

Peter: We will not include this supplement  
in future shipments. Please make  
copys! Werner

## **SUPPLEMENT TO 126-MOPA USERS MANUAL:**

### **ELECTRICAL SUBASSEMBLIES**

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## ELECTRICAL CIRCUIT DIAGRAMS

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Ltr	ECO	By	Date	Appv	Date
A	-	KM			

#### TOOLS

Electronic Asm tools  
PCB Cleaning facilities

#### SPECIAL HANDLING

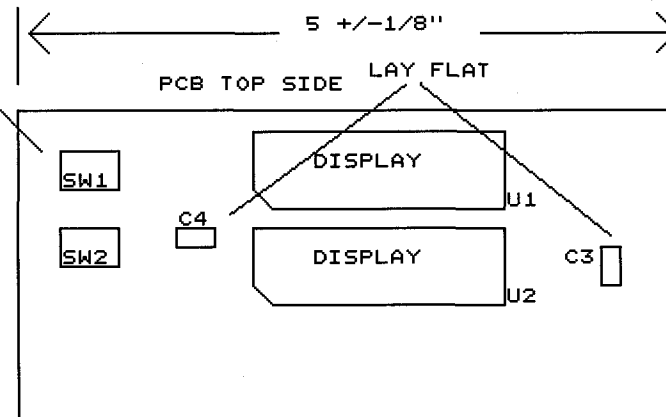
Display is ESD sensitive. Handle in only ESD safe manner. Use ground straps and ground mats.

**\*\* DO NOT USE ULTRASONIC ON PUSHBUTTONS OR DISPLAYS\*\***  
**\*\* THEY WILL CRACK FROM THERMAL STRESS \*\***

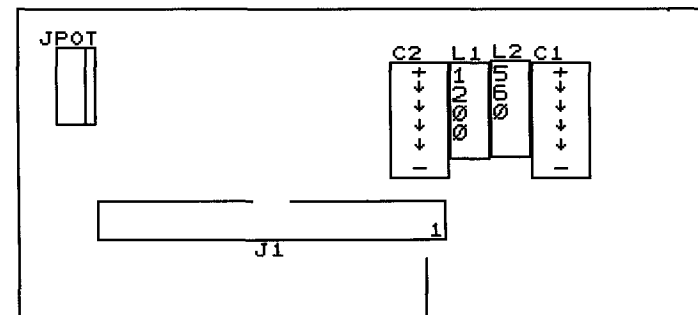
#### ASSEMBLY PROCEDURE

1. Cut standard board to size shown.
2. Solder all components except (pushbuttons & displays)
3. Clean PCB in the Ultrasonic w/gensolve for 30 seconds
4. Solder two pushbuttons to board.
5. Solder Displays
6. **\*\*HAND CLEAN\*\*** Displays and Pushbutton areas w/genesolve
7. Visually inspect PCB for shorts and proper component mounting
7. Store in ESD protective bag (3800-0018).

MOUNT IN FRONT PANEL  
BEFORE SOLDERING



#### PCB BACK SIDE



PIN 1

#### TEST PROCEDURE

EQUIPMENT: Front Panel test System.

#### PROCEDURE

1. Make sure test unit is off.
2. Remove front panel connector from test system.
3. Attach front panel cable to front panel.
4. Plug cable and panel into test system.
5. Turn on system and observe that display works.
6. Press each button and observe a response on display.
8. If passes, Mark board OK with data and initials.
9. If it does not pass, repair and retest or tag and place in Repair Kan Ban.
10. Store in ESD protective bag.

