SERVICE AND PARTS MANUAL
FOR
ACROPRINT MODELS
125, 150 AND P150
TIME RECORDERS

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06-0115-000 Rev D

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ACROPRINT TIME RECORDER

SERVICE AND PARTS MANUAL

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I. MOTOR AND DRIVE ASSEMBLY

These combination payroll and job cost recorders are driven by a 115 volt AC, 60 cycle, 1 RPM motor. This revolves the Minute Drive Cam exactly once each minute. All of the accuracy of the recorder is built into this motor, which should keep perfect time provided all the drive- train parts are properly installed, adjusted, and lubricated.

The 1 RPM Motor operates the Minute Cam which operates the Minute Drive Lever. Attached to the Minute Drive Lever is the Minute Feed Pawl. The Minute Feed Pawl and the Minute Drive Lever are adjusted so that the Minute Feed Pawl will travel 1-1/4 teeth when the Minute Drive Lever is on the high point of the Minute Cam. Check for this clearance on all teeth in the 60-Tooth Minute Drive Ratchet. This adjustment is very critical to the operation of the clock. If there is no clearance between the Minute Detent Pawl and the Ratchet Tooth, the Minute Feed Pawl will bind on the Minute Pawl Stop as the Pawl tries to advance to the next tooth. This will cause loss of time and will shorten the life of the 1 RPM Motor. However, too much clearance between the Minute Detent Pawl and Ratchet Tooth will cause excessive wear on the Hour Cam, which will result in gaining time. When this happens, the edge of the Hour Cam wears round; therefore, on the 59th minute, the Hour Follower Lever is on the rounded edge and will advance the Minute Wheel from the tension of the Hour Follower Lever. This occurs as the Minute Feed Pawl comes off the Minute Pawl Stop. Then the clock will take a normal minute. Also, too much clearance will cause the minutes to print out of alignment.

The area of contact on Minute Drive Lever and the Stud in the Minute Drive Cam should be greased at least twice a year. Points where the Minute Drive Lever bears on the Minute Shaft and Minute Shaft Bearing and the pivotal points of the Feed and Detent Pawls should have #6 machine oil twice a year.

II. TYPEHEAD ASSEMBLY

The Minute Typewheel features a Drive Gear molded to correspond with the Minute Drive Gear on the output of the Motor Drive Gear. Before the Minute Drive Gear can be on the Minute Shaft, you must refer to the Hour Drop-Off Cam which is molded onto the Minute Typewheel. This Cam is used to back the Hour Follower Lever and let it "drop" once each hour or each complete revolution of the Minute Typewheel. As viewed from the bottom center of the Typehead Assembly, "drop-off" occurs when the Typewheel advances from "59" minutes to "00" minutes.

The tab on the Hour Follower Lever should clear the back side of the hour drop-off Cam by .005" when the Minute Typewheel as at "00" minutes and the Hour Follower Lever is in a "thrown" position. This adjustment is made with the setting of gear. Be sure Set Screws are tight after this setting.

The Hour Typewheel arbor extends through the Typehead Rear Plate to which the 24-Tooth Ratchet is set. With the Ratchet Pawl assembled on the stud (on the lower side of the Typehead Rear Plate) and engaged in the Ratchet Teeth, set Ratchet Pawl Stop Screw for Pawl which is also engaged in Ratchet Teeth to just touch the leading edge of the Pawl; then, back the Pawl Screw to allow a .002 inch over-travel.

The same procedure as used above for the Hour Typewheel is used to adjust the Day or the Date Typewheel. This Typewheel is driven by a 1/4" shaft extending through the Typehead Rear Plate. A recorder which uses a Day Typewheel employs a 28-Tooth Ratchet, and a Date Typewheel requires a 31-Tooth Ratchet. On the rear side of the 24-Tooth Ratchet we employ a Cam which advances the Day or Date Typewheel Ratchet.

III. TYPEWHEEL ALIGNMENT

In order to set the 24-Tooth Ratchet to the Hour Typewheel Arbor, manually advance the Ratchet by actuating the Hour Follower Lever until the Day or Date Ratchet advances; then carefully rotate the Hour Typewheel to "12" midnight or "0" Hour to the bottom center printing position and in line with the "00" minutes, which should have already been set. Tighten Set Screws and check for binds or any mis-alignment. The Day or Date Typewheel can now be set to the 1/4" shaft. Align the Day-Date with the Hour and Minutes and tighten the Ratchet Set Screws, making sure the Day-Date Ratchet and the Hour Ratchet are not touching, which may cause binding.

Grease the Hour Drop-Off Cam on the Minutes Typewheel and the Day-Date Cam. Also, apply grease lightly to the 24, 28, or 31-Tooth Ratchets. This should be done twice a year.

When necessary to disassemble the Typewheels from the recorder, always clean and lightly oil the bearing surfaces upon re-assembly.

It will be necessary to periodically clean the Typewheel printing surfaces. DO NOT USE A SOLVENT cleaner, as most solvents will eventually tend to "gum-up" the Typewheel Assembly. Use a short bristle brush only.

Should the recorder be a left hand model; that is , furnished for left side of card registrations, the Intermediate Gear is fixed over the Minute Drive Gear which is molded in the Minute Typewheel and care should be taken to set the Minute Drive Gear out on the shaft so that it only engages the Intermediate Gear and does not engage the molded Minute Typewheel Gear.

A. REMOVING TYPEHEAD ASSEMBLY

1. Remove Hour and Minute Hands. Minute Hand is held in place with a Binder head screw. Notice that the lock washer is behind the Minute Hand. Hour Hand is friction fit over the hour arbor; remove with a slight pulling and twisting action.
   - A. Remove clock Dial Face (1 screw each corner).
   - B. Loosen motor wires from terminal block.
   - C. Remove 4 screws in the Dial Mounting Plate.
   - D. Move bottom of Dial Mounting Plate out, then come up with Dial Mounting Plate to remove.
   - E. Remove Ribbon.
2. Remove four screws (2 on each side) to separate Assembly Frame from Back Case. Lay Assembly Frame on bench face down; remove the four Screws holding Typehead in Assembly Frame. One Screw is under the Hammer Trip on Model 125. Pulling down Hammer will reveal this Screw. This will separate Typehead from Assembly Frame.

B. DISMANTLING TYPEHEAD ASSEMBLY

Loosen two Set Screws in Day-Date Ratchet. Remove E-Clip from Detent Stud and remove Ratchet. Disconnect Detent Spring from Detent Pawl and remove Detent Pawl. Lift Day-Date Follower Lever off Stud and disconnect Springs (2) from Typehead Rear Plate. Loosen Set Screws (2) in Hour Ratchet and remove. Loosen Set Screw in Stud Collar and remove Collar. Unhook Detent Spring from Hour Detent Pawl and remove Detent Pawl, (notice that Hour Feed Pawl and Hour Detent Pawl are shorter the Day-Date Pawls). Unhook springs from Hour Follower Lever and remove Hour Follower Lever. Loosen and remove the four Typehead Spacers. Pick straight up to remove Typehead Rear Plate. The Typewheels can be re-moved. Before the Typewheels are separated, file the Set Screw marks on Hour Wheel Shaft (Brass) and Day-Date Wheel Shaft (Steel). File lightly,remove burrs. Now the Type-wheels can be separated. The Typewheels are in three different pieces (Day-Date, Hour and Minutes). The Day-Date Wheel has a solid 1/4" steel shaft. The Hour Wheel has a brass shaft with 1 1/4" hold in the center. The Minute Wheel, tenths or hundredths, has a molded gear and Cam on one side. Month, Year and Symbol Wheels are held to Front Plate by four screws.

C. REASSEMBLING TYPEHEAD

Put one drop of oil on Day-Date Wheel Shaft where it fits Front Plate. Install Wheel in Front Plate. Oil the 1/4" steel shaft and slip Hour Wheel over Shaft -- Hour Wheel should now spin freely on shaft. If it does not, look for burrs on Day-Date Wheel Shaft. Put Minute Wheel over brass Hour Arbor; grease Hour Cam on Minute Wheel. Install Typehead Rear Plate and secure with three of the four Typehead Spacers. Do not install Spacer where the springs are going to hook in the Rear Plate. Install this Spacer after all springs are connected to the Rear Plate. All three Typewheels should spin freely; if not free, check for burrs or mis- alignment. There is a 1/4" hole in all Typewheels in which a 1/4" shaft can be inserted for temporary Typewheel alignment. Insert this shaft with Minute Wheel at "00" printing position, Hour Wheel at 12:00 MIDNIGHT printing position, Day-Date Wheel at Monday printing position, and Date Wheel at 1st printing position. For clocks with Month, Year and Symbol Wheels, the Month Bracket has to be removed to reveal the aligning holes. Leave this aligning shaft in Typewheels -- it can be removed later. Install Hour Follower Lever on Detent Stud. Connect Springs and put thin Spacer Washer on Stud. Install Collar and tighten Set Screw. With Set Screw tight, Hour Follower Lever and Detent Pawl should have very little side play, but should be free enough that Detent Pawl will not bind with spring unhooked. Hold side play to a minimum. Connect Detent Spring. Holding Hour and Detent Pawl out of the way, install 24-Tooth Ratchet. Rotate Minute Wheel counter clockwise until it stops. The Minute Wheel will stop when Hour Follower Lever bottoms in Hour Cam. This will also position Minute Wheel to be in a "00" printing position. Manually operate Hour Follower Lever so Hour Feed Pawl drops into next tooth of Ratchet. Release Hour Follower Lever and Hour Ratchet will advance one tooth. Hour Detent Pawl should drop into tooth and give about .002" clearance. If Detent Pawl does not drop in or there is no clearance, check Minute Wheel for "00" position. If Minute Wheel is in correct position and still there is no clearance, adjust Ratchet Pawl Stop Screw. Loosen Hex Nut and unscrew Ratchet Pawl Stop Screw about 1/2 turn. Tighten Hex Nut. Too little clearance will cause binding of Hour Follower Lever, resulting in Typehead losing hours. Too much clearance will cause hours to be out of alignment. Attached to the 24-Tooth Ratchet is a white, molded Cam. This is the Day-Date Cam. The 24-Tooth Ratchet has to be in position so Day- Date Follower Lever will operate at 12:00 MIDNIGHT. Install Day-Date Follower Lever on Stud, but do not connect Spring. Manually advance Hour Ratchet until Day-Date Follower Lever drops off Day-Date Cam. Slip a .010" feeler gauge between Hour Ratchet and bushing in Typehead Rear Plate. Press firmly on Hour Ratchet and tighten one (1) Set Screw in Hour Ratchet. Remove feeler gauge. Do not tighten both Set Screws -- this is a temporary adjustment. Install Day-Date Follower Lever

connecting springs to Typehead Rear Plate and install fourth Spacer. Install Spacer Washer on Stud and Day-Date Detent Pawl; secure with E- Clip. Detent Pawl should be free on Stud. If tight or binding, you might have to remove thin Washer or grind side surface of Detent Pawl. Connect Detent Spring. Detent Pawl and Day-Date Follower Lever should have as little side clearance as possible yet be free of binds. Install Day-Date Ratchet. There should be 1/16" clearance between tab on Day-Date Follower Lever and Hour Ratchet. Too little clearance will bind Hour Ratchet and result in losing hours. Adjust for .002" clearance between Detent Pawl and Ratchet. Insert .010" feeler gauge between Day-Date Ratchet and Hour Ratchet, press firmly on Day-Date Ratchet and tighten one Set Screw. Remove gauge and remove aligning shaft from Typewheels. Manually operate Hour Follower Lever. It should operate from its own spring tension all the way around the Hour Ratchet. If there is binding, check for proper spring tension, clearance between Ratchets, roughness on Detent or Ratchets, binding Detent Pawl or Typewheels, and clearance between Day- Date Detent Pawl and Day-Date Ratchet. If Typehead has Month Wheel, install Month Wheel and Month Bracket. Leave the four Month Bracket Screws loose and align wheel with rest of Typewheels using a straight edge. Press firmly on straight edge against Typewheels and tighten all four Screws in Month Bracket. Now Typehead can be installed in Assembly Frame; tighten all four Screws. Next install Dial Mounting Plate Assembly -- be sure the Set Screws in Drive Gear are sitting at 12:00 and 3:00 position(s). With Screws in this position, you can get to both Set Screws to adjust Minute Wheel. Rotate Minute Wheel counter clockwise until Minute Wheel stops. This is "00" minutes in printing position. Holding Minute Wheel in this position, install Dial Mounting Plate. Tighten the four Screws in Dial Mounting Plate. After this has been installed, insert the unit into Back Case and connect motor wires. Install Ribbon -- hex hole in Ribbon Spool to the rear of clock and round hole to the front. Loosen both Set Screws in Drive Gear and rotate Gear counter clockwise until it stops. This stop is Hour Cam backing up to Hour Follower Lever. This will position "00" minute to print on card. Hold a slight counter clockwise tension on Drive Gear and tighten both Set Screws in Drive Gear. Make sure the molded gear on Minute Wheel and Drive Gear have a full mesh. Also be sure Drive Gear does not rub the side of Minute Wheel too hard -- this would cause a bind in Minute Wheel and Drive Assembly. Insert time card and take a print. Always align other Typewheels with the Minute Wheel. Minute Wheel will always be the reference for aligning other Typewheels. Now the Minute Wheel is adjusted and tightened. Take another print and compare the printed hour to the printed minute. If the hour prints high or low, it can be adjusted in the following manner. Connect spring hook in spring hole in Hour Follower Lever, advancing Hour Ratchet around until Set Screw on Hour Ratchet comes into view on the left side of clock. Loosen the one Set Screw in Hour Ratchet and turn Hour Wheel up or down to correct printing. Tighten Set Screw and take another print. Continue this adjustment until hour print aligns with minute print. Tighten both Set Screws in Hour Ratchet and remove spring hook. Align Day-Date Wheel in the same manner as Hour Wheel. The spring hook does not need to be used with the Day-Date Follower Lever. The Day- Date Follower Lever has an extension with a blue sleeve. Year, Month and Symbol Wheels must be aligned two ways: (1) for heavy or light printing, or (2) aligned with other type.

1. Heavy or light printing is corrected by moving the Year-Month Bracket up or down. A simple way to do this is to loosen the four screws in the Bracket and raise Bracket all the way up. Snug down the four screws. Take a print -- it should be light printing. Place a punch or screwdriver on the one outside corner of Bracket and tap Bracket down until printing is uniform. Tighten the four Bracket Screws. Heavy print on Month or Symbol will cause light printing on other Typewheels, which would be hard to read.
2. The Month Latch has an elongated mounting hole. Loosen Latch mounting screw and slide Latch to the left or right to correct alignment. Sometimes moving latch will not align month printing. In that case, the Bracket must be moved. This can be done with a punch and hammer. Tap Bracket to the left or right. After moving Bracket, check the four screws for tightness.

Step 1 & 2 might have to be made in reverse order -- adjust alignment before heavy or light print adjustment is made.

The Card Table has a Card Stop Bar which is adjustable to accommodate unusual depths of print-on-the-card requirements. On the left hand model recorder with a full typewheel complement, this bar is omitted.

