

Trendsetter VLF

RF Immunity Enhancements for the 40W V-Head

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Revision History

Revision	Date	Author	Comments
Draft1	1999:Jul:17	R.Luther/C.Townsend	
A	1999:Aug:03	C.Townsend	Copy to be released under ECO C826
B	1999:AUG:31	C.Townsend	ECO D110. Fasteners for bonding strap clamp correctly identified as M5 size. Changed length of air tube (56-1038) in table related to Figure 3.

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1. SCOPE

Tests involving the Trendsetter VLF (TS-VLF) has shown the V-Head machine will benefit from improved RF Immunity and lowered EMI emissions with the following changes:

1. Install a bonding strap in the flex track to provide an RF ground between the exposure head and the power-box;
2. Replace the 50Ω coax 'hotlinks' cable in the flex-track with a 75Ω version;
3. Replace three cables (10-1429x, 10-3497x and 10-3541x) with versions that have ground shield extensions for bonding to the power-box;
4. Add a DSUB in-line capacitance filter and common mode choke to the carriage drive electronics system.

This document describes how to complete these changes on a TS-VLF machine in the field using upgrade kit 05-0106.

2. MACHINES NEEDING THIS UPGRADE

All 40W, V-Head TS-VLF's need these changes unless this machine is listed below. As of the date on this document, the following machines already have these changes:

- European machines B159, B186, B191, B192, B197 and B199.
- B103 (40W field upgrade) and every TS-VLF (V-Head or F-Head) shipped from the factory since machine B200.

3. OTHER RELATED CHANGES NOT PART OF THIS UPGRADE

Tests involving the TS-VLF has also shown improved RF Immunity and lowered EMI emissions with the following changes:

- New filter board added to the 40W V-Head (Version C head).
- EMI filter relocated to lower base-frame.

For further details see:

1) ECO C826: EMI/RFI Enhancements for TS-VLF.

2) ECO C828: Version C change to 40W V-Head to include RF filter board.

3) Doc 72-3091: EMI Filter Relocation.

4. PARTS

The following is a list of key parts contained in the upgrade kit 05-0106;

- bonding strap and power-box clamp: 57-5754A and 57-5755A
- 75Ω coax and adapter cable: 10-3518B and 10-4107A

- modified 10-3497B PDB-MDA cable with extended shield: 10-3497C
- modified 10-1429A MDM-MDA cable with extended shield: 10-1429B
- modified 10-3541A MP-MDA cable with extended shield: 10-3541B
- cable shield bracket and clamp: 57-5756A and 57-5758A
- DSUB in-line capacitance filter: 16-4083
- carriage motor common mode choke: 10-3790A
- various fasteners and cable mount hardware

5. REQUIRED TOOLS

- small slotted screwdriver
- small side cutters
- metric nut driver or socket set
- metric hex key set
- 7mm drill bit
- drill, electric or air
- de-burr tool with v-hook for 7mm hole

6. INSTALLATION INSTRUCTIONS

6.1 Preparation

Carriage should be about mid way along track for easy access. This procedure can be completed with exposure head mounted to carriage.

Ensure machine is powered down.

For minimum access, remove service panels covering encoder end, motor end, front centre and power-box locations.

Understand and practice standard Creo laser safety and personnel static grounding procedures.

6.2 De-populating card-cage

The card-cage must be emptied to allow safe access for drilling a hole to mount the 75Ω ‘hotlinks’ cable described later in this procedure.

If the system has a DPE board, you will disconnect the 50Ω ‘hotlinks’ cable from the PHI board. If the system has an FDPE board, this cable will be disconnected from the FDPE board.

Remove all electronic cards now and safely set them aside.