LIGHTWAVE ELECTRONICS		
Title		
LIGO ASY FRONT PANEL DUAL DISPLAY		
Size	Document Number	REV
A	0-1802X.PRC	A
Date:	September 11, 1997	Sheet 1 of 1

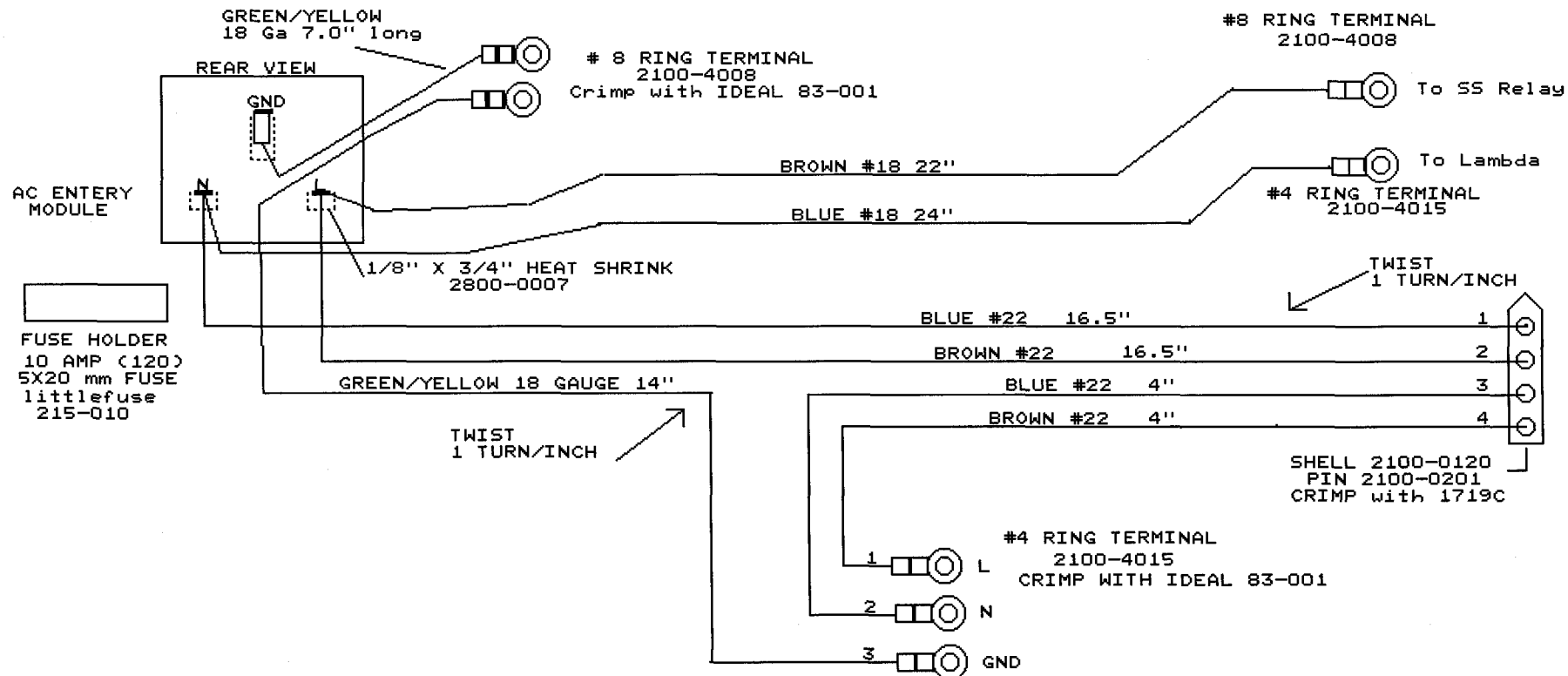
TOOLS: CRIMP TOOLS  
 Molex 1719c  
 Ideal 83-001

SKILLS: ELECTRONIC ASM

Ltr	ECO	By	Date	Apprv	Date
A	-	KM			

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Strip 1/8" and pre-tin blue and brown wires and solder one end to filter
3. Insert both Grn/Yel gnd wires into ground lug on filter and solder.
4. Put heat shrink over lugs and shrink.
5. Strip short Grn/Yel wire and crimp ring terminal on it.
6. Twist wires aprx 1 turn/inch.
7. Strip other ends and crimp ring terminal on to it.
8. Pull check crimped wires - 1 lb.
10. Verify right color wires are in the right place.



