

| REVISIONS |      |                        |      |        |
|-----------|------|------------------------|------|--------|
| REV       | ZONE | DESCRIPTION            | DATE | APPROV |
| A         |      | REVISED PER TDRR 17351 |      |        |
| B         |      | REVISED PER TDRR 19403 |      |        |
| C         |      | REVISED PER TDRR 19429 |      |        |
| D         |      | REVISED PER TDRR 19507 |      |        |
| E         |      | REVISED PER TDRR 20143 |      |        |
| F         |      | REVISED PER TDRR 22944 |      |        |
| G         |      | REVISED PER TDRR 23883 |      |        |

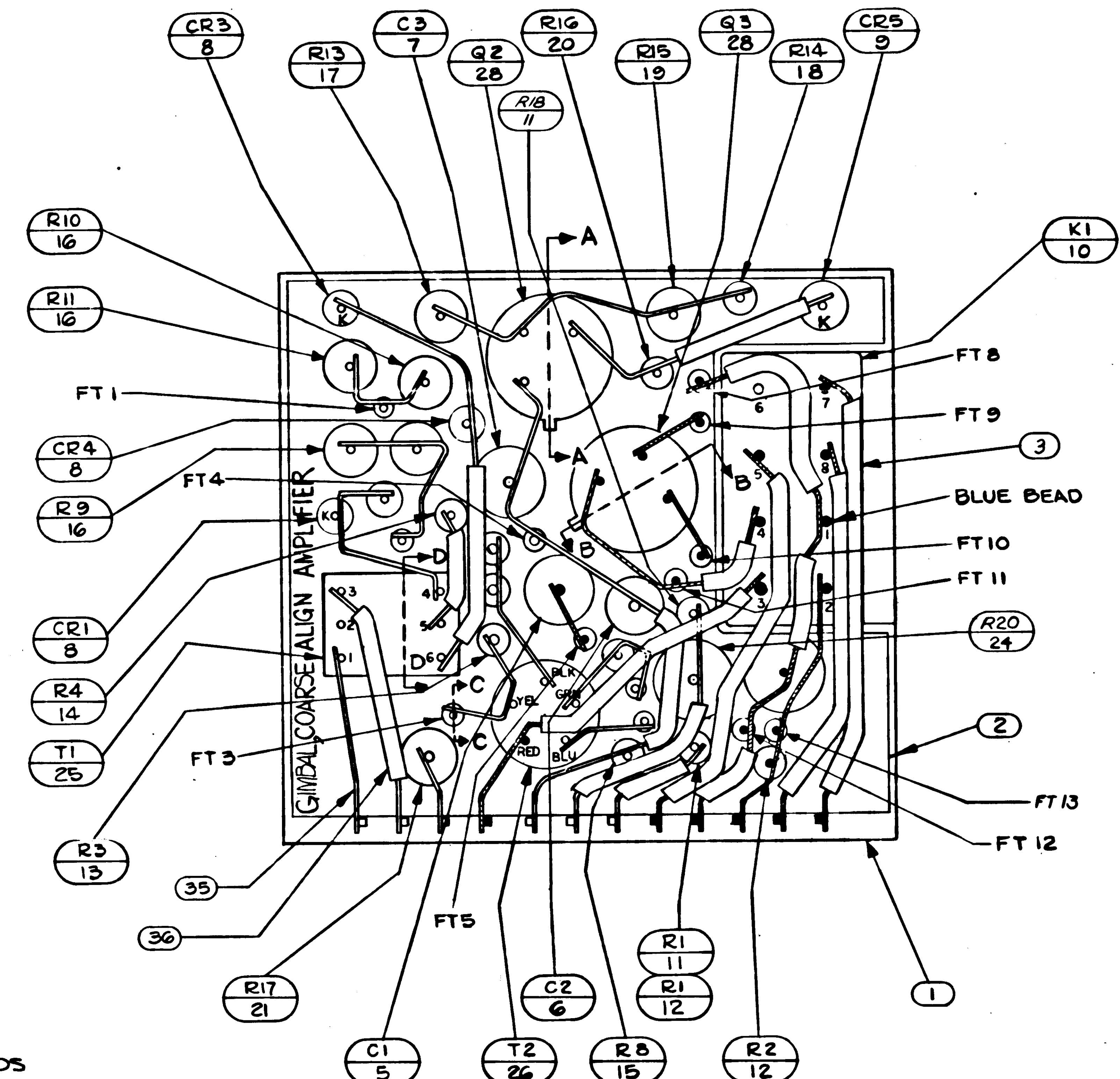
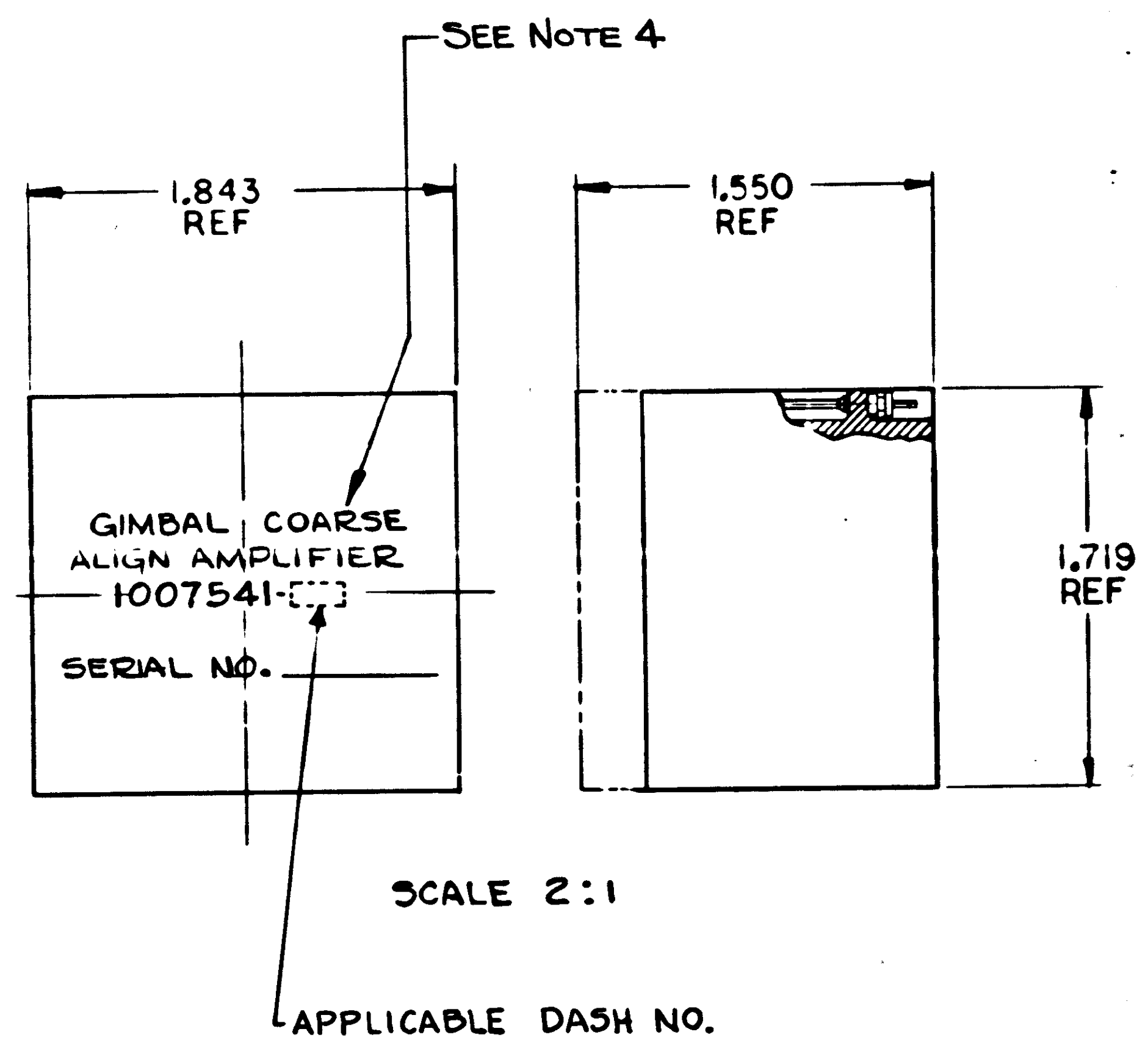


TABLE I

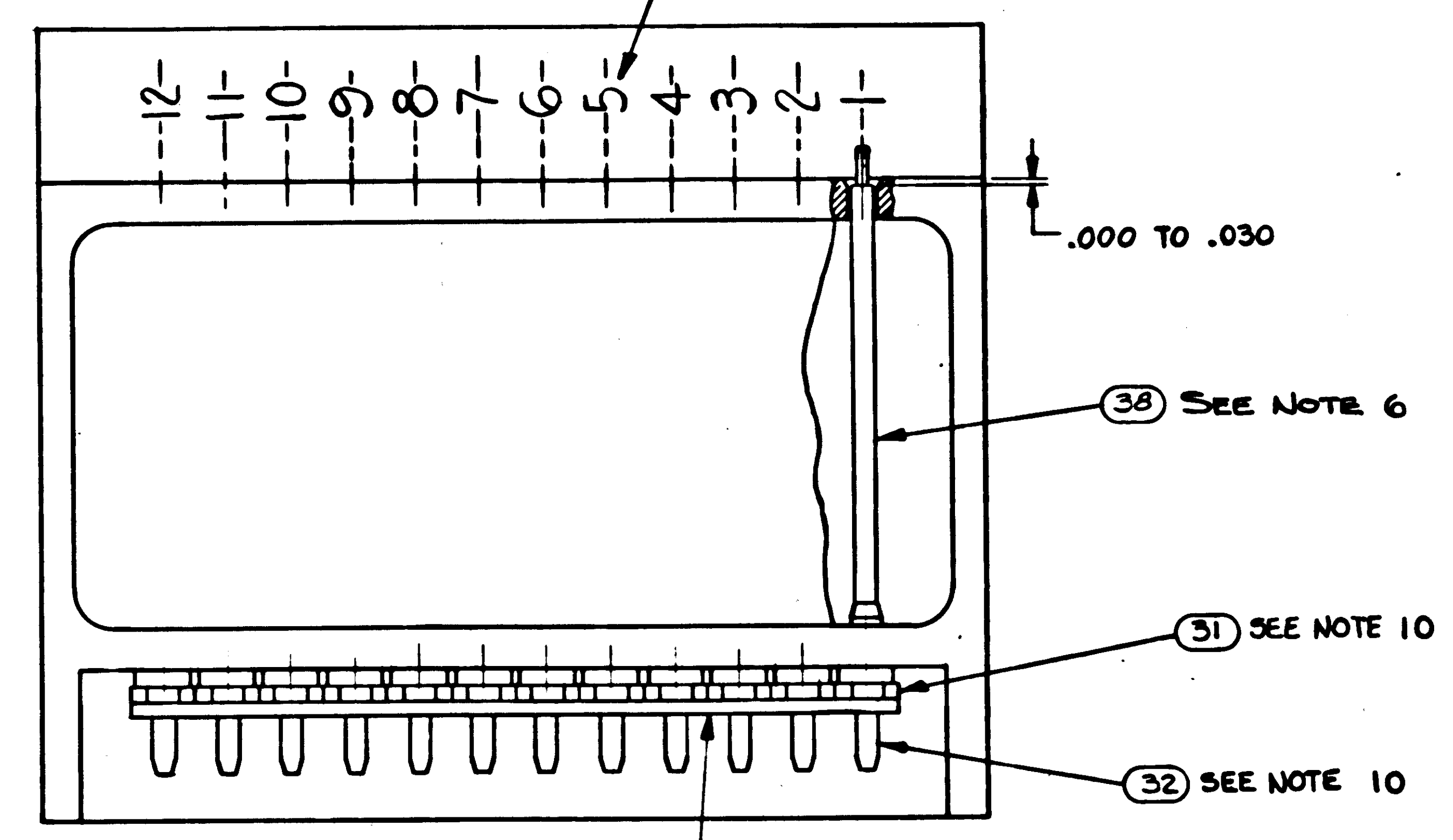
| CONFIGURATION                                | GAP BETWEEN WAFER AND HEATSINK   | TOP OF WAFER                                   | HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTER SURFACE                    |
|--|--|--|---|
| WAFER & FLAT HEATSINK                        | 100% OF AREA 18 FROM EXTERNAL HEATSINK SURFACE/BOX OF AREA 28 FROM EXTERNAL HEATSINK SURFACE | 100% OF AREA 25 FROM EXTERNAL HEATSINK SURFACE | N/A   |