Periodically oil all pivotal and sliding points in the ribbon feed and printing assemblies. Grease the Trip Latch where it contacts the Hammer Trip on Model 125 at least twice yearly. The Center Bar should be free always to return upward after a registration is made. Should a bind develop and lack of oil is not the problem, check for gummy or gritty deposits. Also, a bind could develop should the Back Case be twisted or distorted when fastened to a wall which is not even or flat.

IV. PRINTING--RIBBON DRIVE AND REVERSE

MODEL 125

As the Center Bar is depressed, two mechanical functions are taking place. First, the Hammer Spring is being stretched as the Trip Latch slides off the Hammer Trip. The Hammer Assembly is thrown into the Typewheels due to the tension of the Hammer Spring. This is the way a print is

MODEL P150

The only difference in the 150 and P150 is the Front Case and the Card Finger. The Case has a Trip Plate which is spring loaded with a Contact Trip lever. The Card Finger is removed.

VII. ELECTRICAL INFORMATION

MODEL 150

One wire of the AC line goes to one AC terminal on the Full Wave Bridge Rectifier. The other AC wire will go to one of the Microswitch terminals, then from the other Microswitch terminal to the other AC terminal on the Rectifier. The Print Solenoid is connected to the + and - terminals on the Rectifier (one wire on the Solenoid to +; the other wire to -). Always be sure Microswitch is connected to AC.

VIII. PREVENTIVE MAINTENANCE PROCEDURE

Model 125, 150, and P150

1. Remove the clock Case and the Ribbon.
2. Dust out the machine with a dusting brush or with compressed air if available.
3. Remove any grease build-up on the Cams and Ratchets by using a rag on the end of a screwdriver blade.
4. Clean with a dry rag any ink build-up on the inside Card Table where the Ribbon slides back and forth.
5. Lubricate with a drop of #6 machine oil the Ribbon Reverse Toggle Plate and at pivot points of the left and right Ribbon Feed Fingers. Make sure the Toggle Plate moves easily and the Shoulder Screw is snug.
6. Put a drop of oil in the oil access hole found on top of the Collar supporting the left and right Ribbon Shafts. Also, place one drop of oil on the pivot point of the Trip Latch and another behind the Hex Nut that holds the Hammer on the Hammer Trip Sleeve.
7. Lubricate with a slight amount of oil the pivot points of the Feed and Detent Pawls (2 each) in the typehead. Also, with a slight amount of oil, lubricate the Minute Feed and Detent Pawls. NOTE: Make sure no oil drips on the Ribbon or on the Card Table.
8. Place a drop of oil on each of the three (3) studs that support the Center Bar.
9. If no grease is evident, place a small amount on the Minute Drive Lever where the Minute Drive Cam Stud makes contact, and on the Hour Drop-Off Cam on the Minute Typewheel and the Day-Date Cam. Also, grease if necessary, the Hammer Trip where it contacts the Trip Latch.
10. Make sure all five (5) Set Screws in the Typehead Assembly, the two (2) Set Screws in both Ribbon Reverse Ratchets and the Two (2) Set Screws in the Main Drive Gear are tight.
11. Make sure that the following screws are tight: The four (4) Assembly Frame Screws, the four (4) Month Bracket Screws and the two (2) Microswitch Screws.
12. Check to see if ribbon reverses properly. You can advance the ribbon without activating the Hammer on the Model 125 by pushing down the Center Bar just far enough to move the ribbon and on the Model 150 by lifting up the Solenoid Plunger and then letting it drop. To make the Ribbon Reverse, simply hold the Ratchet that is being driven by the Ribbon Feed Finger until drive reverses.
13. Check for excessive wear where the Minute Feed Pawl drives the Minute Drive Ratchet. Replace the Ratchet and Pawl, if worn.
14. Set the clock on an A.M. hour at "00" minutes and check the ends of the two (2) Ratchet Pawl Stop Screws. The ends should not be worn.
15. Check the top of the Minute Feed Pawl where it strikes the Minute Pawl Stop. Replace Pawl if it is excessively worn or dented.
16. Look directly down behind the Dial to see if any of the parts mounted on the Dial Mounting Plate are touching the back of the Dial. If so, form the Dial out enough so that nothing touches it.
17. Install a new Ribbon.
18. Make sure the recorder is printing proper Day-Date and Time.
19. Put the clock case back on the machine.

X. SERVICE TIPS

A. Losing time (minutes).
   1. Check 1 RPM motor with second hand on watch -- Minute Drive Lever should operate at the same second for 4 or 5 minutes.
   2. Check travel on Minute Feed Pawl --should be 1-1/4 teeth--check for loose Minute Feed Pawl Stop. More than 1-1/4 teeth travel will allow Minute Feed Pawl to jump a tooth in 60-Tooth Ratchet.
   3. Binding Minute Wheel against Drive Gear.
   4. Binding Hour Reduction Gears.
   5. Minute Cam loose on motor -- Set Screw loose in Drive Gear.
   6. Check parts for lubrication.
   7. Ask User if they have experienced any power failures recently.

B. Losing time (hours).
   1. Hour Ratchet binding on Typehead Rear Plate.
   2. Too much side play in Hour Follower Lever allowing Hour Feed Pawl to get off Hour Ratchet.
   3. Day-Date Lever binding Hour Ratchet.
   4. Hour Detent Pawl binding--not enough clearance.

C. Gaining time (minutes).
   1. Minute Feed Pawl backing up two (2) teeth.
   2. Minute Feed Pawl and Detent Pawl out of adjustment. When this adjustment is incorrect, the Hour Cam on Minute Wheel wears the point off Hour Cam. On the 59th minute, the Minute Feed Pawl comes out of the 60-Tooth Ratchet. At this time the Minute Wheel can be rotated by the Hour Follower Lever. This will account for one (1) minute fast. Then the recorder will take on (1) normal minute.

D. Gaining Time (hours) Typewheels one or more hours ahead of clock face).
   1. When Hour Typewheel is at 12:00 midnight, check clearance between Day-Date Cam and Cam Follower of Day-Date Follower Lever. There should be 1/16" clearance between Cam and Follower at midnight. Check Hour Ratchet for correct adjustment and alignment. It may be necessary to remove Day-Date Cam and grind off about 1/16" for correct clearance.
   2. Set Screws in Hour Ratchet loose, causing Hour Wheel to spin freely and appear to gain time.
   3. Hour Pawl Stop Screw loose -- causing hours to advance two hours at a time.
   4. Binding Hour Detent Pawl.

E. Day or Date not changing.
   1. Too much side play in Day-Date Follower Lever.
   2. Day-Date Detent Pawl binding--not enough clearance.
   3. Set Screws in Day-Date Ratchet loose, causing Day-Date wheel to spin freely.
   4. Day-Date Pawl Stop Screw too tight not allowing Pawl to advance.
   5. Clock may be set 12 Hours of so Day-Date would appear to advance at noon instead of midnight.

F. Light or weak print.
   1. Ribbon worn out or not reversing.
   2. Inside Card Table bend down or loose.
   3. Trip Latch loose.

G. Ribbon not reversing.
   1. Toggle Plate loose.
   2. Finger Spring broken or disconnected.
   3. Ribbon Drive Gear loose on shaft.
   4. Too much tension on Ribbon Tension Spring.

H. Center Bar Binding.
   1. Back Case mounted to wall in distorted position.
   2. Center Bar Return Spring broken.
   3. Sliding areas dry or gummy.

I. Glass Installation.
   1. Remove cover and place face down on table.
   2. Carefully remove any glass shards of broken glass
   3. Remove round push-on clips which retain glass. Some of the plastic posts to which the clips are attached may have to be cut off with pliers to remove the clips. Extraplastic post were molded into the cover if the original ones are damaged.
   4. Lay replacement glass into cover and push on new clips to retain the glass. A nutdriver would well for installing clips.

J. Platen Replacement.
   SEE PREVIOUS TEXT.

K. No Signals.
   1. Check for proper programming.
   2. Check Batteries for proper voltage (must be 7.5 Volts or Higher).
   3. Make sure jumpers are attached between Terminals 1 and 2, also between 3 and 4 of Terminal Block.
   4. Check for poor connections at Terminals 4 and 5 of Terminal Block.
   5. Time may be 12 hours off.
   6. If signals are early, Piezoelectric switch mounted to frontplate may be set too close to pawl. If signals are late, switch may be too far from pawl, which lets the circuitry miss the movement of the pawl and not increment the program consistently.

XI. RECTIFIER TEST

A. Preliminary Information
   1. Terminal Configuration & Schematic Diagram
   2. Types of Failures -- Two types of Rectifier failures could cause the inoperation of the Rectifier Power Drive System -- these are:
      A. The opening of the Bridge Diode element/leg.
      B. The shorting of a Bridge Diode element/leg.
   3. Circuit Failure Symptoms:
      A. Open Bridge Diode Element/Leg: Should this occur, there would be a reduction of DC output voltage to the load circuit thus causing no or intermittent operation.

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      A. Open Bridge Diode Element/Leg: Should this occur, there would be a reduction of DC output voltage to the load circuit thus causing no or intermittent operation.

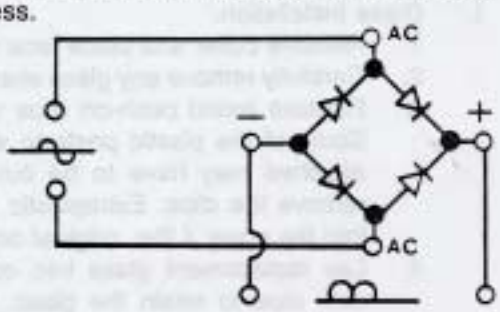
B. Shorted Bridge Diode Element/Leg: Should this occur, there would be no DC output Voltage with AC input Circuit Breakers opening.

B. In Circuit Testing:

1. Procedure

A. Before turning system on, disconnect the Load Circuit from the Positive and Negative Terminals of the Rectifier.

B. Place DC Voltmeter between the Positive and Negative Terminals (1000 ohms/volt typical or higher) with the scale switch set on applicable range which would allow the reading of 250 volts DC or less.



C. Activate System:Meter should read as follows:

For AC	For DC	
Input	Output voltage	
Voltage	Min.	Max.
110-125vac	85vdc	120vdc
208-250vac	170vdc	240vdc

D. If meter indicates within the acceptable maximum/minimum range, the Rectifier is operating properly with the problem most likely being in the Load Circuit.

2. Precautions

A. Make sure that there is no accidental shorting of any of the Terminals of the Rectifier by screw drivers, other tools or metallic objects when the AC Input has been activated. This could cause a severe overload, thus causing the Rectifier to fail.

B. Make sure that no body contact is made with any Terminals of the Rectifier since voltage and current levels could prove to be lethal.

C. Out of Circuit Testing: This method permits a rough check of the Rectifier at convenient/safe voltage current levels. It does not assure that 100% of the Rectifiers tested by this method will function properly under rated voltage and current conditions, but rather is analogous to the simple OHM meter check for half wave Rectifier Diodes.

1. Procedure

a. Basic Test Circuit

b. With or without the primary voltage of T1 applied, place the Rectifier to be tested into the circuit as shown below.

c. Place DC voltmeter between the Positive and Negative Terminals (1000 ohms/volt typical or higher) with the scale switch set on applicable range which would allow the reading of 15 volt DC or less.

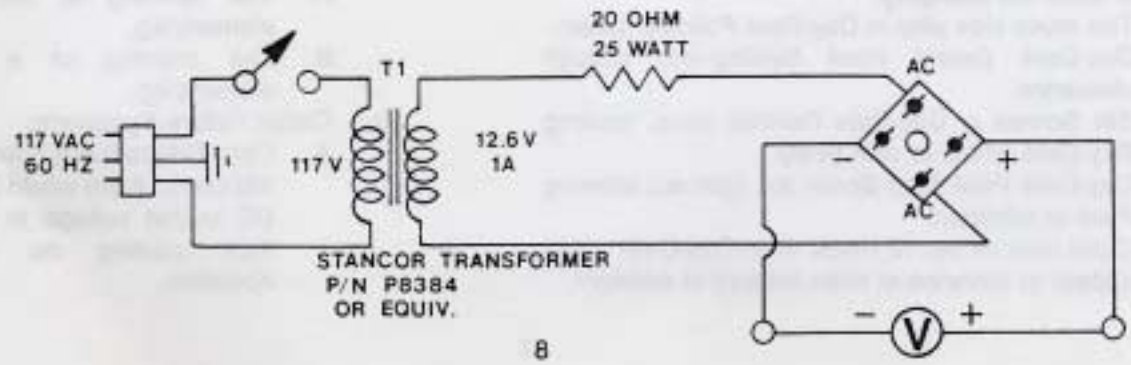
d. With circuit activated, meter should read as follows:

DC	
Output	Voltage
Minimum	Maximum
8.5vdc	14.5vdc

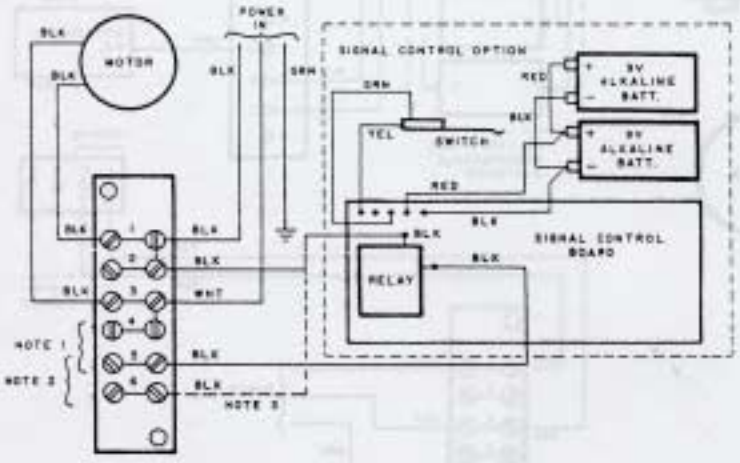
e. If meter indicated with the acceptable maximum/ minimum range, the Rectifier is operating properly.

