

1. CHECK ALL MATERIAL RECEIVED AGAINST SHIPPING CHECK OFF LIST CONTAINED IN SYSTEM INSTALLATION PARTS PACKAGE (THIS PACKAGE CONTAINS ALL DETACHABLE CABLES ETC.)
2. REMOVE ALL SHIPPING TAPE, BRACES AND OTHER MATERIAL AS PER PACKING AND UNPACKING INSTRUCTIONS INCLUDED WITH EACH UNIT.
AT THIS TIME MAKE A THOROUGH PHYSICAL CHECK FOR DAMAGED, BROKEN OR LOOSE PARTS RESULTING FROM SHIPMENT (INCLUDING EDGE CONNECTORS). CAUTION: TURN FEED OVER MANUALLY WHEN REINSERTING BRUSH ASSEMBLY TO PREVENT BRUSH DAMAGE.
3. INSTALL THE FILE FEED MAGAZINE ON THE 1402. (REFER TO 1402 CE REFERENCE MANUAL FOR INSTRUCTIONS.)
4. CHECK THE 1402 RELAY GATE FOR LOOSE RELAYS AND DISPLACED ARMATURES.
5. MANUALLY TRIP CLUTCHES AND FEED CARDS THROUGH THE READ AND PUNCH FEEDS, CHECK FOR BINDS.
6. CHECK ALL MANUAL KNOBS, LEVERS, AND COVERS ON THE 1403 FOR PROPER OPERATION.
7. INSTALL (2) ANTI-WALK FOOT COMPONENT PARTS (2SETS) TO THE 1403 FRAME NEAR THE CASTERS BY THE FOLLOWING PROCEDURE:
INSERT THE MOUNTING STUD IN THE MACHINE FRAME FOR ITS FULL THREADED LENGTH, ASSEMBLE THE FOOT COVER AND MOUNTING FOOT TO THE STUD. BACK THE MOUNTING STUD OFF FOR THE REQUIRED DISTANCE TO STABILIZE THE MACHINE.
8. 1403-CHECK FOR OIL IN THE HYDRAULIC RESERVOIR. APPROX LEVEL TO BOTTOM OF MAGNETS.
9. 1403-CHECK FOR OIL IN THE RESERVOIR AT THE RIGHT END OF THE "T" CASTING (IBM NO.6) - 1403.
10. ALL 1401 MACHINES FROM DECEMBER 1961 (USA NO.20890) AND UP WILL BE DESIGNED FOR CABLES TO EXIT UNDERNEATH THE MACHINE. THE MACHINE WILL BE SHIPPED WITH CABLES ABOVE FRAME AND SHOULD BE INSTALLED AS DESCRIBED BELOW:
 - A) AT 01B1-01B8 - REMOVE THROW AWAY COVER AND DISCARD.
 - B) AT 01B1- REMOVE COVER SUPPORT BRACKET (194370) AND RETAIN. OPEN GATE 01B1.
 - C) AT 01B8 - RUN ALL CABLES DOWN THROUGH THE OPENING AT 01B1-01B8. STARTING WITH CABLE NEAREST REAR OF MACHINE, PLACE A LOOP THROUGH THE OPENING SUCH THAT THE CABLE CONNECTOR GOES THROUGH LAST.
 - D) AT 01B1-01B8
INSTALL HOUSING (723351).
INSTALL FIRE BARRIER THEN INSTALL FILTER.
INSTALL COVER SUPPORT BRACKET, (194370) REMOVED IN STEP B, AT THE CENTER OF THE FRAME.
INSTALL COVER (194372).
FOR RAISED FLOOR INSTALLATION INSTALL KICK PLATE (597329).
FOR ABOVE FLOOR INSTALLATION INSTALL KICK PLATE (723359).
CLOSE GATE 01B1.
 - E) AT 02B4-02B5 -
REMOVE COVER (194372).
OPEN GATE 02B4.
CONNECT CABLES - FIRST PASSING THEM UP FROM UNDERNEATH FRAME.
INSTALL HOUSING (723352).
FOR ABOVE FLOOR INSTALLATIONS INSTALL CLAMP (723353) TO HOLD CABLES AT 02B5 SIDE OF MACHINE. THIS INCLUDES THE THREE 1403 CABLES IF THEY PASS UNDERNEATH THE LENGTH OF THE 1401.
INSTALL FIRE BARRIER THEN INSTALL FILTER.
FOR ABOVE - FLOOR INSTALLATIONS INSTALL KICK PLATE (723360).
FOR RAISED FLOOR INSTALLATIONS INSTALL KICK PLATE (597329).
INSTALL COVER (194372).
CLOSE GATE 02B4.
11. CONNECT CABLES FROM THE 1401 TO THE 1402. - (SEE NOTE I).
12. CONNECT CABLES FROM THE 1401 TO THE 1403. (SHOE WITH GOLD PLATED PINS CONNECTS TO FRONT RECEPTACLE. ON CURRENT MACHINES THESE WILL ONLY FIT ONE WAY).
 - A) IF SYSTEM HAS EXPANDED MEMORY, CONNECT POWER AND SIGNAL CABLES FROM 1401 TO THE 1406 (06B7) (WILL ONLY FIT ONE WAY AFTER 1401-20010 -SEE NOTE I).

