EMPIRE

698 Turntable Instructions

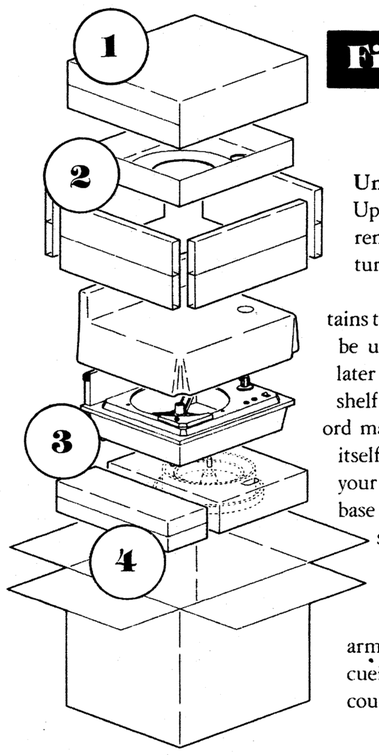


Fig. A

Unpacking

Upon opening the box, simply remove all packing and the turntable in order (Fig. A).

Box #1 contains the dust cover, which should be unpacked and set aside for later attachment. The cardboard shelf (Fig. A, #2) has the record mat attached. The turntable itself (#3) is removed by placing your hands on both sides of the base of the turntable and lifting straight up. DO NOT LIFT FROM THE 3-PRONG SPINDLE SUPPORT.

Box #4 contains the tone arm, cables, belt, screwdriver, cueing adjustment tool and counter-balance weight.

Setting Up the Turntable:

1. Place the turntable base down on a flat surface and unstrap the AC cable from the rear of the base.

2. Remove the motor cover (Fig. B, #12) by unscrewing the knurled knob (Fig. B, #13) and lifting straight up.

3. With a screwdriver, remove the motor transit screw (Fig. B, #2) and cardboard spacers from the motor. This screw can be identified by the red and white arrow in the front left-hand corner. THIS SCREW (10-32 x 7/16") AND THE CARDBOARD SPACERS MUST BE REPLACED WHEN THE TURNTABLE IS TRANSPORTED.

4. Remove the tone arm from its box and notice that there are two (2) cables attached. These cables (Fig. B, #3 and #4) must be placed through their respective holes in the turntable base plate (Fig. B, #3A and #4A).

5. After the cables are passed through their holes, carefully place the tone arm into its hole (Fig. B, #5) and lightly tighten the set screw (Fig. B, #6). Arm height is not critical at this time.

6. Carefully lift the turntable from the front with one hand, and with the other hand, insert the cables (Fig. C, #3 and #4) into their respective sockets (Fig. C, #3B and #4B). Notice that the ~~dissimilar~~ sockets are keyed so that they will easily fit in only one way.

7. At this point, it is necessary to determine which of the two audio cables (packed in the tone arm box) will best suit the needs of the cartridge you have chosen. The shorter of the two cables (4 ft.) will, when attached, make the total capacitance of the turntable approximately 70 picofarads (Pf), while the longer cable (5 ft.) will make the total capacitance approximately 180 picofarads. Since the nominal input capacitance in today's hi fi equipment is approximately 20—30 picofarads, these cables will give the total system approximately 100 picofarads and 210 picofarads respectively. Most four-channel cartridges give best performance with 100 picofarads while most stereo cartridges give best performance with 210 picofarads. Check the specifications of your particular cartridge model for more detailed information.

8. Once you have determined which cable will work best with your system, simply pass the connector (Fig. C, #7) through the hole in the back of the base and plug it into the socket (Fig. C, #7A) under the tone arm noticing that the red dot on the connector must line up with the red dot on the socket. Do not force this connection, as it will fit easily once the pins are correctly aligned.

9. Replace the turntable to its upright position and gently place the platter (Fig. B, #8) into position making certain that the spindle (Fig. B, #9) is correctly positioned into the spindle hole (Fig. B, #1).

10. Take the drive belt (Fig. B, #10) from its box. Place the belt around the platter and around the pulley on the motor (Fig. F, #11). The top portion of the pulley is for 33-1/3 RPM, while the bottom portion is for 45 RPM. It is not necessary to center the belt as it will do so itself once the turntable is turned on.