6.3 Installing bonding strap and 75Ω hotlinks cable

1. Disconnect all flex-track cables at Exposure Head (E.H.).
2. Detach flex-track and bracket from head. Note DC ground connection and remember to re-establish when finishing.
3. Detach other end of flex-track from carrier tray. This step makes the job of accessing interior cables easier since the flex-track can be flipped over and worked from the outside/bottom side.
4. Unroll E.H. end of flex-track out through left (encoder) end and straighten.
5. Pry open flex-track bars on outside of bend to gain access to cables. Do your best not to unnecessarily disturb cable order.
6. Carefully pull back cables and place bonding strap. This strap must be installed twist-free and on top of all other cables with mylar (glossy) side next to plastic bars of flex-track. In operation, this cable will lay on the inside bend of the flex-track. Avoid touching the fabric side of the first 100mm of the strap – fingerprints are oily and will prevent low impedance bonding when tape tail is secured in next step. Figures 1 and 2.
7. With some alcohol and a rag, clean the flex-track bracket flange in preparation for attaching the adhesive backed tail of the bonding strap.
8. Peel off release paper and attach bonding strap to flex-bracket and then double back over the fabric side. It is important to get this connection right. Figure 1.
9. Carefully extract 50Ω 'hotlinks' cable from inside flex-track and install 75Ω version in its place.
10. Carefully organize cables and close up flex-track. Ribbon cables must be layered without twists and not entwined by other cables. Failure to properly organize the cables may lead to constriction and conductor breakage during normal flex-track operation. Figure 2.
11. Re-attach flex-track bracket to carrier tray.
12. Set lengths of all cables emerging from flex-track according to Figure 3 and associated table.
13. Re-position flex-track and attach bracket to head. Remember to reconnect DC ground wire with star washer.
14. Reconnect all cables leading to the head.
15. Refer to the left wall of the card-cage. Remove the push-mount located under the large grommet protecting the 50Ω 'hotlinks' cable. Figure 4.
16. Remove the 50Ω 'hotlinks' cable from the grommet. Grommet should remain in wall after you are done. Figure 4.
17. Enlarge former push-mount hole (from Step 15) with 7mm drill. De-burr. Trap and remove all metal chips to prevent any possibility of future electrical shorts. Figure 4.

18. Working from flex-track to power-box, carefully remove 50Ω 'hotlinks' cable and install the 75Ω version. Replace cable ties as you go. Attach 75Ω 'hotlinks' cable to card cage as shown in Figure 5.

19. Install 'hotlinks' adapter cable (10-4107A) to end of 75Ω cable protruding through card-cage wall. Figure 4.

20. Refer to Figure 9 and notice where the clamp for the bonding strap mounts. In a 20W power-box, two tie mounts will be found in this location – remove them.

21. Refer to the end of the flex-track attached to carrier tray. Neatly attach bonding strap to outside of main cable bundle with tie wraps until inside the wire duct on back wall of power-box. The bonding strap is then routed out the end of the cable duct and through the power-box opening. Once inside, the bonding strap is routed under the card-cage and inside two cable ducts to its mounting location on back wall. Use double 45° degree folds at corners. Surplus strap length to be doubled-up inside vertical duct. Figures 6, 7, 8 and 9.

22. Install bonding strap and clamp using former cable tie anchors. Figure 6.

23. Tidy cables and bonding strap. Re-install wiring duct covers.

6.4 Installing filter, choke and cable shield grounding

1. Replace the 10-1429A MDM-MDA cable, 10-3497B PDB-MDA cable, and 10-3541A MP-MDA cable with the modified versions provided with the kit. Tidy and re-install duct covers.

2. Attach bracket (57-5756A) to the upper set of push mount holes above the drum servo-amp. Two tie wraps holding the main cable bundle for the servo-amp will need to be cut. Figures 10 and 11.

3. Clamp the three ground braids from the new cables to the bracket. Ensure the three braids are neatly stacked (edges aligned) and butt up to the inside surface of the top flange. Do not overtighten the clamping nuts. If the clamping bar bends around the braids then you have gone too far. Figure 11.

4. Use the provided cable ties to neatly re-fasten any cables that were separated from the push mounts on the power box. Ensure drum amp cable bundle does not contact drum brake resistor: 20mm minimum clearance is recommended.

5. Disconnect the 10-3528A CM-CD cable from J2 on the carriage motor drive board. Install the provided 10-3790A common mode choke between this cable and the carriage motor drive board. Re-connect 10-3528A. Figure 12.

6. Disconnect the 10-3495A CD-D-BP cable from J5 on the card-cage back-plane. Install the provided DSUB in-line filter between this cable and the back-plane. Re-connect 10-3495A. Figure 13.

6.5 Re-populating card-cage and upgrading DPE to FDPE

1. Carefully re-install MPE and VLF Auto-load electronic boards in slots 3 and 4 (from left) respectively. Secure.

2. If the TS-VLF was originally equipped with an FDPE board (10-3762B), carefully re-install this card in slot 1 (from left) and secure.

