

OXO-420

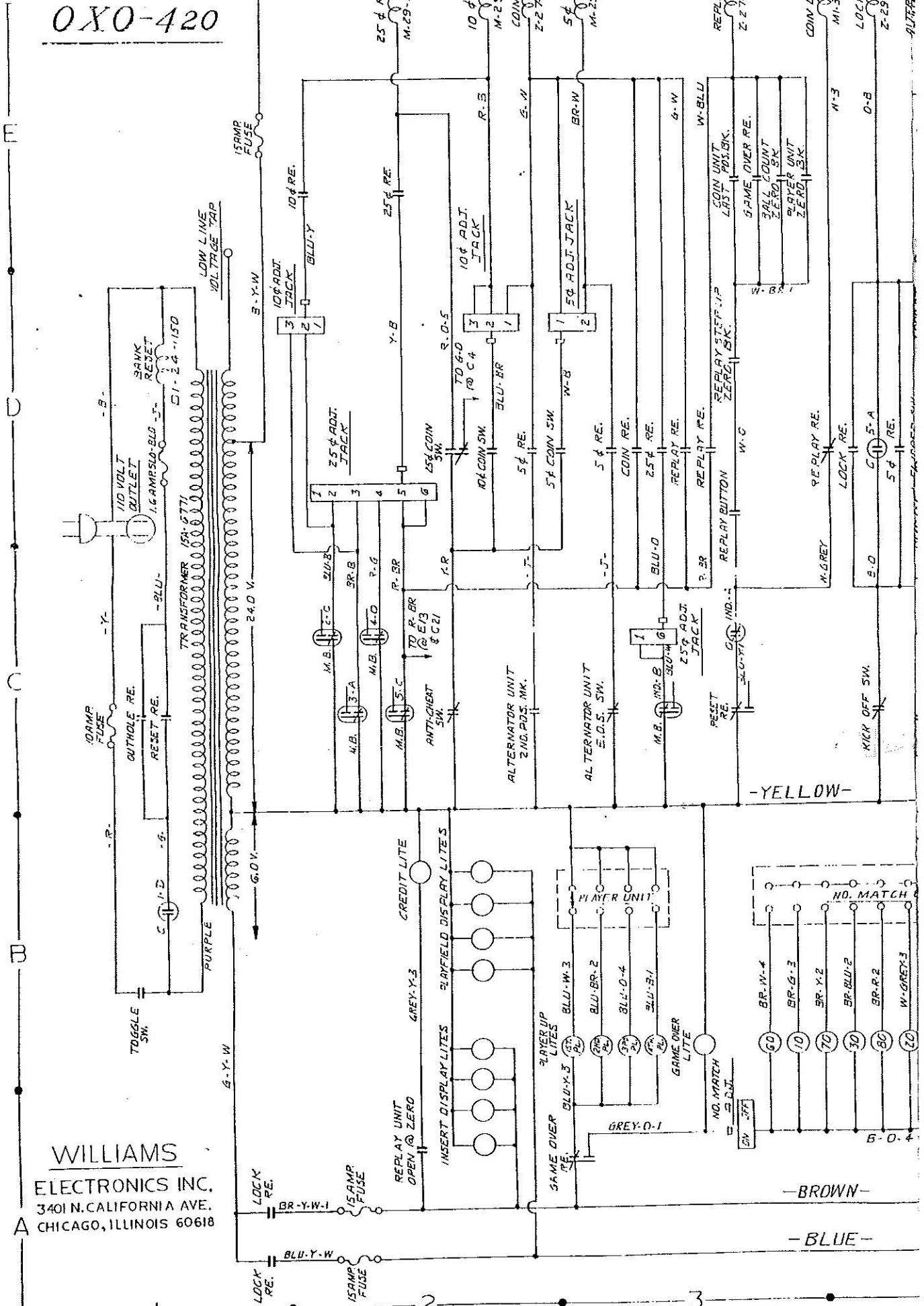
WILLIAMS
ELECTRONICS INC.
3401 N. CALIFORNIA AVE.
CHICAGO, ILLINOIS 60618