XII. SUGGESTED TOOLS & EQUIPMENT

1/4" x 5/16" Open End Wrench
11/32" x 5/16" Open End Wrench
3/8" x 7/16" Open End Wrench
8" Adjustable Wrench
4" Adjustable Wrench (Optional)
Screw Driver -- Large
Screw Driver -- Medium
Screw Driver Medium - Small - 8" long
Screw Driver -- Phillips
Screw Driver -- Close Quarter
Screw Starter Screw Driver - Split Blade Type
Spring Hook -- 6" to 8" Long
Long Nose Pliers
Duck Bill Pliers
Diagonal - Side Cutting Pliers
6 oz. Ball Peen Hammer
Oil Can (use #6 Machine Oil)(for pivotal points)
Tube grease or vaseline (for hour & day/date ratchets, Cams, & hammer trip latch)6"
Knife Edge File
Small Mill File
Knife (sharp pocket)
Stud Finder -- magnetic
Tool Box or Roll
Electric Drill with 1/4" Masonry Bit and 5/16" Regular Bit

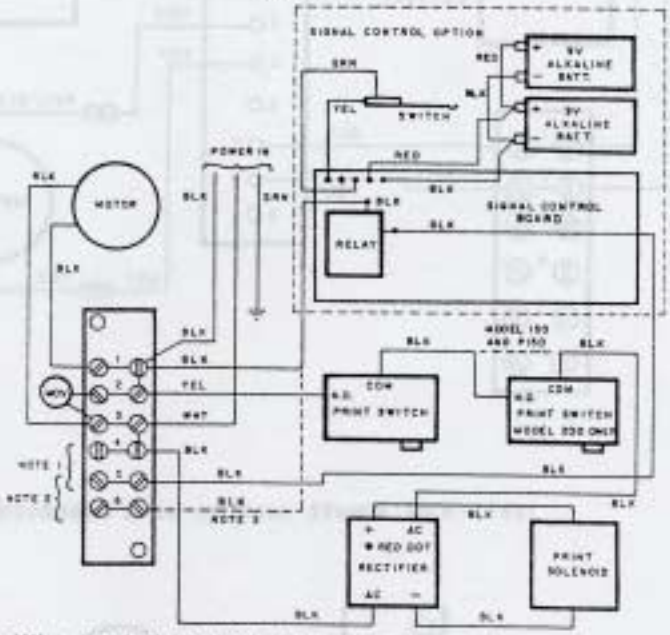


125 AND SIGNAL CONTROL OPTION
(120/240V AC)



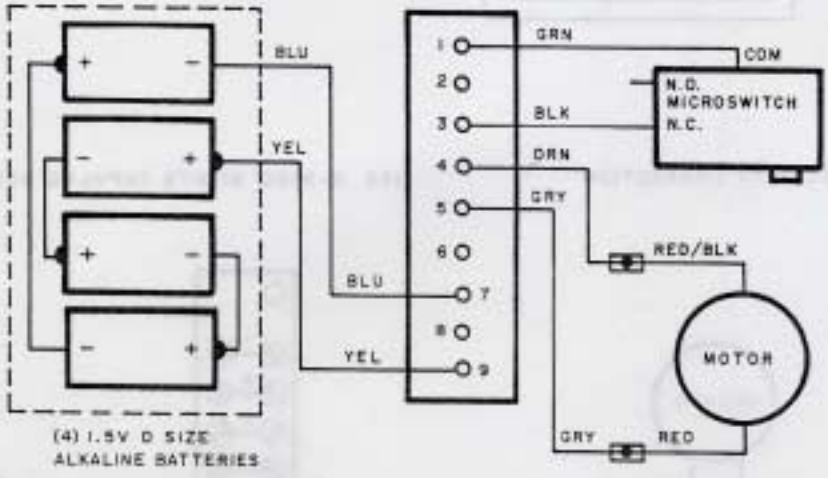
NOTES: 1. 4 AND 5 ARE FOR 120/240V AC SIGNAL OUTPUT
2. 5 AND 6 ARE FOR DRY CONTACT OPTION
3. FOR DRY CONTACT OPTION, BLK WIRE FROM NO. 2 IS CONNECTED TO NO. 6

150, P150, 200 AND SIGNAL CONTROL OPTION
(120/240V AC)



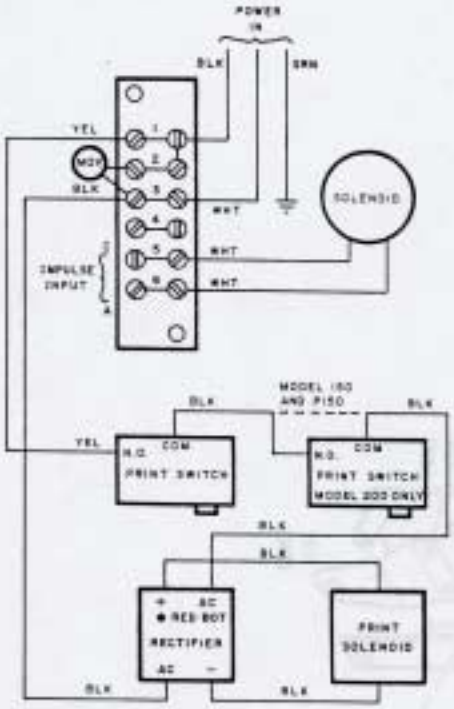
NOTES: 1. 4 AND 5 ARE FOR 120/240V AC SIGNAL OUTPUT
2. 5 AND 6 ARE FOR DRY CONTACT OPTION
3. FOR DRY CONTACT OPTION, BLK WIRE FROM NO. 2 IS CONNECTED TO NO. 6

125 BATTERY POWERED (6V DC)

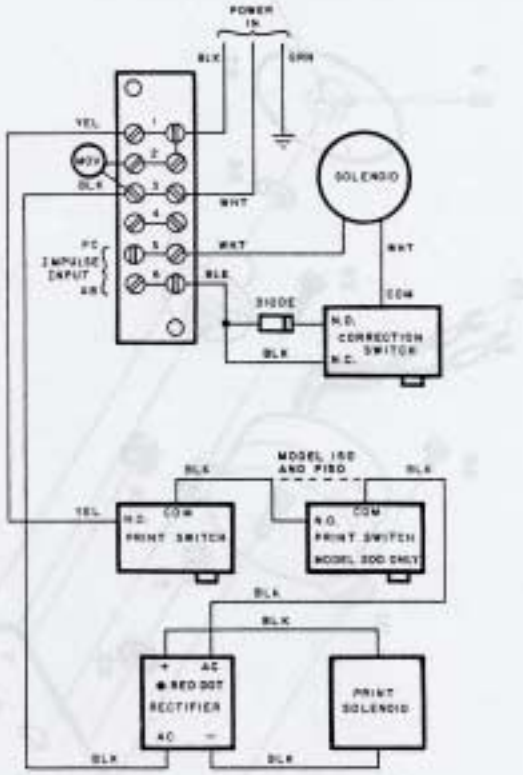


(4) 1.5V D SIZE
ALKALINE BATTERIES

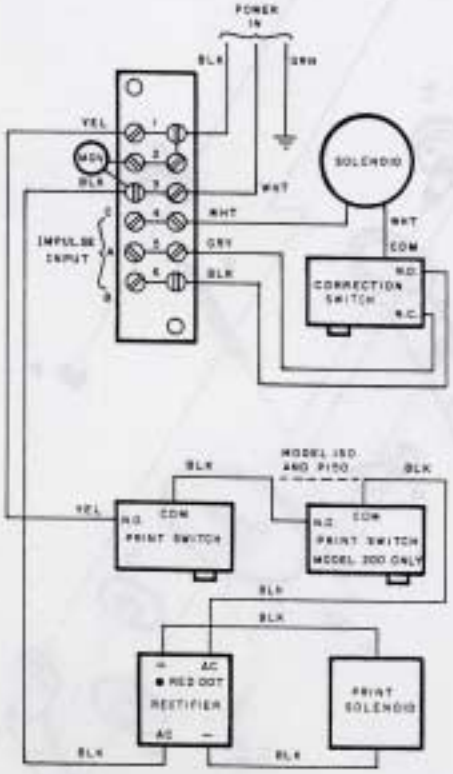
150, P150, & 200
2-WIRE MINUTE IMPULSE NON CORRECTIVE



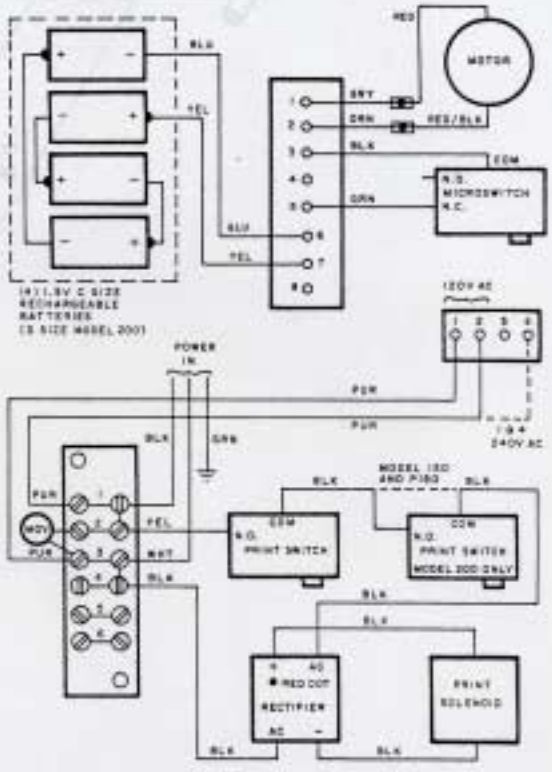
150, P150, & 200 2-WIRE REVERSE POLARITY WITH CORRECTION



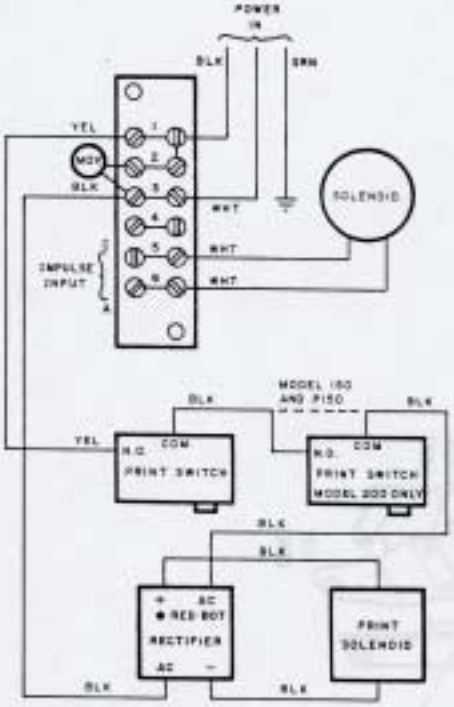
150, P150, & 200 3-WIRE MINUTE IMPULSE WITH CORRECTION



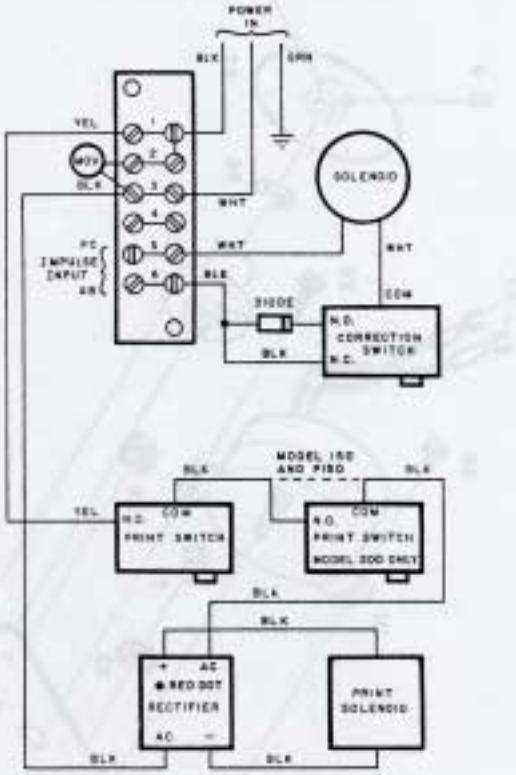
150, P150, & 200 RECHARGEABLE WITH STANDARD MOV (120/240V AC)



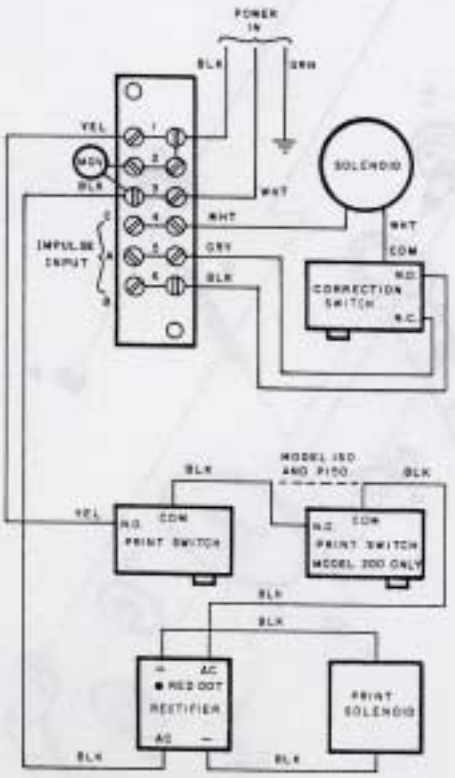
150, P150, & 200
2-WIRE MINUTE IMPULSE NON CORRECTIVE



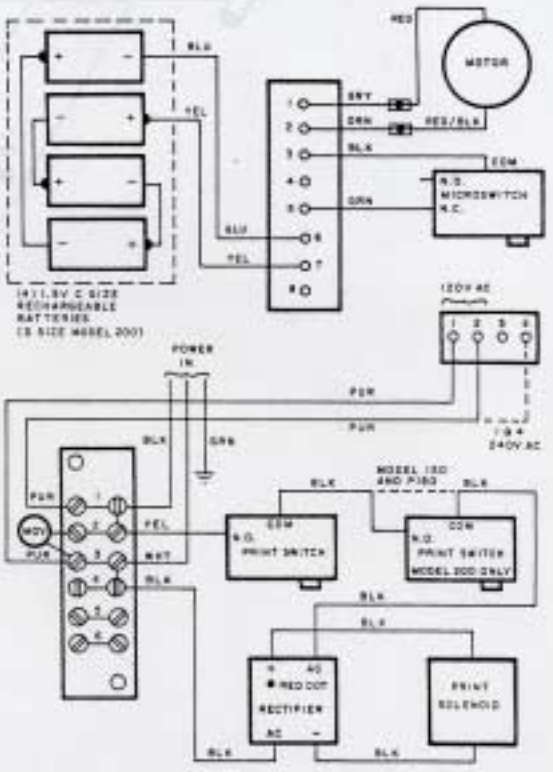
150, P150, & 200 2-WIRE REVERSE POLARITY WITH CORRECTION