   OR

   If the TS-VLF was originally equipped with a DPE board, carefully install the FDPE replacement (including RAM) in slot 1 (from left) and secure. The DPE and PHI boards are no longer required in this TS-VLF.

3. Attach adapter cable (10-4107A) to connector J1 on FDPE board.

7. ILLUSTRATIONS

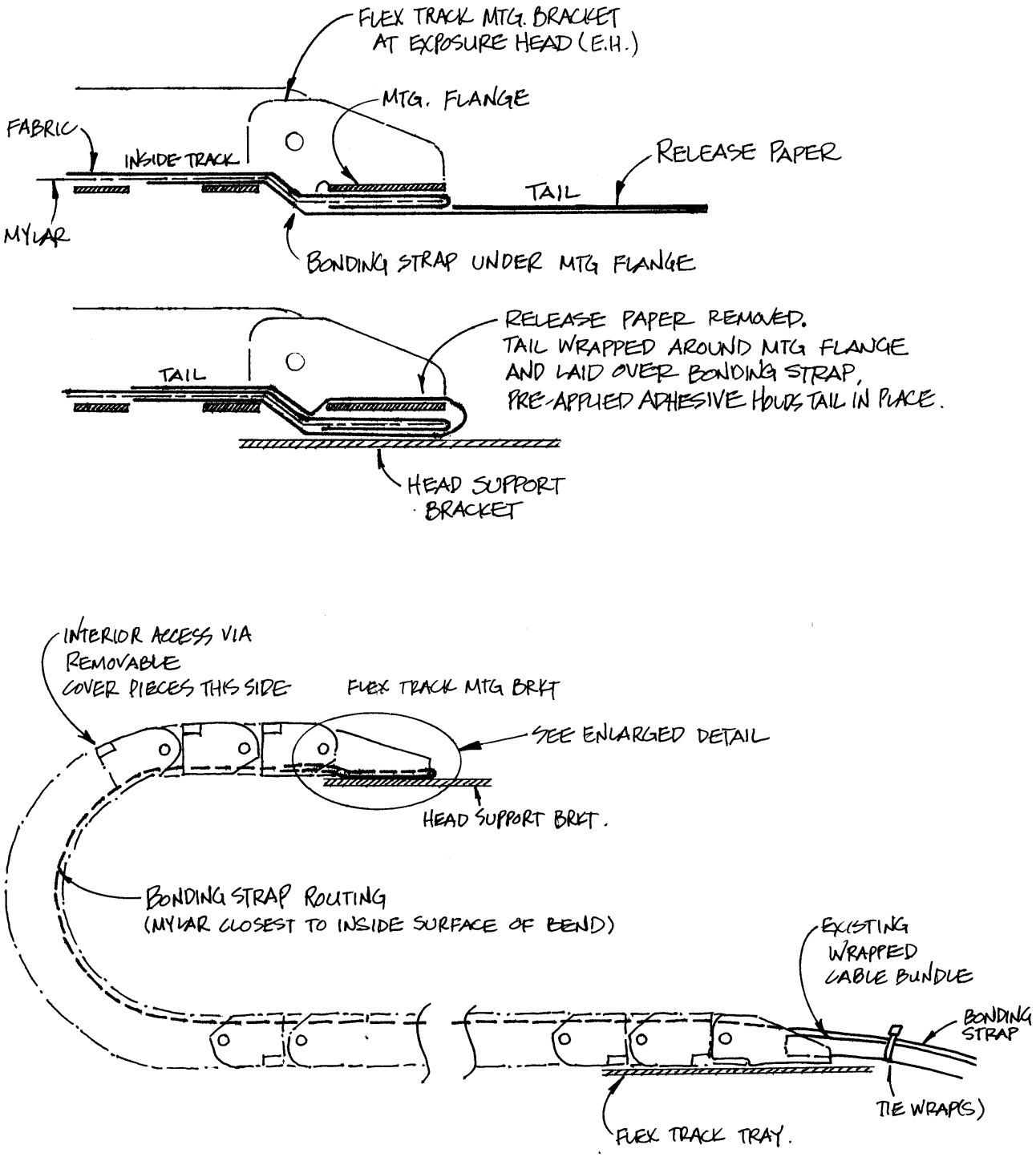


Figure 1: Attaching bonding strap to flex track mounting bracket.