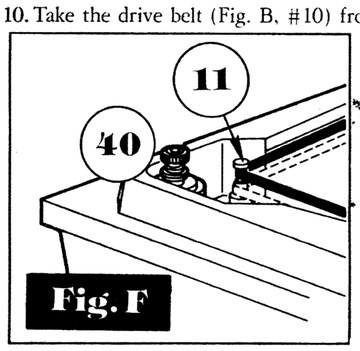


Fig. F

11. Place the trim ring (Fig. B, #14) over the platter making certain that it is seated properly.

12. Place the rubber mat (Fig. B, #15) onto the platter using a slight stretching motion to assure that it fits flat.

13. Remove the rubber band from the 45 adaptor (Fig. B, #16). The side with the concentric circles is for 33-1/3 RPM, while the other side is for 45 RPM.

This completes the set-up of your 698 Turntable.

Installing the Cartridge:

Since each cartridge manufactured is slightly different, these instructions are only basic. Spacers, wedges, and different length screws (all supplied by the cartridge manufacturer) will vary from one cartridge to another.

Included in the drive belt box are two nylon screws and a plastic spacer. These parts should be used in mounting non-insulated metal body cartridges into the 698 shell. This will eliminate any problems with hum and ground loops.

1. Remove the headshell (Fig. C, #17) from the tone arm by unscrewing the knurled ring (Fig. C, #18) in a clockwise direction and lifting the headshell straight up.

2. Using the appropriate length screws (Fig. D, #19 and #20), loosely install the cartridge into the headshell. You will notice that the nuts are installed in such a way as to allow them to move forward and backward. This is to facilitate alignment of the cartridge.

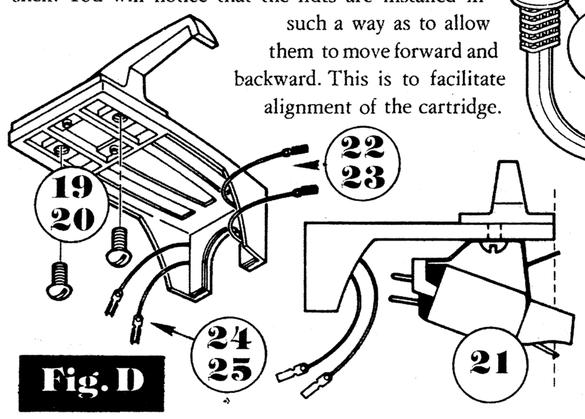


Fig. D

3. To align the stylus, simply position the cartridge so that the stylus (Fig. D, #21) is lined up with the front edge of the shell and so that the sides of the body of the cartridge are parallel and centered in the headshell. Once this is accomplished, tighten the two screws.

4. Using tweezers or small needle nose pliers, push the terminals (Fig. D, #22 through #25) over the appropriate pins on the back of the cartridge.

Color Code

#22 — white — left positive
#23 — green — right ground
#24 — red — right positive

These connections are critical to the performance of your cartridge. DO NOT SOLDER THESE CONNECTIONS TO THE CARTRIDGE.

5. Replace the headshell onto the tone arm and tighten the knurled ring snugly in a counterclockwise direction.

Adjustments:

1. Check to see that the distance between the trim ring and the base plate (Fig. E, #26) is between 1/8" and 3/16" and parallel all the way around. This can be seen best by turning on the turntable (after plugging the A.C. plug into a 117-volt 60-cycle A.C. outlet) by pushing the upper portion of the rocker switch (Fig. C, #27) towards the "ON" position. If the trim ring is not positioned correctly, it can be adjusted by tightening or loosening slightly the appropriate wing nuts (Fig. B, #28) under the turntable. Only slight adjustments should be necessary.

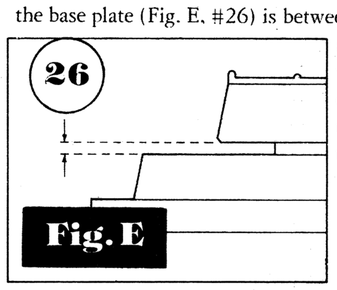


Fig. E

2. Adjust the anti-skating scale (Fig. C, #29), using the knurled knob, so that either of the two "O's" appear in the window (Fig. C, #30).

3. Adjust the tracking weight scale (Fig. C, #31), using the knurled knob, so that the "O" is lined up and centered with the white line.

4. Attach the counter-balance weight (Fig. C, #32) to the back of the arm by turning it counterclockwise. With the tone arm free from the arm rest and in one hand, use your other hand to adjust the weight in or out until the arm floats freely in a horizontal position.

