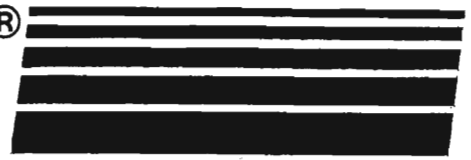
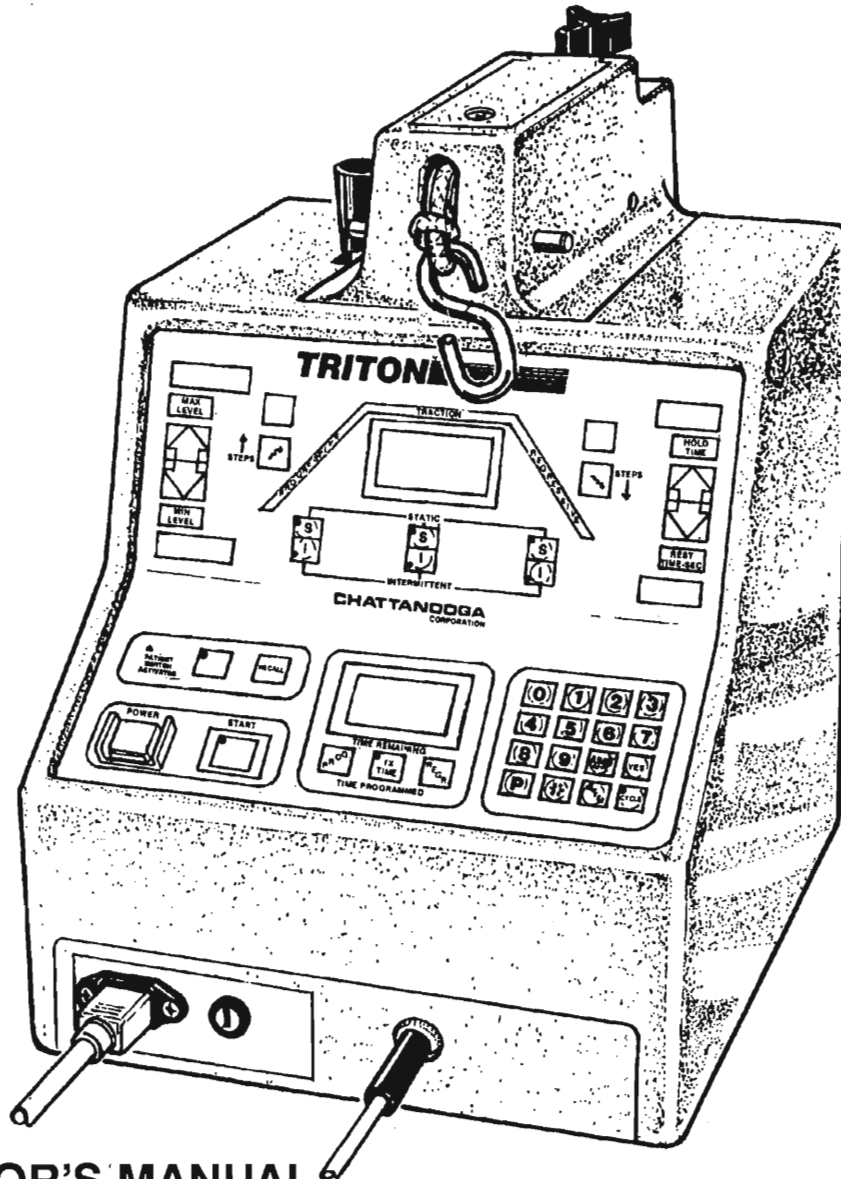


TRITON®



TRACTION UNIT

MODEL MP-1



OPERATOR'S MANUAL

- INSTALLATION
- OPERATION
- MAINTENANCE
- PARTS

P.N. 70532 Rev C 11/96

CHATTANOOGA
GROUP, Inc.

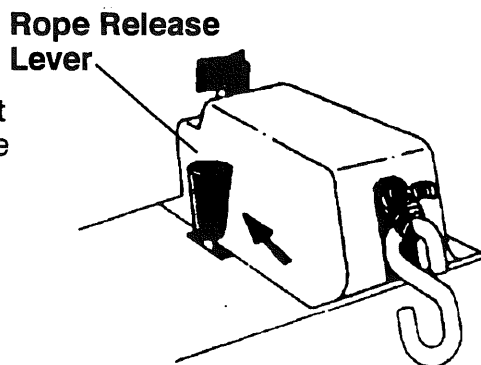
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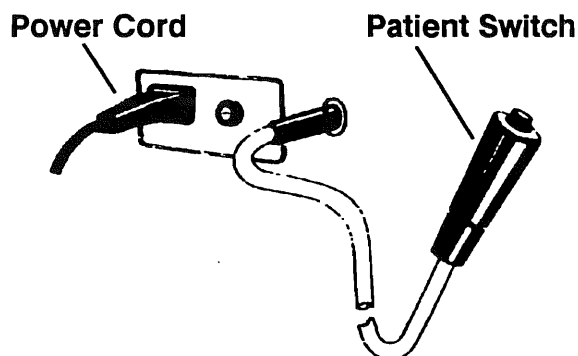
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INSTALLATION (cont.)

3. With the **POWER TURNED OFF**, push the Rope Release Lever and pull out sufficient rope to enable you to connect the "S" hook to the patient harness. While holding the rope to prevent a sudden retraction, push the lever again to slowly retract any slack.



4. Always make certain that the power cord is properly plugged into the unit.
5. The patient switch must be plugged in for the unit to operate. **This control must be given to the patient.** Instruct the patient that pressing the red button will stop the traction cycle.



6. For units intended to be used in the United Kingdom (220/240V 50 Hz) the Mains Lead should be fitted with a sleeved 13 Amp BS-approved Mains plug, fused 5A, and wired as follows:

Brown:	Live
Blue:	Neutral
Green/Yellow:	Earth

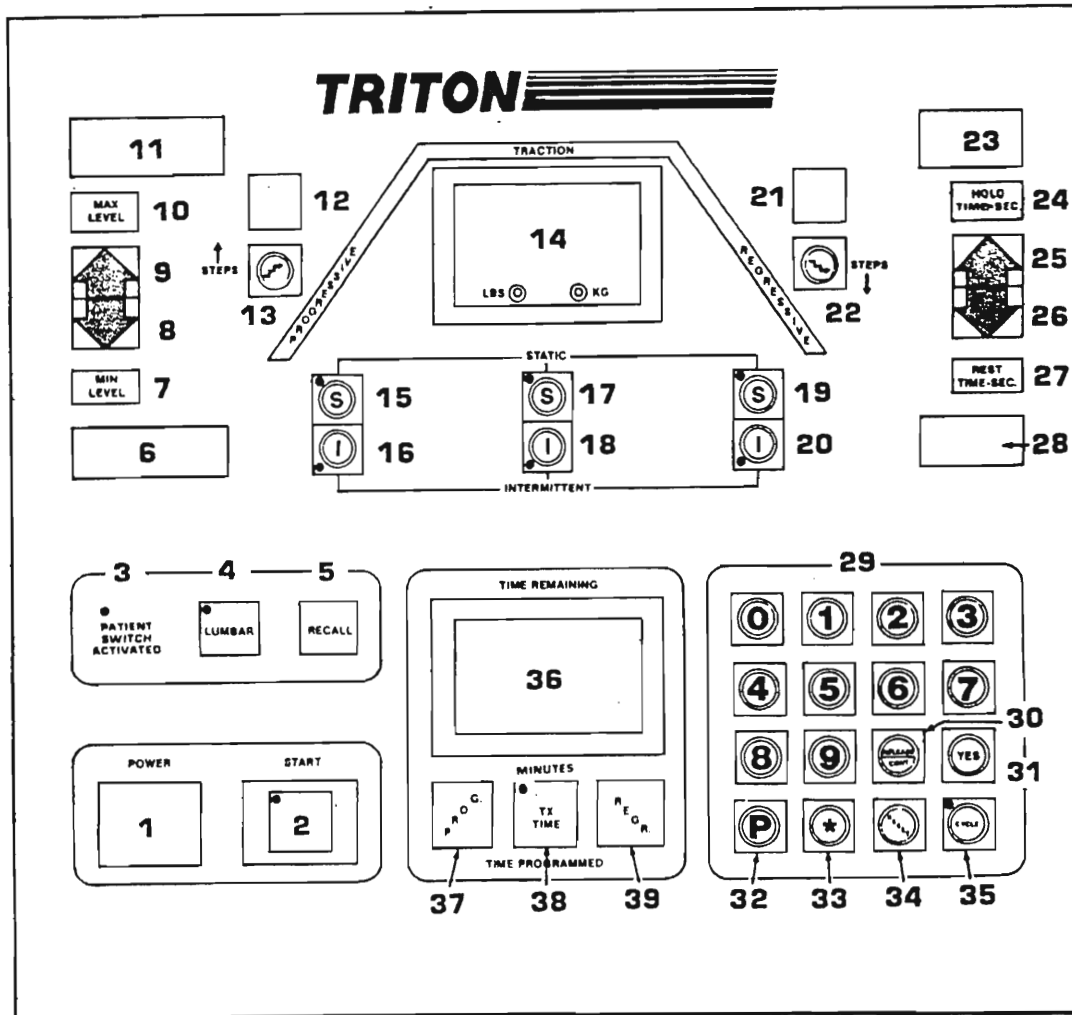
7. The electrical installation of the room in which the equipment is to be used should comply with the regulations for the electrical equipment of buildings, published by the Institution of Electrical Engineers.