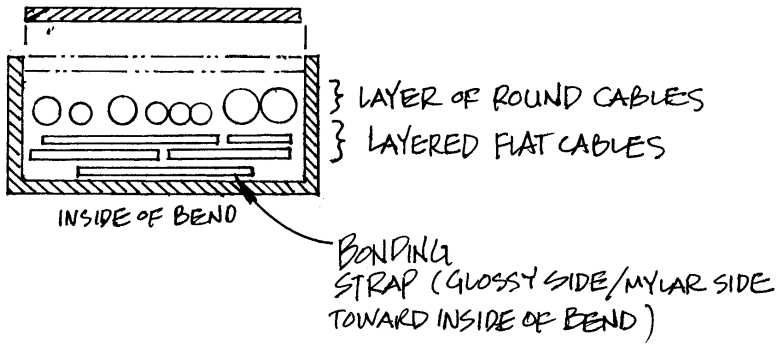


Figure 2: Orderly arrangement of bonding strap and cables in flex track.

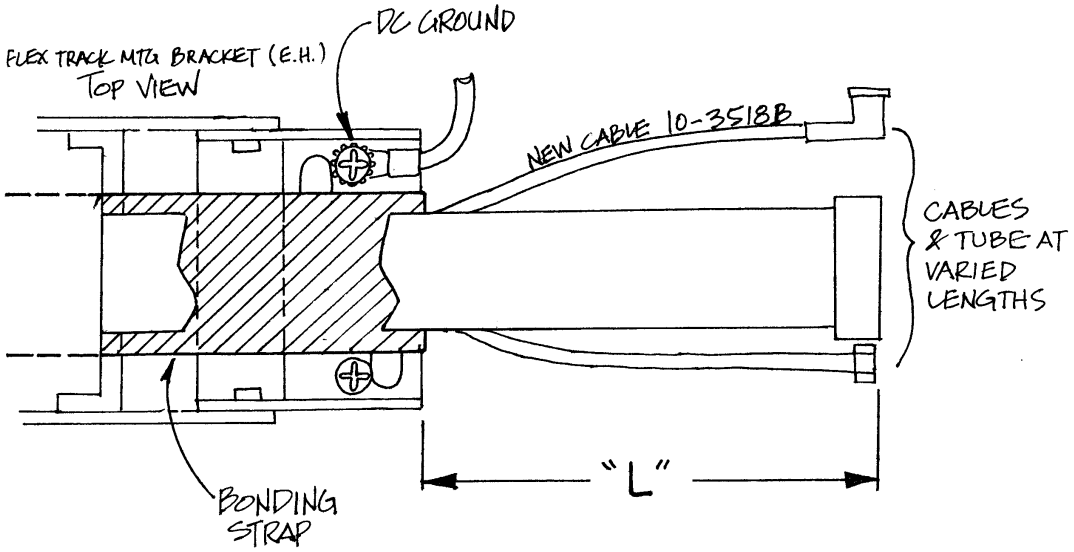


Figure 3: Required cable lengths prior to attaching flex track to head.

Cable number	Description	Length "L" MM (INCH)
10-3523A	Cable, LC-BP	200mm (7-7/8")
10-3520A	Cable, EH-BP	200mm (7-7/8")
10-3519A	Cable, H/A-BP	320mm (12-5/8")
10-3518B	Cable, EH-BLKHD, COAX	200mm (7-7/8")
10-3516A	Cable, EH-LPS	200mm (7-7/8")
10-3517A	Cable, EH-PDB	200mm (7-7/8")
10-3559A	Cable, EHGND	200mm (7-7/8")
56-1038	Tube, red, Ø5/32"	200mm (7-7/8") to 1st fitting
10-3515A	Cable, EH-ESE	510mm (20")