FUSE HOLDER  
 10 AMP (120)  
 5X20 mm FUSE  
 littlefuse  
 215-010

QTY	LWE#	Description
21"	6000-0909	#22 Brown wire
21"	6000-0908	#22 Blue wire
21.5"	6000-0901	#18 Green/Yellow wire
18"	6000-0900	#18 Brown wire
19"	6000-0902	#18 Blue wire

LIGHTWAVE ELECTRONICS		
Title LIGO AC WIRING PS Entry		
Size Document Number	REV	
A 0-1806X.prc	A	
Date: October 14, 1997	Sheet 1 of	1

TOOLS: CRIMP TOOLS  
IDEAL 83-001

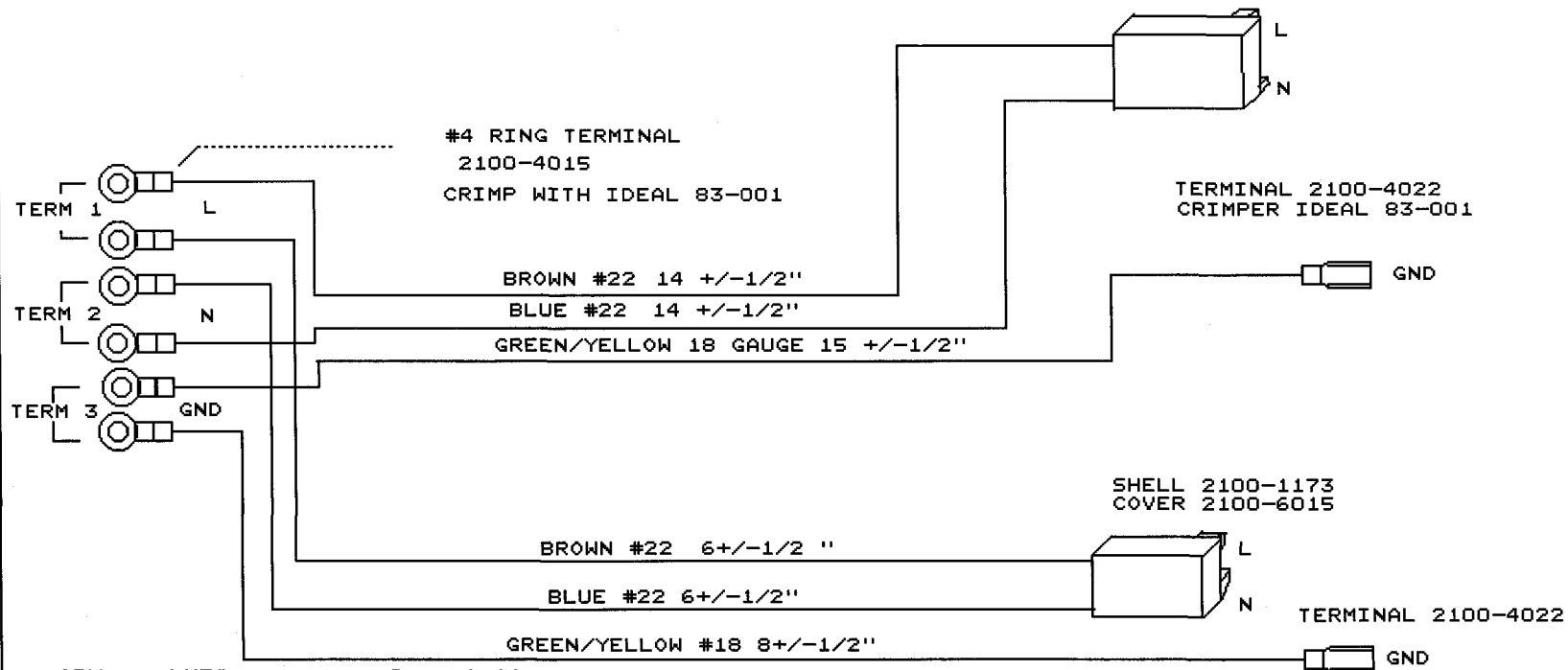
SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Strip Grn/Yel, Brown and Blue wires.
3. Crimp ring terminals on to stripped wires.
4. Put heat shrink over terminals and shrink.
5. Twist wires aprx 1 turn/inch.
6. Strip GND wires and crimp spade terminals to it.
7. Insert wires into connectors and crimp.
8. Pull check crimp -1 lb.
9. Verify that the colored wires go to the right place.
10. Bundle the wires together using tie wraps.