8. Symbols and Indicators (if applicable):

 Attention: Consult accompanying documents.

 Type B Equipment

OPERATING CONTROLS



1. **Power On/Off:** Turns unit ON and OFF. Illuminated when power is ON.

2. **Start Switch:** Touch this switch to Start the treatment program. LED indicator flashes at a slow rate during operation.

3. **Patient Switch Activated:** This is an Indicator -ONLY! When the patient switch has been pressed, this LED flashes once per second, the rope becomes slack and the audible alarm sounds at maximum volume, once per second. The alarm sounds until power is turned OFF, Release/Continue is pressed or Reset is pressed.

4. **Lumbar Switch:** Must be pressed if traction level is set greater than 39 pounds or 18 kilograms. If it is not pressed, the LED flashes at a rate of 4 times per second and the unit will not start.

5. **Recall Switch:** Press this switch,

then press a value on the numeric keypad from 0 to 9 to recall any one of 10 traction programs that may be stored in the MP-1's memory.

6. **Min Level Display:** Displays the minimum amount of traction.

7. **Min Level Switch:** Press this switch, then press a value (pounds or kilograms) on the numeric keypad to select minimum level of traction desired.
NOTE: If the traction program is running, the arrow keys are used to alter one pound at a time.

8. **Max/Min Down Arrow:** Decreases the minimum or maximum traction level settings. Press Min Level Switch(7), then keep pressing this arrow until desired Min Level is shown on the Min Level Display (6). Or, press the Max Level Switch(10), then keep pressing this arrow until desired Max Level is shown on the

Traction Meter. Using this function may cancel portions of the progressive phase of the treatment program.

9. **Max/Min Up Arrow:** Increases the minimum or maximum level settings. Press Min Level Switch(7), then keep pressing this arrow until desired Min Level is shown on the Min Level Display(6). Or press the Max Level Switch(10), then keep pressing this arrow until desired Max Level is shown on the Traction Meter. Using this function may cancel portions of the regressive phase of the treatment program.

10. **Max Level Switch:** Press this switch, then enter a value (pounds or kilograms) on the numeric keypad to select the amount of traction desired. See NOTE-#7.

11. **Max Level Display:** Displays the maximum amount of traction.

12. **Steps Up Display:** Shows the number of steps up selected (1 - 9), and displays the step the MP-1 is in during treatment.
13. **Steps Up Switch:** Press this switch, then use the numeric keypad to select the number of steps up(1-9) desired in the progressive phase of the traction program.
14. **Traction Meter:** Displays the amount of traction being delivered to patient - Pounds or Kilograms.
15. **"S" Switch:** Press to select Static traction in the progressive phase of the traction program. The LED illuminates during the progressive phase if you have selected Static traction.
16. **"I" Switch:** Press to select Intermittent traction in the progressive phase of the traction program. The LED illuminates if you have selected Intermittent traction.
17. **"S" Switch:** Press to select Static traction in the traction phase of the traction program. The LED illuminates during the traction phase if you have selected this option.
18. **"I" Switch:** Press to select Intermittent traction in the traction phase of the program. The LED illuminates during the traction phase if you selected this option.
19. **"S" Switch:** Press to select Static traction in the regressive phase of the program. The LED illuminates during the regressive phase if you selected this option.
20. **"I" Switch:** Press to select Intermittent traction in the regressive phase of the program. The LED illuminates during the regressive phase if you selected this option.
21. **Steps Down Display:** Shows the number of steps down selected (1-9) and displays the step the MP-1 is on during treatment.
22. **Steps Down Switch:** Press this switch, then use the numeric keypad to select the number of steps down (1-9) desired in the regressive phase of the traction program.
23. **Hold Time Display:** Displays the amount of Hold Time (In seconds) selected.
24. **Hold Time Switch:** Press this switch, then use the numeric keypad to select up to 99 seconds of hold time in a traction program.
NOTE: If the traction program is running, use the arrow keys to alter time by one second increments.
25. **Hold or Rest Time Increase Arrow:** Increases the amount of Hold Time or Rest Time. Press the Hold Switch(24), then keep pressing this arrow until the Hold Time Display(23) shows the amount of Hold Time desired(99 secs. max.). Or press the Rest Switch(27), then keep pressing this arrow until the Rest Time Display(28) shows the amount of Rest Time desired (99 secs. max.).
26. **Hold or Rest Time Decrease Arrow:** Decreases the amount of Hold Time or Rest Time. Press the Hold Switch(24), then keep pressing this arrow until the Hold Time Display(23) shows the amount of Hold Time desired(99 secs. max.). Or press the Rest Switch(27), then keep pressing this arrow until the Rest Time Display(28) shows the amount of Rest Time desired (99 secs. max.).
27. **Rest Time Switch:** Press this switch, then use the numeric keypad to select up to 99 seconds of Rest Time in a traction program.
NOTE: If the traction program is running, use the arrow keys to alter time in one second increments.
28. **Rest Time Display:** Displays the amount of Rest Time (in seconds) selected.
29. **Input Keypad:** Ten digits (0-9) to enter numeric data into the traction program.
30. **Release/Continue Key:** Temporarily stops or starts treatment program. Press once to stop; press again to restart. The MP-1 picks up where it left off. This is a pause function.
31. **Yes Key:** An alternate entry key. Use of this key is optional. It can be used to accept all programmed data without initiating treatment.
32. **"P" Key:** Use this key to store a traction program in memory. To use this function, program the MP-1, then press the "P" key and a numeric key between 1 and 9 to store the program.
33. *** Key:** Special function key. It can be used to adjust the volume of the audible alarm. Press the * key, then press the Max/Min Up Arrow to increase volume or the Max/Min Arrow Down to decrease volume. It may be used to check the functions of the LED's.
34. **Reset Key:** Press this key to halt the treatment program. Traction tension goes to 0. The MP-1 will recall the last program. Reset time.
35. **Cycle Key:** Press this key to make the MP-1 operate in a cycling mode during the traction phase of the program. The unit will repeat the progressive and regressive phases of the program selected until the end of traction time.
36. **Time Remaining Display:** Displays the time remaining and the traction (TX) time selected. The traction time (TX time) is displayed for 5 seconds after you enter it in the program. After 5 seconds, the display shows the total time for the complete traction program. This display may also show the amount of progressive and regressive time selected.
37. **Progressive Switch:** Press this switch prior to starting treatment for a display of the amount of time (in minutes) selected for the progressive phase of the traction program. Read the display on the Time Remaining Meter.
38. **TX Time Switch:** Press this switch then enter the desired amount of time (in minutes) on the numeric keypad. The traction time (TX time) is displayed on the Time Remaining Meter for 5 seconds after you enter it. The TX Time LED flashes at a fast rate (4 times per second) until you enter the traction time needed. Once the time has been correctly entered, the TX Time LED flashes at a slower rate. If you enter times totaling more than 99 minutes, the Time Remaining Meter will read "HI".
39. **Regressive Switch:** Press this switch prior to starting treatment for a display of the amount of time (in minutes) selected for the regressive phase of the traction program. Read the display on the Time Remaining Meter.

TRITON® MP-1 OPERATION

NOTE: The controls referred to hereafter, and their respective designations, are shown on pages 5 and 6.

Step 1. Connect the power cord to unit and plug into an appropriate receptacle.

Step 2. Plug patient control switch into front of unit.

Step 3. Attach cervical head halter or Saunders Cervical Traction System or pelvic belt and thoracic restraint to the patient before proceeding with the traction setup. Make sure the patient is comfortable with the fit in the appliance.