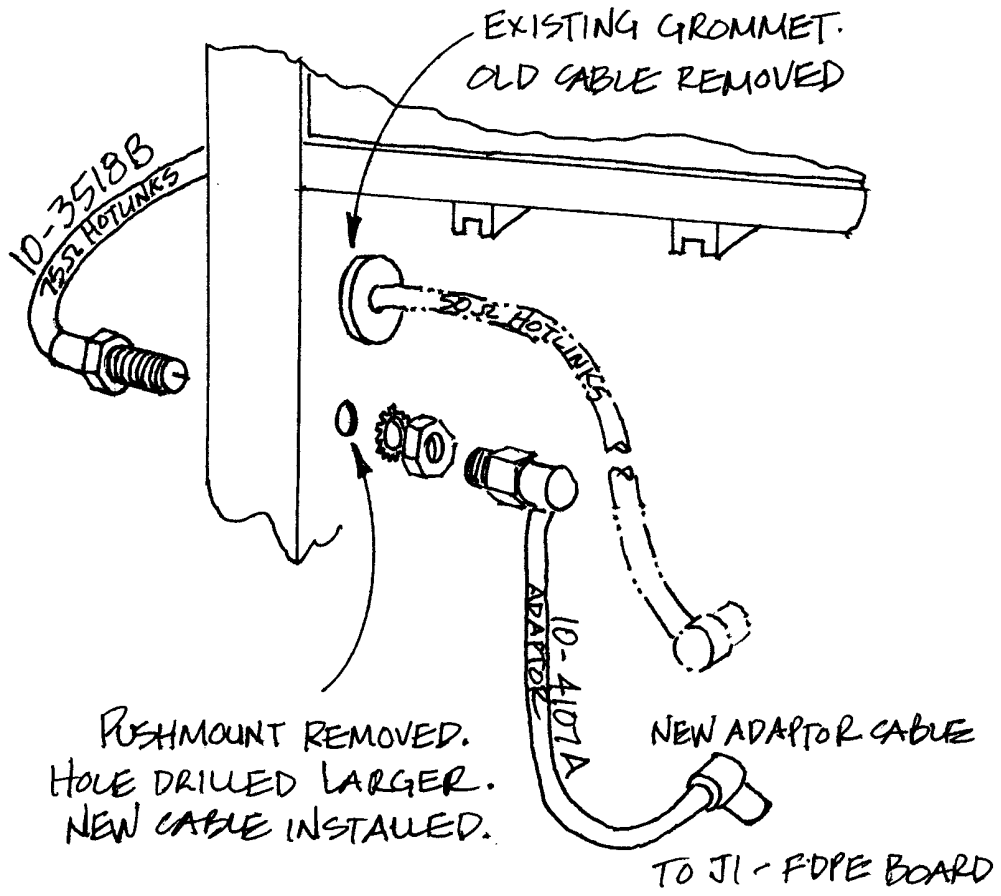


Figure 4: Card-cage modification and new cable installations.



Figure 5: Replacing "Hotlinks" coax cable along former route to new mounting location.