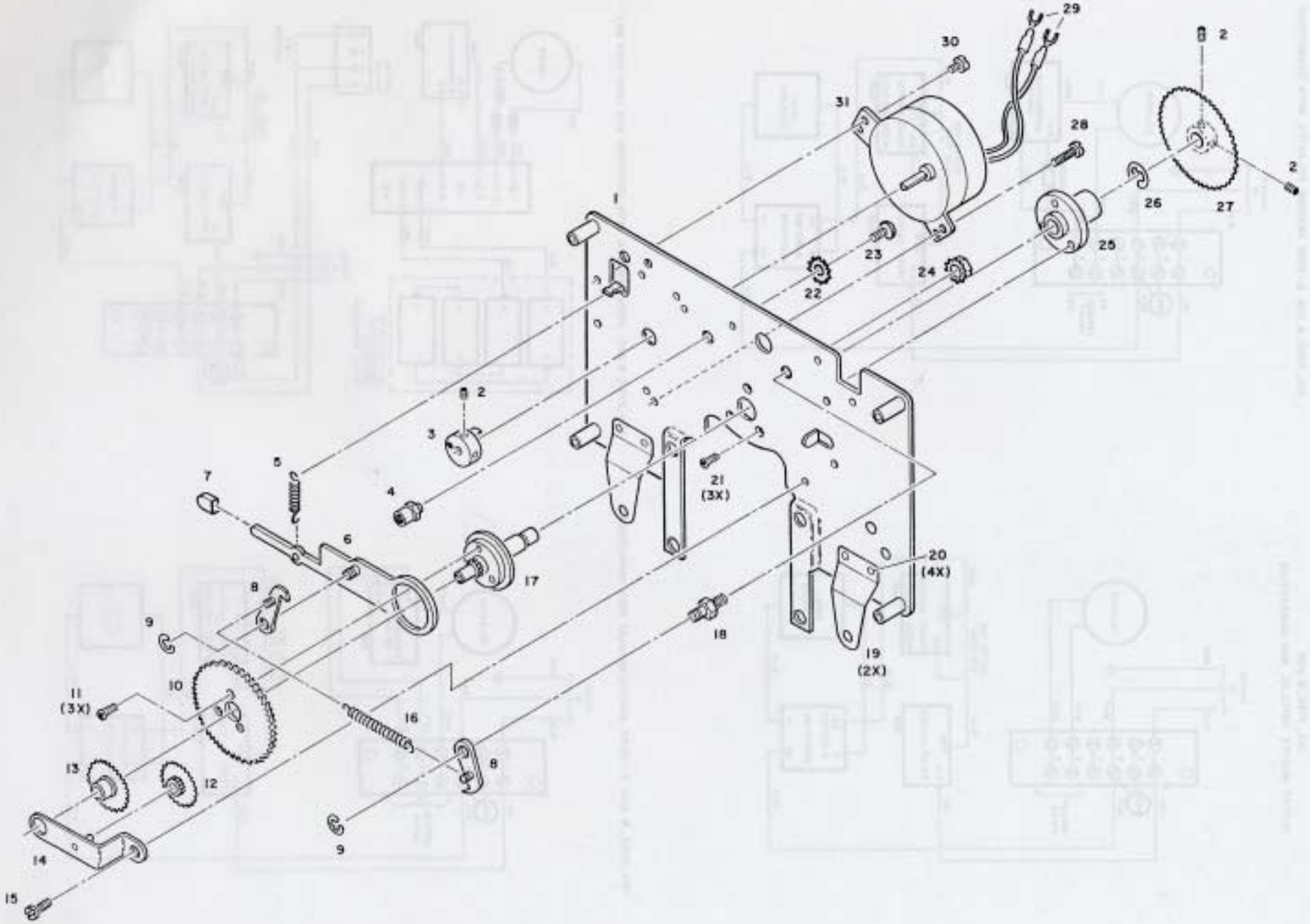
150, P150, & 200 3-WIRE MINUTE IMPULSE WITH CORRECTION



150, P150, & 200 RECHARGEABLE WITH STANDARD MOV (120/240V AC)



STANDARD
FRONT MOUNTING PLATE ASSEMBLY

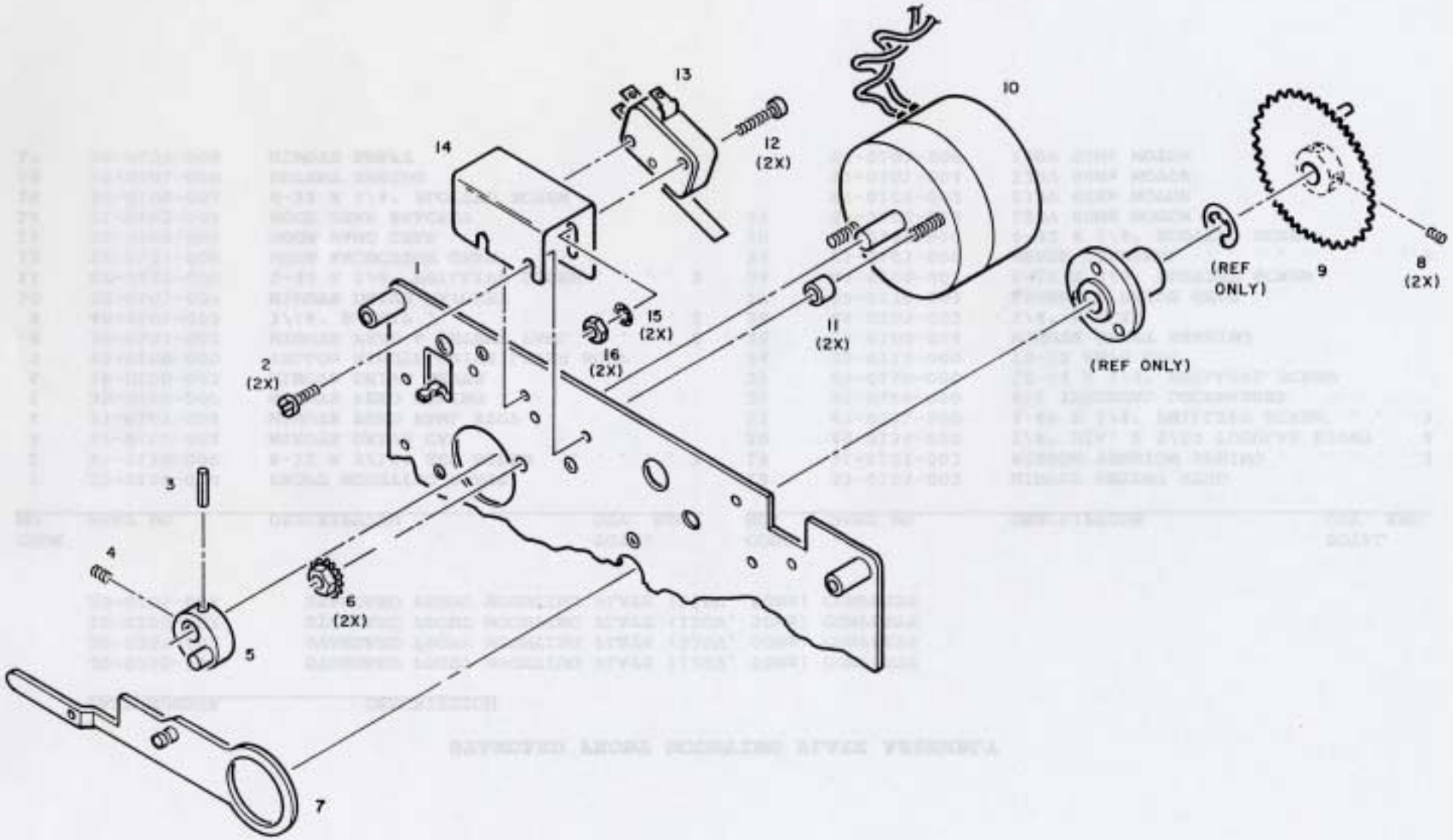


STANDARD FRONT MOUNTING PLATE ASSEMBLY

PART NUMBER	DESCRIPTION
20-0205-000	STANDARD FRONT MOUNTING PLATE (120V, 60Hz) COMPLETE
20-0205-002	STANDARD FRONT MOUNTING PLATE (230V, 60Hz) COMPLETE
20-0205-003	STANDARD FRONT MOUNTING PLATE (120V, 50Hz) COMPLETE
20-0205-004	STANDARD FRONT MOUNTING PLATE (230V, 50Hz) COMPLETE

CODE NO.	PART NO	DESCRIPTION	TOTAL QTY. REQ.
1	20-0100-000	FRONT MOUNTING PLATE	
2	47-0130-000	8-32 X 3/16" SET SCREW	3
3	32-0102-002	MINUTE DRIVE CAM	
4	33-0105-002	MINUTE FEED PAWL STOP	
5	35-0100-000	MINUTE FEED SPRING	
6	38-0100-003	MINUTE DRIVE LEVER	
7	42-0100-000	YELLOW MINUTE DRIVE LEVER BOOT	
8	38-0101-003	MINUTE FEED & DETENT PAWL	2
9	45-0105-003	3/16" E-CLIP	2
10	32-0101-007	MINUTE DRIVE RATCHET	
11	47-0122-000	5-40 X 1/4" PHILLIPS SCREW	3
12	32-0103-000	HOUR REDUCTION GEAR	
13	32-0104-000	HOUR HAND GEAR	
14	31-0102-003	HOUR GEAR BRACKET	
15	47-0108-002	6-32 X 1/4" SLOTTED SCREW	
16	35-0101-000	DETENT SPRING	
17	33-0100-006	MINUTE SHAFT	
18	33-0101-002	MINUTE DETENT STUD	
19	31-0101-003	RIBBON TENSION SPRING	2
20	45-0136-000	1/8" DIA. X 5/32 TUBULAR RIVET	4
21	47-0121-000	4-40 X 1/4" PHILLIPS SCREW . . .	3
22	48-0106-000	#10 INTERNAL LOCKWASHER	
23	47-0110-000	10-32 X 1/4" PHILLIPS SCREW	
24	49-0112-000	10-32 KEPS NUT	
25	32-0100-004	MINUTE SHAFT BEARING	
26	45-0105-002	1/4" E-CLIP	
27	32-0178-003	ASSEMBLY DRIVE GEAR	
28	47-0108-003	6-32 X 3/8" SLOTTED SCREW	
29	63-0103-000	SPADE TERMINAL	2
30	47-0108-000	6-32 X 1/8" SLOTTED SCREW	
31	57-0100-002	120V 60Hz MOTOR	
	57-0101-002	230V 60Hz MOTOR	
	57-0101-004	230V 50Hz MOTOR	
	57-0101-006	120V 50Hz MOTOR	

FRONT MOUNTING PLATE
MINUTE IMPULSE ASSEMBLY
(INCLUDING CORRECTION FEATURE OPTION)



STANDARD FRONT MOUNTING PLATE ASSEMBLY

PART NUMBER	DESCRIPTION
20-0205-000	STANDARD FRONT MOUNTING PLATE (120V, 60Hz) COMPLETE
20-0205-002	STANDARD FRONT MOUNTING PLATE (230V, 60Hz) COMPLETE
20-0205-003	STANDARD FRONT MOUNTING PLATE (120V, 50Hz) COMPLETE
20-0205-004	STANDARD FRONT MOUNTING PLATE (230V, 50Hz) COMPLETE

CODE NO.	PART NO	DESCRIPTION	TOTAL QTY. REQ.
1	20-0100-000	FRONT MOUNTING PLATE	
2	47-0130-000	8-32 X 3/16" SET SCREW	3
3	32-0102-002	MINUTE DRIVE CAM	
4	33-0105-002	MINUTE FEED PAWL STOP	
5	35-0100-000	MINUTE FEED SPRING	
6	38-0100-003	MINUTE DRIVE LEVER	
7	42-0100-000	YELLOW MINUTE DRIVE LEVER BOOT	
8	38-0101-003	MINUTE FEED & DETENT PAWL	2
9	45-0105-003	3/16" E-CLIP	2
10	32-0101-007	MINUTE DRIVE RATCHET	
11	47-0122-000	5-40 X 1/4" PHILLIPS SCREW	3
12	32-0103-000	HOUR REDUCTION GEAR	
13	32-0104-000	HOUR HAND GEAR	
14	31-0102-003	HOUR GEAR BRACKET	
15	47-0108-002	6-32 X 1/4" SLOTTED SCREW	
16	35-0101-000	DETENT SPRING	
17	33-0100-006	MINUTE SHAFT	
18	33-0101-002	MINUTE DETENT STUD	
19	31-0101-003	RIBBON TENSION SPRING	2
20	45-0136-000	1/8" DIA. X 5/32 TUBULAR RIVET	4
21	47-0121-000	4-40 X 1/4" PHILLIPS SCREW	3
22	48-0106-000	#10 INTERNAL LOCKWASHER	
23	47-0110-000	10-32 X 1/4" PHILLIPS SCREW	
24	49-0112-000	10-32 KEPS NUT	
25	32-0100-004	MINUTE SHAFT BEARING	
26	45-0105-002	1/4" E-CLIP	
27	32-0178-003	ASSEMBLY DRIVE GEAR	
28	47-0108-003	6-32 X 3/8" SLOTTED SCREW	
29	63-0103-000	SPADE TERMINAL	2
30	47-0108-000	6-32 X 1/8" SLOTTED SCREW	
31	57-0100-002	120V 60Hz MOTOR	
	57-0101-002	230V 60Hz MOTOR	
	57-0101-004	230V 50Hz MOTOR	
	57-0101-006	120V 50Hz MOTOR	

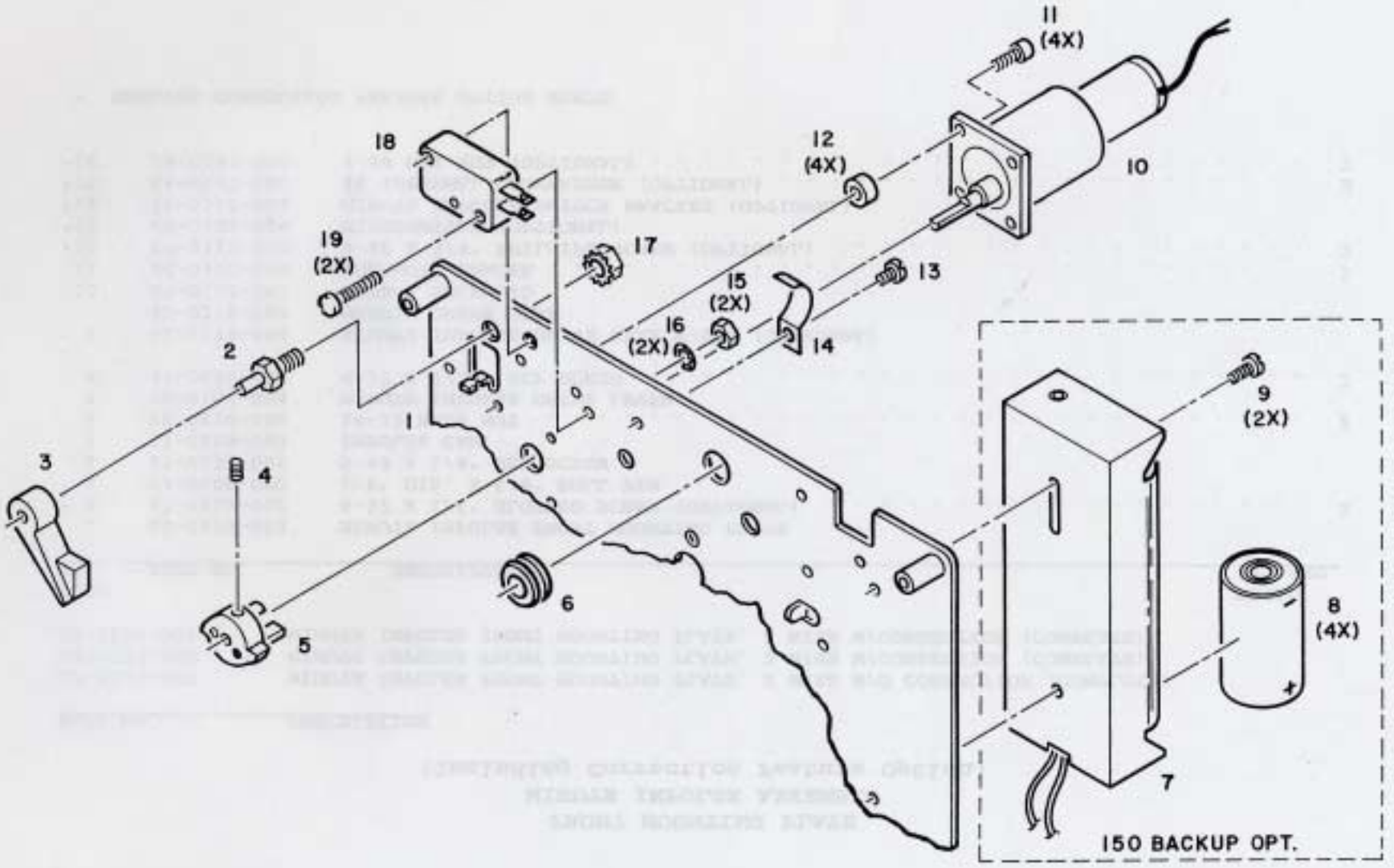
FRONT MOUNTING PLATE
MINUTE IMPULSE ASSEMBLY
(Including Correction Feature Option)