Step 4. Grasp the "S" hook or rope while pushing the rope release lever on the top of the unit; withdraw ample traction cord to attach the "S" hook directly to the appliance or to the spreader bar. Do not release the "S" hook until you have re-engaged the rope release lever.

Step 5. Holding the rope to prevent sudden retraction, push the rope release lever again to take up all the slack in the rope.

Step 6. Give the patient control switch to the patient, instructing him/her that pressing the red button will stop the traction cycle. (A VERY IMPORTANT CONSIDERATION)

Step 7. Depress the GREEN power switch. It will illuminate when the power is ON. Wait about 5 seconds for the unit to go through its self test before attempting to program the data. When the TX Time LED flashes, you may enter data.

NOTE: If you make a mistake, you may correct your error by re-pressing the appropriate key and re-keying the data.

Step 8. Select the maximum pounds by pressing the "Max Level" switch, then enter the desired maximum setting, using the numeric keypad.

Step 9. Set the minimum pounds by pressing the "Min Level" switch, then enter the desired minimum setting, using the numeric keypad.

Step 10. Select Steps UP by pressing the "Steps ↑" switch, then use the numeric keypad to select the number of steps desired. **NOTE: "0" steps is invalid and cannot be programmed.**

Step 11. Select Steps DOWN by pressing the "STEPS ↓" in the same manner as Step 10.

Step 12. Select the type of traction to be used in the three traction phases, progressive, traction and regressive, by pressing the appropriate "S" (static) or "I" (intermittent) switches, numbers 15 to 20.

Step 13. Set the number of seconds of HOLD or REST time (if needed in the program) by pressing "HOLD TIME" or "REST TIME" switch(s), then enter the amount of time desired (1-99 seconds) on the keypad.

Step 14. Press the "TX TIME" switch, then enter the number of minutes of traction time desired, on the numeric keypad.

Step 15. If you have selected traction levels greater than 39 pounds (18 kilograms), you must press the Lumbar switch.

Step 16. Press the "START" switch to begin the traction treatment.

Step 17. The Triton® MP-1 will automatically stop at the end of treatment and sound the audible End-of-Treatment alarm for 5 seconds, every 5 seconds, and the machine will return to zero pounds of pull. To silence the end of treatment alarm, press the reset switch or turn the MP-1 OFF.

Step 18. CAUTION: Federal law restricts this device to sale by, or on the order of, a licensed physician or licensed practitioner.

NOTE: The program is automatically stored in the unit's memory in the "0" slot. For more on how to use the memory features of your Triton® MP-1, see page 8.

FEATURES OF THE MP-1

HOW TO USE

Audible Alarm Volume: To adjust the volume of the Audible Alarm, press the Special Function Key (*) and then press the Max/Min Level UP or DOWN arrow until the volume of the audible alarm reaches the desired level.

Changes in Treatment Settings while Running: A change in either Hold Time or Rest Time may be made while the MP-1 is in operation. Press the appropriate switch (Hold or Rest Time) and use either the numeric keypad or the Hold or Rest Time Decrease/Increase arrows to change the number of seconds of Hold or Rest Time.

Changes in Treatment Time Settings while Running: To increase or decrease Treatment Time, press the TX Time switch and enter the new treatment time using the numeric keypad.

Changes to Maximum Traction Pull - Pounds (lbs) or Kilograms (kgs) - while Running: If you want to change the maximum lbs or kgs setting while the unit is running, press the Max Level switch. Pressing this switch causes the Max Level Display to go blank and forces the MP-1 to the traction phase of the program. After pressing the switch, make the changes by pressing either the increase or decrease arrows. You must press the arrow ONCE for EACH lb or kg of change. The changes you enter will appear on the Traction Meter. The Max Level Display will be blank as you make the changes. **You must press** either the Max Level switch or the "YES" switch to make the MP-1 operate automatically. If you fail to press either switch, the MP-1 will remain at maximum lbs or kgs until treatment time runs out. Once you press the "YES" or Max Level switch, the Max Level display will be illuminated.

Changes to Minimum Traction Pull - Pounds (lbs) or Kilograms (kgs) - while Running: You may make changes by pressing the Min Level switch; then use either the Numeric keypad or the Max/Min Up or Down arrows to enter the change. Changes will appear on the Min Level display.

Cycle Mode: To use the Cycle Mode, press the Cycle switch. The MP-1 will then repeat the progressive and regressive phases of the Treatment Program for the entire Treatment Time programmed. To cancel the Cycle Mode, use either the Reset switch or enter either Static (S) or Intermittent (I) in the Traction Mode.

Lamp (LED) Test: All of the LED's in your MP-1 may be functionally tested by pressing the (*) switch, then the Reset switch.

Patient Switch: The LED marked "PATIENT SWITCH ACTIVATED" on the panel is an indicator only. The LED will flash and the Audible Alarm will sound at its maximum volume if the Patient switch has been pressed or been dis-connected from the unit. Tension on the rope will be reduced, until the rope becomes slack, when the Patient switch is pressed. If the switch is disconnected, the tension on the rope is held until the switch is re-connected or the tension is released manually. To STOP the alarm, press the RESET switch, the Release/Continue switch or turn OFF the MP-1 by depressing the Power switch.

FEATURES OF THE MP-1 (cont.)

Programming the MP-1: The MP-1 has a memory designed to store up to 10 traction treatment programs. The last treatment program used will automatically be stored in memory "0". All that is needed to recall this program is to turn the unit "OFF" then "ON", or depress the Reset switch.

To store other programs in memory, you must program the MP-1 as described on page 7, steps 7 to 13, inclusive, then press the "P" switch and a number between 1 and 9 on the numeric keypad. The program is now stored in memory.

To recall the program, press the RECALL switch and enter, on the keypad, the number of the program you want to recall. The programmed data will be displayed on the front panel displays.

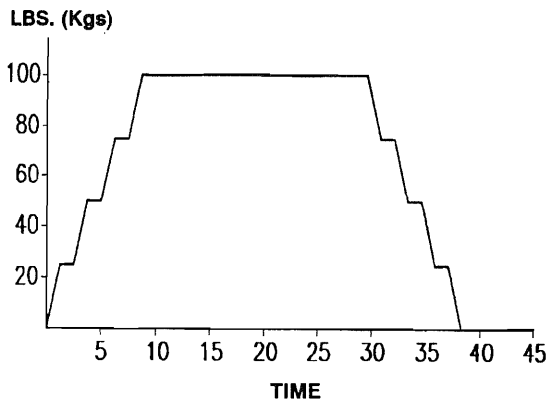
When you recall a program, it **will not** include the Treatment Time. You will have to enter the Treatment Time as a separate step. The stored program will not activate the Lumbar switch. If you select traction levels greater than 39 pounds (18 kilograms), you will have to depress the Lumbar switch.

To change a stored program, first, recall the program you want to change. Once the program is displayed, change the part, or parts, of the program by re-entering the data. Store the altered program by pressing the "P" key, then assign it the same number that was assigned to the original program.

If you recall a program and it does not appear in the displays, first, check to see that you have followed the recall steps correctly (using the "P" key and entering a single digit). If you still have no response, you must return the ENTIRE unit to the factory (or dealer) for repair.