-BLACK-

-YELLOW-

-BROWN-

-BLUE-



ALTERNATOR UNIT

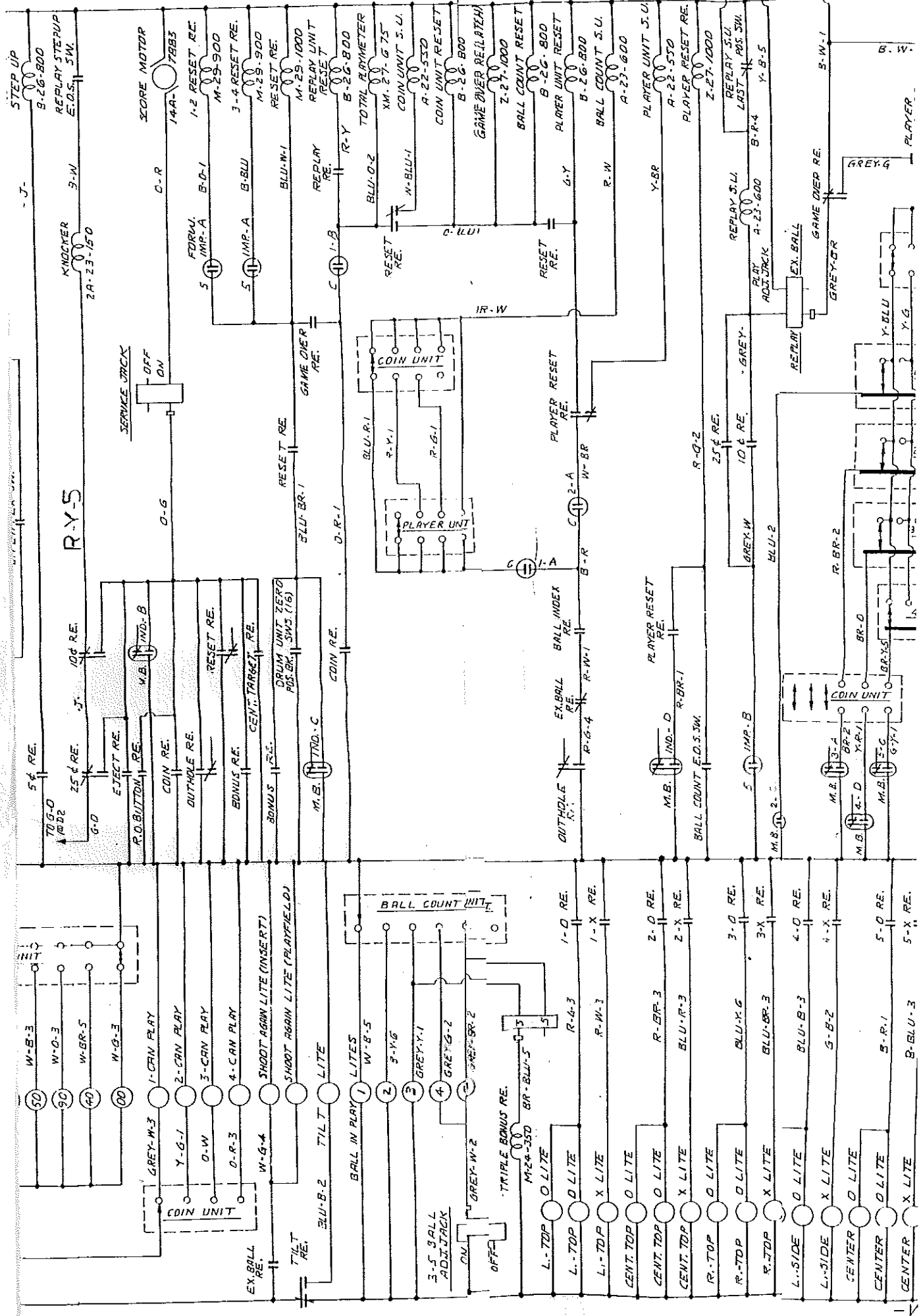
ALTERNATOR UNIT