| WAFER AND ADJACENT VERTICAL HEATSINK SURFACE | CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 OF EXTERNAL SURFACE                         | 100% OF AREA 25 FROM EXTERNAL HEATSINK SURFACE | N/A   |
| HEATSINK-FOAM CONTACT SURFACE PERIMETER      | N/A  | N/A  | .25 MIN WIDTH OR TOTAL AVAILABLE ON 70% OF PERIMETER TO WITHIN .03 OF EXTERNAL EDGE |

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- UNLESS OTHERWISE SPECIFIED: WIRING SHALL MEET THE REQUIREMENTS OF ND 1002069.
- ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING
- MARK PIN NUMBERS .100 HIGH (WHITE) AND ALL OTHER CHARACTERS .140 HIGH (WHITE) PER ND 1002019 AND SERIALIZE PER ND 1002023. CENTRALIZE AS SHOWN.
- AREA TO BE FREE OF ENCAPSULATING COMPOUND
- USE AS REQUIRED
- ON ITEMS (2), (3) AND (4):  
 'K' INDICATES CATHODE SIDE OF DIODE  
 FT ( ) INDICATES FEED THRU  
 'C' INDICATES COLLECTOR LEAD OF TRANSISTOR  
 B - BASE  
 E - EMITTER  
 C ( ) - COLLECTOR MULTI-STAGE TRANSISTOR  
 BU - BASE  
 EU - EMITTER
- WHITE DOT AND CLEAR WIRING INDICATES LOWER LEVEL WIRING. BLACK DOT AND CROSS-HATCHED WIRING INDICATES UPPER LEVEL WIRING.
- TYPICAL SLEEVING FOR CR1 THRU CR4, R1 THRU R8, R14, R16 AND R18
- MUST MEET REQUIREMENTS OF ND 1002136
- TORQUE TO 4 ± 1 IN-LB FOR ASSY OF ITEM 10
- ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
- BOND ITEM (40) TO ITEM (31) PER ND 1002237.
- COMPONENTS TO BE CEMENTED IN PLACE PER ND 1002009 METHOD J AND CENTRALIZED.
- USE MIL-I-631 TYPE F, FORM U, GRADE C, CLASS I, CATEGORY I, ONE PLACE ONLY. BOND IN PLACE PER ND 1002004, TYPE I
- PROCURE PER PS 1007041.
- FILL PER ND 1002117
- BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.

19. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL ADHESIVE AND COATING MATERIAL PER ND 1002187 TYPE I. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.

20. EXCEPT FOR MODULE MOUNTING SURFACE. PAINT ALL SURFACES PER ND 1002279, USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE OF PAINT.

21. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON & ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.