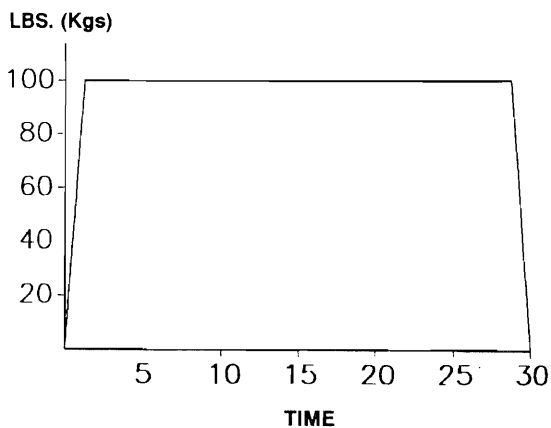
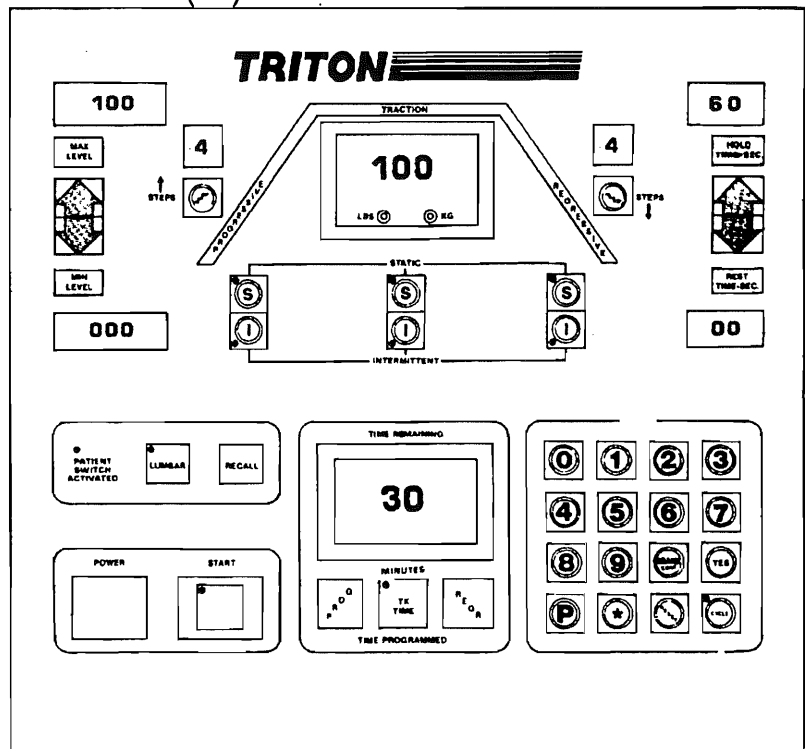
TYPES of TRACTION AVAILABLE USING the TRITON® MP-1

1. **Static Traction**, sometimes referred to as sustained traction, is a steady amount of traction applied over a continuous period. Two examples of Static Traction are shown below. 30 minutes has been programmed for the Traction (TX) time..



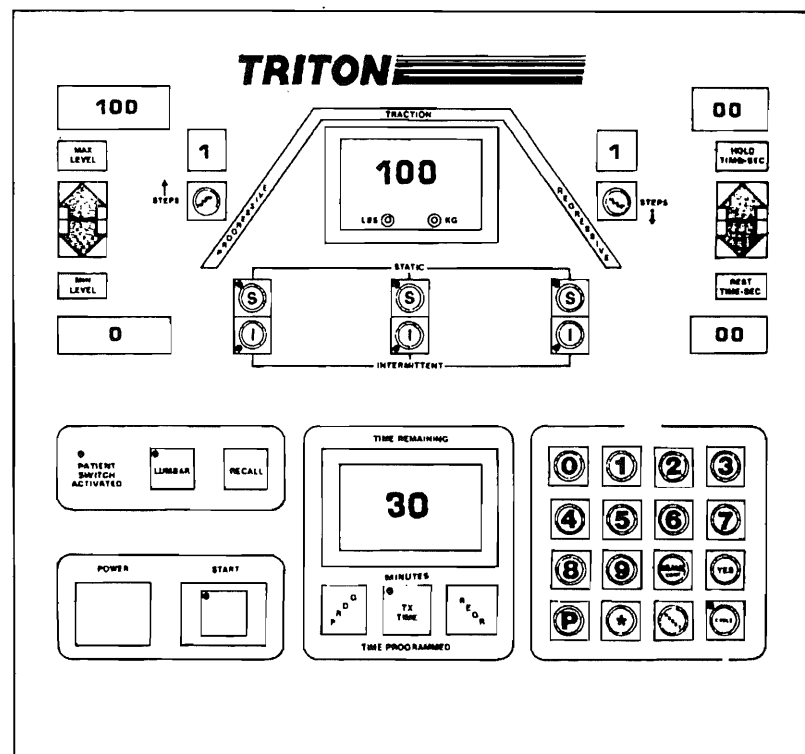
Note: Typically, total time for this program is 38 minutes. Total time includes tension adjusting between steps.

Example 1 - Static Traction



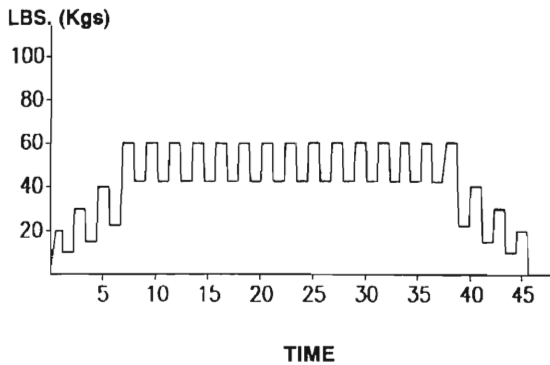
Note: Total time for this program is approximately 30 minutes.

Example 2 - Static Traction



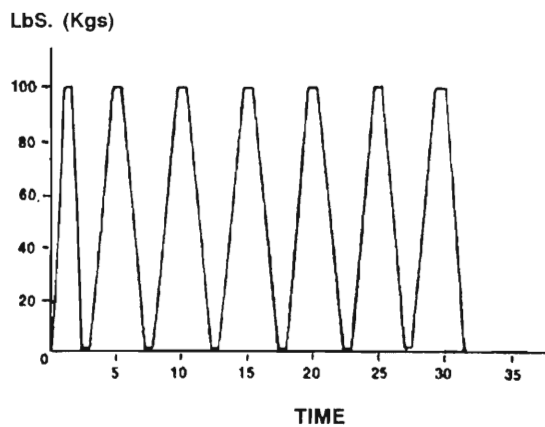
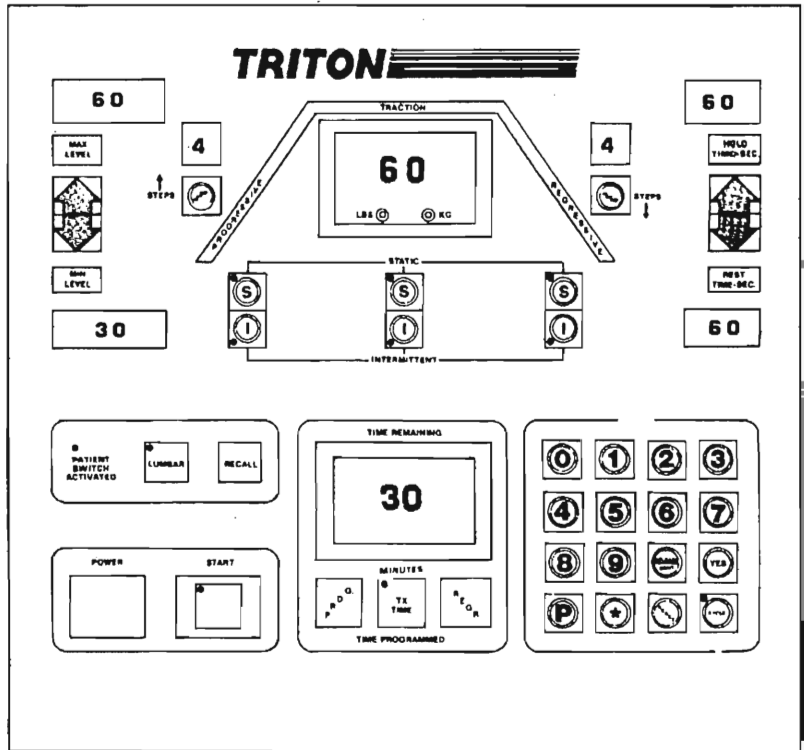
TRACTION EXAMPLES (cont.)

2. Intermittent Traction: Wherein the traction is applied and released alternately for very short time periods. In the progressive and regressive phases, the MP-1 pulls to the calculated tension, holds for the set hold time, then drops to 50% of this tension, holds the set rest time and then repeats this step for the number of steps selected. However, once the Min Level is reached, the MP-1 uses the Min Level for the Rest Time. Examples of Intermittent Traction are shown below.