PART NO.	DESCRIPTION
20-0205-007	MINUTE IMPULSE FRONT MOUNTING PLATE, 2 WIRE W/O CORRECTION (COMPLETE)
20-0205-008	MINUTE IMPULSE FRONT MOUNTING PLATE, 2 WIRE W/CORRECTION (COMPLETE)
20-0205-009	MINUTE IMPULSE FRONT MOUNTING PLATE, 3 WIRE W/CORRECTION (COMPLETE)

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY.REQ.
1	20-0100-002	MINUTE IMPULSE FRONT MOUNTING PLATE	
* 2	47-0108-002	6-32 X 1/4" SLOTTED SCREW (OPTIONAL)	2
3	33-0108-000	1/8" DIA. X 5/8" ROLL PIN	
4	47-0132-000	5-40 X 1/8" SET SCREW	
5	32-0109-003	IMPULSE CAM	
6	49-0112-000	10-32 KEPS NUT	2
7	38-0100-004	MINUTE IMPULSE DRIVE LEVER	
8	47-0130-000	8-32 X 3/16" SET SCREW	2
* 9	32-0178-004	MINUTE IMPULSE DRIVE GEAR W/PIN (OPTIONAL)	
	32-0178-003	MINUTE DRIVE GEAR	
10	57-0102-002	ROTARY SOLENOID	
11	46-0102-000	SOLENOID SPACER	2
*12	47-0117-000	4-40 X 5/8" PHILLIPS SCREW (OPTIONAL)	2
*13	65-0103-000	MICROSWITCH (OPTIONAL)	
*14	31-0213-002	MINUTE IMPULSE SWITCH BRACKET (OPTIONAL)	
*15	48-0107-000	#4 INTERNAL LOCKWASHER (OPTIONAL)	2
*16	49-0107-000	4-40 HEX NUT (OPTIONAL)	2

* DENOTES CORRECTION FEATURE OPTION PARTS

MODEL 125 FRONT MOUNTING PLATE
BATTERY POWERED OPTION ASSEMBLY
(INCLUDING MODEL 150 BATTERY BACKUP OPTION)

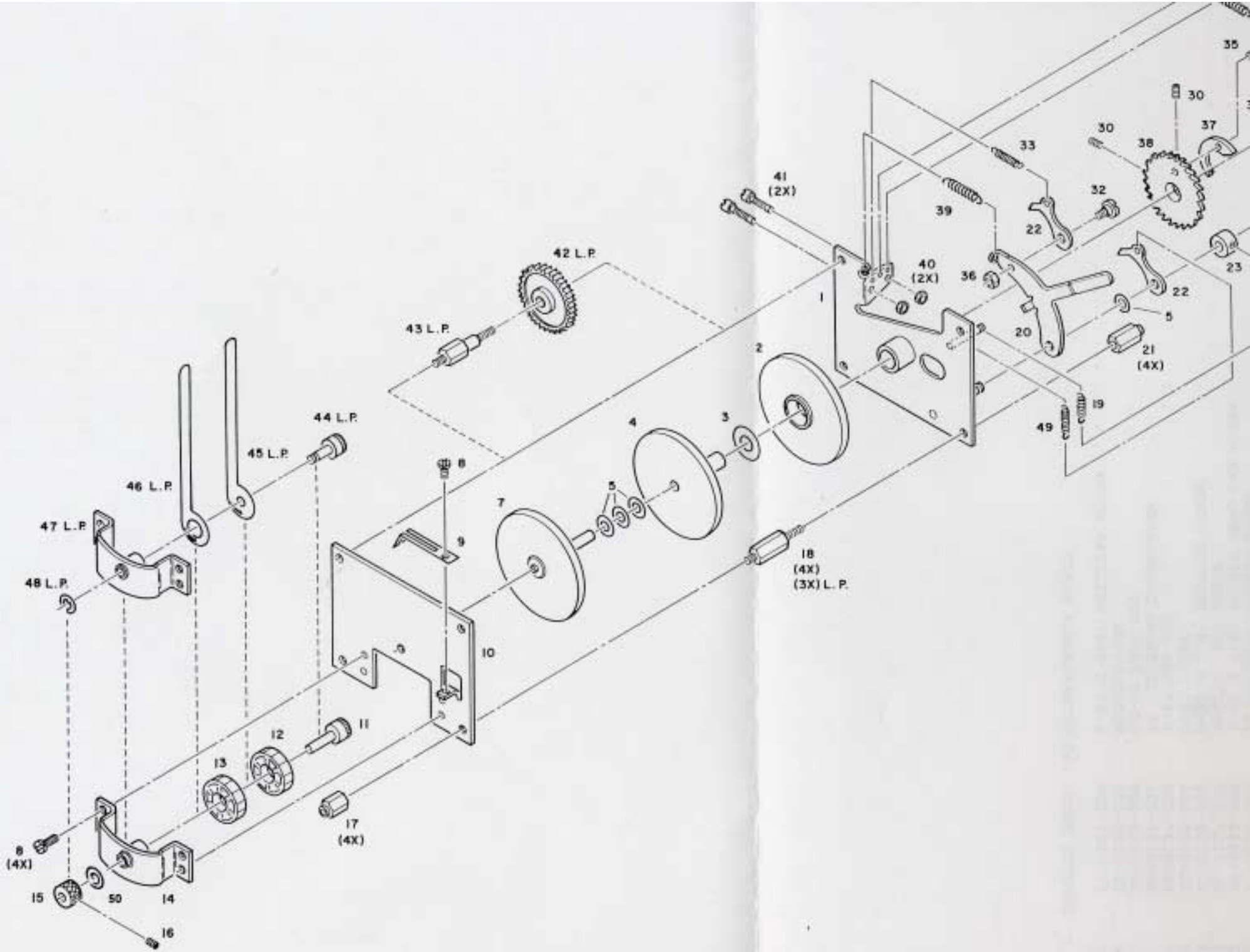


FRONT MOUNTING PLATE
BATTERY POWERED ASSEMBLY
(Including BP 125, & Rechargeable 125 & 150)

PART NO.	DESCRIPTION
20-0205-005	BATTERY POWERED & RECHARGEABLE 125 FRONT MOUNTING PLATE (COMPLETE)
20-0205-006	RECHARGEABLE 150 FRONT MOUNTING PLATE (COMPLETE)

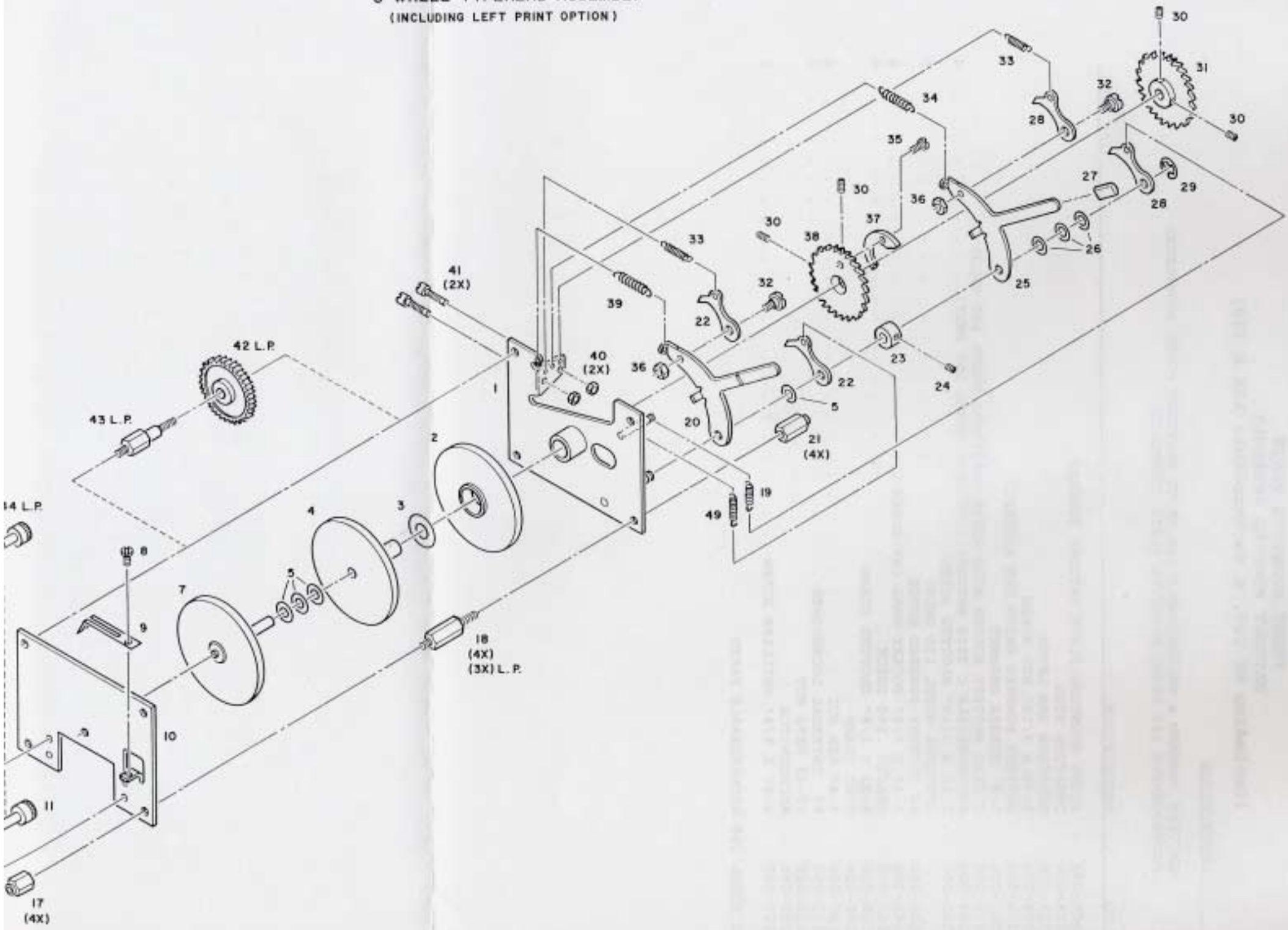
CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
1	20-0100-003	FRONT MOUNTING PLATE BATTERY POWERED	
2	33-0138-002	DURATION STUD	
3	38-0115-000	DURATION ARM LEVER	
4	47-0128-000	5-40 X 3/16" SET SCREW	
5	32-0176-002	BATTERY POWERED DRIVE CAM ASSEMBLY	
6	42-0107-000	3/8" RUBBER GROMMET	
*7	72-0106-000	C SIZE BATTERY HOLDER WITH WIRES (OPTIONAL MODEL 150 ONLY)	
*8	58-0101-000	RECHARGEABLE C SIZE BATTERY (OPTIONAL MODEL 150 ONLY)	4
*9	47-0112-000	5-40 X 3/16" SLOTTED SCREW OPTIONAL MODEL 150 ONLY)	2
10	57-0112-000	6V BATTERY POWERED MOTOR	
11	47-0146-000	3-48 X 3/8" SOCKET HEAD CAP SCREW	4
12	46-0117-002	SPACER .160 THICK	4
13	47-0108-000	6-32 X 1/8" SLOTTED SCREW	
14	73-0100-000	CORD CLAMP	
15	49-0107-000	4-40 HEX NUT	2
16	48-0107-000	#4 INTERNAL LOCKWASHER	2
17	49-0112-000	10-32 KEPS NUT	
18	65-0100-000	MICROSWITCH	
19	47-0117-000	4-40 X 5/8" PHILLIPS SCREW	2

* DENOTES MODEL 150 RECHARGEABLE PARTS


41 (2X)
42 L.P.
43 L.P.
44 L.P.
45 L.P.
46 L.P.
47 L.P.
48 L.P.
40 (2X)
36
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17 (4X)
18 (4X) (3X) L.P.
19
20
21 (4X)
22
23
30
30
32
33
35
37
38
39
49
50
8 (4X)

5 WHEEL TYPEHEAD ASSEMBLY

(INCLUDING LEFT PRINT OPTION)



TYPEHEAD ASSEMBLIES
(Includes Left Print Option)

PART NO.	DESCRIPTION
20-0154-XXX	TYPEHEAD ASSEMBLY (CONSULT FACTORY FOR PART NO.S)

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
1	31-0223-003	TYPEHEAD REAR PLATE	
2	37-0100-002	MINUTE TYPEWHEEL	
	37-0102-002	HUNDREDTH TYPEWHEEL	
	37-0101-002	TENTHS TYPEWHEEL	
3	46-0107-000	.885 X .443 X .005 SHIM	
4	37-0105-000	1-12 HOUR TYPEWHEEL	
	37-0106-000	0-23 HOUR TYPEWHEEL	
5	46-0107-006	.500 X .257 X .010 SHIM	4
7	37-0107-000	DAY TYPEWHEEL	
	37-0110-000	1-31 DATE TYPEWHEEL	
8	47-0108-000	6-32 X 1/8" SLOTTED SCREW	5
9	38-0102-002	YEAR-MONTH LATCH	
10	31-0104-002	TYPEHEAD FRONT PLATE	
11	33-0112-002	MONTH TYPEWHEEL SHAFT	
12	37-0103-000	MONTH TYPEWHEEL	
	37-0103-002	MONTH TYPEWHEEL ASSY., WITH SHAFT	
	37-0103-003	MONTH TYPEWHEEL LEFT PRINT ASSY., WITH SHAFT	
13	37-0104-002	YEAR TYPEWHEEL	
	37-0104-003	SYMBOL TYPEWHEEL	
14	31-0105-003	YEAR & MONTH BRACKET (RIGHT PRINT)	
15	45-0100-002	MONTH KNOB	
16	47-0132-000	5-40 X 1/8" SET SCREW	
17	46-0103-002	TYPEHEAD SPACER	4
18	46-0104-002	CENTER TYPEHEAD SPACER	4
		(with Left Print Option)	3
19	35-0104-000	DETENT PAWL SPRING (.324 LONG)	
20	38-0105-002	HOUR FOLLOWER LEVER	
21	46-0105-002	LONG TYPEHEAD SPACER	4
22	38-0106-002	HOUR RATCHET PAWL	2
23	32-0111-002	STUD COLLAR	
24	47-0130-000	8-32 X 3/16" SET SCREW	
25	38-0103-002	DAY-DATE FOLLOWER	
26	46-0107-003	.500 X .250 X .003 SHIM (optional, As Needed)	
	46-0107-005	.500 x .257 x .005 SHIM (optional, As needed)	
	46-0107-006	.500 X .257 X .010 SHIM (optional, As Needed)	
27	42-0100-002	BLUE DAY-DATE BOOT	
28	38-0104-002	DAY-DATE RATCHET PAWL	2
29	45-0105-002	1/4" E-CLIP	
30	47-0128-000	5-40 X 3/16" SET SCREW	4
31	32-0113-003	28 TOOTH RATCHET (for day wheel)	
	32-0114-003	31 TOOTH RATCHET (for date wheel)	