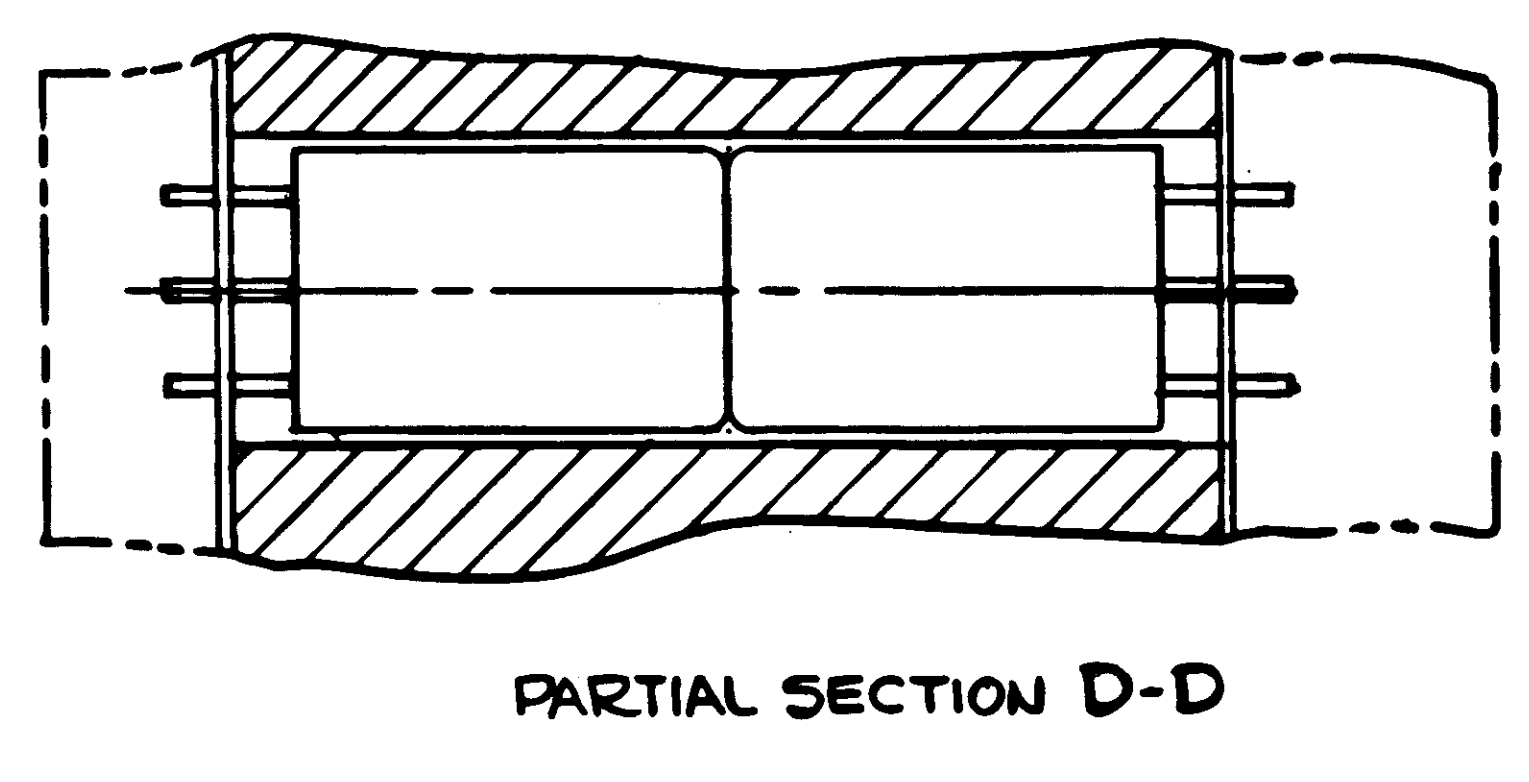
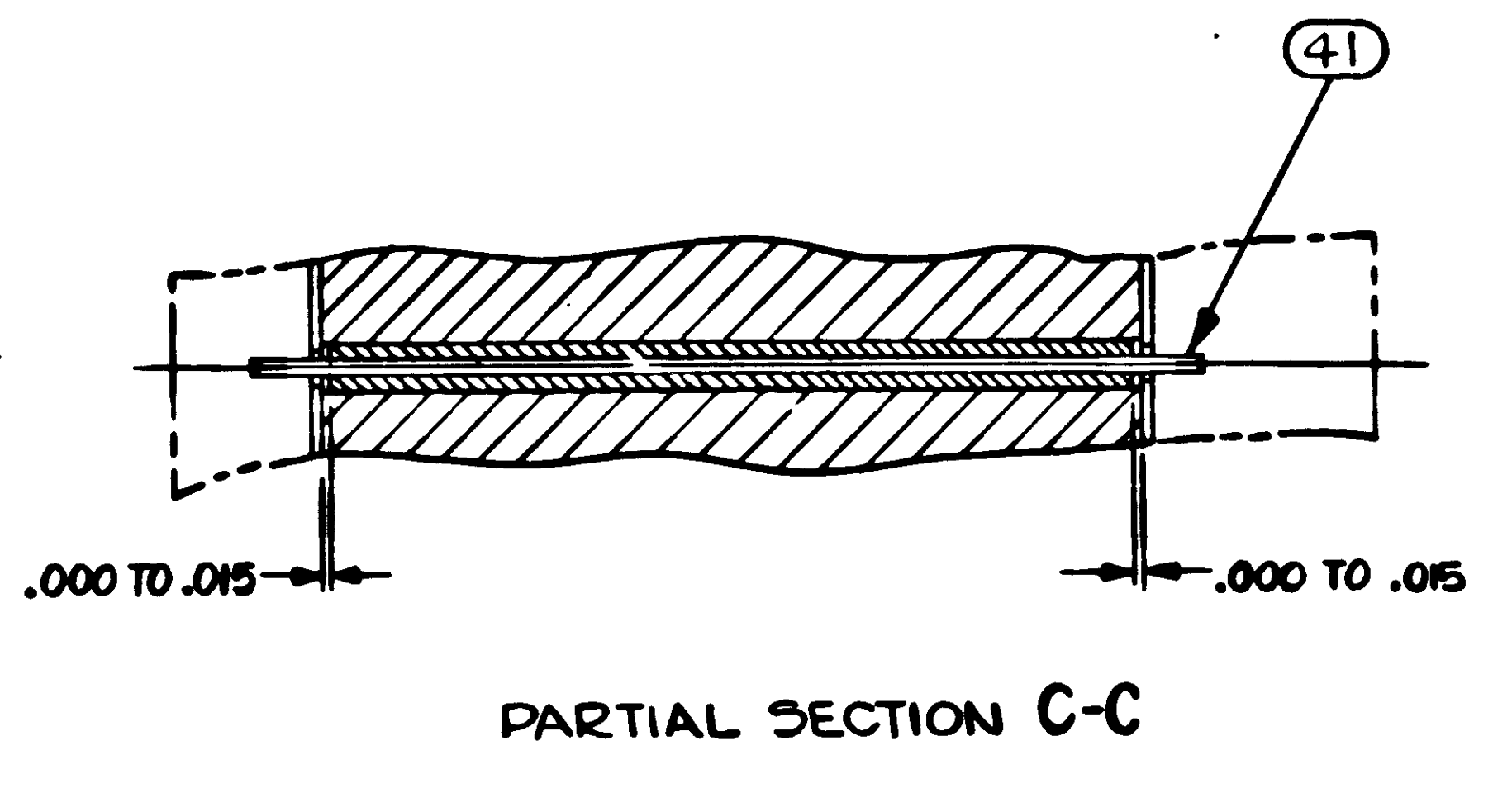
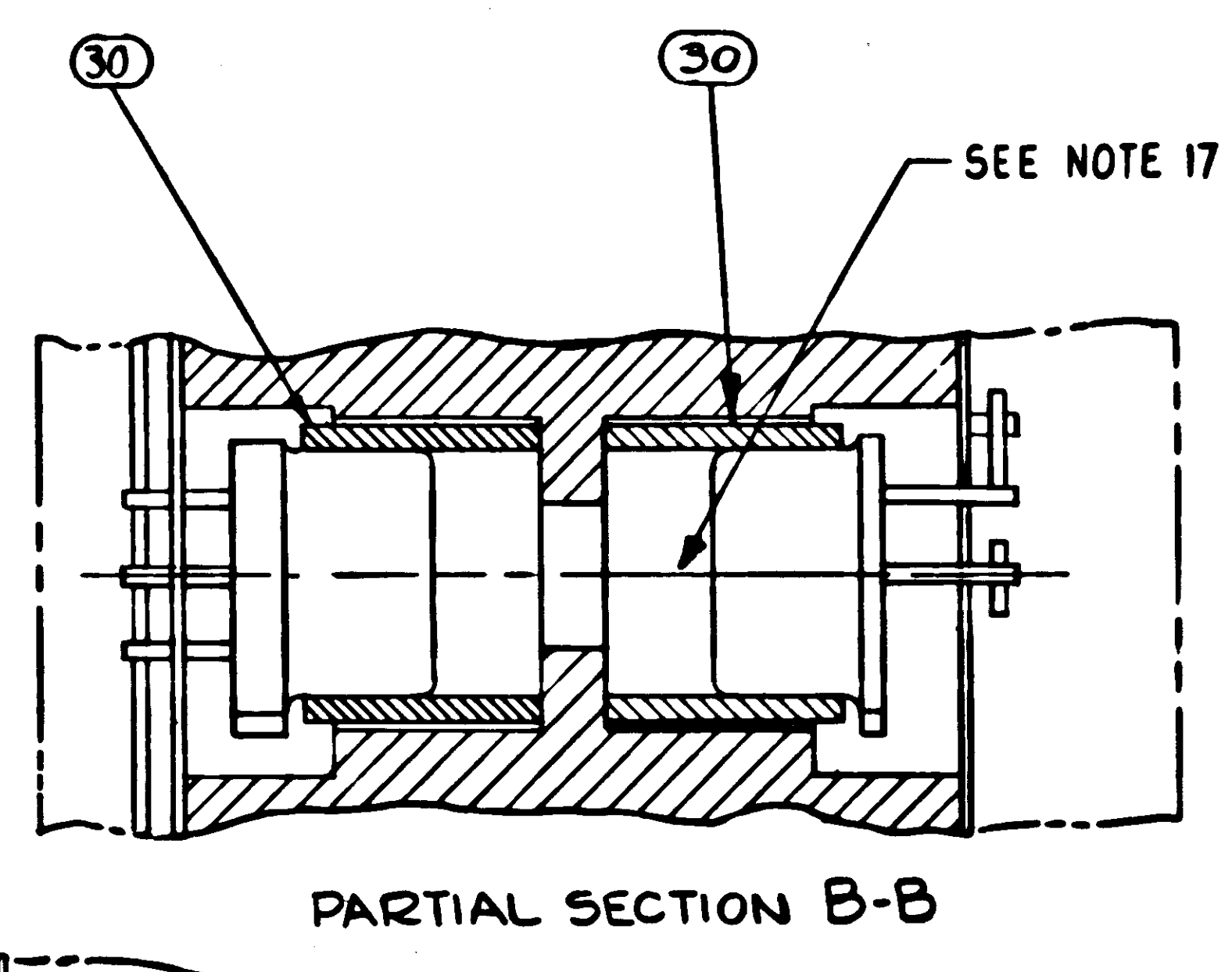
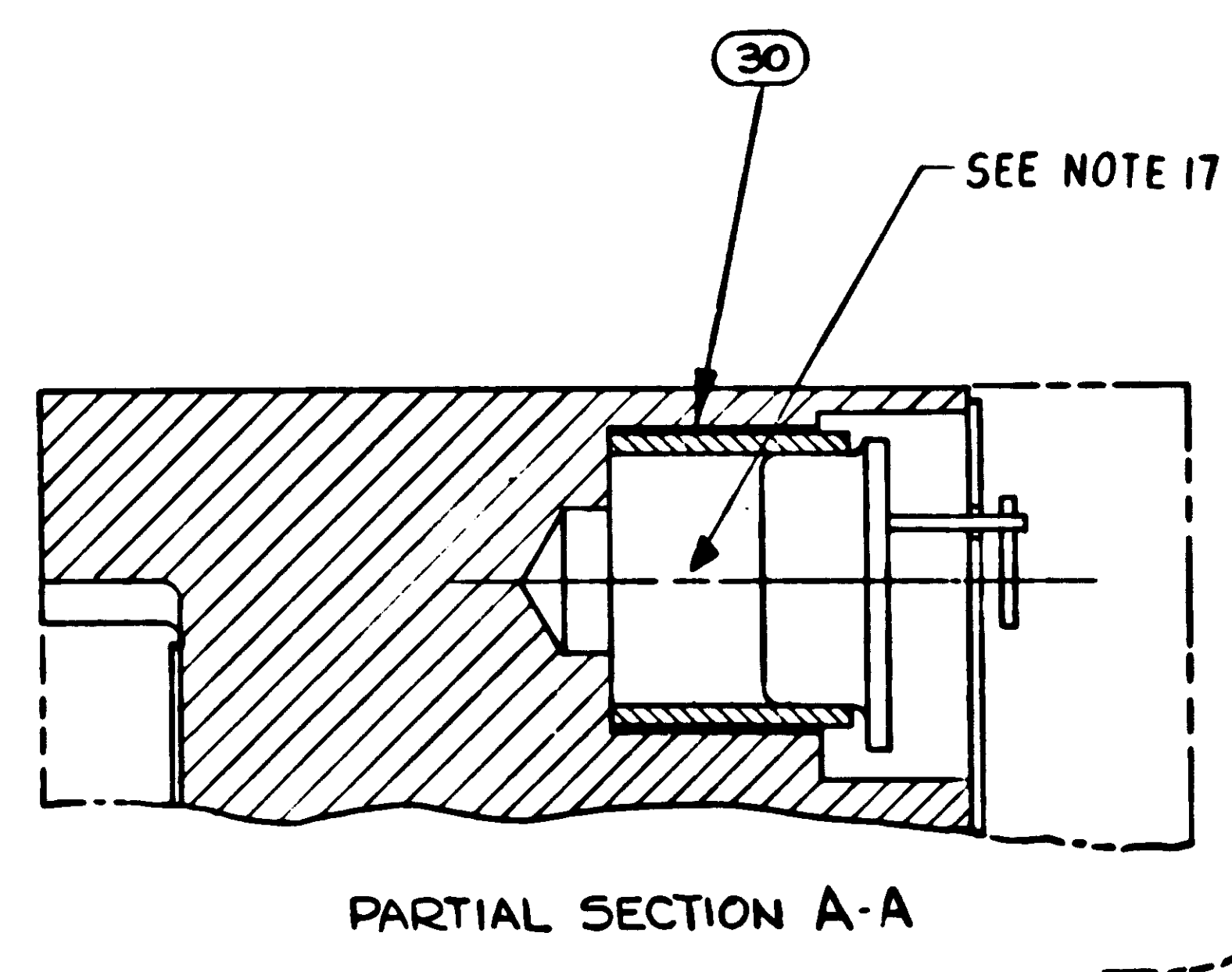
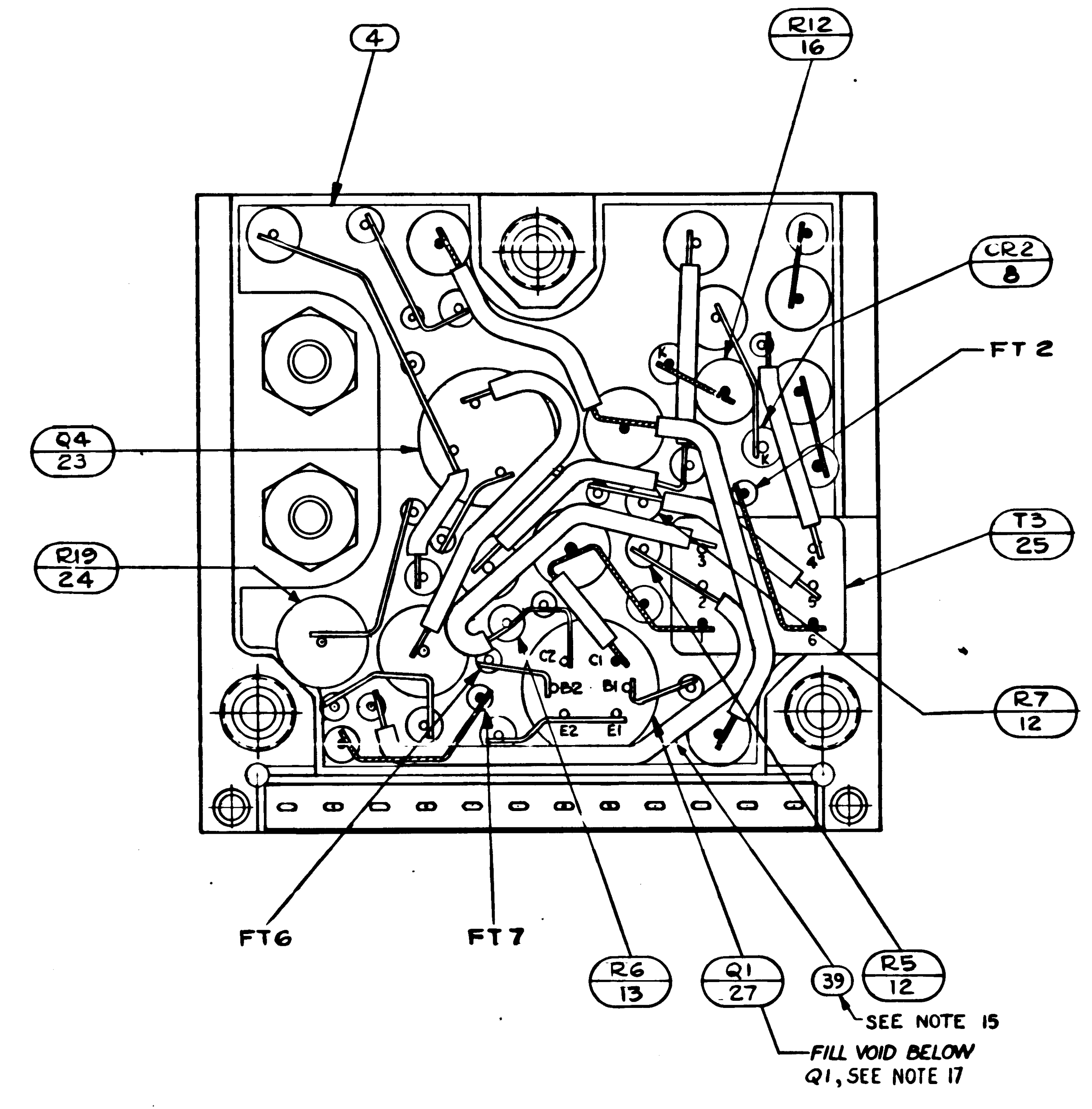
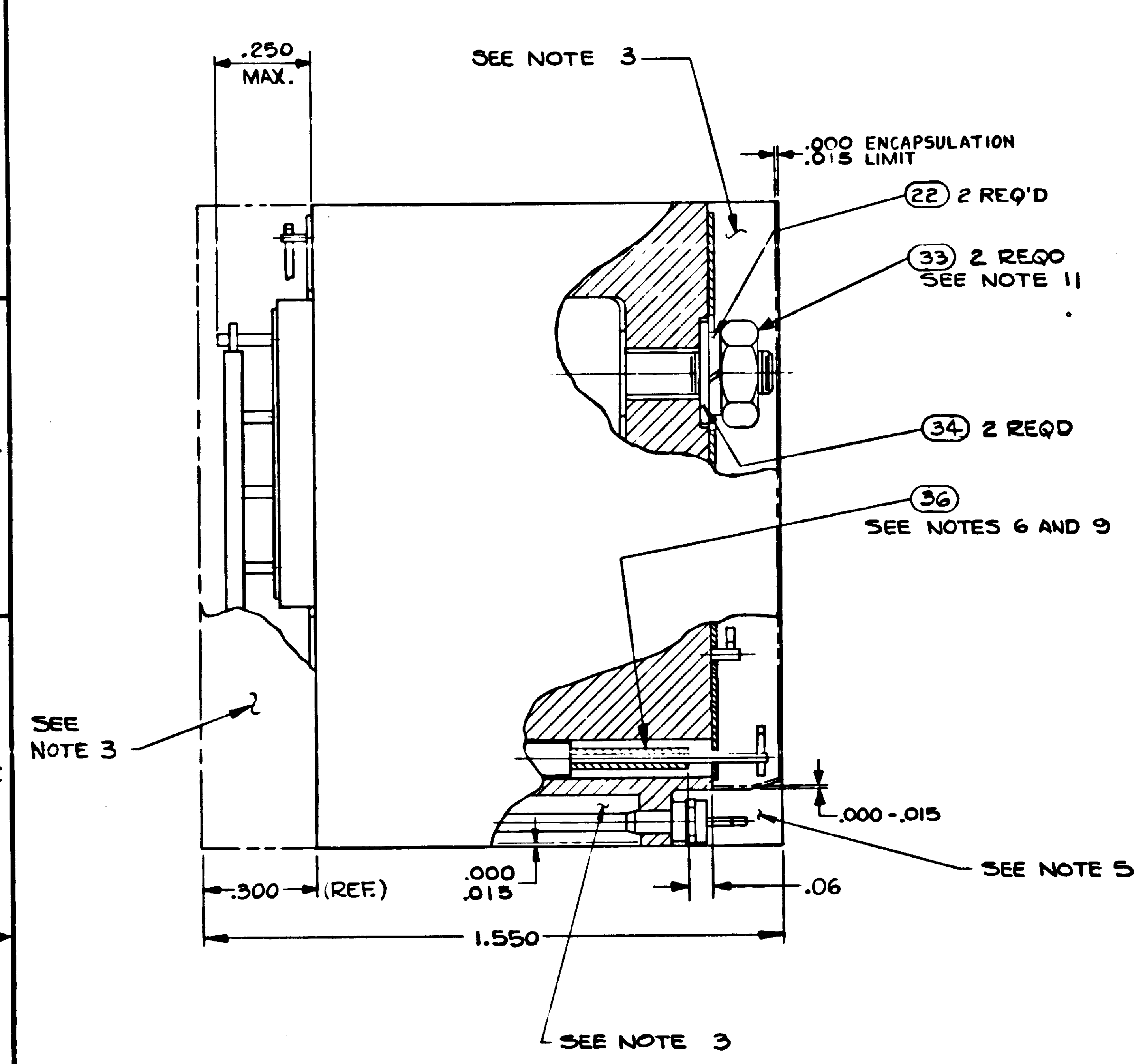


| REF         | QTY | DESCRIPTION | REF | QTY | DESCRIPTION                   |
|-------------|-----|-------------|-----|-----|-------------------------------|
| REF 100023  |     |             |     |     | SCHEMATIC                     |
| REF 1009524 |     |             |     |     | SCHEMATIC                     |
| AR AR       | 41  | 1010848-2   |     |     | WIRE-ELECTRICAL NICKEL        |
| AR AR       | 40  | 1008540-12  |     |     | GASKET, CONNECTOR MINATURE    |
| AR AR       | 39  | MIL-I-631   |     |     | INSULATION, SLEEVING 22 GA    |
| AR AR       | 38  | 1006776-20  |     |     | INSULATION SLEEVING           |
| AR AR       | 37  | 1006757-8   |     |     | WIRE-ELEC                     |
| AR AR       | 36  | 1006776-21  |     |     | INSULATION SLEEVING           |
| AR AR       | 35  | 1006757-7   |     |     | WIRE, ELEC.                   |
| 2 2         | 34  | 1008070-5   |     |     | WASHER- FLAT                  |
| 2 2         | 33  | MS20341-4A  |     |     | NUT-HEX                       |