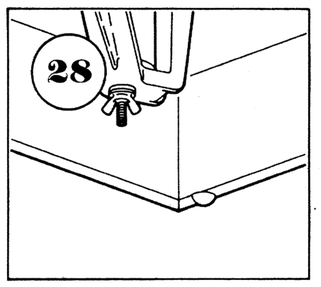
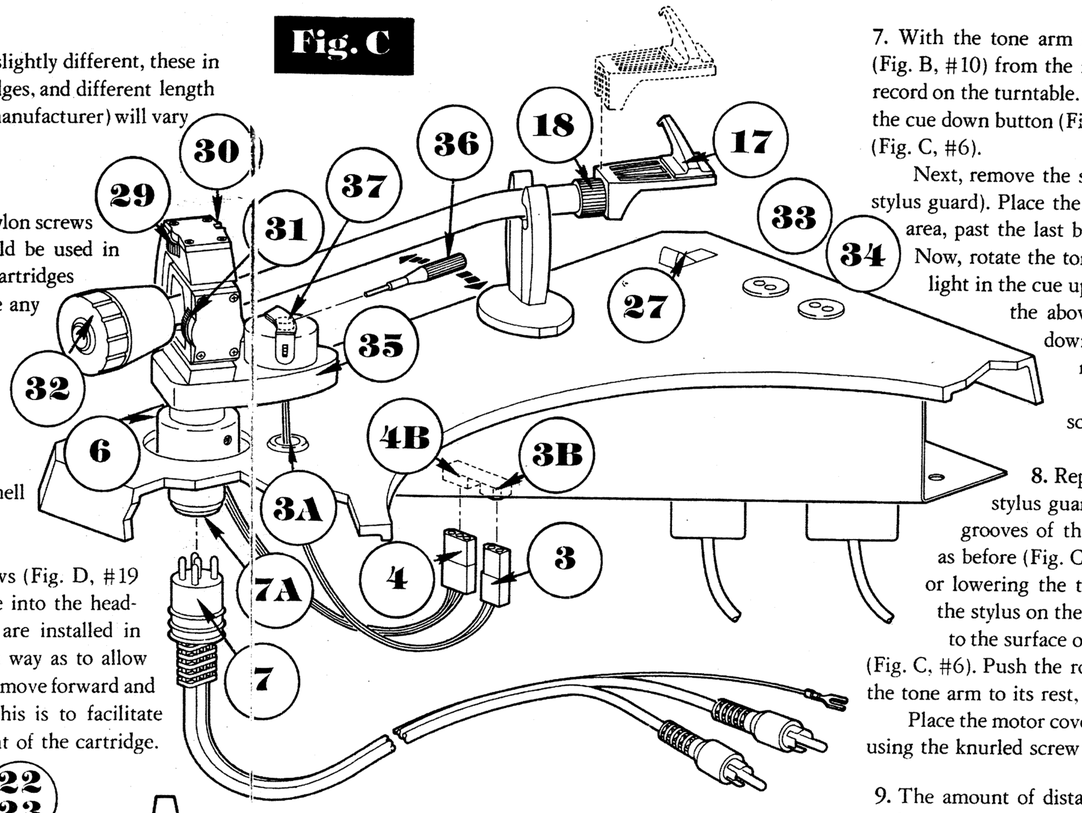