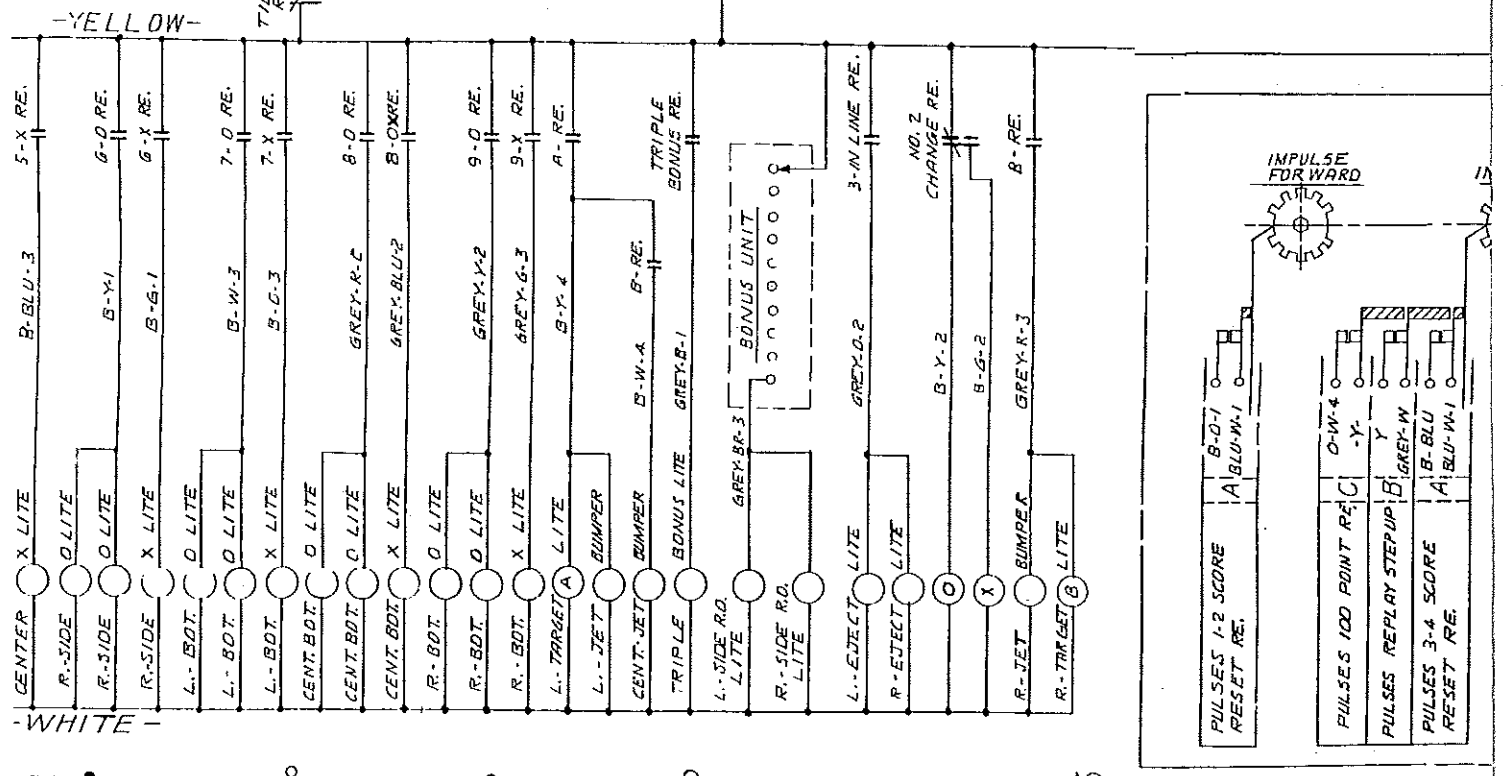
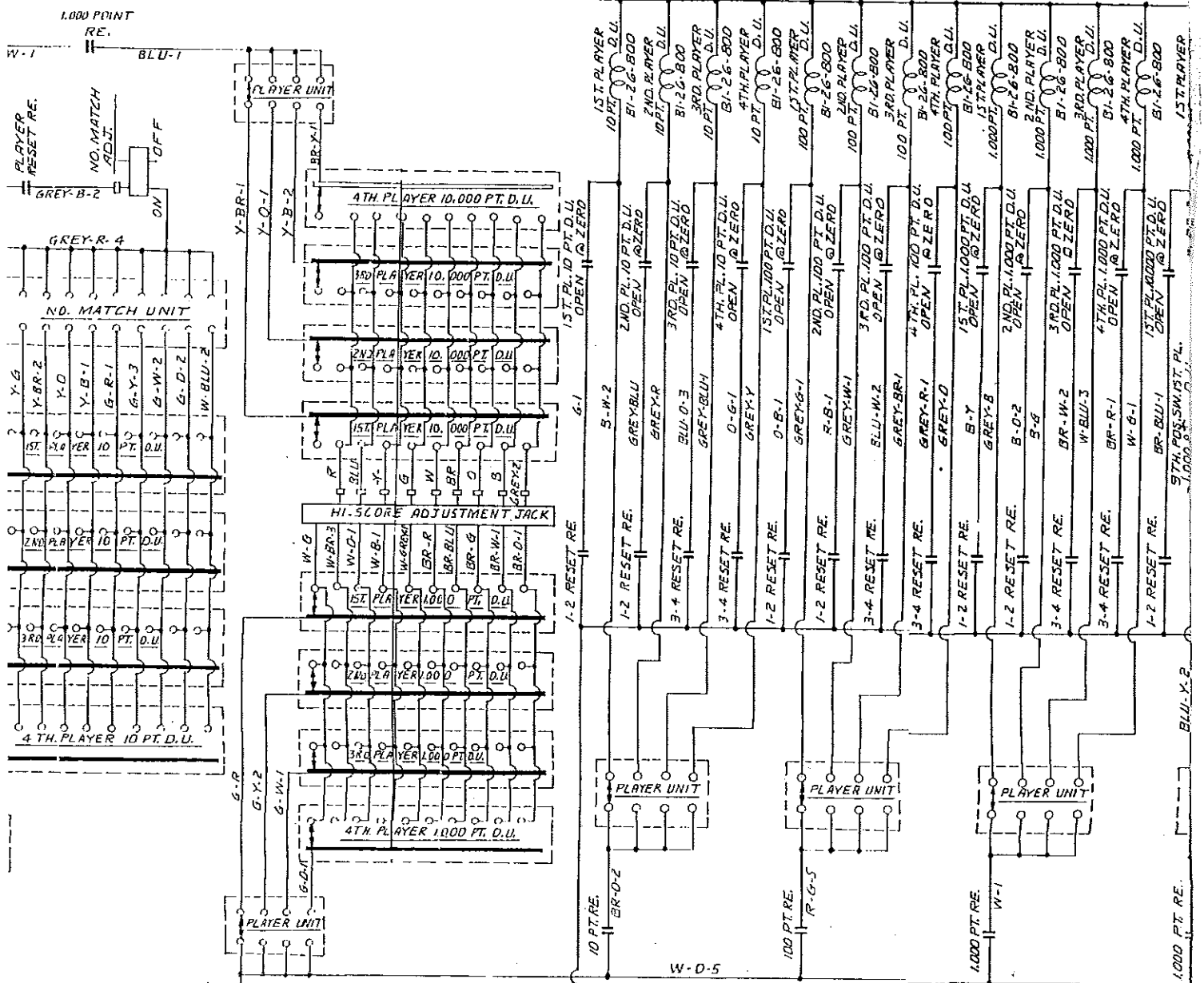
ALTERNATOR UNIT