NOTE I - 1402 CANNON CONNECTORS-THREAD ON OUTSIDE OF RING-SMALL-NEAR-PIN 3
-LARGE-NEAR PIN 3
1406 CANNON CONNECTORS-THREAD ON OUTSIDE OF RING-SMALL-NEAR PIN 6
-LARGE-NEAR PIN 15

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13. POWER CABLE CONNECTION:

- A) 60 CYCLE MACHINES:
CONNECT THE MAIN POWER CABLE TO THE UPPER TERMINALS ON THE INNER CIRCUIT BREAKER OF THE 1402 UNIT. THE GREEN-YELLOW (GROUND) WIRE SHOULD BE CONNECTED TO THE FRAME OF THE 1402. REFER TO 1402 WIRING DIAGRAM NO.609400 PAGE 11.01.11.1.
- B) 50 CYCLE MACHINES:
CONNECT THE MAIN POWER CABLE TO THE UPPER TERMINALS ON THE CIRCUIT BREAKER OF THE 1402 UNIT. THE GREEN-YELLOW (GROUND) WIRE SHOULD BE CONNECTED WITH THE FRAME. THE NEUTRAL LINE SHOULD BE CONNECTED WITH THE NEUTRAL (O) POINT OF THE VOLTAGE MODE TERMINAL IN THE 1402.
ON MODEL D (WITHOUT 1402) THE MAIN POWER CABLE SHOULD BE CONNECTED TO THE UPPER TERMINALS OF THE CIRCUIT BREAKER (FOR 1401) IN 1401 (GATE 02B7, 02B8). THE NEUTRAL LINE SHOULD BE CONNECTED TO THE NEUTRAL POINT Y. THE GREEN-YELLOW LINE (GROUND) SHOULD BE CONNECTED WITH FRAME.
- C) CONNECT THE ADDITIONAL YELLOW-GREEN GROUND WIRES AS SHOWN ON THE REFERENCE DRAWINGS, 4062985A-4062988A (OR LATER SUFFIXES) ON SECT. 5/6 A TO PROVIDE CORRECT GROUND CONNECTIONS. CHECK THE GROUND WIRE CONNECTION OF THE 1402 MAIN POWER CABLE OR, IF THE MACHINE IS A MODEL D, CHECK THE SAME OF THE 1401 CONNECTION MAIN POWER CABLE AND MAKE CERTAIN, THAT THIS CONNECTION IS PARTICULAR UNOBJECTIONABLE. FOR SYSTEM WITH 1405 ATTACHMENT SEE NOTE II

14. DO NOT CONNECT TAPE UNIT CABLES AT THIS TIME.

15. CHECK CUSTOMERS POWER RECEPTACLE FOR THE PROPER TYPE OF VOLTAGE SUPPLY AND GROUND. GROUND CONNECTION SHOULD BE GREEN/YELLOW WIRE NON-CURRENT CARRYING EARTH GROUND. IF IT IS NECESSARY TO CHANGE THE SYSTEM VOLTAGE SEE STEP 1.0 OF REFERENCE MATERIAL.

16. LIFT CARRIAGE BRUSHES AND OPEN "T" CASTING ON THE 1403 BEFORE APPLYING POWER.

17. APPLY POWER. CHECK ALL BLOWERS FOR OPERATION ON THE 1401 (AND 1406) ESPECIALLY THE ONE OVER THE CORE STORAGE UNITS. ALSO CHECK THE CARRIAGE BLOWER ON THE RIGHT SIDE OF THE 1403. PLACE A CARD OVER THE LOUVERS IN THIS COVER. IF THE CARD IS DRAWN AGAINST THE COVER, THE BLOWER IS OPERATING.

18. CHECK FOR PROPER PHASE ROTATION ON THE 1403. SLIP A PIECE OF PAPER OR TAB CARD THROUGH THE PAPER FEED ROLLERS ON THE BACK OF THE MACHINE. THE PAPER OR CARD SHOULD BE FED DOWN. IF THIS IS CORRECT CLOSE THE "T" CASTING AND CHECK TO SEE THAT THE CHAIN IS TURNING COUNTER CLOCKWISE, LOOKING DOWN AT IT. FINALLY CHECK TO SEE THAT AIR IS BLOWING INTO THE HAMMER UNIT, THIS CHECK CAN BE MADE BY PLACING A CARD OVER THE LOUVERS IN THE COVER ON THE LEFT SIDE OF THE 1403. IF THE CARD IS DRAWN AGAINST THE COVER, AIR IS BEING BLOWN INTO THE MACHINE. COMPLETE THE CHECK BY FEELING THAT AIR IS BEING BLOWN OUT OF THE HAMMER UNIT AT THE SIDES OF THE UNIT. IF ALL THREE OF THE ABOVE ARE INCORRECT REVERSE ANY TWO LEADS ON THE MAIN POWER CABLE. IF ONE OR TWO ARE INCORRECT FOLLOW PROCEDURE OUTLINED IN THE 1403 REFERENCE MANUAL PAGE 6, FORM NO.225-6493. (IF THE SYSTEM DOES NOT HAVE A PRINTER BUT HAS 729 TAPE DRIVES USE STEP 27A FOR CHECKING PHASE RELATIONSHIP).

19. IF ALL PHASING IS CORRECT IT IS NOW SAFE TO LOWER CARRIAGE BRUSHES. A CARRIAGE TAPE SHOULD BE INSTALLED.

20. CHECK 1401, 1402 (AND 1406) POWER SUPPLY VOLTAGES. THEY SHOULD BE $\pm 2\%$ WHEN MEASURED AS DESCRIBED BELOW.

- A) MEASURE -6V, +6V, -12 VOLT OUTPUT AT GATE LOCATION 01B3. ADJUST FOR PROPER OUTPUT. ALWAYS ADJUST -6V BEFORE ADJUSTING -12V. SEE 1401 WIRING DIAGRAM FOR LOCATION OF SUPPLIES LOCATED ON 02A4, AND 02A5 (1401 ONLY).
- B) MEASURE -6V, +6V, AND -12V AT GATE LOCATION 02A1 ON MACHINES WITH TAPES. IF THIS FEATURE IS NOT PRESENT, MEASURE AT GATE LOCATION 02A7, 02A8 OR 02B6 DEPENDING ON WHICH MAY BE PRESENT. ADJUST FOR PROPER OUTPUT FROM THE SUPPLIES WHICH ARE LOCATED ON 02A3 AND 02A6. ALWAYS ADJUST -6V BEFORE ADJUSTING -12V. REFER TO 1401 WIRING DIAGRAM, (1401 ONLY).
- C) MEASURE -36 VOLTS ON 02B2 ON MAGNETIC TAPE SYSTEMS WITH TAU 2.