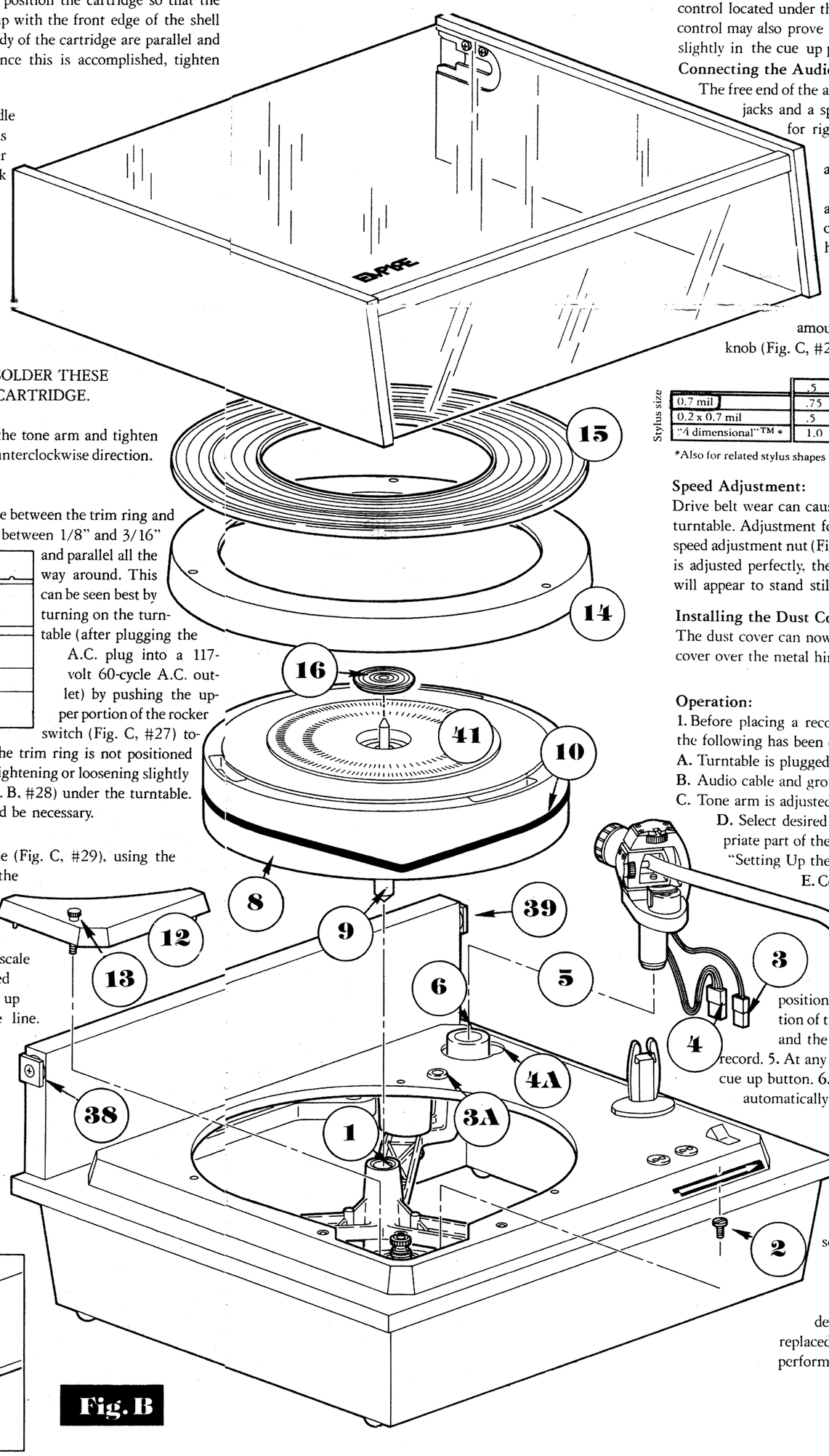
Fig. B

Fig. C



5. Add the appropriate tracking force for the cartridge installed (check the instructions supplied with the cartridge) by turning the knurled knob (Fig. C, #31) until the desired force is aligned with the white line. Each line represents 1/4 gram.

6. Place a record on the turntable (this record is for adjustment purposes and it would be desirable to use an old record that you do not mind touching with your fingers).



7. With the tone arm in the arm rest, remove the drive belt (Fig. B, #10) from the motor pulley (Fig. F, #11). Place an old record on the turntable. With the power turned on, lightly touch the cue down button (Fig. C, #34). Slightly loosen the set screw (Fig. C, #6).

Next, remove the stylus from the cartridge (or, attach the stylus guard). Place the cartridge on the record in the lead-out area, past the last band of music, close to the record label. Now, rotate the tone arm platform (Fig. C, #35) until the light in the cue up button (Fig. C, #33) comes on. Repeat the above process again (starting with the cue down button [Fig. C, #34]) to verify the correct position of the tone arm platform (Fig. C, #35). Lightly retighten the set screw (Fig. C, #6).

8. Replace the stylus assembly (or remove the stylus guard) and set the tone arm down into the grooves of the record. Slightly loosen the set screw as before (Fig. C, #6). Adjust the arm height by raising or lowering the tone arm platform (Fig. C, #35). With the stylus on the record, the tone arm should be parallel to the surface of the record. Now, tighten the set screw (Fig. C, #6). Push the rocker switch to the off position, return the tone arm to its rest, and replace the drive belt.

Place the motor cover (Fig. B, #12) into position and tighten using the knurled screw (Fig. B, #13).