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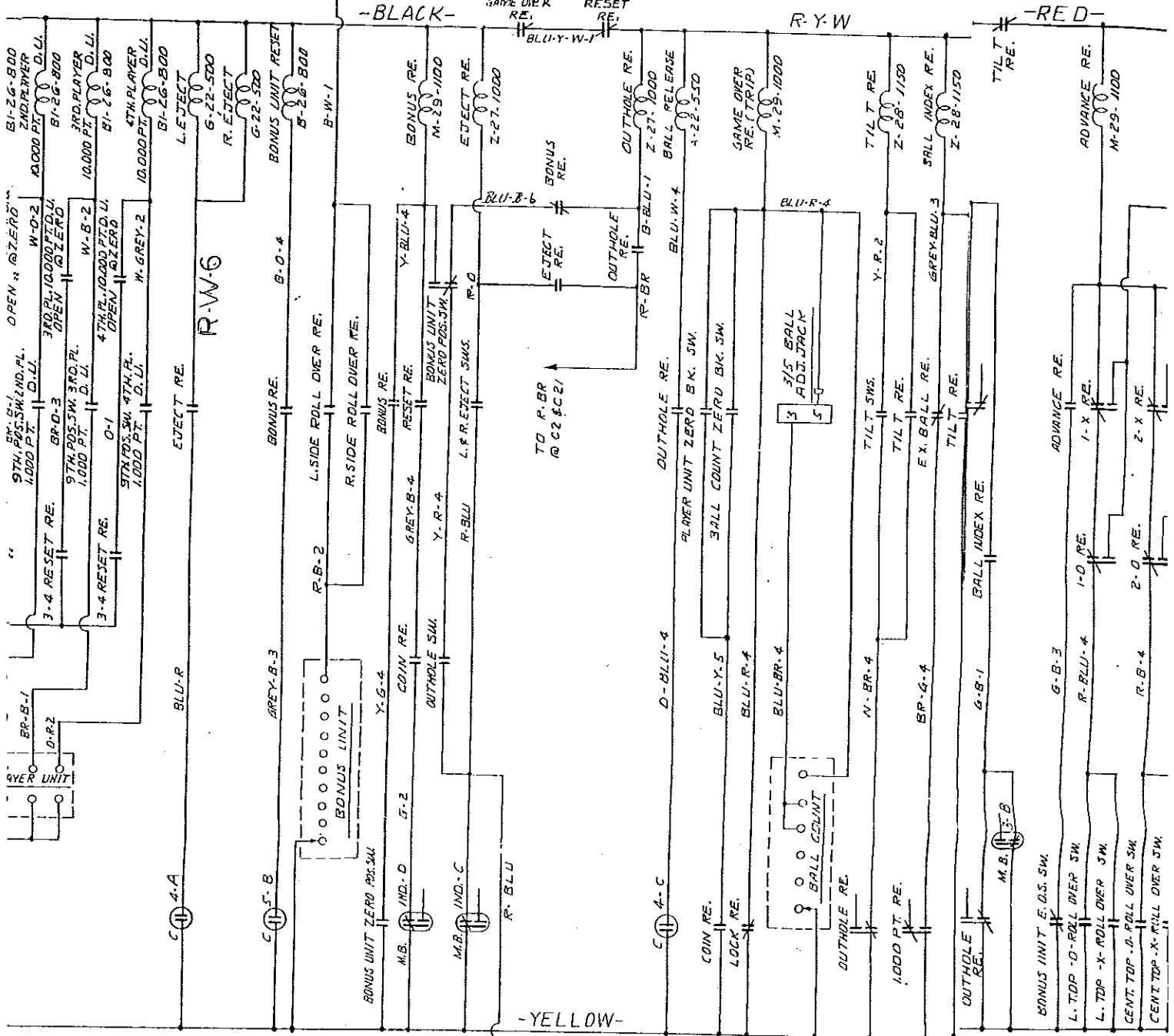
ALTERNATOR UNIT

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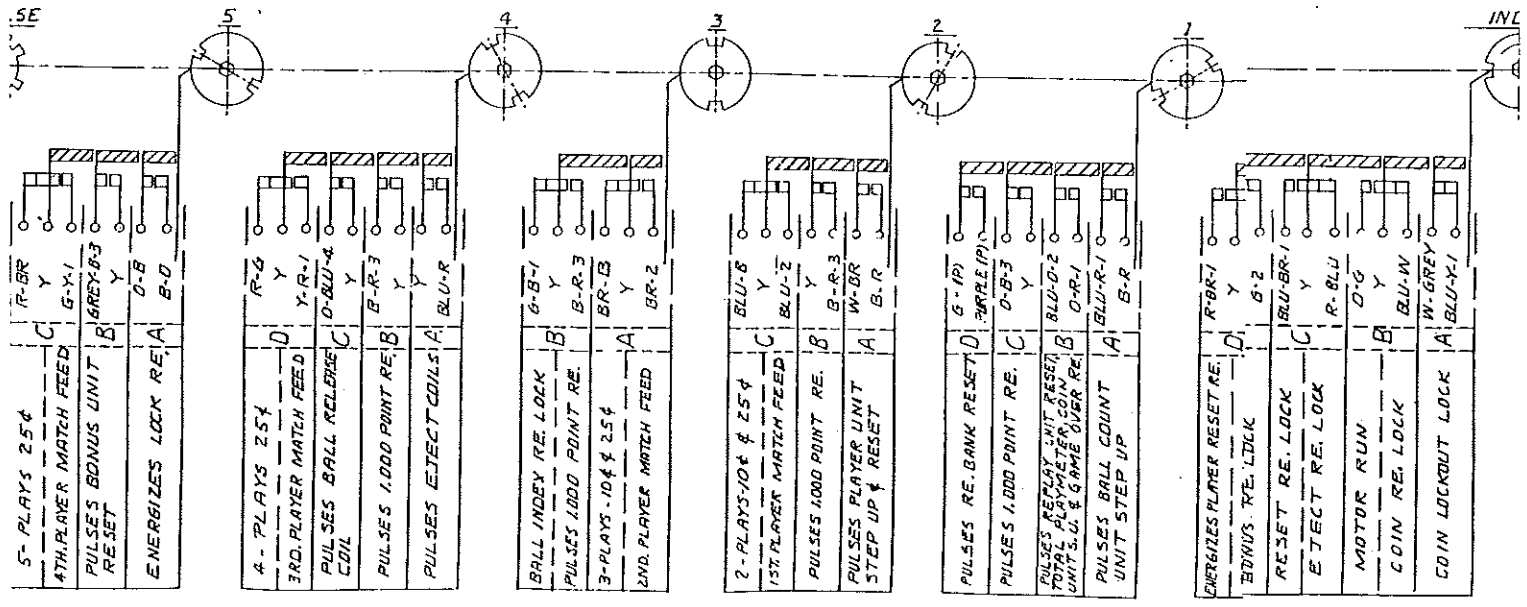