NOTE II CONVERTER 50/60 CPS TO BE GROUNDED TO CENTRAL GROUNDING TERMINAL IF LOCATED IN THE SAME ROOM. MAKE SURE, THAT THERE IS NO GROUND CONNECTION BETWEEN CONVERTER AND 1405.

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D) MEASURE -60 VOLTS ON 01B8 AT THE -60 VOLT BUS BAR. ADJUST FOR THE PROPER OUTPUT FROM THE SUPPLY LOCATED IN THE 1402. IN MODEL D THIS SUPPLY IS LOCATED ON 01B4 (1401 ONLY).

E) MEASURE -20 VOLTS ON 01A1 AT F26R AND ADJUST FOR PROPER OUTPUT FROM THE SUPPLY LOCATED IN THE 1402. IN MODEL D, SUPPLY IS LOCATED ON GATE 02A8. (TURN OFF ALL POWER-INCLUDING LINE POWER INPUT TO 1402- AND MOVE TAPS ON SUPPLY IF ADJUSTMENT IS NECESSARY).

NOTE - -20 VOLT POWER SUPPLIES (PART NUMBER 473 430) ON 1402 "M" SUFFIX AND LATER, ARE NOT ADJUSTABLE. (PN 4118226 - 50 CYCLE)

F) MEASURE +30 VOLTS ON 01A1 (AND 1406 CORE ARRAY GATES) AT F26N. MEASURE +12V FIXED ON 01A1 (AND 1406 CORE ARRAY GATES) AT F26Q. MEASURE +12V VARIABLE (18V DIFF) ON 01A1 (AND 1406 CORE ARRAY GATES) AT F13Q. ALWAYS ADJUST +30V BEFORE ADJUSTING +12V. IF VOLTAGE VARIATION OF THE MEMORY IS DESIRED REFER TO SERVICE AID CEM 107.

G) THE MARGINAL VOLTAGES ARE NOT MEASURED. (IF THE ABOVE STEPS ARE FOLLOWED, THESE VOLTAGES SHOULD BE WITHIN TOLERANCES).

H) ON LATER MACHINES THE MARGINAL VOLTAGE SUPPLY WILL NOT BE PERMANENTLY INSTALLED IN THE SYSTEM. A PORTABLE SUPPLY CAN BE ORDERED BY THE BRANCH OFFICE. THIS WILL PROVIDE GREATER FLEXIBILITY FOR CHECKING THE SYSTEM INCLUDING ANY PERIPHERAL EQUIPMENT. A SPACE FOR STORAGE OF THE PORTABLE SUPPLY IS AVAILABLE IN THE LEFT END OF THE 1402 DIRECTLY UNDER THE PUNCH DRIVE MOTOR. THE PORTABLE SUPPLY CAN BE PLUGGED INTO ANY 220V RECEPTACLE AND IS USED THE SAME AS THE FIXED MARGINAL SUPPLY. CAUTION: PORTABLE SUPPLIES OF US ORIGIN ARE TO BE PLUGGED INTO 115V RECEPTACLE.

21. RUN READER AND PUNCH WITH NON-PROCESS RUNOUT KEY.

22. RUN READ WITH PROCESS UNIT. (PUT IN READ OF MANUALLY).

23. RUN PUNCH WITH PROCESS UNIT.

24. RUN PRINTER WITH PROCESS UNIT WITH NO INFORMATION IN THE PRINT AREA.

24A. CARRIAGE CONTROL SINGLE SHOT ADJUSTMENTS.

MAKE THESE ADJUSTMENTS ONLY IF THE 1403 IS BEING FIELD MERGED. OTHERWISE, PROCEED TO THE NEXT STEP.

A) 4.5 MILLISECOND SINGLE SHOT ADJUSTMENT. (LOGIC 36.43.21.2).

A TAG LOCATED ON THE 1403 TRANSLATOR HANDLE SHOWS THE TIMING FOR THE 4.5 MS SINGLE SHOT. ADJUST THE 4.5 MS SINGLE SHOT FOR THIS TIMING.

B) 16 MILLISECOND SINGLE SHOT ADJUSTMENT. (LOGIC 36.31.31.2).

SUBTRACT THE ACTUAL TIMING OF THE 4.5 MS SINGLE SHOT FROM 21.4. ADJUST THE 16 MS SINGLE SHOT FOR THIS TIMING.

C) 10 MS "CARRIAGE INTERLOCK" SINGLE SHOT ADJUSTMENT. (LOGIC 36.46.21.2).

SUBTRACT 1.7 MS FROM THE FINAL ADJUSTMENT OF THE 16 MS SINGLE SHOT. ADJUST THE 10 MS SINGLE SHOT FOR THIS TIMING.

24B. IF IT IS DESIRED TO TEST THE RESET CHECK CIRCUITS PROCEED TO THE REFERENCE MATERIAL STEP 2.0.

25. RUN COMBINATION OF CODES 3, 5, 6 AND 7.

✓ 26. REMOVE POWER AND INSTALL TAPE UNIT CABLES.