9. The amount of distance between the stylus and the record surface (with the arm cued up) has been adjusted at the factory. If further adjustment is necessary, it can be done using the following steps:

Place the end of the gold colored tool (Fig. C, #36) supplied in the tone arm box into one of the holes in the cueing piston (Fig. C, #37). The arm position can now be adjusted by moving the tool towards the left for up and right for down. Remove the tool once this adjustment has been completed.

Note: The speed of the cueing may be adjusted by rotating the control located under the right front of the turntable base. This control may also prove helpful if the cueing seems to stick slightly in the cue up position.

Connecting the Audio Cable:

The free end of the audio cable you have selected has two pin jacks and a spade lug. The pin jacks are marked "R" for right channel (red) and "L" for left channel (grey). They are to be connected to the appropriate connectors on your receiver or pre-amplifier. The spade lug is to be attached to a ground point (usually found on the back of the same equipment you have plugged the pin jacks into).

Anti-skating Adjustment:

Each of the different stylus shapes and sizes used requires different amounts of anti-skating. Adjust the knurled knob (Fig. C, #29) according to the following chart.

Vertical stylus load (grams)

Stylus size	.5	.75	1.0	1.5	2.0	2.5	Anti-skate setting
0.7 mil	.75	1.0	1.5	2.0	2.5	3.0	
0.2 x 0.7 mil	.5	.75	1.25	1.75	2.25	2.75	
"4 dimensional" ™ *	1.0	1.5	2.0	3.0	4.0	—	

*Also for related stylus shapes used for "CD-4" playback.

Speed Adjustment:

Drive belt wear can cause a slight variation in the speed of the turntable. Adjustment for this can be made by turning the fine speed adjustment nut (Fig. F, #40) on the motor. When the speed is adjusted perfectly, the lines on the strobe disc (Fig. B, #41) will appear to stand still when viewed under fluorescent light.

Installing the Dust Cover:

The dust cover can now be installed by placing the rear of the cover over the metal hinge points (Fig. B, #38 & #39).

Operation:

1. Before placing a record on the turntable, check to see that the following has been done:

A. Turntable is plugged into a 117-volt 60-cycle socket.
B. Audio cable and ground is correctly connected.
C. Tone arm is adjusted and in the arm rest.
D. Select desired speed by placing the belt on the appropriate part of the motor pulley as discussed in step #10 of "Setting Up the Turntable."
E. Center spindle adaptor (Fig. B, #16) is correctly installed as per step #13 of "Setting Up the Turntable."

2. Place the record on the turntable and push the rocker switch to the "On" position. 3. Position the arm over the desired portion of the record. 4. Touch the cue down button and the arm will slowly go down and play the record. 5. At any point, to raise the arm, simply touch the cue up button. 6. At the end of the record, the arm will automatically raise.

Maintenance: The main bearing reservoir contains pre-lubricated oilite bearings. (Fig. B, #1). Once a year, the platter should be removed and the spindle shaft cleaned with a soft cloth (Fig. B, #9). The shaft should then be given a light coat of oil (3 in 1 or equivalent) using a cotton swab. Periodically wash the drive belt in mild detergent and water. The belt should be replaced every two years to assure optimum performance.