| 12 12       | 32  | 1006752-5   |     |     | CONTACT, WRAPOST MALE MINAT   |
| 12 12       | 31  | 1006775     |     |     | INSULATOR, WRAPOST MALE MINAT |
| 3 3         | 30  | 1008025-2   |     |     | INSULATOR, BUSHING            |
| AR AR       | 29  | 1006776-22  |     |     | INSULATION SLEEVING           |
| 2 2         | 28  | 1010270     |     |     | TRANSISTOR                    |
| 1 1         | 27  | 1010252-1   |     |     | TRANSISTOR                    |
| 1 1         | 26  | 1010326     |     |     | TRANSFORMER                   |
| 2 2         | 25  | 1010329-1   |     |     | TRANSFORMER                   |
| 2 2         | 24  | 1010278-7   |     |     | RESISTOR, FIXED               |
| 1 1         | 23  | 1010345-1   |     |     | TRANSISTOR                    |
| 2 2         | 22  | MS35338-78  |     |     | WASHER, LOCK                  |
| 1 1         | 21  | 1010364-543 |     |     | RESISTOR, FIXED               |
| 1 1         | 20  | 1006750-56  |     |     | RESISTOR                      |
| 1 1         | 19  | 1010364-765 |     |     | RESISTOR, FIXED               |
| 1 1         | 18  | 1010569-105 |     |     | RESISTOR, FIXED               |
| 1 1         | 17  | 1010364-579 |     |     | RESISTOR, FIXED               |
