

## **General Information and Applications Guide for RCA 3-inch Image Isocons**

by

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This Note is designed for use with RCA 4807, 4827 or 4828 families of Image Isocons. Its purpose is to assist the potential user of any of these tube types in the proper selection of tube and associated components. A brief description is given of each tube type and various magnetic assembly options. Detailed information on any of the tube types or assemblies discussed may be found in the respective device bulletin.

### **The 4807 Family of Image Isocons**

These ruggedized, fiber-optic faceplate image isocon television camera tubes are designed for high-resolution, real-time "low-light-level" (Moonlight) TV systems. They are especially useful in systems where another fiber-optic device, e.g., an image intensifier is to be coupled to the fiber-optic faceplate of the tube for even greater sensitivity.

The 4807 family consists of four tube types; 4807, 4807/V1, 4807A and 4807A/V1. All have a maximum image section diameter of 3 inches. Features common to all types in the family include:

- Low Capacitance Target (0.020" Target-Mesh Spacing)
- Multialkali Photocathode (S-20 Spectral Response)
- Fiber-Optic Faceplate
- Ruggedized

The differences of basic tube types 4807 and 4807A are as follows:

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\*More stringent than the 4807A

### **4807 (Military Version)**

Scan Aspect of 1:1  
Blemish Zone 1  $\approx$  30% of Scanned Area\*  
S/N (0.002 lm/ft<sup>2</sup> highlights) = 32 dB\*  
Shading Variation = 12%\*

### **4807A (Formerly Dev. Type C21095C)**

Scan Aspect of 4:3  
Blemish Zone 1  $\approx$  15% of Scanned Area  
S/N (0.002 lm/ft<sup>2</sup> highlights) = 30 dB  
Shading Variation = 15%

Both of these types (4807 and 4807A) incorporate "flying leads" in both the gun and image sections. Overall length is 16 inches. Respective mechanical variants of these two tube types with "flying lead" image sections but permanent gun-sections basing are the 4807/V1 and the 4807A/V1. Overall length of these versions is 16.56 inches.

### **Selecting a Magnetic Assembly for 4807 Family Tubes**

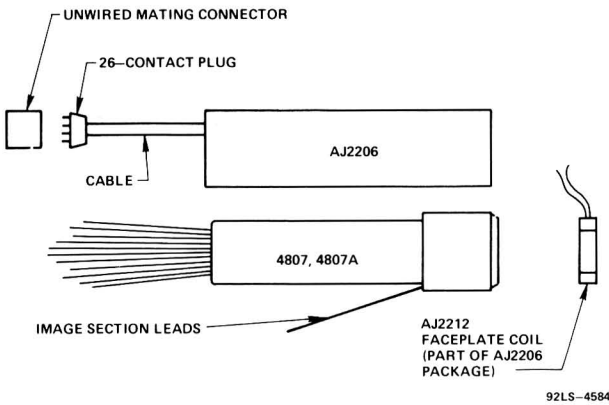
Three RCA magnetic assemblies may be used with this family of tubes; AJ2206 (replaces AJ2172/V2), AJ2172 (replaces AJ2172/V1), or AJ2147.

### **AJ2206**

The AJ2206 was designed for military applications requiring ruggedization and MIL spec. quality. Internal surfaces are free of confining sockets, etc., so suitable clamping of tube and intensifier can be accomplished. The unit was designed to conduct heat out of the assembly without forced-air cooling.

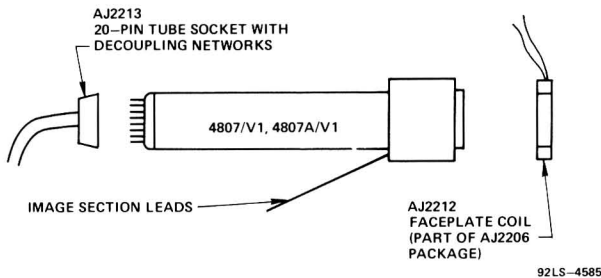
**AJ2206 (Cont'd)**

**A. Basic Package**



1. Retention, support and image coupling details are to be provided by the user. An RCA coupling assembly, AJ2214 which may be used with the 8605/V1 intensifier, is available on special order from RCA-EC.
2. Decoupling networks are to be supplied by the user.
3. Image section leads exit with other cable leads.
4. Additional faceplate coils, AJ2212, are available from RCA-EC on special order.