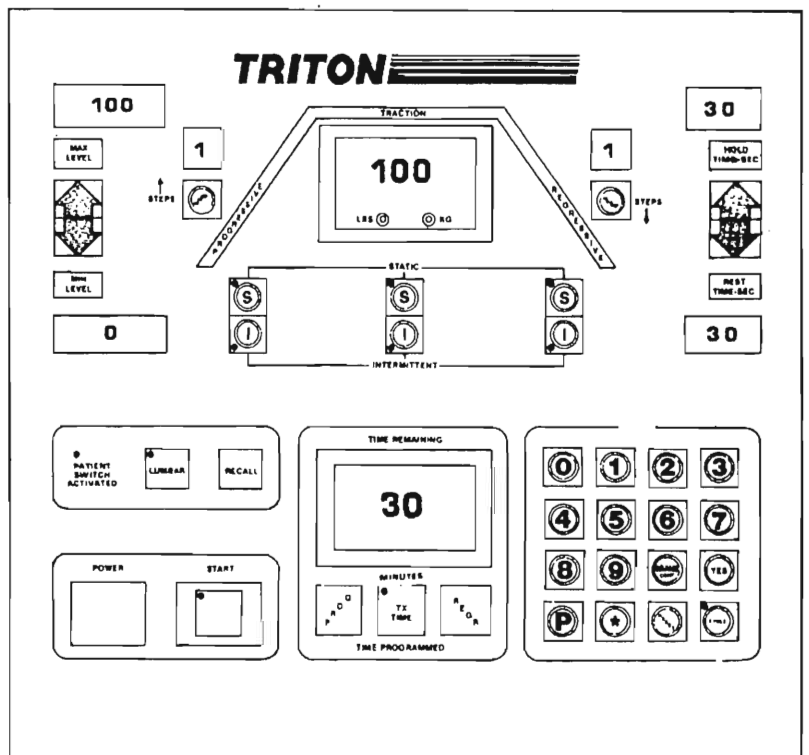
Note: Total time for this program is 46 minutes.

Example 1 - Intermittent Traction



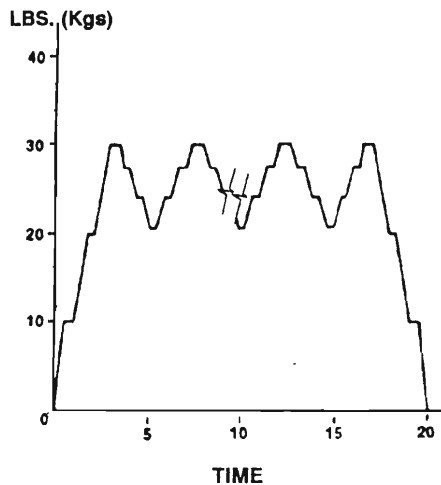
Note: Total time for this program is approximately 32 minutes.

Example 2 - Intermittent Traction

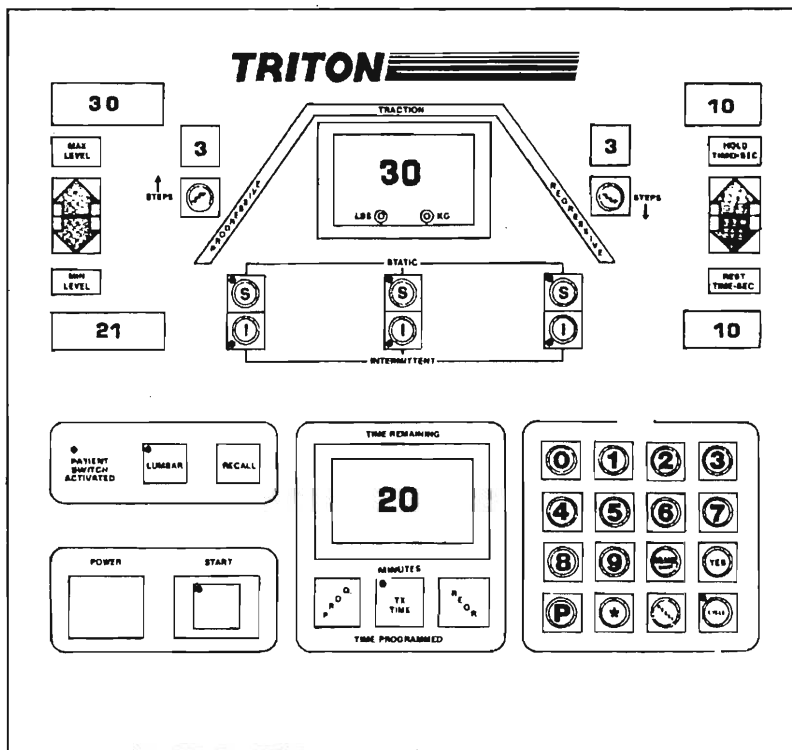


TRACTION EXAMPLES (cont.)

- Cycling Traction:** The Progressive and Regressive phases of the traction program are repeated throughout the entire course of the traction treatment.



Note: The center LED is not illuminated if the cycling mode is used.



EXAMPLE of CYCLING

TROUBLE SHOOTING

Problem	Cause	Solution
No power to the unit.	Not plugged in. No power at receptacle.	Insert plug into receptacle. Check for tripped circuit breaker or blown fuse. Replace 1 Amp 250V Slo-Blo fuse.
Rope release will not work.	Unit is ON. Gears jammed.	Turn unit OFF. Return to factory for repair.
Number 4 appears in Steps UP display.	Problem with the Transducer circuit.	Return to factory for repair.
Number 8 appears in Steps UP display.	Problem with the Transducer. Too much slack in the rope.	Return to factory for repair. Turn Power OFF and remove slack.
Minimum and maximum displays flashing.	Minimum programmed is greater than maximum. Maximum is in excess of 200 pounds.	Re-program. Re-program.
Lumbar LED is flashing fast (4 times per second)	Unit programmed greater than 39 pounds without pressing Lumbar switch	Press Lumbar switch Re-program for less than 39 pounds.
TX Time flashing fast (4 times per second)	TX Time not entered in program.	Enter some TX Time.
TX Time Display flashes "Hi"	Total time of program is greater than 99 minutes.	Change one, or several, of the parameters that affect time (steps up/down, hold/rest times, static or intermittent modes) Re-program the amount of TX time.
Cannot set Steps Up/Down to "0".	"0" is not a valid step and unit will not accept it.	Use Steps of 1 to 9 ONLY.

TROUBLE SHOOTING

Problem	Cause	Solution
Triton [®] MP-1 will not run when "Start" is pressed; "clicks" as it tries to start.	Faulty RAM or ROM	Return to factory for Replacement.
Cannot change settings after "Release" is pressed	This is normal operation.	"Release" is meant to be used only to re-adjust harness for patient's comfort.
Audio Alarm is loud when patient switch is pressed	This is normal operation.	The alarm volume is set for maximum volume when patient switch is pressed.
Lumbar Switch and TX Time are not saved with the program.	This is normal operation.	The MP-1 is not programmed to save this data.
Maximum settings cannot be changed using the keypad while the MP-1 is running	This is normal operation.	The program was designed this way to prevent large, inadvertent changes to the maximum settings.
"Max Level" display goes blank when changing the Maximum Level while the MP-1 is running.	This is normal operation.	The blank screen indicates that the operator has taken manual control of the maximum level settings.
Time of Progressive or Regressive steps is not displayed when switches are depressed prior to treatment.	Normal operation if the Progressive or Regressive phase is less than one minute.	If the Progressive or Regressive phase is greater than one minute, it may be a significant portion of the traction program and will be displayed.