| 4 4         | 16  | 1010364-443 |     |     | RESISTOR, FIXED               |
| 1 1         | 15  | 1006750-43  |     |     | RESISTOR                      |
| 1 1         | 14  | 1006750-48  |     |     | RESISTOR                      |
| 2 2         | 13  | 1010369-97  |     |     | RESISTOR, FIXED               |
| 4 3         | 12  | 1006750-73  |     |     | RESISTOR                      |
| 1 2         | 11  | 1006750-80  |     |     | RESISTOR                      |
| 1 1         | 10  | 1010353-1   |     |     | RELAY, ELECTROMAGNETIC        |
| 1 1         | 9   | 1010372-22  |     |     | DIODE, SEMICONDUCTOR DEVICE   |
| 4 4         | 8   | 1010392-1   |     |     | DIODE, SEMICONDUCTOR DEVICE   |
| 1 1         | 7   | 1010279-232 |     |     | CAPACITOR, FIXED              |
| 1 1         | 6   | 1010279-228 |     |     | CAPACITOR, FIXED              |
| 1 1         | 5   | 1010264-15  |     |     | CAPACITOR, FIXED              |
| 1 1         | 4   | 1015692     |     |     | INSULATOR                     |
| 1 1         | 3   | 1015690     |     |     | INSULATOR                     |
| 1 1         | 2   | 1015691     |     |     | INSULATOR                     |
| 1 1         | 1   | 1015689     |     |     | HEATSINK                      |