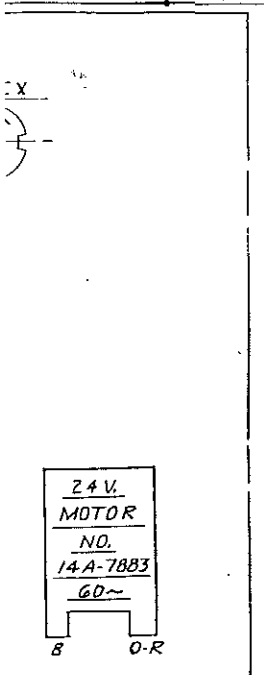
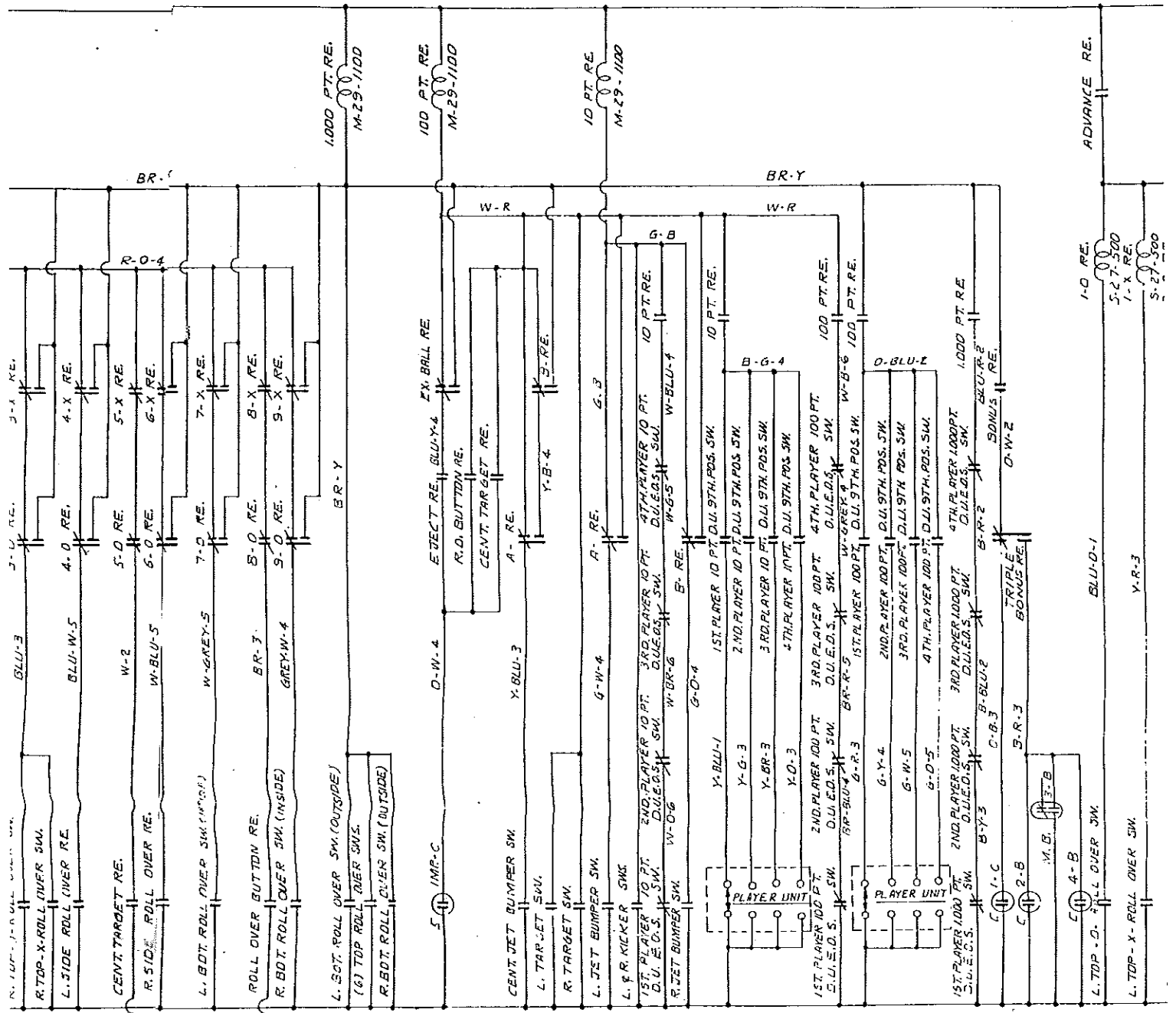