CALIBRATION

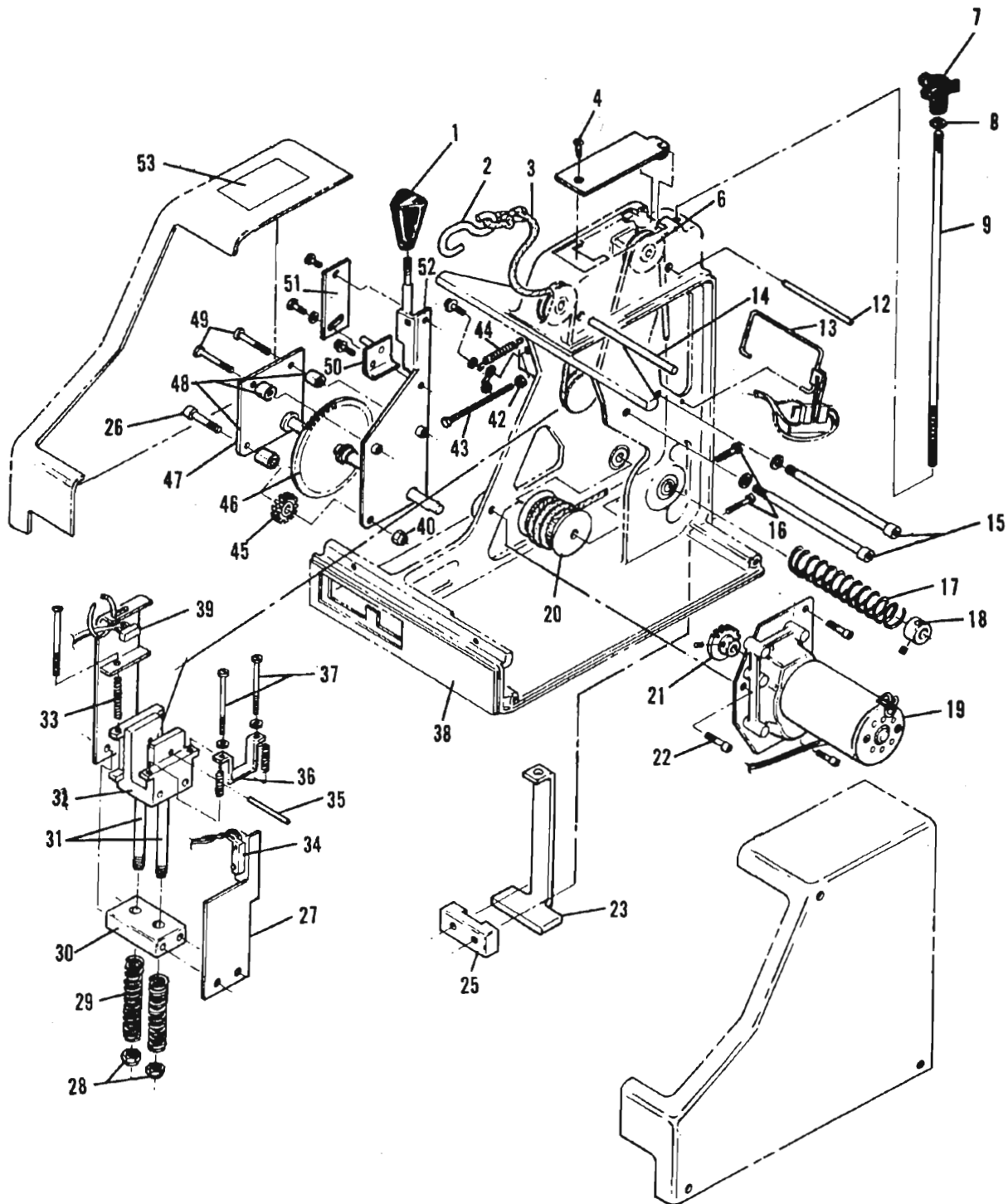
Your Triton[®]MP-1 was fully calibrated prior to shipment. Should you desire to check the calibration, a complete Calibration Procedure is available from the customer service department of Chattanooga Group, Inc.

Calibration of the MP-1 requires the use of an accurate tension gauge, capable of measuring loads up to 215 pounds (97.5 kgs).

MP-1

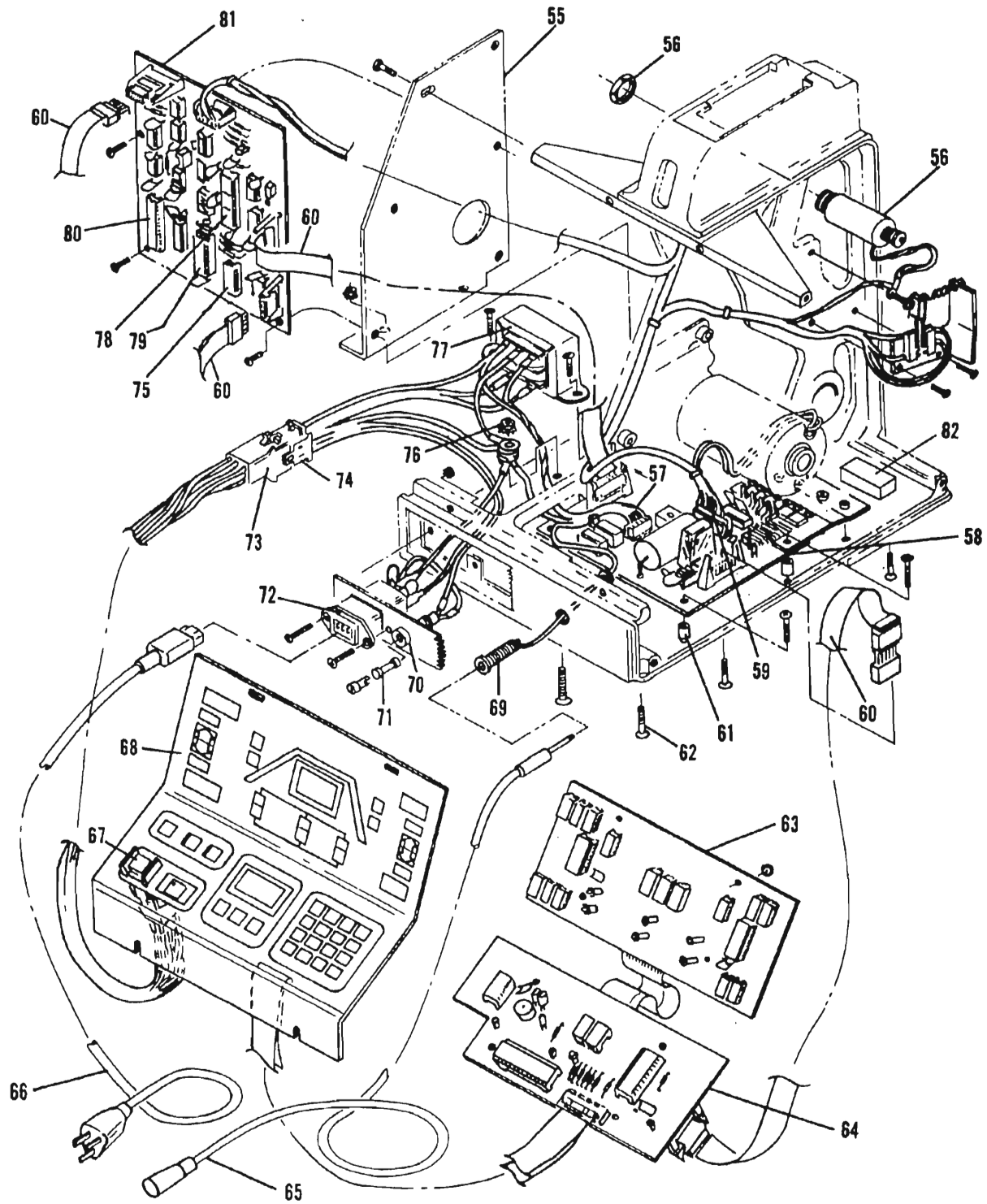
MECHANICAL PARTS

Please Note: Main housing shown split for simplification.



