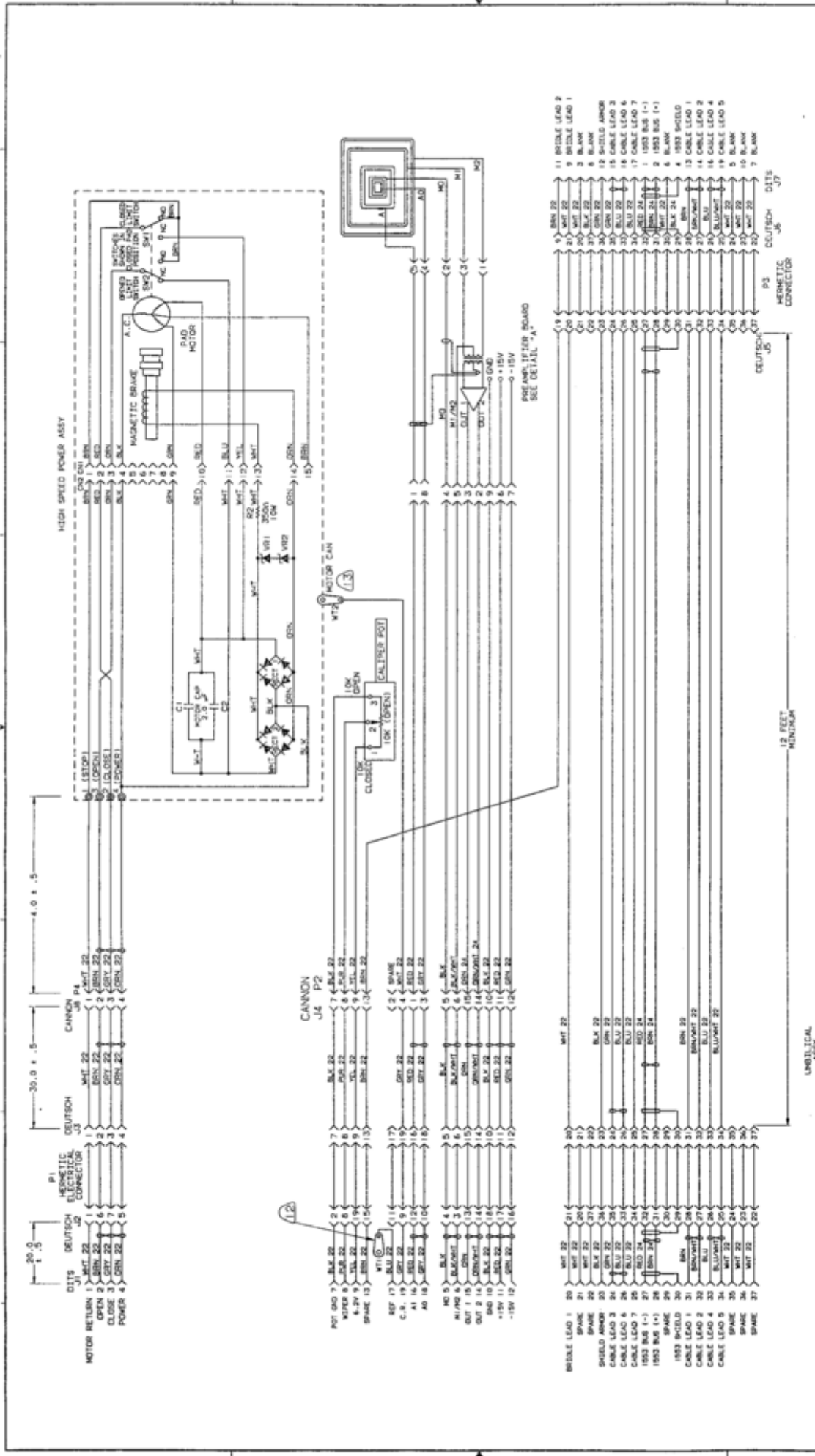


VIEW C-C

17 16 15 14 13 12 11 10







**NOTES:**

1 DENOTES TWISTED PAIR  
THIN WIRE IS +/- 5 TURNS PER FOOT

2 GROUND WIRE LENGTH 6.0"

3 GROUND WIRE LENGTH 4.0"

**WIRING DIAGRAM**

**MANOREL ASSY - UNIVERSAL PAD - MSFL-A**

REV	DATE	BY	CHKD	APP'D
1	10-14-61	AN	FBM	10-18-61
2	10-18-61	AN	FBM	10-18-61
3	10-18-61	AN	FBM	10-18-61
4	10-18-61	AN	FBM	10-18-61
5	10-18-61	AN	FBM	10-18-61
6	10-18-61	AN	FBM	10-18-61
7	10-18-61	AN	FBM	10-18-61
8	10-18-61	AN	FBM	10-18-61
9	10-18-61	AN	FBM	10-18-61
10	10-18-61	AN	FBM	10-18-61
11	10-18-61	AN	FBM	10-18-61
12	10-18-61	AN	FBM	10-18-61
13	10-18-61	AN	FBM	10-18-61
14	10-18-61	AN	FBM	10-18-61
15	10-18-61	AN	FBM	10-18-61
16	10-18-61	AN	FBM	10-18-61
17	10-18-61	AN	FBM	10-18-61
18	10-18-61	AN	FBM	10-18-61
19	10-18-61	AN	FBM	10-18-61
20	10-18-61	AN	FBM	10-18-61
21	10-18-61	AN	FBM	10-18-61
22	10-18-61	AN	FBM	10-18-61
23	10-18-61	AN	FBM	10-18-61
24	10-18-61	AN	FBM	10-18-61
25	10-18-61	AN	FBM	10-18-61
26	10-18-61	AN	FBM	10-18-61
27	10-18-61	AN	FBM	10-18-61
28	10-18-61	AN	FBM	10-18-61
29	10-18-61	AN	FBM	10-18-61
30	10-18-61	AN	FBM	10-18-61
31	10-18-61	AN	FBM	10-18-61
32	10-18-61	AN	FBM	10-18-61
33	10-18-61	AN	FBM	10-18-61
34	10-18-61	AN	FBM	10-18-61
35	10-18-61	AN	FBM	10-18-61
36	10-18-61	AN	FBM	10-18-61
37	10-18-61	AN	FBM	10-18-61

3.33175 B