FOLD OUT

TYPEHEAD ASSEMBLIES
(Includes Left Print Option)

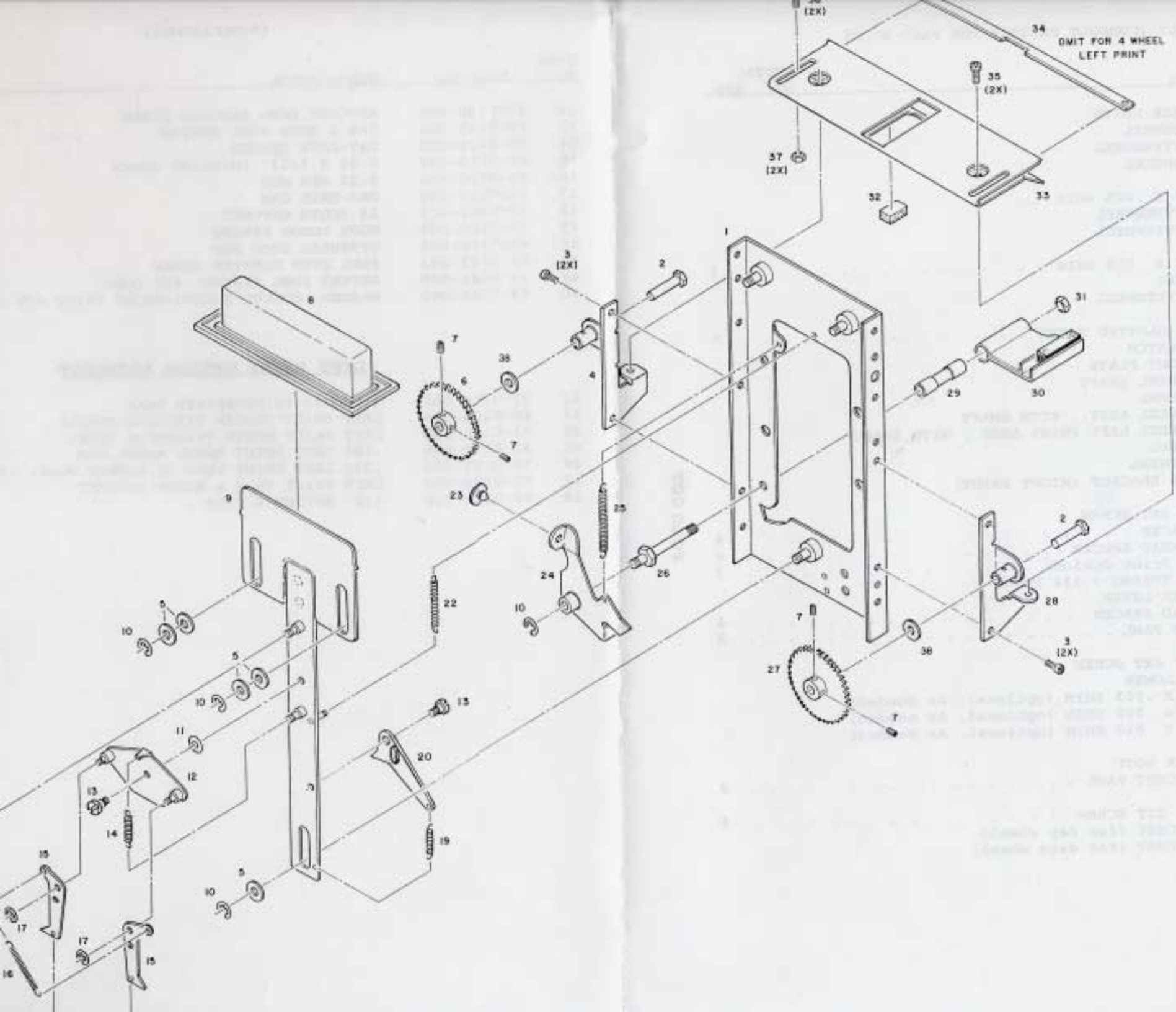
(continued)

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
32	47-0100-002	RATCHET PAWL SLOTTED SCREW	2
33	35-0105-000	DAY & HOUR PAWL SPRING	2
34	35-0103-000	DAY-DATE SPRING	
35	47-0112-006	5-40 X 7/32" PHILLIPS SCREW	
36	49-0110-000	8-32 HEX NUT	2
37	32-0115-000	DAY-DATE CAM	
38	32-0112-003	24 TOOTH RATCHET	
39	35-0102-000	HOUR THROW SPRING	
40	49-0100-002	TYPEHEAD STOP NUT	2
41	47-0102-002	PAWL STOP SLOTTED SCREW	2
49	35-0141-000	DETENT PAWL SPRING .450 LONG	
50	48-0101-000	WASHER, CURVED SPRING(RIGHT PRINT 4/5 WHEEL)	

LEFT PRINT OPTION ASSEMBLY

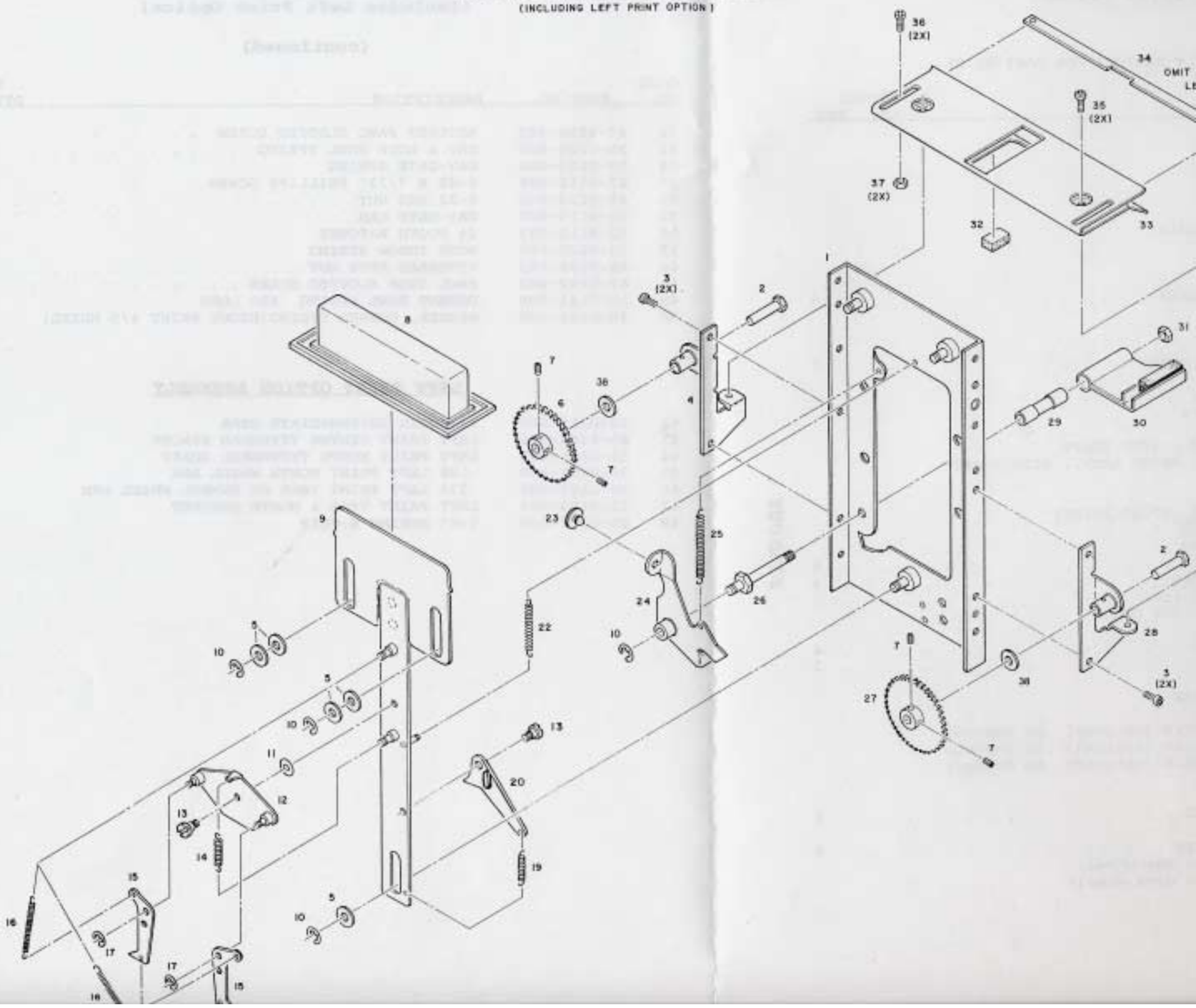
42	32-0116-000	41 TOOTH INTERMEDIATE GEAR
43	46-0104-004	LEFT PRINT CENTER TYPEHEAD SPACER
44	33-0115-002	LEFT PRINT MONTH TYPEWHEEL SHAFT
45	38-0107-000	.188 LEFT PRINT MONTH WHEEL ARM
46	38-0107-002	.375 LEFT PRINT YEAR OR SYMBOL WHEEL ARM
47	31-0105-004	LEFT PRINT YEAR & MONTH BRACKET
48	45-0102-000	1/8" SPRING E-CLIP

FOLD OUT


OMIT FOR 4 WHEEL LEFT PRINT

MODEL 125 PRINT & RIBBON DRIVE ASSEMBLY

(INCLUDING LEFT PRINT OPTION)



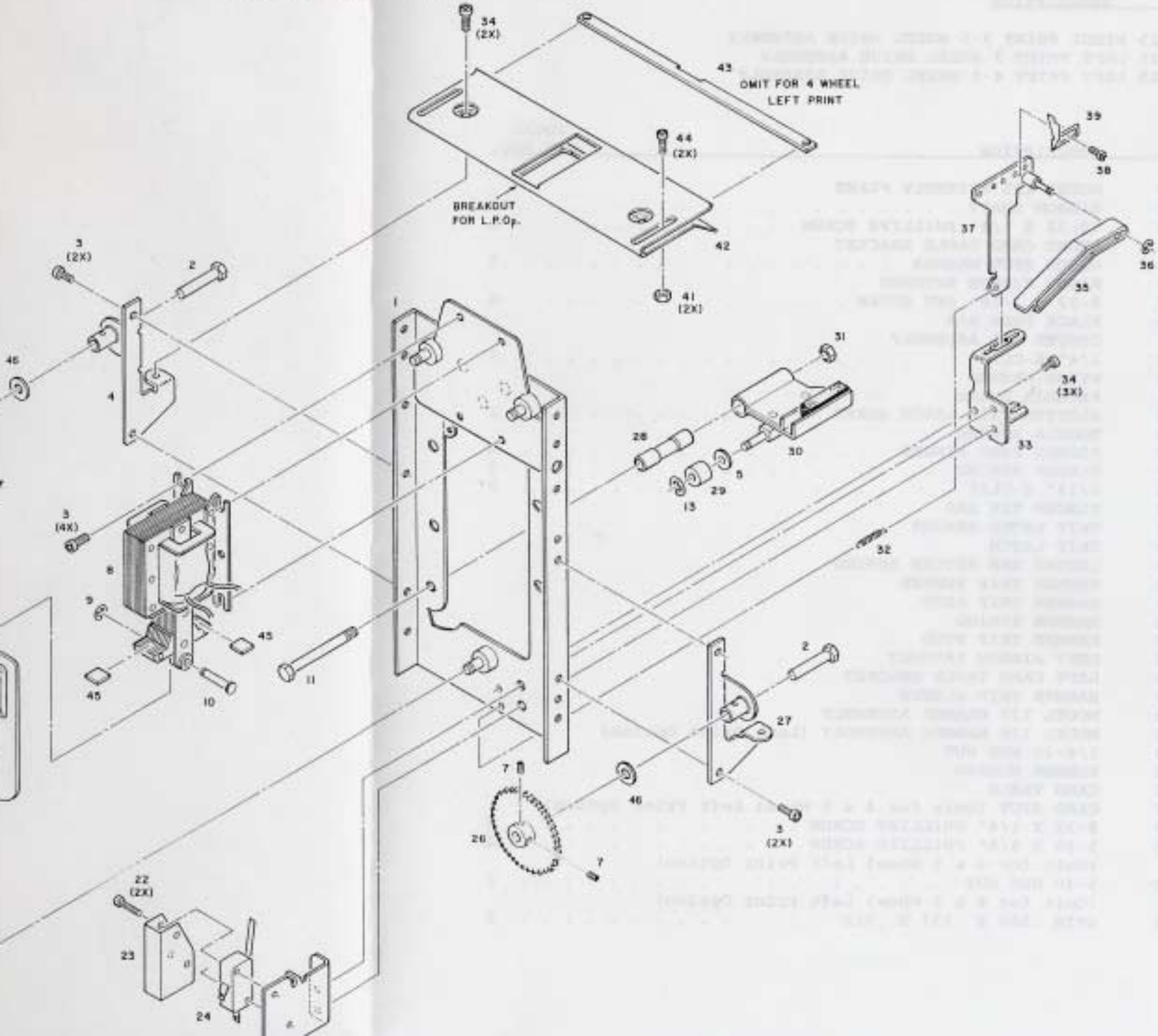
MODEL 125 PRINT & RIBBON DRIVE ASSEMBLIES
(Including Left Print Option)