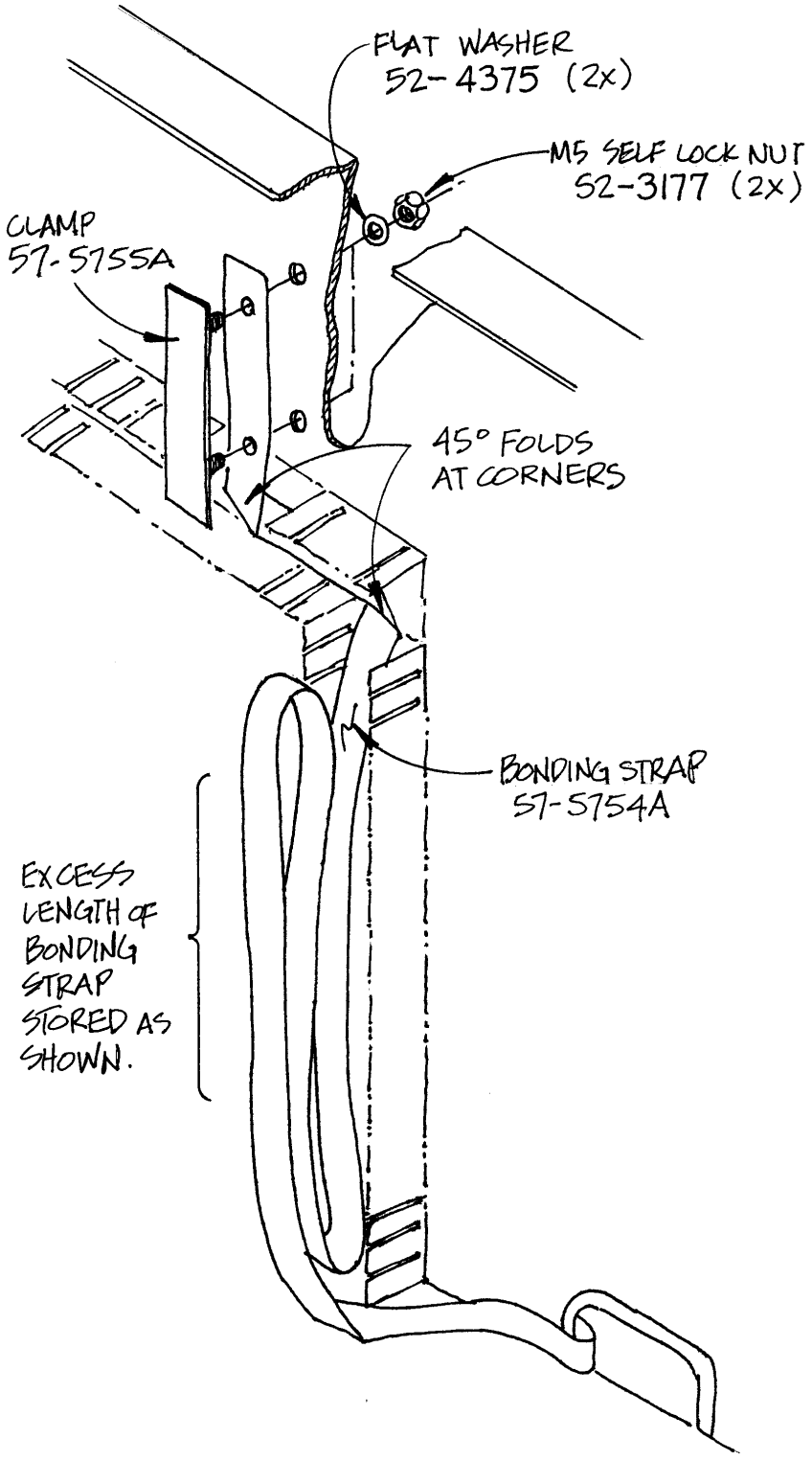


Figure 6: Routing and clamping of bonding strap inside power-box.



Figure 7: Route of bonding strap from flex track to power-box.



Figure 8: Bonding strap entering power-box via opening under card-cage.