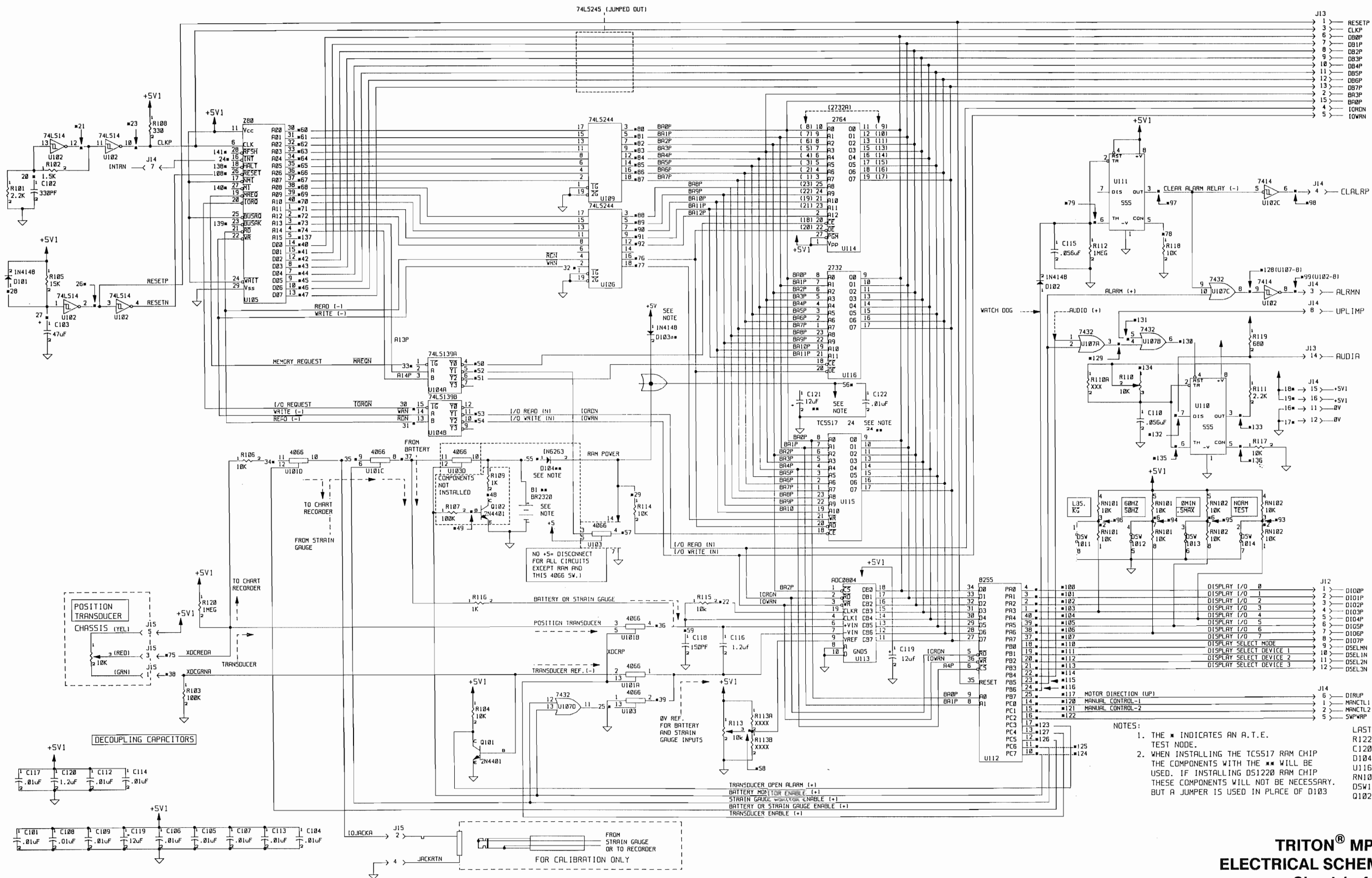
MP-1

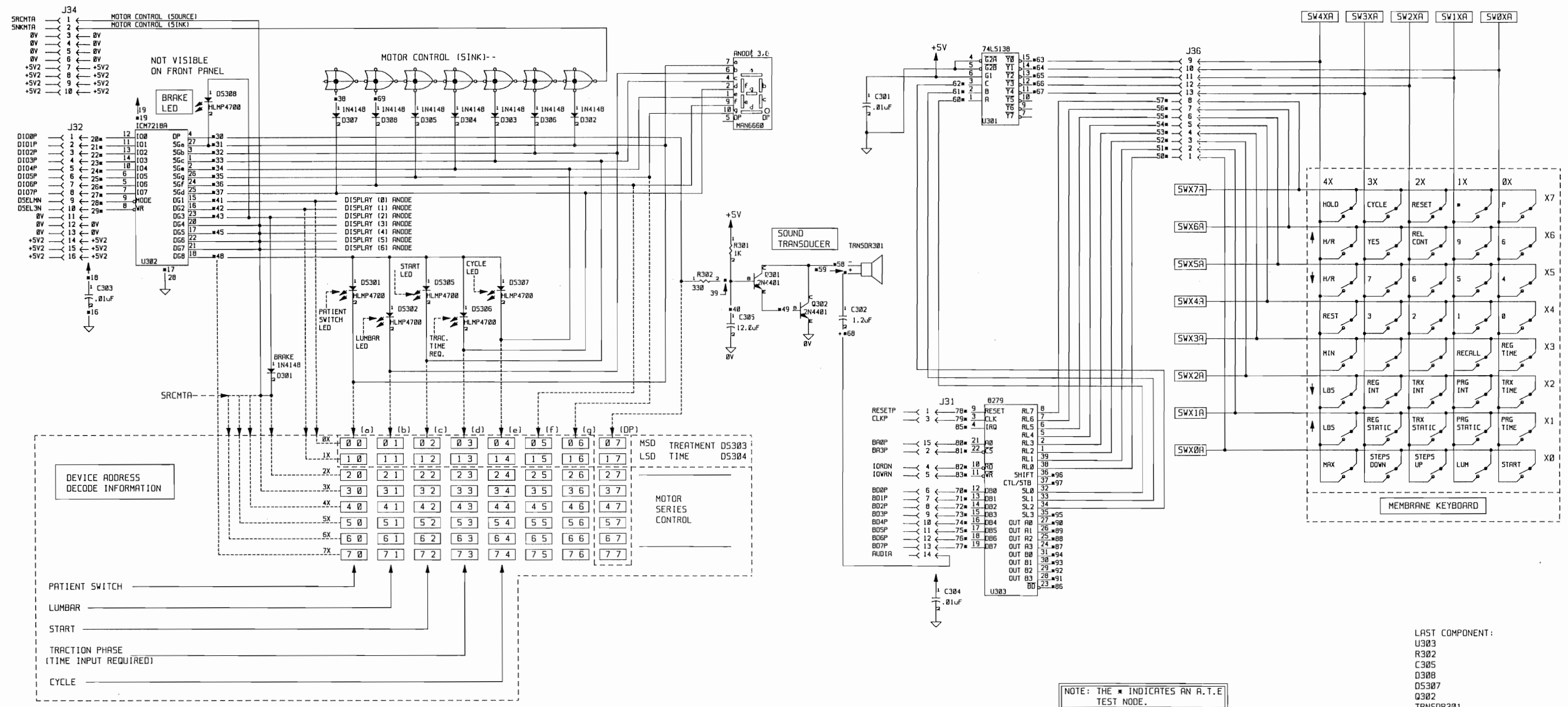
ELECTRICAL PARTS



PARTS LIST - MP-1

REF.	PART NO.	DESCRIPTION	QTY.
MECHANICAL PARTS			
1	70337	Knob, Rope Release	1
2	73155	Hook, TXM-17	1
3	70697	Rope, TXM-17 #7 x 76"	1
4	71682	Screw, 10-24 x 1/2, Fl. Hd. Phillips, Plated	9
6	70369	Pulley, AN210-3a	3
7	70336	Screw, Knob Clamp, TXM	1
8	70208	Nut, 1/4-20, ESNA, Plated	1
9	73156	Screw, Clamp, TXM-17, Plated	1
12	72482	Pin, Block, 1/4 ϕ x 2-1/2, TXM	1
13	70235	Arm, Anti-Reverse Switch, TXM	1
14	72739	Pin, Pulley	1
15	70788	Screw, 5/16 x 2-3/4, Soc. Hd., Plated	2
16	71519	Screw, Soc Set, 1/4-20 x 3/4	2
17	70796	Spring, Rope Return, TXM	1
18	73120	Collar, 1/2", standard, Modified	1
19	61820	Motor, MP120V, Modified	1
20	70311	Drum, Rope, Traction Machine	1
21	71647	Gear, Drive, F-20-20 w/5/16 Bore	1
22	21829	Screw, 1/4-20 x 1/2, Soc. Hd. Cap, Plated	3
23	73154	Clamp, Machine Hold Down, TXM, Plated	1
25	70277	Clamp, Striker, TXM	1
26	70788	Screw, 5/16 x 2-3/4, Soc. Hd., Plated	2
27	70366	Plate, Transducer, Right, Standard	1
28	70222	Nut, ESNA, 3/8-16	2
29	70797	Spring, Transducer React, TXM-S5	2
30	71549	Transducer Base	1
31	72735	Bolt, Shoulder, 3/8 x 3/4 Spcl.	2
32	73130	Casting, Cradle, Machined	1
33	70955	Spring	3
34	72831	Transducer, ETI, LCP821831OK	1
35	72739	Pin, Pulley	1
36	72716	Bracket, O Adjust	1
37	71167	Screw, 10-32 x 1-1/2, Soc Head	3
38	72022	Casting, Base, Painted	1
39	70355	Switch, Micro, 11SM1-H4	3
40	63985	Nut, Flex-Lok, 10-24	1
42	21738	Nut, Hex, Stainless Steel, 10-32	1
43	70784	Screw, 10-32 x 2, ND. Hex HD, Stainless, Full	1
44	70795	Spring, Idler Tension	1
45	73163	Gear, Idler, w/Bearing P/N 70237	1
46	73160	Shaft, Rope, Drum w/Gear	1
47	73137	Bracket, Idler, Outer, Plated	1
48	70792	Spacer, 8 x 5/8, Waldom 60129	2
49	70783	Screw, 8-32 x 1, Indent, Hex Hd., Stainless Steel	2
50	73140	Clip, Retainer, Idler, TXM, Plated	1
51	73135	Plate, Cam, Plated	1
52	73134	Bracket, Idler, Inner, Plated, TXM	1
53	65220	Decal, Rope Release	1
	60014	Feet, Rubber (Not Shown)	4
ELECTRICAL PARTS			
55	72044	Bracket, PC Board w/Fastner	1
56	71516	Solenoid, TP6x12-Cont. D.C.	1
57	72563	Harness, B-4 to Transformer	1
58	71284	TMP-1 PC Board B-4	1
59	71433	Harness, B-4 Board	1
60	71437	Harness, Ribbon, TMP-1	3
61	72559	Stand-Off, 6-32 x 3/8	4
62	71532	Screw, Phillips, Fl. Hd. 6-32 x 1/2	3
63	71282	PC Board, TMP-1, B-2	1
64	71283	PC Board, TMP-1, B-3	1
65	73110	Cord, Patient, TXM-17, Assembled	1
66	21284	Cord Set, 8", Europe (220/240 Volt)	1
	72453	Cord Set, 16-3, 0-9311-008-GY (120 Volt)	1
67	72011	Switch, AML 21 CBA2AD, Micro, Power	1
68	65249	Panel, Front, TMP-1	1
69	73540	Connector Rec., Switchcraft No. FA-11	1
70	70316	Fuse Holder, Schurter 031-1673 (120 Volt)	1
	70511	Fuse Holder, Schurter 031-1673 (220/240 Volt)	2
71	74469	Fuse 250V, Slo-Blo, 1 Amp (120 Volt)	1
72	70286	Fuse (220/240 Volt) 1/2A MET 034.3114	2
73	72039	Connector, Potter 615G6	1
	73113	Harness, Power, Front Panel (120 Volt)	1
74	72037	Harness, Power, Front Panel (220/240 Volt)	1
	73115	Harness, Power, Casting (120 Volt)	1
75	73195	Harness, Power, Casting (220/240 Volt)	1
	21733	IC 2KRAM	1
76	70147	Nut, ESNA, 8-32	1
77	70745	Transformer, Signal 241-6-24 (120 Volt)	1
	70786	Transformer DP241-6-24 (220/240 Volt)	1
78	71841	Microprocessor, IC Z80	1
79	70805	IC 27256 PROG 5X	1
80	71281	IC 8255	1
81	70496	PC Board, TMP-1 B-1	1
82		Filter	1
83	71540	Plate, Motor (Not Shown)	1