**B. Alternate Package**



1. The 4807/V1 or 4807A/V1 may be used in the AJ2206 with a 20-pin tube socket and decoupling networks, AJ2213, available from RCA-EC on special order.

**AJ2172 (See 4827 Family for Outline)**

1. The 4807 family of tubes may be used in the AJ2172 if the image section leads are connected to the appropriate socket leads on the yoke. The "flying" lead based 4807 and 4807A tubes will require decoupling networks to be supplied by the user because the decoupler-socket cannot be used.

2. Coupled intensifiers may be used with the 4807/V1 or 4807/V1 in the AJ2172 if, in addition to making the appropriate image section connection, (a) the springs of the spring-loaded yoke are removed, (b) a special faceplate coil, AJ2212, available from RCA-EC, is used between the coupled tubes, and (c) suitable coupling details and support arrangement are incorporated.

**AJ2147**

This obsolete version can produce operation equivalent to the AJ2172 if the alignment and auxiliary alignment circuits are de-energized.

**The 4827 and 4828 Families of Image Isocons**

These clear-glass faceplate image isocon television camera tubes are designed for use in high-definition, "low-light-level" (Moonlight for 4827, Deep Twilight for 4828) TV systems. Because of their inherently high resolution, they are especially recommended for use in camera systems of higher line number (1000 lines, or more). All versions come with rigid pins on both the image section and gun section. Overall length for all types is 16.56 inches.

Featured differences of these types are as follows:

**4827**

- Low Capacitance Target (0.020" Target-Mesh Spacing)
- Multialkali Photocathode (S-20 Spectral Response)
- Scan Aspect of 1:1
- Blemish Zone 1  $\approx$  30% of Scanned Area\*
- S/N at the "Knee" (0.001 lm/ft<sup>2</sup>) = 30 dB
- Shading Variation = 15%

\*More stringent than the 4827A

**4827A (Formerly Dev. Type C21127)**

- Features same as 4827 with following exceptions:
- Scan Aspect of 4:3
- Blemish Zone 1  $\approx$  15% of Scanned Area

**4828**

- High Capacitance Target (0.001" Target-Mesh Spacing)
- Bialkali Photocathode Response
- Scan Aspect of 1:1
- Blemish Zone 1  $\approx$  30% of Scanned Area\*
- S/N at the "Knee" (0.01 lm/ft<sup>2</sup>) = 38 dB
- Shading Variation = 12%

\*More stringent than the 4828A

**4828A (Formerly Dev. Type C21093A)**

Features same as 4828 with following exceptions:

Scan Aspect of 4:3

Blemish Zone 1  $\approx$  15% of Scanned Area

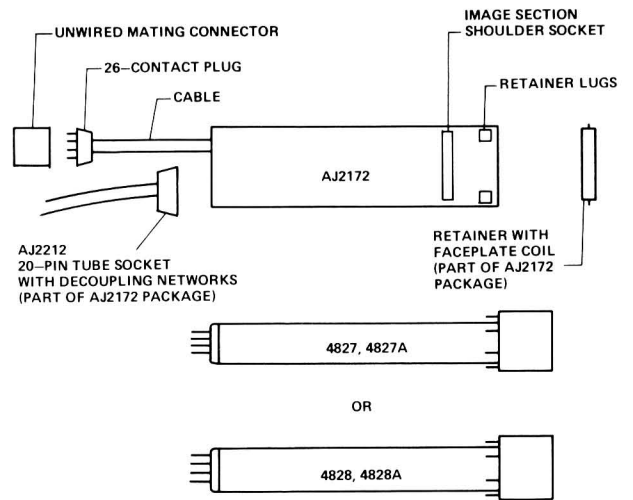
**Selecting a Magnetic Assembly for 4827 and 4828 Families**

Three RCA magnetic assemblies may be used with these families of tubes; AJ2172, AJ2147, and AJ2206. The AJ2206 is not normally recommended for use with these tube types due to the less convenient nature of mounting and providing electrical connections.

**AJ2172**

The AJ2172 was designed for ease of use and can be used in most camera applications requiring the glass-faceplate versions. A shoulder socket is built into the yoke for easy insertion of the image section pins. The yoke assembly is spring loaded so when the faceplate coil retainer is properly seated, the tube is positioned properly. The external housing has suitable openings to facilitate forced-air cooling over the entire length of the tube.

**A. Basic Package**



92LS-4586

**AJ2147**

This obsolete version can provide operation equivalent to the AJ2172 if the alignment and auxiliary alignment circuits are de-energized.