A) FOR C, D AND F SYSTEMS - WHEN 729 AND 7330 TAPE UNITS ARE INTERMIXED, CABLES CANNOT BE CROSS CONNECTED. I.E. EACH END OF ANY TAPE CABLE MUST CONNECT TO THE SAME TYPE TAPE UNIT ON EITHER END. THE FIRST TAPE UNIT IN THE SYSTEM MUST ALSO BE CONNECTED TO THE PROPER CONNECTOR IN THE PROCESSING UNIT. AFTER THE INITIAL CABLE HOOKUP HAS BEEN MADE AND CHECKED OUT, THE CONNECTORS ON EACH END OF THE CABLES MUST BE IDENTIFIED WITH "729" OR "7330" LABELS PROVIDED IN THE SYSTEM MAINTENANCE PACKAGE FOR THIS PURPOSE. (NOTE - 729 AND 7330 CABLES HAVE IDENTICAL CONSTRUCT.)

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- 27A. IF SYSTEM HAS TYPE 729 TAPE DRIVES APPLY POWER AND CHECK ROTATION OF MOTORS BY HITTING LOAD REWIND. IF THE HEAD DOES NOT COME DOWN, CHECK FOR VACUUM IN COLUMNS. IF AIR IS BLOWING OUT, THE PHASING IS REVERSED. IF AIR IS BEING SUCKED IN, PHASING IS CORRECT AND SOMETHING ELSE IS PREVENTING THE HEAD FROM COMING DOWN. IF ROTATION IS INCORRECT, TURN OFF ALL POWER TO SYSTEM (LINE POWER INCLUDED) AND REVERSE ANY TWO PHASES AT CIRCUIT BREAKER NO. 2 IN THE 1402 (REFER TO 1402 LOGICS FOR DIAGRAM-SEC 1A).
NOTE: ON MOD D SYSTEMS, CIRCUIT BREAKER IS LOCATED 02B8.
TURN POWER ON AND RECHECK ROTATION.
- 27B. IF SYSTEM HAS TYPE 7330 TAPE DRIVES,
A) CLEAN TRANSPORT AND CHAMBER.
B) CHECK 7330 POWER CONTROL SWITCHES OFF.
C) INSTALL TERMINATOR SHOE.
CAUTION: DO NOT, AT ANY TIME, TURN POWER ON WITHOUT A TERMINATOR SHOE INSTALLED ON THE 7330. DO NOT PLACE THE TERMINATOR SHOE ON THE 1401.
D) TURN ON 1401 MAIN LINE POWER.
E) TURN ON 7330 POWER CONTROL SWITCHES.
F) CHECK: READ BUS SIGNAL LEVEL, WRITE CIRCUIT FEED THROUGH, SKEW AND TRACKING AS PER 7330 C. E. REFERENCE MANUAL.
28. CHECK TAPE OPERATION FROM THE C. E. CONSOLE (02A1)
A) WRITE TAPE WITH TERMINAL AT A26 ON PIN A FOR CONTINUOUS WRITING, ON PINS B, C, AND D FOR WRITING WITH GAPS AND ON PIN J FOR 1 CHARACTER RECORDS.
B) WRITE TAPE MARK.
C) BACK SPACE AND READ 1 RECORD TO CHECK TAPE INDICATE.
D) REWIND AND READ.
29. CHECK TAPES WITH PROCESS UNIT,
A) MANUAL TAPE OF WRITE.
B) MANUAL TAPE OF READ.
30. IF SYSTEM HAS EXPANDED MEMORY, RUN THE PROGRAMS SHOWN BELOW TO INSURE THAT THE 1406 SIGNAL CABLES CONTACTS ARE MAKING:
A) FOR 8K SYSTEM, MANUALLY ENTER A "C" BIT IN LOCATION 7999 AND THEN ENTER L, 7999 7998, IN ANY MEMORY LOCATIONS. BY STARTING THE LOAD OP, THE ENTIRE MEMORY SHOULD BE LOADED WITH "C" BITS, STORAGE SCAN. MANUALLY ENTER C, A, B, 8, 4, 2, 1 INTO 7999. THEN PROCEED AS ABOVE BY LOADING C, A, B, 8, 4, 2, 1 INTO THE ENTIRE MEMORY. STORAGE SCAN.
B) FOR 12K SYSTEM, MANUALLY ENTER IN LOCATION 11,999 AND USING PROGRAM L 11,999 11,999, PROCEED AS IN STEP (A).
C) FOR 16K SYSTEM, MANUALLY ENTER IN LOCATION 15,999 AND USING PROGRAM L 15,999 15,998, PROCEED AS IN STEP (A).
31. RUN CE DIAGNOSTIC TEST AS OUTLINED IN THE DIAGNOSTIC TEST PROCEDURE BOOK.
32. IF SYSTEM HAS EXPANDED MEMORY, PERFORM A FULL STORAGE PRINT OUT.
33. IF SYSTEM HAS 1311 DISK STORAGE DRIVES - REFER TO 1311 CUSTOMER ENGINEERING REFERENCE MANUAL (NUMBER 227-5649-X) AND ITS SUPPLEMENT (NUMBER 227-5758-X) SECTION 1.2.X FOR COMPLETE INSTALLATION INSTRUCTIONS AND CHECKOUT PROCEDURES.

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34. 1401 METER CHECKOUT PROCEDURE

IMPORTANT NOTE:

NOT MORE THAN 50 HOURS ALLOWED TEST TIME ON ANY OF THE METERS.