Ltr	ECO	By	Date	Appv	Date
A	-	KM			

SHELL 2100-1173  
COVER 2100-6015



QTY	LWE#	Description
20"	6000-0909	#22 Brown wire
20"	6000-0908	#22 Blue wire
23"	6000-0901	#18 Green/Yellow wire

LIGHTWAVE ELECTRONICS		
Title		
LIGO AC WIRING +5V DISTRIBUTION		
Size	Document Number	REV
A	0-1807X.PRC	A
Date:	October 14, 1997	Sheet of 1

TOOLS: CRIMP TOOLS  
IDEAL 83-001

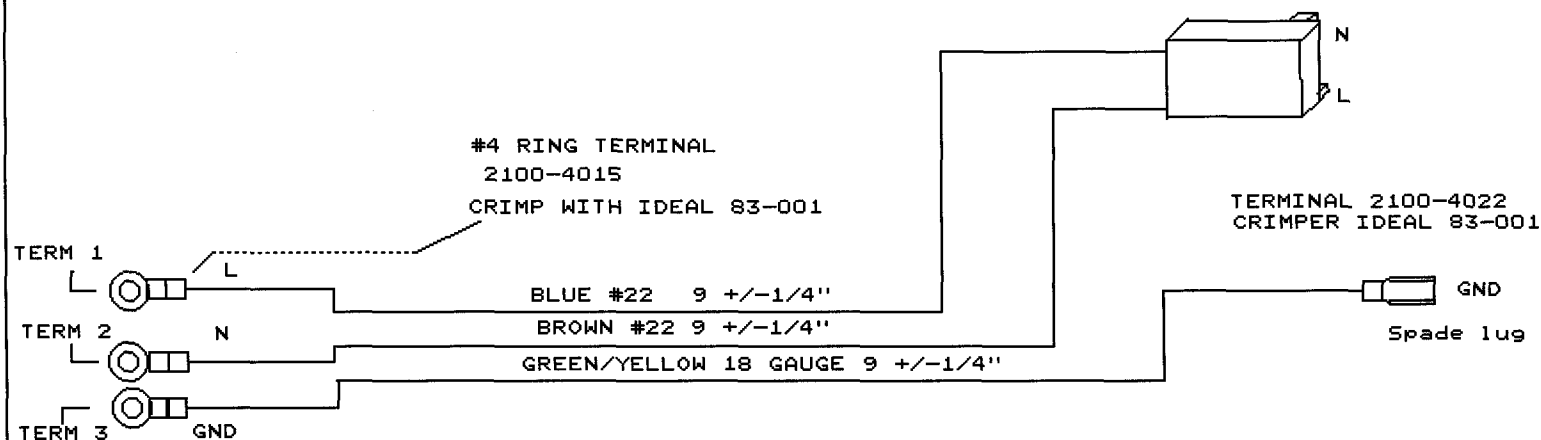
SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Strip Grn/Yel, Brown and Blue wires.
3. Crimp ring terminals on to stripped wires.
4. Put heat shrink over terminals and shrink.
5. Twist wires aprx 1 turn/inch.
6. Strip Yel/Grn wire and crimp spade lug to it.
7. Insert wires into connectors and crimp.
8. Pull check crimp -1 lb.
9. Verify that the colored wires go to the right place.
10. Bundle the wires together using tie wraps.