Y-B-5
B-W-1



SCORE MOTOR



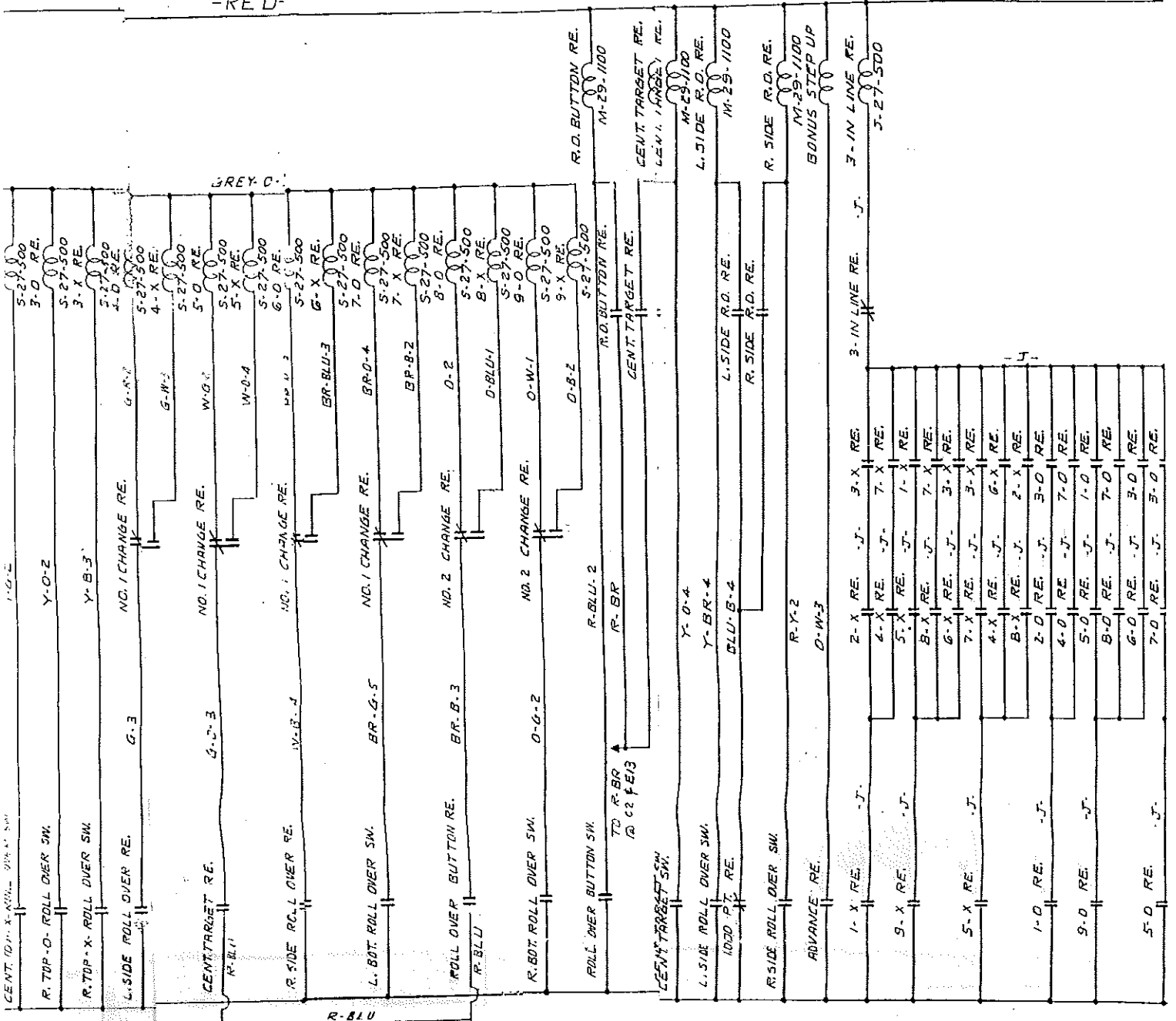


| ABBREVIATIONS | |
|---------------|---------------|
| ADJ. | ADJUSTMENT |
| ADV. | ADVANCE |
| AMP. | AMPERE |
| BOT. | BOTTOM |
| BK. | BREAK |
| C. | CLOSE |
| CENT. | CENTER |
| D.U. | DRUM UNIT |
| E.O.S. | END OF STROKE |
| EX. | EXTRA |
| G.O. | GAME OVER |
| IMP. | IMPULSE |
| IND. | INDEX |
| J. | JUMPER |
| L. | LEFT |
| M.B. | MAKE BREAK |
| M.R. | MAKE |
| NO. | NUMBER |
| O. | OPEN |
| PL. | PLAYER |
| POS. | POSITION |
| PT. | POINT |
| R. | RIGHT |
| RE. | RELAY |
| R.O. | ROLL OVER |
| S.U. | STEP UP |
| SW. | SWITCH |
| SWS. | SWITCHES |
| V. | VOLT |