A) MANUALLY ENTER THE FOLLOWING PROGRAM, STARTING IN LOCATION 444. 444-1 B 445

B) 1402 CHECKOUT:

RUN CARDS OUT OF READER AND PUNCH. DEPRESS CHECK RESET ON 1402. START PROGRAM AT LOCATION 444. CPU METER SHOULD RUN FOR 400 MILLISECONDS. PLACE BLANK CARDS IN THE READER. DEPRESS START KEY. BOTH METERS SHOULD RUN. DEPRESS STOP KEY. BOTH METERS SHOULD STOP. SWITCH TO C.E. MODE ON 1401 METER PANEL. DEPRESS START KEY. ONLY C.E. METER SHOULD RUN. DEPRESS STOP KEY. SWITCH BACK TO CUSTOMER MODE. DEPRESS START KEY. BOTH METERS SHOULD RUN. DEPRESS STOP KEY. OPEN FRONT AND SIDE COVERS ON 1402. TURN ON OVERRIDE INTERLOCK SWITCH AND TURN THE "ON LINE-OFF LINE" SWITCH TO "OFF LINE". DEPRESS START KEY. ONLY CPU METER SHOULD RUN. DEPRESS STOP KEY. TURN "ON LINE-OFF LINE" BACK TO "ON LINE". TURN OVERRIDE INTERLOCK SWITCH OFF. CLOSE COVERS. REMOVE CARDS FROM READ HOPPER AND PERFORM A NON-PROCESS RUN-OUT. DEPRESS CHECK RESET ON 1402, THEN PRESS START KEY. ONLY THE CPU METER SHOULD RUN. DEPRESS STOP KEY.

C) MANUALLY INSERT A PUNCH OP. (4) INTO LOCATION 444. REFER TO SECTION IB AND PERFORM THESE STEPS FOR THE PUNCH SIDE.

D) 1403 CHECK-OUT:

MANUALLY ENTER A PRINT OP (2) IN ADDRESS 444.

WITH NO FORMS IN THE 1403, START THE PROGRAM AT 444. DEPRESS START KEY. CPU METER SHOULD RUN FOR 400 MILLISECONDS. INSERT FORMS IN 1403 AND DEPRESS START. BOTH THE CPU METER AND THE 1403 METER SHOULD RUN. DEPRESS STOP KEY. BOTH METERS SHOULD STOP. DEPRESS START KEY. BOTH METERS SHOULD RUN. DEPRESS SPACE KEY ON 1403. 1403 METER SHOULD STOP WHILE CPU METER SHOULD CONTINUE TO RUN. RESTART PROGRAM AT 444 AND BOTH METERS SHOULD RUN. DEPRESS CARRIAGE RESTORE KEY ON 1403. 1403 METER SHOULD STOP WHILE CPU METER SHOULD CONTINUE TO RUN. DEPRESS STOP KEY. SWITCH TO C.E. MODE ON THE 1401 METER. DEPRESS START KEY. ONLY THE C.E. METER ON THE 1401 SHOULD RUN. DEPRESS STOP KEY. C.E. METER SHOULD STOP. SWITCH BACK TO CUSTOMER MODE. DEPRESS START KEY ONLY. CPU METER SHOULD RUN.

THIS PROCEDURE CHECKS TO SEE THAT THE METER RUN LINE WILL NOT DROP OUT ON OPERATIONS THAT INVOLVE LONG PROCESS TIME BEFORE AN I/O OPERATION. MANUALLY ENTER THE FOLLOWING PROGRAM STARTING IN LOCATIONS 444, 774 AND 885.

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444  NN1A  777888          B 4668852
      B 447L777888B 444
774  0001
885  0001

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START PROGRAM AT ADDRESS 444 AND SCOPE THE OUTPUT OF THE 400 MILLISECONDS SINGLE SHOT. THE SINGLE SHOT SHOULD REMAIN ON.

ALTER THE TWO NUMBERS OP. AND READ OP. INST, AT LOCATION 444-446 TO F 1 2 AND REPEAT THE PROCEDURE. THE SAME RESULTS SHOULD OCCUR.

E) 1404 CHECK-OUT:

WITH T-CASTING IN PLACE ON THE FORMS SIDE, PERFORM THE STEPS LISTED IN SECTION ID. WHEN THESE CHECKS HAVE BEEN COMPLETED, SHIFT T-CASTING TO CARD FEED SIDE. MANUALLY ENTER THE FOLLOWING PROGRAM STARTING AT LOCATION 444.