Ltr	ECO	By	Date	Apprv	Date
A	-	KM			

SHELL 2100-1173  
COVER 2100-6015



QTY	LWE#	Description
9"	6000-0909	#22 Brown wire
9"	6000-0908	#22 Blue wire
9"	6000-0901	#18 Green/Yellow wire

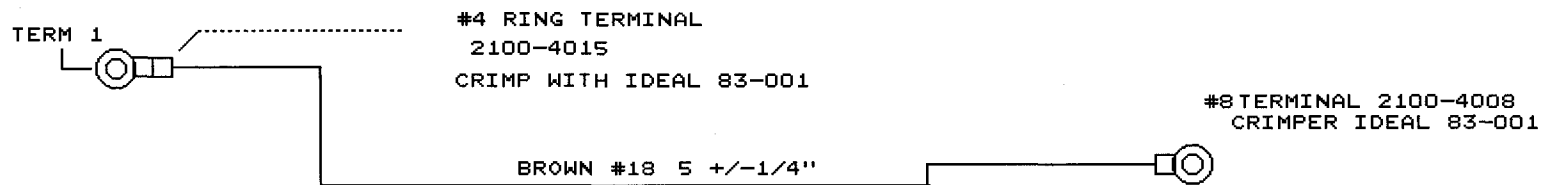
LIGHTWAVE ELECTRONICS		
Title		
LIGO AC WIRING +24V DISTRIBUTION		
Size	Document Number	REV
A	0-1808X.PRC	A
Date: December 1, 1997		
Sheet	of	1

TOOLS: CRIMP TOOLS  
 IDEAL 83-001  
 SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wire to length.
2. Strip both ends of wire (1/4" approx. ).
3. Crimp ring terminals on to stripped wires.
4. Place heat shrink over #4 terminal and shrink.
5. Pull check crimp -11b.

Ltr	ECO	By	Date	Aprv	Date
A	-	KM			



QTY	LWE#	Description
6"	6000-0900	#18 Brown Wire

LIGHTWAVE ELECTRONICS		
Title		
LIGO AC S. S. RELAY JUMPER		
Size	Document Number	REV
A	0-1809X.PRC	A
Date: September 11, 1997		Sheet of 1

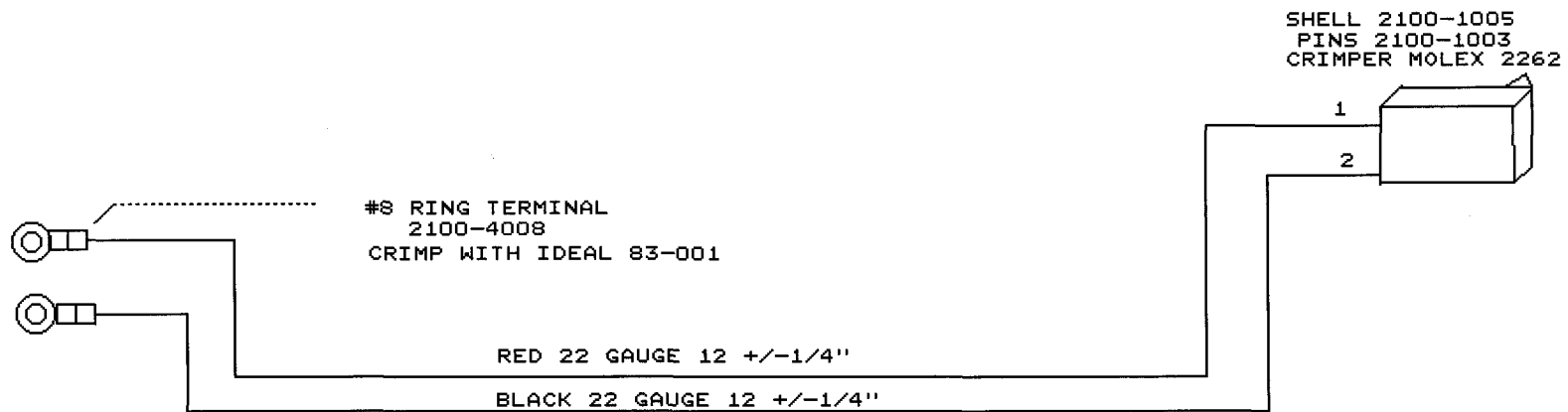
TOOLS: CRIMP TOOLS  
 IDEAL 83-001  
 MOLEX 2262