| COIL LOCATION | | | |
|-------------------------------|------|-------------------------------|------|
| ALTERNATOR UNIT STEP UP | E 4 | REPLAY STEP UP | E 7 |
| BALL COUNT RESET | E 6 | REPLAY UNIT RESET | E 7 |
| BALL COUNT STEP UP | E 6 | 2ND. PLAYER 10 POINT D.U. | E 9 |
| BALL RELEASE | E 13 | 2ND. PLAYER 100 POINT D.U. | E 10 |
| BANK RESET | D 1 | 2ND. PLAYER 1,000 POINT D.U. | E 11 |
| BONUS STEP UP | E 21 | 2ND. PLAYER 10,000 POINT D.U. | E 11 |
| BONUS UNIT RESET | E 12 | SMALL CHIME | E 24 |
| COIN LOCKOUT | E 4 | 3RD. PLAYER 10 POINT D.U. | E 9 |
| COIN UNIT RESET | E 6 | 3RD. PLAYER 100 POINT D.U. | E 10 |
| COIN UNIT STEP UP | E 5 | 3RD. PLAYER 1,000 POINT D.U. | E 11 |
| CENTER JET BUMPER | E 25 | 3RD. PLAYER 10,000 POINT D.U. | E 11 |
| 1ST. PLAYER 10 POINT D.U. | E 9 | TOTAL PLAYMETER | E 5 |
| 1ST. PLAYER 100 POINT D.U. | E 10 | | |
| 1ST. PLAYER 1,000 POINT D.U. | E 10 | | |
| 1ST. PLAYER 10,000 POINT D.U. | E 11 | | |
| 4TH. PLAYER 10 POINT D.U. | E 10 | | |
| 4TH. PLAYER 100 POINT D.U. | E 10 | | |
| 4TH. PLAYER 1,000 POINT D.U. | E 11 | | |
| 4TH. PLAYER 10,000 POINT D.U. | E 11 | | |
| KNOCKER | E 4 | | |
| L. EJECT | E 12 | | |
| L. FLIPPER | E 25 | | |
| L. JET BUMPER | E 25 | | |
| L. KICKER | E 24 | | |
| LARGE CHIME | E 24 | | |
| MEDIUM CHIME | E 24 | | |
| NUMBER MATCH | E 24 | | |
| PLAYER UNIT RESET | E 6 | | |
| PLAYER UNIT STEP UP | E 6 | | |
| R. EJECT | E 12 | | |
| R. FLIPPER | E 25 | | |
| R. JET BUMPER | E 25 | | |
| R. KICKER | E 24 | | |

| | |
|------------------------|------|
| A. RELAY | E 7 |
| ADVANCE RELAY | E 7 |
| B. RELAY | E 9 |
| BALL INDEX RELAY | E 11 |
| BONUS RELAY | E 11 |
| CENTER RELAY | E 11 |
| COIN RELAY | E 11 |
| EJECT RELAY | E 12 |
| B-O RELAY | E 10 |
| B-X RELAY | E 10 |
| EXTRA BALL RE. | E 11 |
| 5# RELAY | E 11 |
| 10# RELAY | E 11 |
| 25# RELAY | E 11 |
| 5-0 RELAY | E 11 |
| 5-X RELAY | E 11 |
| 4-0 RELAY | E 11 |
| 4-X RELAY | E 11 |
| GATE RELAY | E 11 |
| GAME OVER RE. (LATCH) | E 11 |
| GAME OVER RE. (TRIP) | E 11 |
| L-SIDE ROLL OVER RELAY | E 11 |
| LOCK RELAY | E 11 |
| 9-0 RELAY | E 11 |
| 9-X RELAY | E 11 |
| NO.1 CHANGE RELAY | E 11 |
| NO.2 CHANGE RELAY | E 11 |
| 1-0 RELAY | E 11 |
| 1-X RELAY | E 11 |
| 1-2 RESET RELAY | E 11 |
| OUTHOLE RELAY | E 11 |
| PLAYER RESET RELAY | E 11 |
| R-SIDE ROLL OVER RELAY | E 11 |

-RED-



| LOCATION | |
|----------|------------------------|
| E23 | REPLAY RELAY |
| E15 | RESET RELAY |
| E23 | ROLL OVER BUTTON RELAY |
| E14 | 7-0 RELAY |
| E12 | 7-X RELAY |
| E21 | 6-0 RELAY |
| E2 | 6-X RELAY |
| E13 | 10 POINT RELAY |
| E20 | 100 POINT RELAY |
| E20 | 1000 POINT RELAY |
| E23 | 3-0 RELAY |
| E2 | 3-X RELAY |
| E2 | 3-IN LINE RELAY |
| E2 | 2-0 RELAY |
| E19 | 2-X RELAY |
| E20 | 3-4 RESET RELAY |
| E19 | TILT RELAY |
| E19 | TRIPLE BONUS RE. |
| E23 | |
| E6 | |
| E13 | |
| E21 | |
| E4 | |
| E21 | |
| E23 | |
| E24 | |
| E19 | |
| E19 | |
| E5 | |
| E13 | |
| E6 | |
| E21 | |