|   |             |                     |                           |   |               |       |   |         |
|---|-------------|---------------------|---------------------------|---|---------------|-------|---|---------|
| 1007871   | USED ON     | APPLICABLE DASH NO. | DO NOT SCALE THIS DRAWING | NASA APPROVAL                             | CODE IDENT NO | 80230 | E | 1007541 |
| NEXT ASSY   | APPLICATION |                     |                           | BY APPROVAL                               | SCALE         | 2:1   |   |         |
| THE ASSEMBLY PART NUMBER IS THE DRAWING NUMBER AND THE DASH NUMBER THAT APPLIES |             |                     | CONTRACT NAS 9-497        | INSTRUMENTATION LAB CENTER HOUSTON TEXAS  |               |       |   |         |
|   |             |                     |                           | GIMBAL COARSE ALIGN AMPLIFIER MODULE ASSY |               |       |   |         |
|   |             |                     |                           | SHEET 1 OF 2                              |               |       |   |         |



| REVISIONS |      |                                       |      |       |
|-----------|------|---------------------------------------|------|-------|
| SYM       | ZONE | DESCRIPTION                           | DATE | APPD. |
| Δ         |      | REVISED PER TDRR 17381                | 2/68 | CM    |
| B         |      | REVISED PER TDRR 19403                | 2/68 | CM    |
| C         |      | REVISED PER TDRR 19429                | 3/68 | CM    |
| D         |      | REVISION STATUS CHANGE PER TDRR 23449 | 7/68 | CM    |
| E         |      | REVISION STATUS CHANGE                | 7/68 | CM    |
| F         |      | REVISED PER TDRR 23449                | 7/68 | CM    |
| G         |      | REVISED PER TDRR 23888                | 7/68 | CM    |



|   |   |  |
|---|---|--|
| UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ON | INSTRUMENTATION LAB<br>Houston, Texas                         | MANIPULATED<br>SPACECRAFT CENTER<br>HOUSTON, TEXAS |
| FRACTIONS DECIMALS ANGLES<br>+ - - - -<br>- - - - -<br>- - - - -        | DATE 11 Jun 68<br>CHECKED [Signature]<br>APPROVAL [Signature] | GIMBAL COARSE ALIGN<br>AMPLIFIER MODULE ASSY       |
| DO NOT SCALE THIS DRAWING   | NASA APPROVAL [Signature]                                     | CODE IDENT NO. SEE<br>80230 E 1007541              |
| CONTRACT NAS 9-497  | INT APPROVAL [Signature]                                      | SCALE 5:1 SHEET 2 OF 2                             |