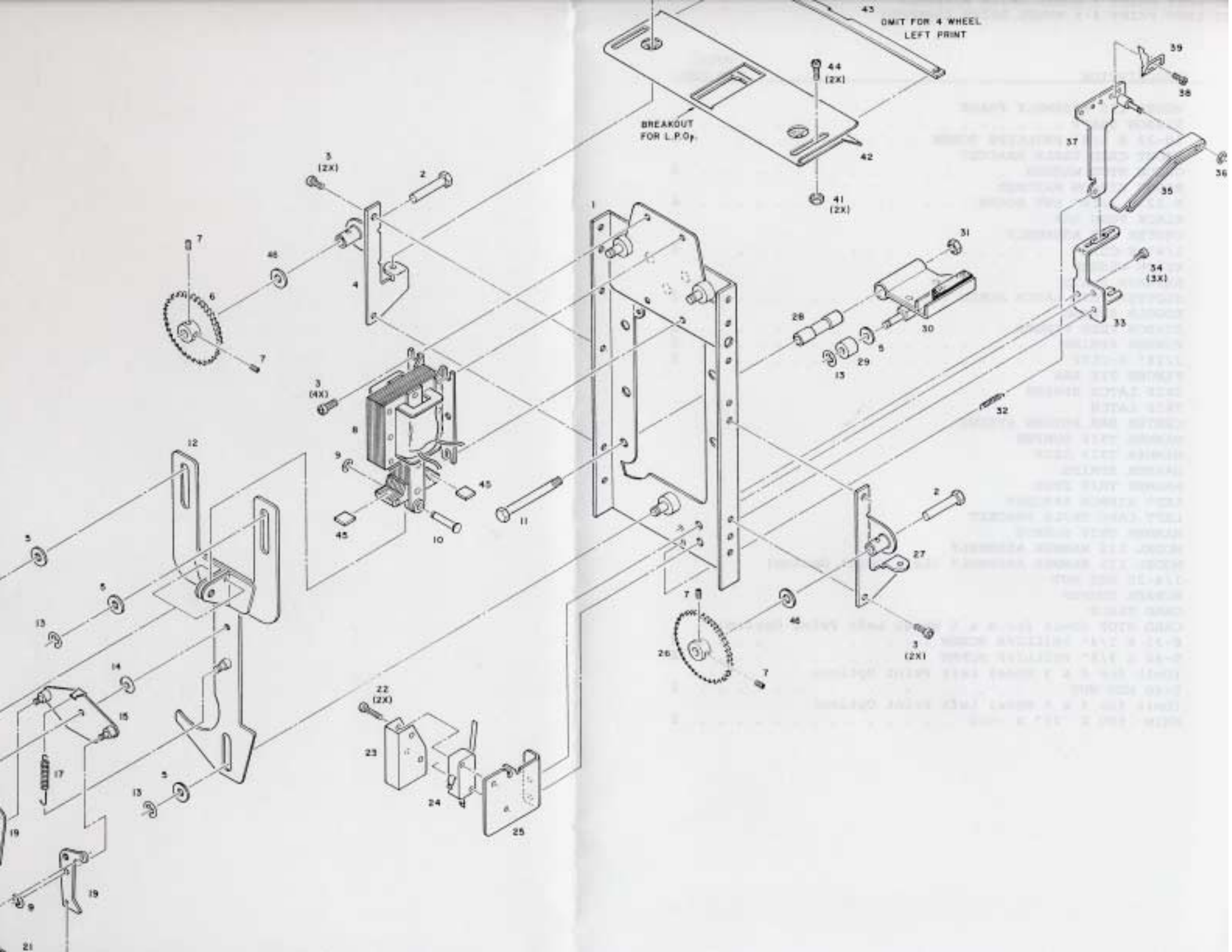
PART NO.	DESCRIPTION
20-0180-000	125 RIGHT PRINT 3-5 WHEEL DRIVE ASSEMBLY
20-0180-002	125 LEFT PRINT 3 WHEEL DRIVE ASSEMBLY
20-0180-003	125 LEFT PRINT 4-5 WHEEL DRIVE ASSEMBLY

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY.REQ.
1	31-0110-003	MODEL 125 ASSEMBLY FRAME	
2	33-0122-002	RIBBON SHAFT	2
3	47-0110-000	10-32 X 1/4" PHILLIPS SCREW	4
4	31-0113-006	RIGHT CARD TABLE BRACKET	
5	48-0100-000	GUIDE STUD WASHER	5
6	32-0101-003	RIGHT RIBBON RATCHET	
7	47-0130-000	8-32 X 3/16" SET SCREW	4
8	42-0101-000	BLACK PUSH BAR	
9	20-0104-003	CENTER BAR ASSEMBLY	
10	45-0105-002	1/4" E-CLIP	4
11	48-0113-002	NYLON WASHER	
12	31-0108-003	REVERSE PLATE	
13	47-0103-002	SLOTTED TRIP LATCH SCREW	2
14	35-0108-000	TOGGLE SPRING	
15	38-0108-002	RIBBON FEED FINGER	2
16	35-0107-000	FINGER SPRING	2
17	45-0105-003	3/16" E-CLIP	2
18	33-0118-002	FINGER TIE BAR	
19	35-0109-000	TRIP LATCH SPRING	
20	38-0109-003	TRIP LATCH	
22	35-0106-000	CENTER BAR RETURN SPRING	
23	42-0103-000	HAMMER TRIP BUMPER	
24	38-0110-005	HAMMER TRIP ASSY	
25	35-0111-000	HAMMER SPRING	
26	33-0121-002	HAMMER TRIP STUD	
27	32-0101-005	LEFT RIBBON RATCHET	
28	31-0113-003	LEFT CARD TABLE BRACKET	
29	32-0123-002	HAMMER TRIP SLEEVE	
30	20-0108-000	MODEL 125 HAMMER ASSEMBLY	
	20-0108-002	MODEL 125 HAMMER ASSEMBLY (Left Print Option)	
31	49-0111-000	1/4-20 HEX NUT	
32	42-0104-002	RUBBER BUMPER	
33	31-0114-002	CARD TABLE	
34	31-0115-002	CARD STOP (Omit for 4 & 5 Wheel Left Print Option)	
35	47-0109-000	8-32 X 1/4" PHILLIPS SCREW	2
36	47-0112-003	5-40 X 3/8" PHILLIPS SCREW (Omit for 4 & 5 Wheel Left Print Option)	2
37	49-0108-000	5-40 HEX NUT (Omit for 4 & 5 Wheel Left Print Option)	2
38	46-0107-006	SHIM .500 X .257 X .010	2

MODELS 150 & P150 PRINT & RIBBON DRIVE ASSEMBLY

(INCLUDING LEFT PRINT OPTION)



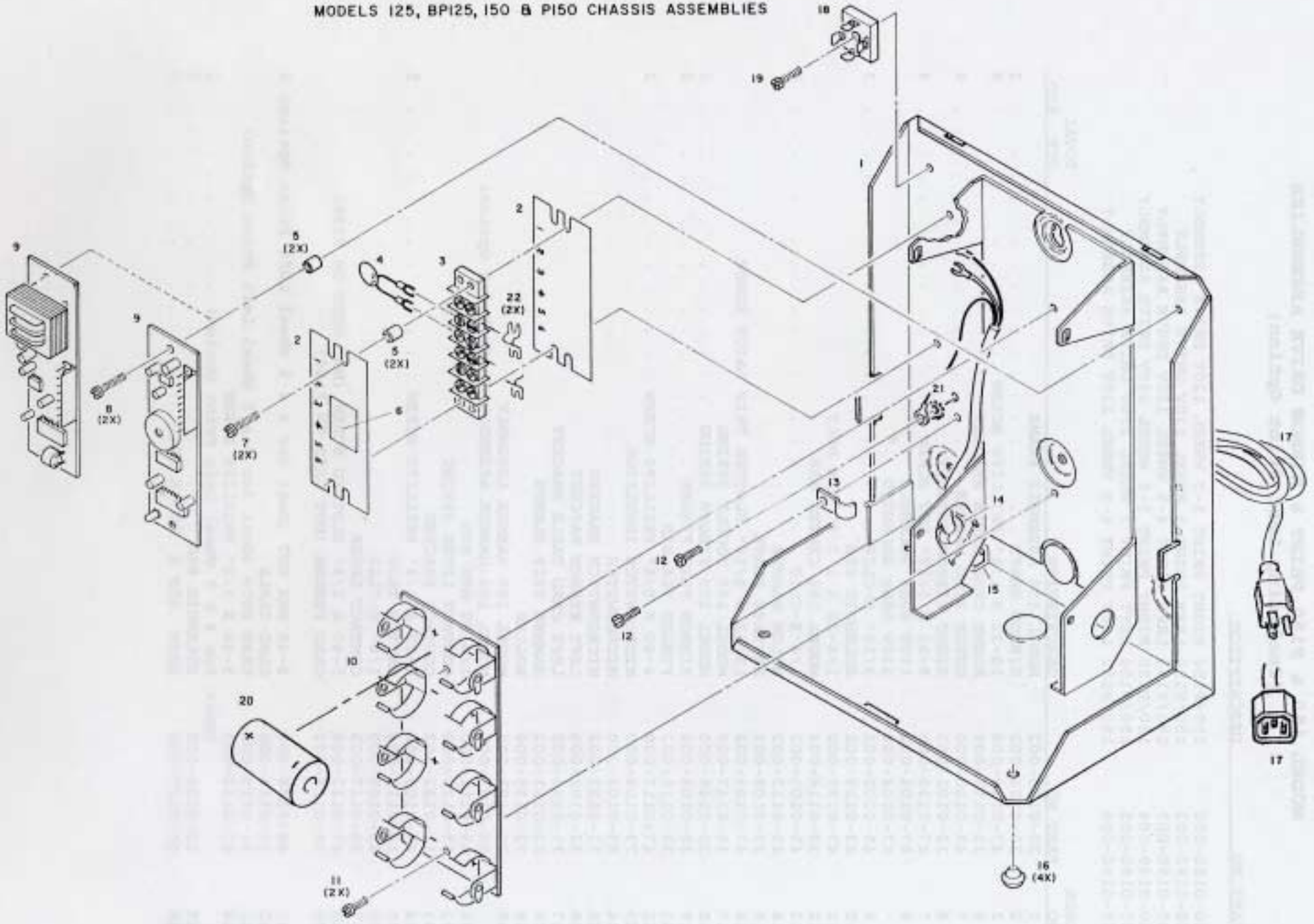

OMIT FOR 4 WHEEL LEFT PRINT
BREAKOUT FOR L.P.O.
43
44 (2X)
42
41 (2X)
39
38
37
36
35
34 (3X)
33
31
30
28
29
5
13
32
1
2
27
46
3 (2X)
7
26
3 (4X)
8
9
45
10
11
12
5
6
13
14
15
17
19
21
22 (2X)
23
24
25
4
48
7
6

MODEL 150 & P150 PRINT & RIBBON DRIVE ASSEMBLIES
(Including Left Print Option)

PART NO.	DESCRIPTION
20-0190-000	150/P150 RIGHT PRINT 3-5 WHEEL 120V DRIVE ASSEMBLY
20-0190-002	150/P150 LEFT PRINT 3 WHEEL 120V DRIVE ASSEMBLY
20-0190-003	150/P150 LEFT PRINT 4-5 WHEEL 120V DRIVE ASSEMBLY
20-0190-004	150/P150 RIGHT PRINT 3-5 WHEEL 230V DRIVE ASSEMBLY
20-0190-005	150/P150 LEFT PRINT 3 WHEEL 230V DRIVE ASSEMBLY
20-0190-006	150/P150 LEFT PRINT 4-5 WHEEL 230V DRIVE ASSEMBLY

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
1	20-0105-002	MODEL 150 ASSEMBLY FRAME	
2	33-0122-002	RIBBON SHAFT	2
3	47-0110-000	10-32 X 1/4" PHILLIPS SCREW	8
4	31-0113-006	RIGHT CARD TABLE BRACKET	
5	48-0100-000	GUIDE STUD WASHER	4
6	32-0101-003	RIGHT RIBBON RATCHET	
7	47-0130-000	8-32 X 3/16" SET SCREW	4
8	57-0104-002	110V 60Hz SOLENOID	
	57-0104-004	230V 50Hz SOLENOID	
9	45-0105-003	3/16" E-CLIP	3
10	33-0129-002	SOLENOID PIN	
11	47-0139-000	1/4-20 X 1 3/4" HEX BOLT	
12	38-0116-004	MODEL 150 CENTER BAR	
13	45-0105-002	1/4"E-CLIP	4
14	48-0113-002	NYLON WASHER	
15	31-0108-003	REVERSE PLATE	
16	47-0103-002	10-32 X 5/16" SLOTTED TRIP LATCH SCREW	
17	35-0147-000	MODEL 150 TOGGLE SPRING	
18	35-0146-000	MODEL 150 FINGER SPRING	2
19	38-0108-002	RIBBON FEED FINGER	2
21	33-0118-002	FINGER TIE BAR	
22	47-0117-000	4-40 X 5/8" PHILLIPS SCREW	2
23	73-0108-000	MICROSWITCH INSULATOR	
24	65-0102-000	MICROSWITCH	
25	31-0123-002	MICROSWITCH BRACKET	
26	32-0101-005	LEFT RIBBON RATCHET	
27	31-0113-003	LEFT CARD TABLE BRACKET	
28	32-0123-002	HAMMER TRIP SLEEVE	
29	32-0135-000	ROLLER	
30	20-0107-003	MODEL 150 HAMMER ASSEMBLY	
	20-0107-004	MODEL 150 HAMMER ASSEMBLY (Left Print Option)	
31	49-0111-000	1/4-20 HEX NUT	
32	35-0112-000	CONTACT LEVER SPRING	
33	31-0122-002	CONTACT BRACKET	
34	47-0109-000	8-32 X 1/4" PHILLIPS SCREW	5
35	38-0119-000	SWITCH TRIP	
36	45-0105-000	1/8" E-CLIP	
37	38-0117-003	CONTACT LEVER	
38	47-0112-004	5-40 X 1/8" SLOTTED SCREW (NOT USED ON P150)	
39	38-0118-002	CARD FINGER (NOT USED ON P150)	
41	49-0108-000	5-40 HEX NUT (Omit for 4 & 5 Wheel Left Print Option)	2
42	31-0114-002	CARD TABLE	
43	31-0115-002	CARD STOP (Omit for 4 & 5 Wheel Left Print Option)	
44	47-0112-003	5-40 X 3/8" PHILLIPS SCREW (Omit for 4 & 5 Wheel Left Print Option)	2
45	42-0108-000	SOLENOID PAD	2
46	46-0107-006	SHIM .500 X .257 X .010	2