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Strip ends of wire approx 1/8"
3. Crimp ring terminals on to stripped wires.
4. Twist wires approx. 1 turn/inch.
5. Crimp connector pins on to wires.
6. Insert pins into connector.
7. Pull check crimp -1lb.
8. Verify that the colored wires go to the right place.

Ltr	ECO	By	Date	Appv	Date
A	-	KM			



QTY	LWE#	Description
12"	6000-0606	#22 Black wire
12"	6000-0907	#22 Red wire

<b>LIGHTWAVE ELECTRONICS</b>		
Title LIGO SOLID STATE RELAY CONTROL LINE		
Size A	Document Number 0-1810X.PRC	REV A
Date: October 6, 1997 Sheet of 1		



TOOLS: Pistol Grip Handle AMP #58075-1  
 or  
 Air Bench Tool AMP #58338-1  
 Amp Insertion Heads: #58247-2, #58443-1

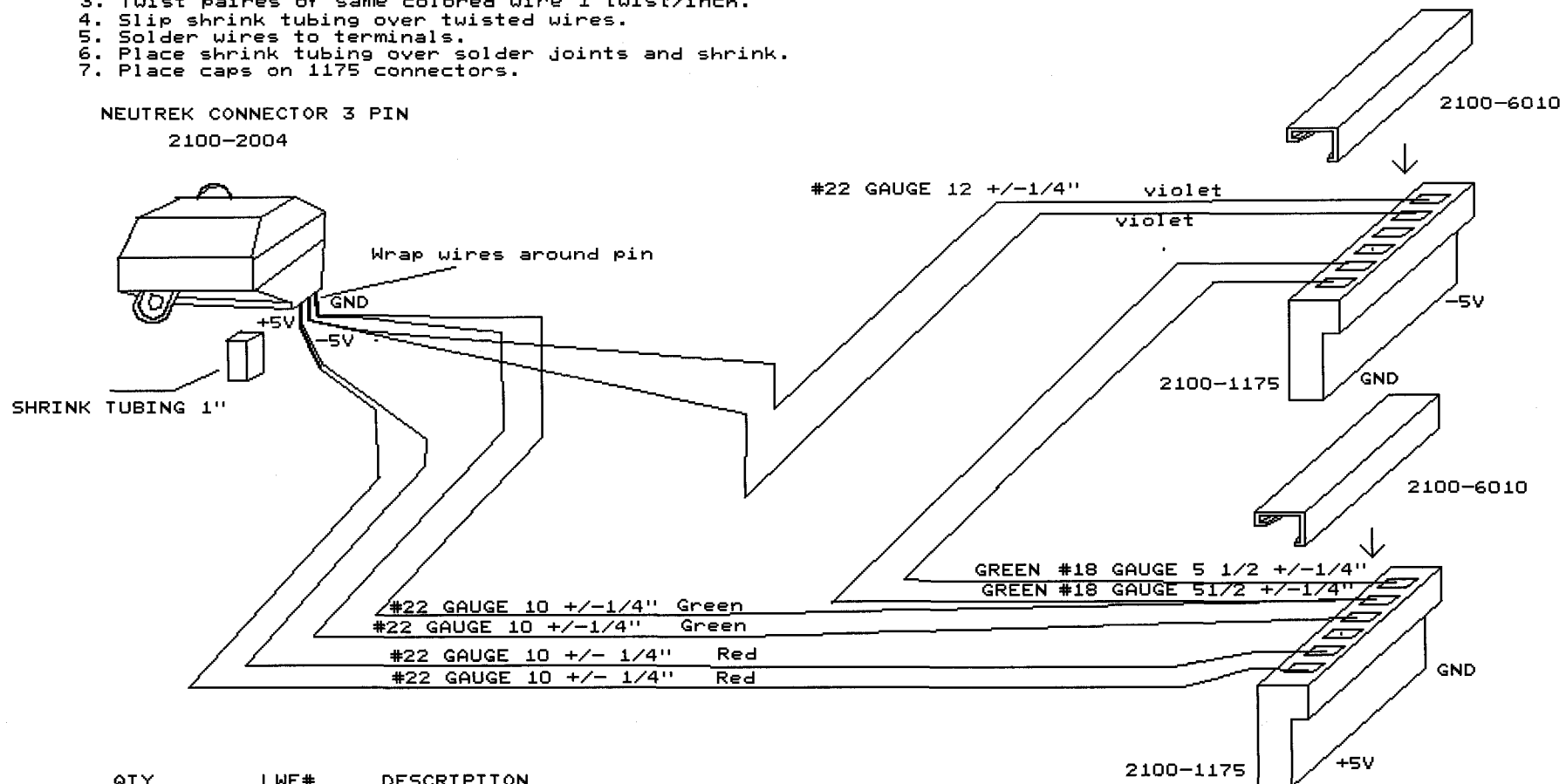
Ltr	ECO	By	Date	Aprv	Date
A	-	KM			

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length
2. Insert wires into 1175 connectors. Put #22 Green on before #18.
3. Twist pairs of same colored wire 1 twist/inch.
4. Slip shrink tubing over twisted wires.
5. Solder wires to terminals.
6. Place shrink tubing over solder joints and shrink.
7. Place caps on 1175 connectors.

NEUTREK CONNECTOR 3 PIN  
 2100-2004



QTY	LWE#	DESCRIPTION
22"	6000-0905	#22 Green wire
20"	6000-0907	#22 Red wire
24"	6000-0910	#22 Violet wire
10"	6000-0924	#18 Green wire

LIGHTWAVE ELECTRONICS		
Title LIGO DC WIRING P.S. +5V & -5V		
Size A	Document Number 0-1811X.PRC	REV A
Date: October 23, 1997	Sheet 1 of	1