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- s) Using an allen wrench, press down on the up limit switch plate to cancel the alarm.
- t) The unit will switch to a pulsed beeping and will run down.
- u) Press <RESET>.
- v) Repeat steps a thru i.
- w) Press <START> and allow the unit to run up to 190 lbs. (91 kg.).
- x) The unit should alarm on its own at a strain gage reading of 215-220lbs. (220v units between 235 - 240lbs.)
- y) If the unit does not alarm within this range as expected, adjust the up limit switch slightly and repeat steps a thru h, n and o.

2. TENSION CALIBRATION: Set up:

- a) Press on the rope to slacken it completely.
 - b) Cycle power OFF/ON to force recalculation of zero
 - c) MAX. = 100 lbs. (82 kg.)
 - d) MIN. = 0 lbs. (0 kg.)
 - e) STEPS UP = 1
 - f) STEPS DOWN = 1
 - g) STATIC, STATIC, STATIC
 - h) Select LUMBAR mode
 - i) TRACTION MODE TIME = 30 minutes
 - j) Press <START> and wait for traction phase.
 - k) Adjust R113 until strain gage reads 100 lbs (+/-2lbs).
 - m. *Push release cont. to run down and*
Press <RESET> to force the unit to run down. *Again to check 100lb*
- IF CHECKING STEP 2 A SECOND TIME, PROCEED TO STEP 4 OTHERWISE PROCEED TO THE NEXT STEP.**

3. **NOTE:** Mechanical Zero point adjustment is only required if the unit has been failing and error 8 is displayed. Skip to step 4 otherwise.

MECHANICAL ZERO POINT ADJUSTMENT:

- a) MAX. = 005 lbs. (1 kg.) Press <Max Level> 5
- b) MIN. = 0 lbs. (0 kg.) Press <Min Level>
- c) STEPS UP = 1
- d) STEPS DOWN = 1
- e) STATIC, STATIC, STATIC
- f) TRACTION MODE TIME = 30 minutes
- g) Press <START>.
- h) Press <MAX> and use poundage arrows to adjust tension to 2 lbs. The strain gage reading at a unit reading of 2 lbs. should be between 3.5 and 4.9lbs.
- i) Press <RESET>. The unit will run down to rest. At rest, the strain gage should read 3.5lbs. maximum.
- j) Slacken the rope and turn the unit off.

Max again

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new style

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PRE-CHECKS AND PREPARING THE UNIT FOR CALIBRATION

3. Attach the unit to the strain gage with digital readout.
4. Volume Check and Adjustment:
 - a) Turn power switch on with patient cord disconnected from the unit.
 - b) Unit sounds a continuous tone. Adjust R110 for maximum volume.
 - c) Replace patient cord. The unit should now sound a pulsed beep. Make sure that the volume is acceptably loud for testing. If the volume is at an acceptable level, press <Reset>.
 - d) Press <*> and the poundage arrows (up or down) to set volume to the highest level.
Note: For all alarms, the volume should switch to maximum.
5. Patient Switch Operational Check:
 - a) Press and hold in the patient switch button.
 - b) A steady tone should be heard. The motor is disabled and will not yield rope.
 - c) Release patient switch.
 - d) The motor is enabled and will yield rope. A 1 Hertz pulsed audio tone alert is present.
 - e) Press <RESET> to clear patient alarm.

CALIBRATION PROCEDURES:

1) UP LIMIT SWITCH ADJUSTMENT:

- a) Remove the top casting cover to access the up limit switch.
- b) Set the unit for a treatment as follows:
- c) MAX. = 190 lbs. (91 kg.)
- d) MIN. = 0 lbs. (0 kg.)
- e) STEPS UP = 1
- f) STEPS DOWN = 1
- g) STATIC, STATIC, STATIC
- h) SELECT LUMBAR MODE: The lumbar button will flash quickly until pressed at which time it will continue to flash, but at a slower rate.
- i) TRACTION MODE TIME = ~~30 minutes~~ *5 min.*
- j) Press <START> and allow the unit to run up to 190 lbs. (91 kg.).
- k) Observe that the actuator plate is close (within 1/16") to the switch lever.
- l) manually activate the up limit switch and verify that the unit alarms and runs down.
- m) Press <RESET>
- n) If the unit functioned as expected, proceed to step 2 otherwise move to step o to adjust the switch.
- o) Pre-adjust the up limit switch fully CW to prevent it from activating too early.
- p) Press <START> and allow the unit to run up to 190 lbs. (91 kg.).
- q) Adjust R113 until the strain gage reads between 215-220 lbs. (91kg).
- r) Slowly adjust the up limit switch CCW until the alarm sounds.

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k) If the unit meets the criteria in steps h and i, proceed back to Step 2 for final recheck of calibration. If unit does not meet the criteria of steps h and i proceed to the next step.

l) Adjust the red poundage springs until the unit meets the criteria set out in steps h and i (± 0.5 lbs.). Prior to adjusting, find the loose spot for each spring by rotating it on its respective bolt. Adjust each spring nut in small increments and be sure to adjust each spring nut an equal amount. Proceed to the next step when adjustments are complete.

m) Cycle power on to auto calibrate zero tension.

n) Repeat steps a thru k above.

4. LAMP TEST:

a) Press <TX> (to activate traction time display).

b) Press <*> <RESET>. Verify that all the LED's are operative

5. VISUAL INSPECTION:

a) Inspect to see that all mounting screws, nuts, etc. are properly tightened.

b) Inspect and verify that all wires are routed properly and that all connections are tight.

c) Remove any remaining loose wire clippings and/or debris from the chassis.

6. FINAL DOWN LIMIT SWITCH ADJUSTMENT:

a) Start a treatment cycle.

b) Once max setpoint is reached, press <RESET>.

c) The unit should slacken the rope tension and stop with 1 to 1.5lbs of tension on the digital display.

d) If the unit performs as required, skip steps e thru n

e) Mount unit vertically.

f) Attach a one pound bag of sand (or suitable weight) to the rope.

g) Turn the unit's power switch on.

h) Press the patient switch for "slack rope". A pulsed tone alarm will sound.

i) Adjust the down limit switch by gently bending the actuator arm until the motor stops.

j) Add a 1/2 lb. bag of sand or weight, the motor should start to run down.

k) If the motor does not start, adjust the lever until it does start. Remove the 1/2 lb. bag of sand and the motor should stop.

l) Verify that the rope release mechanism is operates smoothly.

m) Verify that the rope pulls out and retracts freely.

n) Turn the power switch off.

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