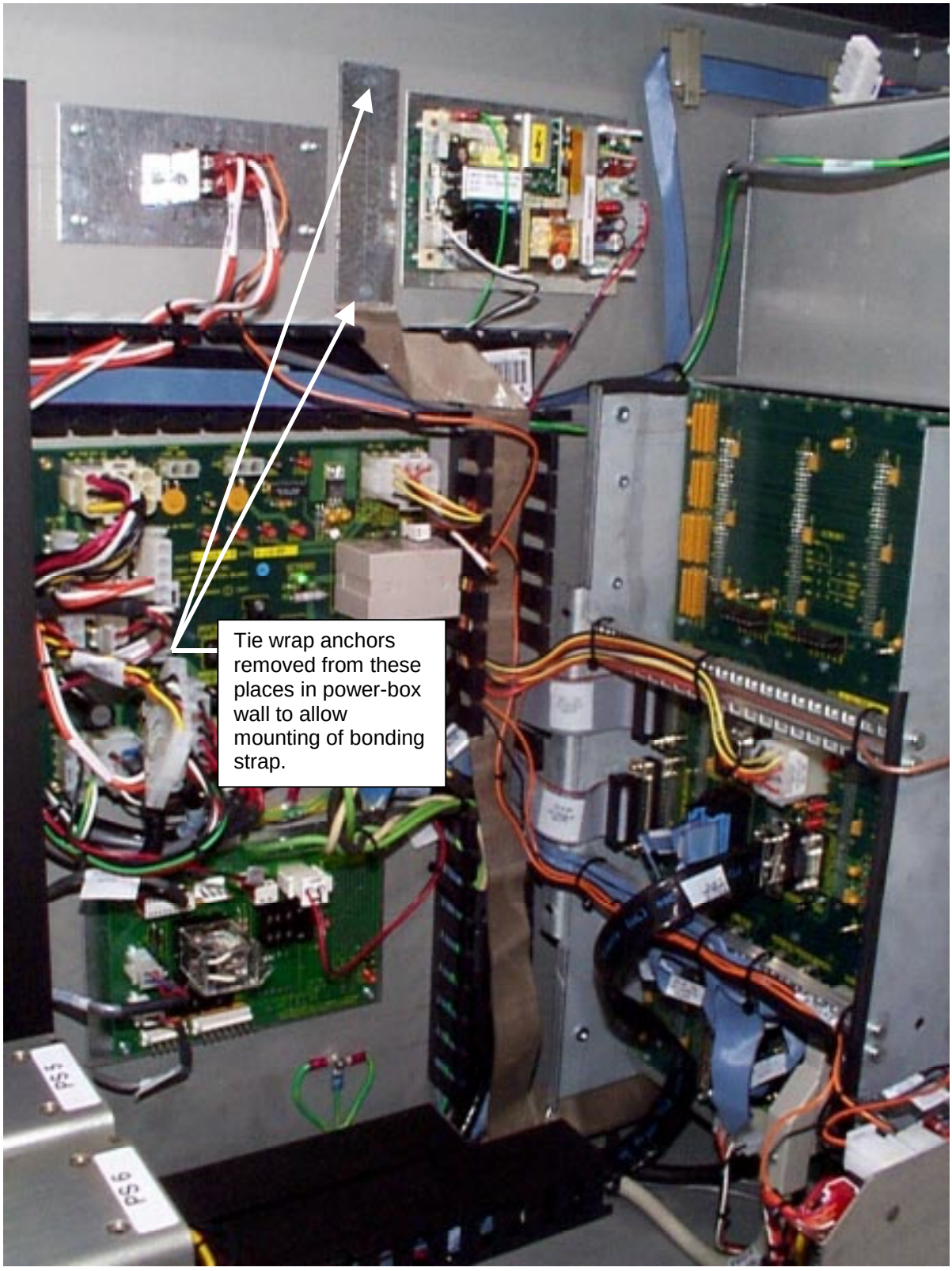


Figure 9: Routing of bonding strap to clamping location.



Figure 10: Clamping of ground braids above drum servoamp.