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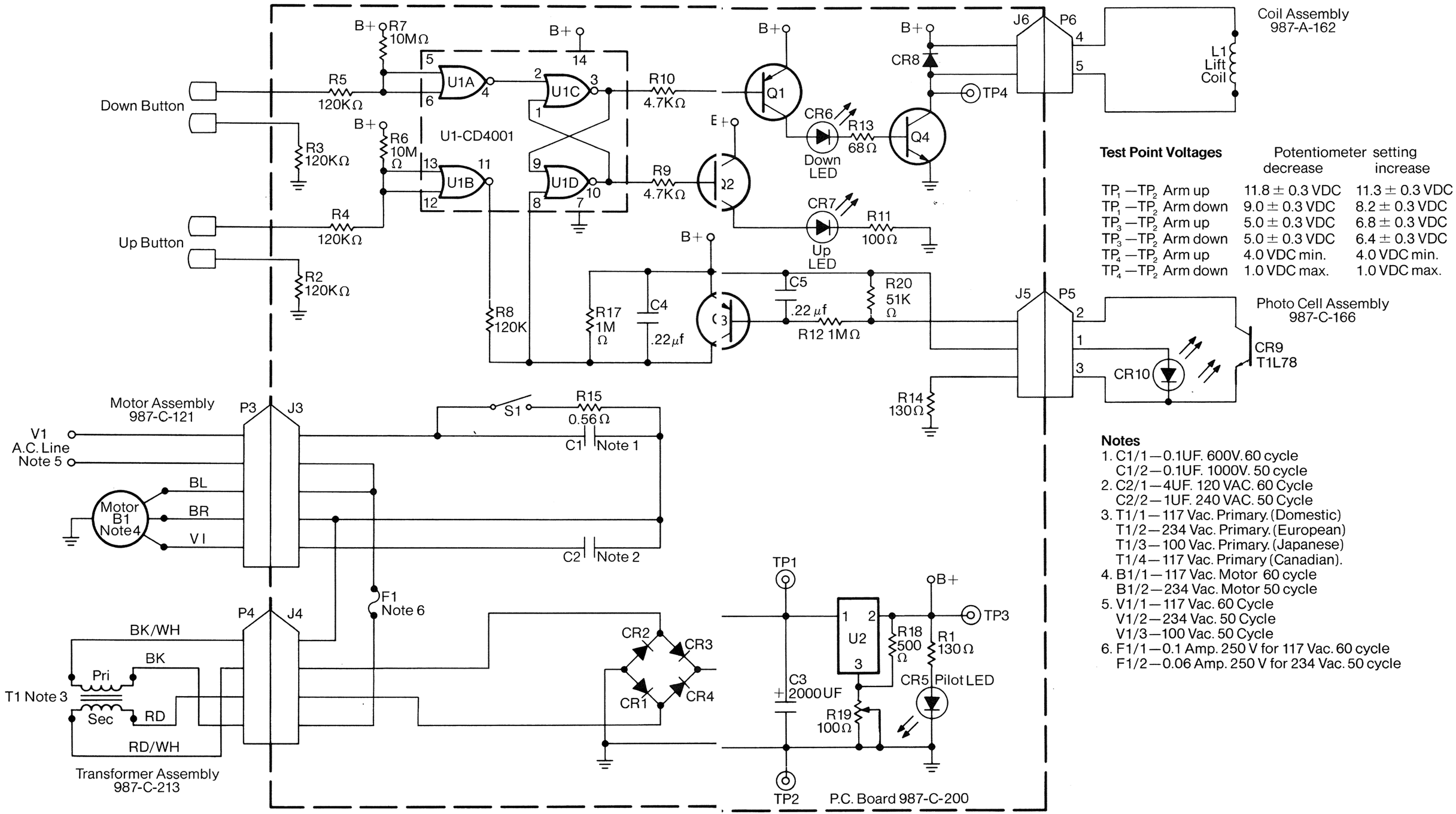

Test Point Voltages

	Potentiometer setting decrease	increase
TP_1 —TP_2 Arm up	11.8 ± 0.3 VDC	11.3 ± 0.3 VDC
TP_1 —TP_2 Arm down	9.0 ± 0.3 VDC	8.2 ± 0.3 VDC
TP_3 —TP_2 Arm up	5.0 ± 0.3 VDC	6.8 ± 0.3 VDC
TP_3 —TP_2 Arm down	5.0 ± 0.3 VDC	6.4 ± 0.3 VDC
TP_4 —TP_2 Arm up	4.0 VDC min.	4.0 VDC min.
TP_4 —TP_2 Arm down	1.0 VDC max.	1.0 VDC max.

Notes

1. C1/1—0.1UF. 600V. 60 cycle
   C1/2—0.1UF. 1000V. 50 cycle
2. C2/1—4UF. 120 VAC. 60 Cycle
   C2/2—1UF. 240 VAC. 50 Cycle
3. T1/1—117 Vac. Primary. (Domestic)
   T1/2—234 Vac. Primary. (European)
   T1/3—100 Vac. Primary. (Japanese)
   T1/4—117 Vac. Primary (Canadian).
4. B1/1—117 Vac. Motor 60 cycle
   B1/2—234 Vac. Motor 50 cycle
5. V1/1—117 Vac. 60 Cycle
   V1/2—234 Vac. 50 Cycle
   V1/3—100 Vac. 50 Cycle
6. F1/1—0.1 Amp. 250 V for 117 Vac. 60 cycle
   F1/2—0.06 Amp. 250 V for 234 Vac. 50 cycle

Reference schematic no. 987-C-254—A

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