MODELS 125, BP125, 150 & P150 CHASSIS ASSEMBLIES



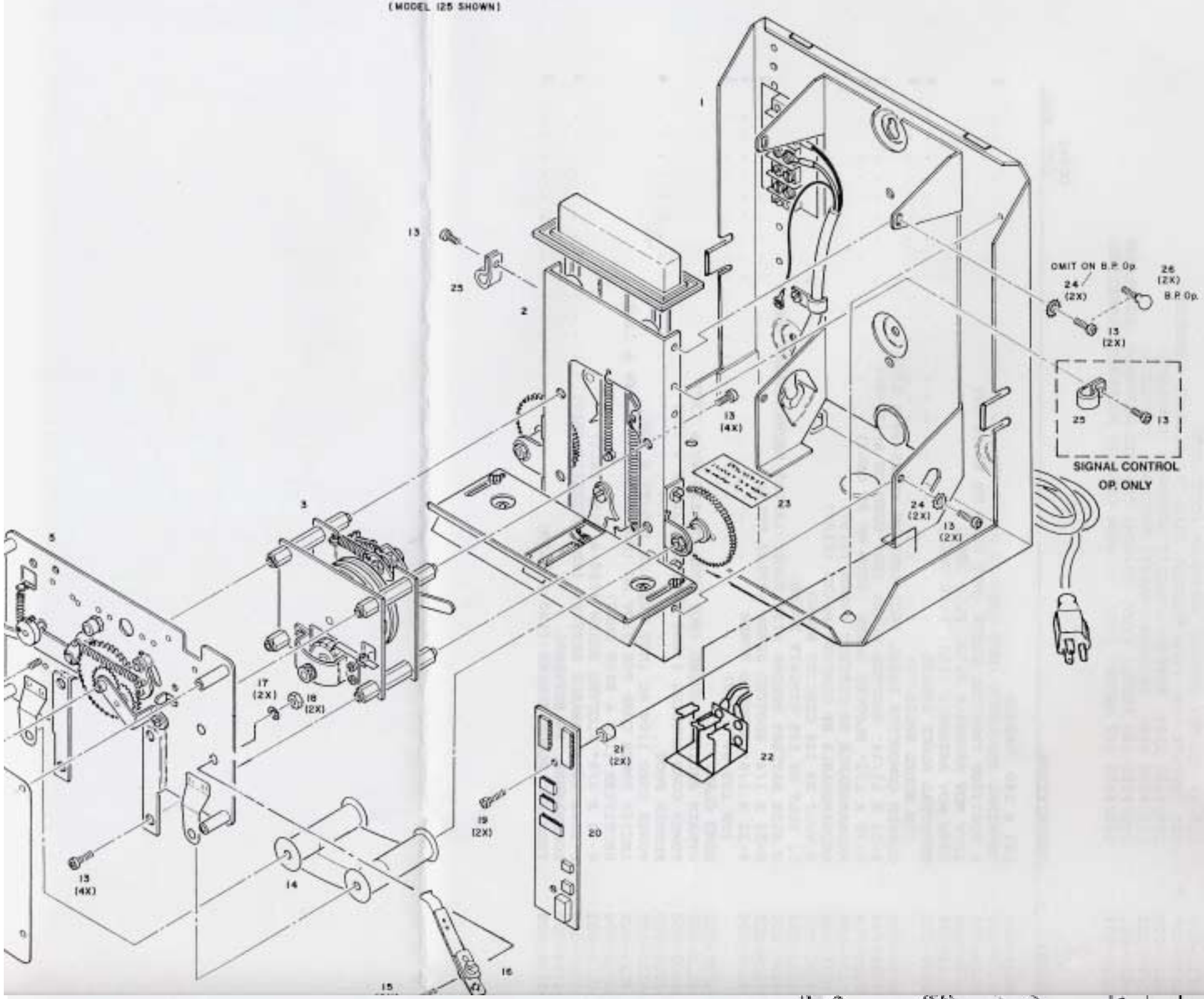
CHASSIS ASSEMBLIES

PART NO.	DESCRIPTION
20-0213-000	125 (120V, 50/60Hz) CHASSIS ASSEMBLY (COMPLETE)
20-0213-002	125 (230V, 50/60Hz) CHASSIS ASSEMBLY (COMPLETE)
20-0213-003	125 BP (6 VOLT) CHASSIS ASSEMBLY (COMPLETE)
20-0213-004	125 BP (6V RECHG) 120V,50/60Hz CHASSIS ASSEMBLY (COMPLETE)
20-0213-005	125 BP (6V RECHG) 230V,50/60Hz CHASSIS ASSEMBLY (COMPLETE)
20-0213-006	125 BP (12VDC) CHASSIS ASSEMBLY (COMPLETE)
20-0213-007	125 IMPULSE (24V FROM MASTER) CHASSIS ASSEMBLY (COMPLETE)
20-0219-000	150/P150 120V, 50/60Hz CHASSIS ASSEMBLY (COMPLETE)
20-0219-002	150/P150 230V, 50/60Hz CHASSIS ASSEMBLY (COMPLETE)
20-0219-003	150/P150 (6V RECHG) 120V, 50/60Hz CHASSIS ASSEMBLY (COMPLETE)
20-0219-004	150/P150 (6V RECHG) 230V, 50/60Hz CHASSIS ASSEMBLY (COMPLETE)

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
1	30-0125-000	125 & 150 CHASSIS	
2	73-0107-000	TERMINAL INSULATOR (NOT USED ON BP125-6V)	2
3	63-0128-000	6 POSITION TERMINAL BLOCK (NOT USED ON BP125-6V)	
4	26-0101-000	120V MOV ASSEMBLY (150, P150 ONLY)	
	26-0101-002	230V MOV ASSEMBLY (150, P150 ONLY)	
5	46-0108-002	TERMINAL BLOCK SPACER	4
		(ON MODEL BP125-6V)	2
6	44-0100-000	COPPER CONDUCTOR LABEL (NOT USED ON BP125-6V & 12V)	
7	47-0108-006	6-32 X 11/16" SLOTTED SCREW (NOT USED ON BP125-6V)	2
8	47-0108-004	6-32 X 1/2" SLOTTED SCREW (USED ON BP ONLY)	2
9	10-0123-000	RECHARGEABLE BP CIRCUIT BOARD (115V)	
	10-0123-002	RECHARGEABLE BP CIRCUIT BOARD (230V)	
	10-0122-000	6 VOLT BP 125 CIRCUIT BOARD	
	10-0122-002	12 VOLT BP 125 CIRCUIT BOARD	
10	72-0105-000	D SIZE BATTERY HOLDER WITH WIRES (BP125 RECHARGEABLE ONLY)	
11	47-0108-002	6-32 X 1/4" SLOTTED SCREW (BP125 ONLY)	2
12	47-0108-000	6-32 X 1/8" SLOTTED SCREW	2
		(ON 125-6V & 12V)	1
13	73-0100-000	CORD CLAMP	
14	73-0112-000	STRAIN RELIEF BUSHING (NOT USED ON 125-6V & 12V)	
15	73-0102-000	POWER CORD BUSHING (NOT USED ON 125-6V & 12V)	
16	42-0105-000	RUBBER FOOT	4
17	75-0102-002	POWER CORD 120V AC (NOT USED ON 125-6V & 12V)	
	75-0111-002	IEC320 POWER CORD FOR 230V AC (NOT USED ON 125-6V & 12V)	
18	52-0100-000	RECTIFIER (150 & P150 ONLY)	
19	47-0108-003	6-23 X 3/8" SLOTTED SCREW (150 & P150 ONLY)	
20	58-0100-000	D SIZE RECHARGEABLE BATTERY (RECHARGEABLE ONLY)	4
21	48-0104-000	LOCKWASHER, #6 EXTERNAL	
22	63-0108-000	TERMINAL BLOCK JUMPER (150 & P150)	2

MODELS 125 & 150 FINAL ASSEMBLIES

(MODEL 125 SHOWN)

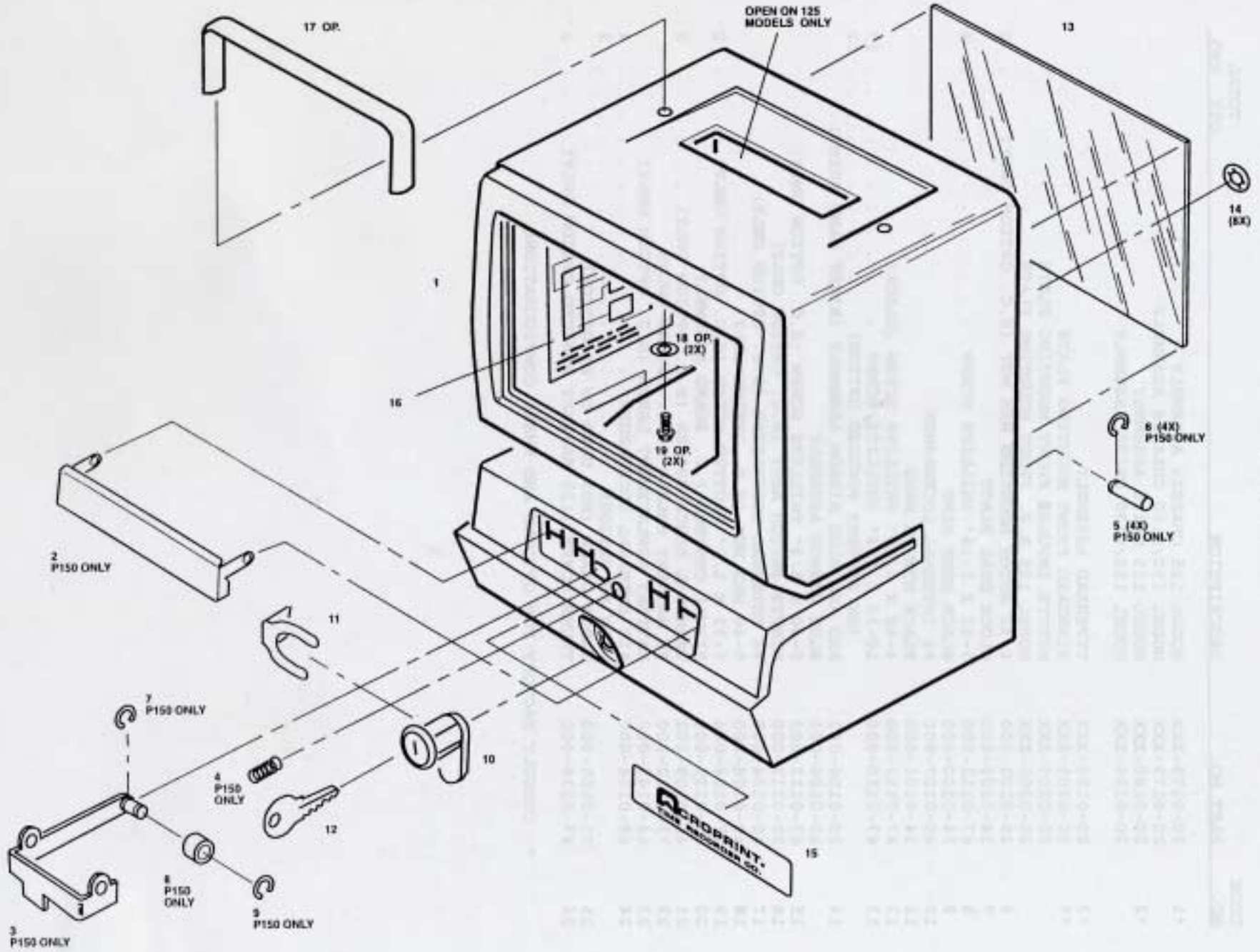


FINAL ASSEMBLY PARTS
(Model 125 Shown)

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
*1	20-0178-XXX	MODEL 125 CHASSIS ASSEMBLY	
	20-0179-XXX	MODEL 150/P150 CHASSIS ASSEMBLY	
*2	20-0180-XXX	MODEL 125 DRIVE ASSEMBLY	
	20-0190-XXX	MODEL 150/P150 DRIVE ASSEMBLY	
*3	20-0154-XXX	TYPEHEAD ASSEMBLY	
*5	20-0205-XXX	STANDARD FRONT MOUNTING PLATE	
	20-0205-XXX	MINUTE IMPULSE FRONT MOUNTING PLATE	
	20-0205-XXX	MODEL 125 B.P. FRONT MOUNTING PLATE	
6	49-0109-000	6-32 MOTOR MOUNTING HEX NUT (S.C. OPTION ONLY) . . .	2
7	34-0108-000	CLOCK DIAL PLATE	
8	47-0112-000	5-40 X 3/16" PHILLIPS SCREW	4
9	34-0100-000	BLACK HOUR HAND	
10	48-0107-000	#4 INTERNAL LOCKWASHER	
11	34-0101-000	BLACK MINUTE HAND	
12	47-0153-000	4-40 X 3/16" PHILLIPS SCREW (BLACK)	
13	47-0110-000	10-32 X 1/4" PHILLIPS SCREW	13
		(ON BATTERY POWERED OPTION)	10
14	20-0106-002	RED AND BLUE RIBBON ASSEMBLY (RIGHT HAND PRINT)	
	20-0106-003	BLUE RIBBON ASSEMBLY	
15	47-0112-003	5-40 X 3/8" PHILLIPS SCREW (S.C. OPTION ONLY)	
16	20-0217-000	MINUTE SWITCH ASSY (S.C. OPTION ONLY)	
17	48-0104-000	#6 EXTERNAL LOCKWASHER (S.C. OPTION ONLY)	
18	49-0108-000	5-40 HEX NUT (S.C. OPTION ONLY)	
19	47-0108-004	6-32 X 1/2" SLOTTED SCREW (S.C. OPTION ONLY)	2
20	10-0129-000	SIGNAL CONTROL P.C. BOARD ASSEMBLY	
21	46-0108-002	TERMINAL BLOCK SPACER (S.C. OPTION ONLY)	2
22	73-0122-000	9V BATTERY HOLDER (S.C. OPTION ONLY)	
23	44-0145-000	BATTERY REPLACEMENT LABEL (S.C. OPTION ONLY)	
24	48-0106-000	#10 EXTERNAL LOCKWASHER	4
		(ON BP OPTION)	2
25	73-0105-000	CABLE CLAMP (NOT USED ON BP OPTION)	
26	47-0138-000	THUMB SCREW (125 BATTERY POWERED OPTION ONLY) . . .	2

* CONSULT FACTORY FOR OPTIONS AND WHEEL CONFIGURATIONS

MODELS 125, BP125, 150 & P150 COVER ASSEMBLIES



COVER ASSEMBLIES

PART NO.	DESCRIPTION
20-0214-000	125 GREEN COVER (COMPLETE)
20-0214-002	125 GREEN COVER WITH HANDLE
20-0214-003	150 GREEN COVER (COMPLETE)
20-0214-004	P150 GREEN COVER

CODE NO.	PART NO.	DESCRIPTION	TOTAL QTY. REQ.
1	30-0130-000	MODEL 125 COVER	
	30-0130-002	MODEL 150 & P150 COVER	
2	31-0227-000	PUSH PLATE (P150 ONLY)	
3	38-0154-003	LEVER (P150 ONLY)	
4	35-0114-000	SPRING	
5	33-0212-002	HINGE PIN	4
6	45-0112-000	E-CLIP, 1/8"	4
7	45-0105-003	E-CLIP, 3/16"	
8	32-0175-002	DRIVE PIN BEARING	
9	45-0134-002	CRESCENT CLIP, .188"	
10	45-0150-000	LOCK	
11	45-0150-004	LOCK CLIP	
12	45-0103-003	KEY	2
13	34-0107-000	GLASS LENS	
14	45-0147-000	TINNERMAN FASTENER	8
15	44-0151-000	125/150 NAMEPLATE LABEL	
16	44-0134-000	125 2-WIRE IMPULSE NON-CORR. WIRE DIAGRAM LABEL	
	44-0135-000	125 2-WIRE IMPULSE W/CORR. WIRE DIAGRAM LABEL	
	44-0136-000	125 3 WIRE IMPULSE W/CORR. WIRE DIAGRAM LABEL	
	44-0137-000	125 RECHARGEABLE (120/230 VAC) WIRE DIAGRAM LABEL	
	44-0138-000	125 B.P. (6 VOLT) WIRE DIAGRAM LABEL	
	44-0139-000	125 B.P. (12 VOLT) WIRE DIAGRAM LABEL	
	44-0141-000	150,P150 2-WIRE IMP. NON-CORR. WIRE DIAGRAM LABEL	
	44-0142-000	150,P150 2-WIRE IMPULSE W/CORR. WIRE DIAGRAM LABEL	
	44-0143-000	150,P150 3-WIRE IMPULSE W/CORR. WIRE DIAGRAM LABEL	
	44-0144-000	150, P150 RECHARGEABLE 120/240 VAC	
	44-0147-000	150 WIRE DIAGRAM LABEL (Including S.C. OPTION)	
	44-0148-000	125 WIRE DIAGRAM LABEL (Including S.C. OPTION)	
17	45-0104-000	HANDLE	
18	48-0111-002	#10 HELICAL SPRING WASHER	2
19	47-0123-000	10-32 X 1/2" SOCKET HEAD SCREW	2

* NOTE: IF NEW LOCK IS NEEDED, ORDER 45-0103-002 FOR COMPLETE LOCK ASSEMBLY (INCLUDES LOCK, NUT, & KEY)