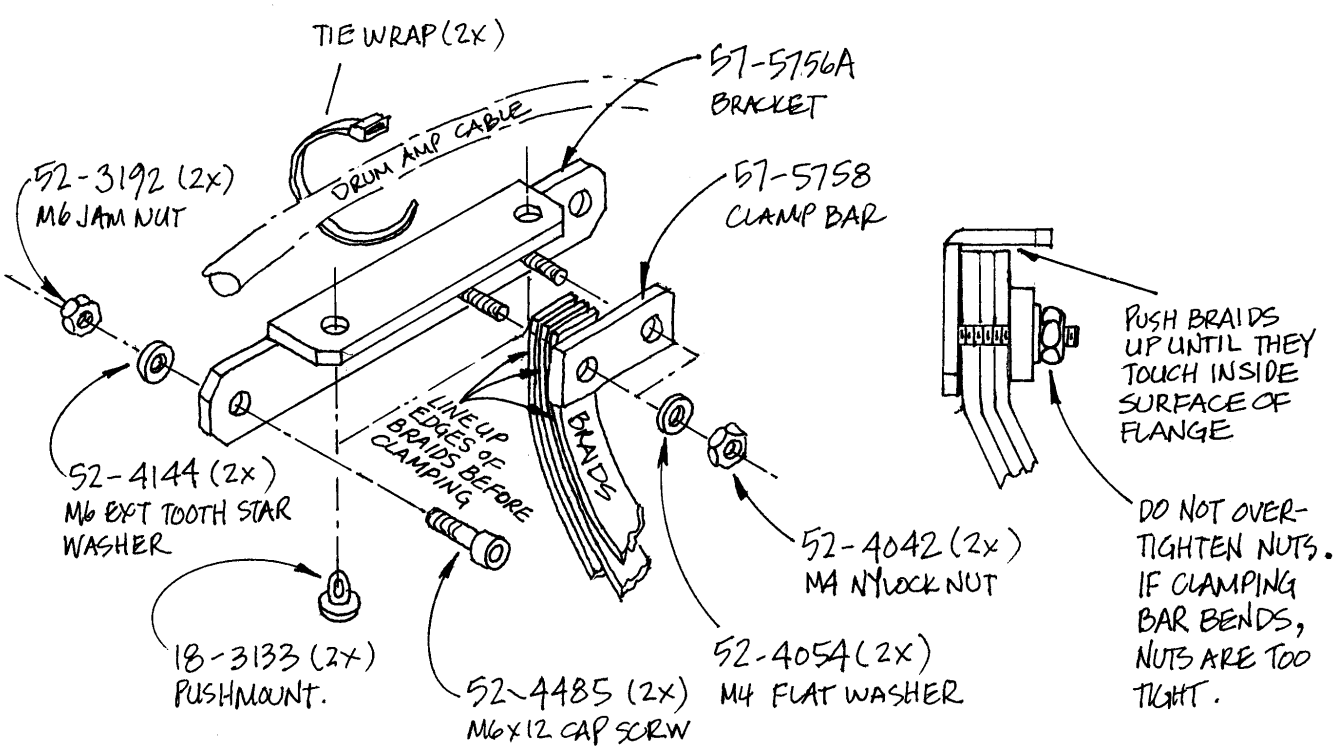


Figure 11: Braid clamp bracket mounting details.

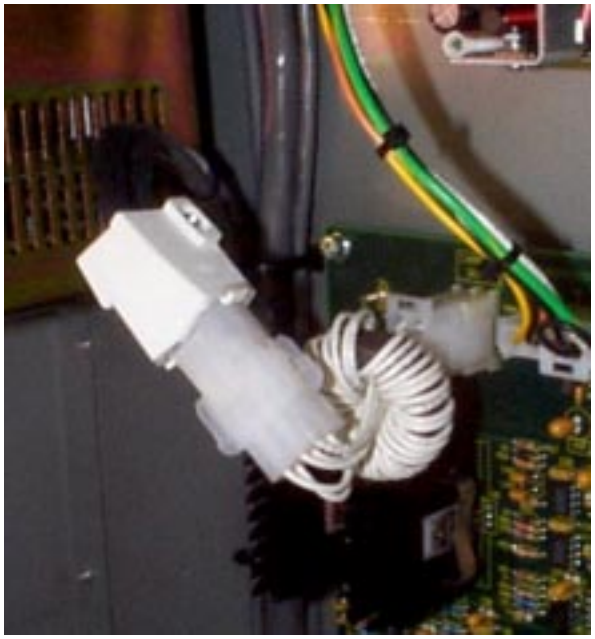


Figure 122: Common mode choke.

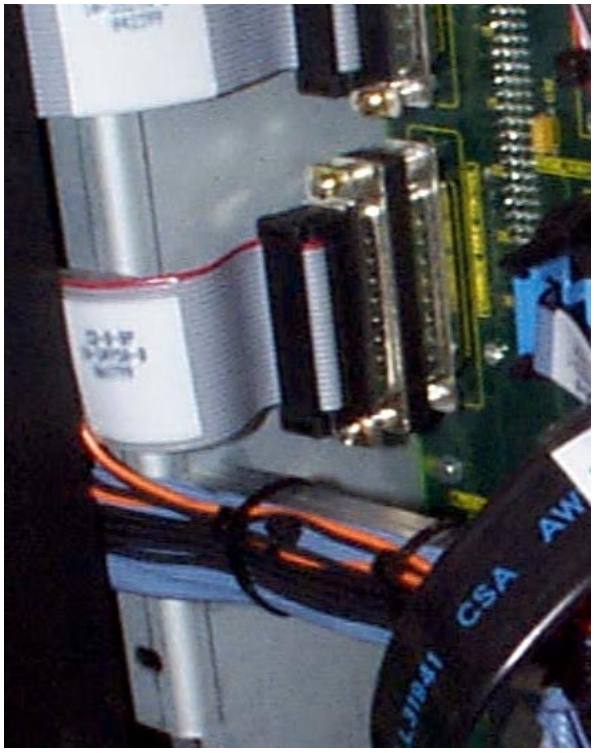


Figure 133: D-Sub inline capacitive filter.