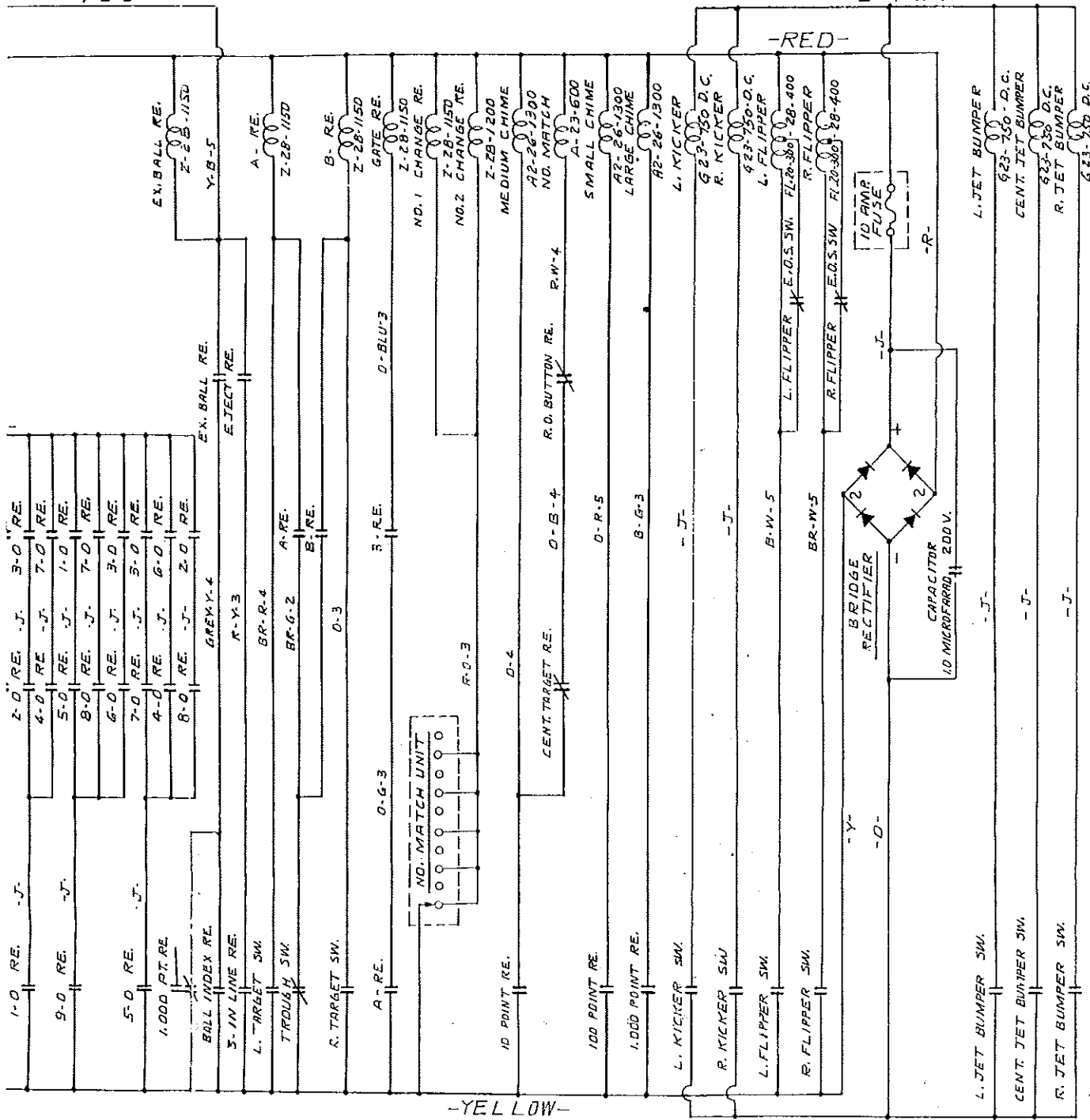
| SWITCH SYMBOLS | | | |
|-----------------|--|----------------------|------|
| | NORMALLY OPEN SWITCH | MAKES WHEN ACTUATED. | |
| | NORMALLY CLOSED SWITCH | OPENS WHEN ACTUATED | |
| | MAKE BREAK SWITCH | | |
| | CIRCLE INDICATES SWITCH ACTUATED BY A MOTOR I AM | | |
| WIRE COLOR CODE | | | |
| RED | R | BROWN | BR |
| BLUE | BLU | ORANGE | -O- |
| YELLOW | -Y- | BLACK | B |
| GREEN | -G- | GREY | GREY |
| WHITE | -W- | | |

| | | |
|-------------|-----------|-----|
| SCORE MOTOR | 14A-7813 | 60~ |
| SCORE MOTOR | 14A-7814 | 50~ |
| TRANSFORMER | 15A-671 | 60~ |
| TRANSFORMER | 15A-672-1 | 50~ |

EXAMPLE: W-R INDICATES WHITE WIRE WITH A RED TRACE.
 W-R-1 INDICATES WHITE WIRE WITH A RED TRACER AND USED A SECOND TIME

Y-B-5

G-Y-W-1



-YELLOW-

-ORANGE-

"0X0" # 420