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F 1 B 444  B 450

```

PLACE BLANK CARDS IN THE HOPPER. START THE PROGRAM AT LOCATION 444. WHEN CARDS BEGIN ARRIVING IN THE STACKER DEPRESS STOP KEY RESTART THE PROGRAM AT LOCATION 450. BOTH THE CPU METER AND THE 1404 METER SHOULD RUN.

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34. (CONTINUED)

DEPRESS STOP KEY. BOTH METERS SHOULD STOP. SWITCH TO CE MODE ON THE CPU METER PANEL. DEPRESS START KEY. ONLY THE CE METER SHOULD RUN. DEPRESS STOP KEY. SWITCH BACK TO CUSTOMER MODE. REMOVE CARDS FROM HOPPER AND PERFORM A NON-PROCESS RUN-OUT. DEPRESS CHECK RESET ON THE 1404. DEPRESS START KEY. ONLY THE CPU METER SHOULD RUN. DEPRESS STOP KEY. CPU METER SHOULD STOP.

F) TAPE DRIVE CHECK-OUT:

ENTER THE FOLLOWING PROGRAM STARTING IN LOCATION 444.

444

M % U 1 453 W B 452 _ (USE CE TAPE).

LOAD TAPE ON TAPE DRIVE 1 AND LEAVE DRIVE IN AN "NOT READY STATUS". START PROGRAM AT 444. ONLY CPU METER SHOULD RUN.

MAKE DRIVE 1 READY. BOTH METERS SHOULD RUN. DEPRESS RESET KEY ON TAPE DRIVE. BOTH METERS SHOULD CONTINUE TO RUN.

DEPRESS STOP KEY. BOTH METERS SHOULD STOP. SWITCH TO CE MODE ON 1401 METER. DEPRESS START KEY. ONLY CE METER SHOULD RUN. DEPRESS STOP KEY. CE METER SHOULD STOP. SWITCH BACK TO CUSTOMER MODE. REWIND TAPE DRIVE AND MAKE READY. DEPRESS START KEY. ONLY CPU METER SHOULD RUN. DEPRESS STOP KEY. RESTART PROGRAM AT 444. DEPRESS STOP KEY. UNLOAD TAPE DRIVE. DEPRESS START KEY. ONLY CPU METER SHOULD RUN.

REPEAT THIS PROCEDURE FOR EACH DRIVE ON THE SYSTEM.

G) 1311 CHECK-OUT:

WITH ALL 1311 DRIVES ON THE SYSTEM UNLOADED AND ALL METER SWITCHES ON THE DRIVES OFF, START THE PROGRAM AT LOCATION 450 (450=B 450). ONLY THE CPU METER SHOULD RUN. DEPRESS STOP KEY. TURN ON METER SWITCH ON ALL FILES ON THE SYSTEM. LOAD A DISK PACK ON A DRIVE AND MAKE THE DRIVE READY. DEPRESS SYSTEM START KEY. BOTH CPU METER AND 1311 METERS SHOULD RUN. (MASTER AND SAT. WITH PACK ON ONLY). WITH CPU STILL RUNNING, TURN ALL METER SWITCHES OFF. METERS SHOULD CONTINUE TO RUN UNTIL STOP KEY IS DEPRESSED. WITH ALL METER SWITCHES OFF, DEPRESS START KEY. ONLY CPU METER SHOULD RUN. DEPRESS STOP KEY. TURN ALL METER SWITCHES ON. SWITCH TO CE MODE ON CPU METER PANEL. DEPRESS START KEY. ONLY CE METER SHOULD RUN. DEPRESS STOP KEY. SWITCH BACK TO CUSTOMER MODE. UNLOAD DRIVE THAT HAS PACK ON IT. DEPRESS START KEY. ONLY CPU METER SHOULD RUN. DEPRESS STOP KEY.

H) 1405 CHECK-OUT:

TURN METER SWITCH ON THE 1405 TO THE OFF POSITION. START PROGRAM AT LOCATION 450 (B 450). ONLY CPU METER SHOULD RUN. DEPRESS STOP KEY. TURN METER SWITCH ON 1405 TO THE ON POSITION. DEPRESS START KEY. BOTH METERS SHOULD RUN. DEPRESS STOP KEY. BOTH METERS SHOULD STOP. SWITCH TO CE MODE ON CPU METER PANEL. DEPRESS START KEY. ONLY CE METER SHOULD RUN. DEPRESS STOP KEY. SWITCH BACK TO CUSTOMER MODE.

I) 1407 CHECK-OUT:

TURN THE METER ON-OFF SWITCH ON THE 1407 TO THE OFF POSITION. START THE BRANCH LOOP PROGRAM AT LOCATION 450. ONLY THE CPU METER SHOULD RUN. DEPRESS STOP KEY. TURN METER ON-OFF SWITCH TO THE ON POSITION. DEPRESS START KEY. BOTH METERS SHOULD RUN. DEPRESS STOP KEY. SWITCH TO CE MODE ON THE CPU METER PANEL. DEPRESS START KEY. ONLY THE CE METER SHOULD RUN. DEPRESS STOP KEY. SWITCH BACK TO CUSTOMER MODE. DEPRESS START KEY. BOTH METERS SHOULD RUN. TURN THE METER ON-OFF SWITCH TO THE OFF POSITION. BOTH METERS SHOULD CONTINUE RUNNING. DEPRESS STOP KEY, THEN START KEY. ONLY THE CPU METER SHOULD RUN. DEPRESS STOP KEY. TURN METER ON-OFF SWITCH TO OFF POSITION. PLACE MODE SWITCH IN ALTER POSITION. TRY TO ENTER INFORMATION IN STORAGE USING TYPEWRITER KEYBOARD. SHOULD BE LOCKED UP.

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J) ALL SERIAL I/O DEVICES:

MAKE I/O DEVICE READY. ENTER A PROGRAM TO CALL FOR THE I/O DEVICE FOLLOWED BY A BRANCH LOOP. EXAMPLE:

444

M % XXXXXWB452_.

START THE PROGRAM RUNNING. BOTH CPU METER AND THE I/O METER SHOULD RUN. DEPRESS STOP KEY. BOTH METERS SHOULD STOP. SWITCH TO CE MODE ON THE CPU METER PANEL. DEPRESS START KEY ONLY. THE CE METER SHOULD RUN. DEPRESS STOP KEY. SWITCH BACK TO CUSTOMER MODE. CLEAR THE I/O DEVICE. (EXAMPLE: 1012-- DEPRESS TAPE FEED KEY). DEPRESS START KEY. ONLY CPU METER SHOULD RUN. DEPRESS STOP KEY.

REFERENCE MATERIAL
FOR 60 CYCLE SYSTEMS ONLY

1.0 TO CHANGE THE SYSTEM FROM 208V TO 230V COMPLETE THE FOLLOWING:

1401

- A) EXPANDED BULK REGULATOR (ALL MODELS EXCEPT A)
GATE 02A3 - MOVE WIRE OR WIRES ON BULK REGULATOR TB-4 TO TB-5.
- B) 1250 WATT REGULATOR. LOCATED IN THE LEFT SIDE OF THE 1402. ON MODEL D SYSTEMS LOCATED ON GATE 02A7. MOVE THE WIRE ON THE 1250 WATT REGULATOR TB-4 TO TB-5.
- C) 115V AC ISOLATION TRANSFORMER. LOCATED BEHIND THE RELAY PANEL ASSEMBLY IN THE 1402. ON MODEL D SYSTEMS LOCATED IN 02B7-8 GATE AREA. REMOVE THE WIRE ON THE TRANSFORMER SOLDER TERMINAL 6 AND SOLDER TO TERMINAL 7. ON LATER MODEL D MACHINES TERMINAL 7 IS WIRED TO TERMINAL POSITION 7 OF THE 8 POSITION BLOCK NEAR THIS TRANSFORMER. ON THESE MACHINES REMOVE THE WIRE ON TERMINAL POSITION 6 OF THIS BLOCK AND INSTALL ON TERMINAL 7.
- D) 24V AC STEP DOWN TRANSFORMER. LOCATED IN THE 1402 BEHIND THE FUSE PANEL. (DOES NOT EXIST ON SYSTEMS BELOW 20,000) ON MODEL D SYSTEMS LOCATED IN 02B7-8 GATE AREA. REMOVE THE WIRE ON STEP DOWN TRANSFORMER TB POSITION 2 AND INSTALL ON TB POSITION 3.
- E) -60V AT 10 AMP OR -60V AT 20 AMP SUPPLY. LOCATED IN THE BACK OF THE 1402. ON MODEL D MACHINES LOCATED IN GATE AREA 01B4. REMOVE WIRE FROM VR1-4 AND INSTALL ON VR1-5. (VR1 IS THE 12 POSITION TERMINAL BLOCK LOCATED TO THE BOTTOM OF THIS UNIT.)
- F) 3V MARGINAL CHECK SUPPLY. (EXCEPT PORTABLE SUPPLIES) LOCATED IN THE LEFT END OF THE 1402. LOCATED IN GATE 02A8 ON MODEL D. REMOVE WIRE ON MC POWER SUPPLY POSITION VR1-4 AND INSTALL ON POSITION VR1-5. (THIS WIRING CHANGE IS MADE INTERNALLY OF THE SUPPLY ASSEMBLY DIRECTLY ON THE TRANSFORMER.)

1406

- A) 415 WATT REGULATOR IN 1406 GATE 06B8. (NOT ON EARLIER SYSTEMS) REMOVE WIRE FROM TB POSITION 4 AND INSTALL ON TB POSITION 5.

1403

- A) ONLY THE CHAIN MOTOR IS AFFECTED. WIRE TB7 AS PER WIRING DIAGRAM PAGE 01.09.1.

1405

- A) CHANGE TRANSFORMER TAPS FOR 3 TRANSFORMERS AS SHOWN ON LOGIC PAGES 75.58.11 AND 75.58.21.

1407

- A) NO CHANGE REQUIRED.

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7330

A) REFER TO 729 SERVICE AID CEM - NUMBER 246.

729

A) ADD F/B 352075. THIS BILL INCLUDES A 230V TO 208V STEPDOWN TRANSFORMER.

1311

MOD IV AND MOD II

REFER TO CUSTOMER ENGINEERING REFERENCE MANUAL SUPPLEMENT (NUMBER 227-5758-X) FIGURE 1-3.

METER DEVICES

A) METER POWER SUPPLY (ALL CONFIGURATIONS ONLY THE INPUT AC POWER TO THE TRANSFORMER IS CHANGED. MOVE WIRE FROM TB-AC-4 TO TB-AC-5.

1.01 FOR 50 CYCLE SYSTEMS ONLY

1401

A) IF IT IS NECESSARY TO CHANGE THE 1402 OR ON MODEL D THE 1401 FROM 220V TO 380V AND VICE VERSA REFER TO FBM 4064750.

1406

A) NO CHANGE REQUIRED.

1403

A) LOOK FOR FBM 4121780

1405

A) LOOK FOR DESCRIPTION NO: 4064211 EN AND FOR WIRING DIAGRAM NO. 4064220.

1407

A) NO CHANGE REQUIRED.

7330

A) LOOK FOR WIRING DIAGRAM 73.50.20.2 PART NO. 2092503.

729

A) IF IT IS NECESSARY TO CHANGE TO 220V LOOK FOR 8013923.
IF IT IS NECESSARY TO CHANGE TO 380V LOOK FOR 8013924.

1311

A) MACHINE HAS A SEPRATE POWER CORD AND 220V SINGLE PHASE INPUT.

METER DEVICES

A) METER POWER SUPPLY ALL CONFIGURATIONS ONLY THE INPUT AC POWER TO THE TRANSFORMER IS CHANGED; MOVE WIRE FROM TB -AC-4 TO TB-AC-5, (ALWAYS 220V, NO CHANGE REQUIRED.)

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12-12-63	TA 604 J

722951

- 1.1 IF IT IS NECESSARY TO CHANGE THE SYSTEM FROM 230V TO 208V REVERSE THE INSTRUCTIONS IN STEP 1.0 ABOVE.
- 1.2 IF A VOLTAGE CHANGE IS MADE ON THE SYSTEM ENTER AN MES ORDER SO THAT RECORDS WILL BE PROPERLY UPDATED.
- 1.3 PROCEED NEXT TO STEP 16.
- 2.0 RUN PRINTER WITH PROCESS UNIT WITH NO INFORMATION IN THE PRINT AREA.
- 2.1 IF THE 1401 MACHINE NO. IS 10000-20000, PROCEED NEXT TO STEP 2.3.
- 2.2 IF THE 1401 MACHINE NO. IS 20000-AND ABOVE, SKIP STEP 2.3 AND PROCEED NEXT TO STEP 2.4.
- 2.3 TEST RESET CHECK CIRCUIT AS FOLLOWS:
 - A) CLEAR THE ENTIRE PRINT AREA AND EXECUTE A PRINT OPERATION WITH THE SCOPE SYNC ON C17N +U NOT FIRST SCAN GOING PLUS ON 36.35.11.1 (01A6).
 - B) SCOPE BO3N AND BO4N ON GATE 01B5, LOGIC 36.37.51.1 SHOULD GO TO +T WHEN NOT PRINTING AND -T WHEN PRINTING. SCOPE DO3H, G AND DO4G LOGIC 36.37.41.1 AND CO4H, G AND DO4H LOGIC 36.39.91.1 THEY SHOULD BE AT +T WHEN NOT PRINTING. WHEN PRINTING, THEY WILL GO +T IN THE HALF OF A SUBSCAN JUST PRIOR TO THE TIME 1/6 OF THE HAMMERS MAY BE OPTIONED TO PRINT (SIX RESETS PER PRINT SCAN).
 - C) SCOPE PIN E OF TRIGGER IN E21 ON 01B5, LOGIC 36.37.51.1 SHOULD TURN ON (GO TO +U) 110 USEC AFTER SYNC GOES POSITIVE. SHOULD TURN OFF 220 USEC AFTER IT TURNS ON. PATTERN SHOULD REPEAT ITSELF EVERY 555 USEC WHILE PRINTING.
 - D) SCOPE PIN E OF TRIGGER IN F20 ON 01B5, LOGIC 36.37.51.1 SHOULD TURN ON (GO TO +U) 190 USEC AFTER SYNC GOES POSITIVE. SHOULD TURN OFF 220 USEC AFTER IT TURNS ON. PATTERN SHOULD REPEAT ITSELF EVERY 555 USEC WHILE PRINTING.
 - E) IF ABOVE TRIGGERS ARE OPERATING PROPERLY, PROCEED TO STEP F. IF NOT, THE HAMMER DRIVER RESETS ARE NOT WORKING PROPERLY. CHECK LOGIC ON 36.37.41.1 TO GET RESETS WORKING PROPERLY. THEN REPEAT STEPS C AND D THEN PROCEED TO F IF C AND D ARE O.K.
 - F) SCOPE PIN G OF F02 ON 01B5 (LOGIC 36.37.51.1) FOR THE FOLLOWING STEPS.
 - G) BEING VERY CAREFUL, TIE PIN E OF TRIGGER IN E21 TO "GROUND" WITH CLIP LEAD. THIS CHECKS LOGIC BLOCK 4B ON 36.37.51.1, AND PIN G OF F02 ON 01B5 SHOULD GO TO +U AND STAY THERE BECAUSE THE RESET CHECK LATCH HAS BEEN "SET" WHICH WILL HOLD ALL THE HAMMER DRIVERS RESET. AFTER REMOVING CLIP LEAD, RESET THE LATCH WITH THE I-O CHECK RESET SWITCH.
 - H) TIE E21H TO "GROUND" WITH CLIP LEAD. THIS CHECKS LOGIC BLOCK 4C AND RESULT SHOULD BE AS FOR STEP G. RESET LATCH AS FOR STEP G.
 - I) TIE F20E TO "GROUND" WITH CLIP LEAD. THIS CHECKS LOGIC BLOCK 4D AND RESULT SHOULD BE THE SAME AS FOR STEP G. RESET LATCH AS FOR STEP G.
 - J) TIE F20H TO "GROUND" WITH CLIP LEAD. THIS CHECKS LOGIC BLOCK 4E AND RESULT SHOULD BE THE SAME AS FOR STEP G. RESET LATCH AS FOR STEP G.
 - K) A WITH PRINT STORAGE - TIE E20B TO "GROUND" WITH CLIP LEAD. THIS CHECKS LOGIC BLOCK 3F AND 4F AND RESULT SHOULD BE THE SAME AS FOR STEP G. RESET LATCH AS FOR STEP G.
 B WITHOUT PRINT STORAGE - TIE F15B TO "GROUND" WITH CLIP LEAD WHILE EXECUTING A PRINT OPERATION. THIS CHECKS LOGIC BLOCK 2G AND RESULT SHOULD BE THE SAME AS FOR STEP G. RESET LATCH AS FOR STEP G.
 - L) A WITH PRINT STORAGE - OPEN T-FRAME ON 1403 WHILE EXECUTING THE ABOVE PRINT OPERATION WITH THE PRINT AREA CLEAR. THIS CHECKS LOGIC BLOCKS 5J AND 6J ON LOGIC 36.31.01.1 (GATE 01A6). RESULT SHOULD BE THE SAME AS FOR STEP G. RESET THE LATCH WITH THE I-O CHECK RESET SWITCH.

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- M) TRY TO PRINT IN ONE POSITION ONLY. IF O.K., EXPAND THE PRINT FIELD. AFTER PRINTING IN ALL POSITIONS CHECK TO SEE THAT THE -60V HAMMER RESPONSE COMMON FUSES (2) ARE NOT BLOWN. IF FUSES HAVE BLOWN AND BLOW A SECOND TIME, CHECK FOR GROUNDS ON THE HAMMER RESPONSE LINES.
- N) PROCEED NEXT TO STEP 25.

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10.12.63 TA 604J

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Formal
Type
Zg - Art
Lang -
Prelim
Serial