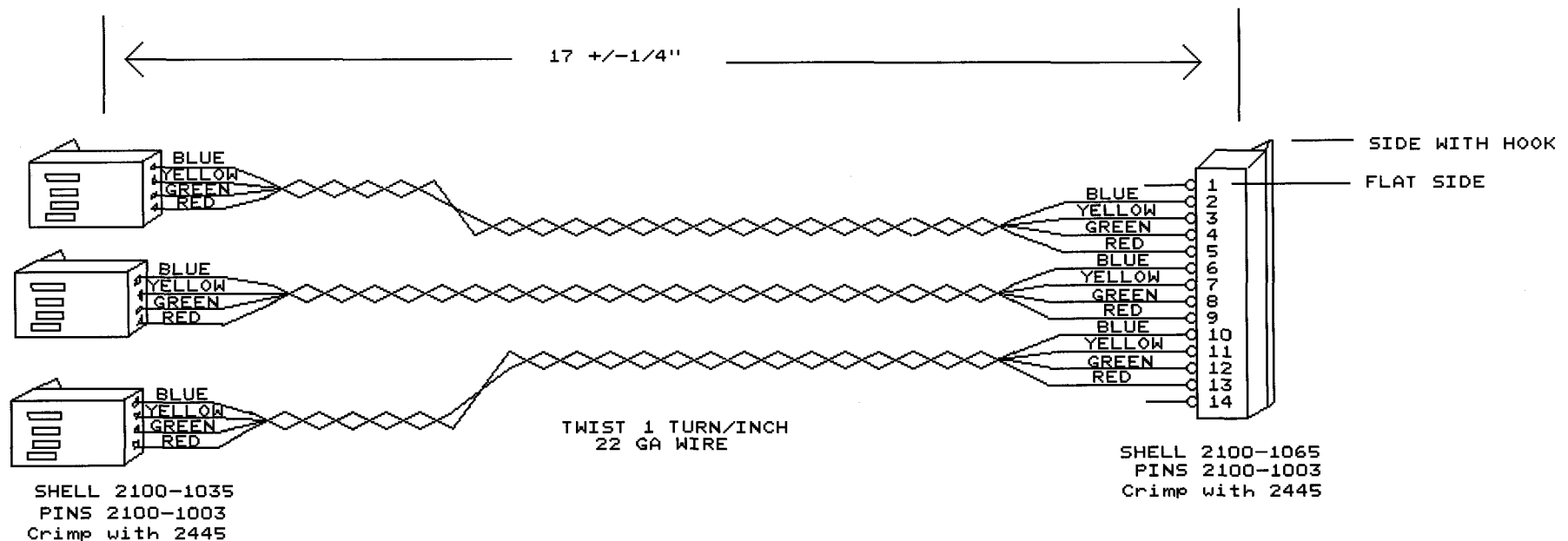
Ltr	ECO	By	Date	Appv	Date
A	-	KM			

TOOLS: CRIMP TOOLS  
MOLEX 2445

SKILLS: ELECTRONIC ASM

#### ASSEMBLY PROCEDURE

1. Precut wires to a length slightly longer than needed.
2. Strip one end of wires 1/8" and crimp pins on to wires.
3. Insert wires with pins into 14 pin connector.
4. Bundle wires as per drawing and twist 1 turn/in.
5. Cut wires to length, strip and crimp as before.
6. Insert pins into the appropriate connector as per drawing.
7. Pull check crimp wires -1lb.
8. Verify right color wire is in the right place.



QTY	LWE#	Description
51"	6000-0908	#22 Blue wire
51"	6000-0904	#22 Yellow wire
51"	6000-0905	#22 Green wire
51"	6000-0907	#22 Red wire

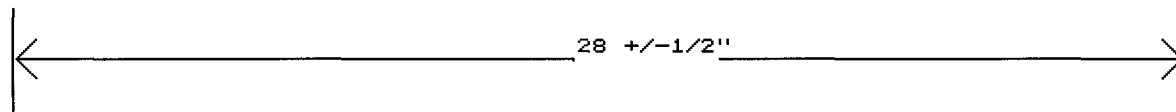
LIGHTWAVE ELECTRONICS		
Title ASY LIG0 DC WIRING P.S. +24V		
Size	Document Number	REV
A	0-1812X.PRC	A
Date:	December 1, 1997	Sheet 1 of 1

Ltr	ECO	By	Date	Aprv	Date
A	-	KM			

TOOLS:

SKILLS: ELECTRONIC ASM  
ASSEMBLY PROCEDURE

1. Cut wire to length.
2. Strip each end of the wires approx. 1/4"
3. Solder a #8 ring terminal to one end of each wire.
4. Solder 2100-4016 terminal to the black wires.
5. Pull test crimp -11b
6. Verify that the right terminals are on the right color wire.



All Lambda high power connections  
#8 Solder cup with 1/4x20 ring opening.

Con term 2100-4016



To mother board



Con term 2100-4016

QTY	LWE#	Description
28"	6000-1004	#8 Black wire
28"	6000-1005	#8 Green wire

LIGHTWAVE ELECTRONICS		
Title		
LIGO DC WIRING HIGH CURRENT LEADS		
Size	Document Number	REV
A	0-1813X.PRC	A
Date:	December 1, 1997	Sheet of 1

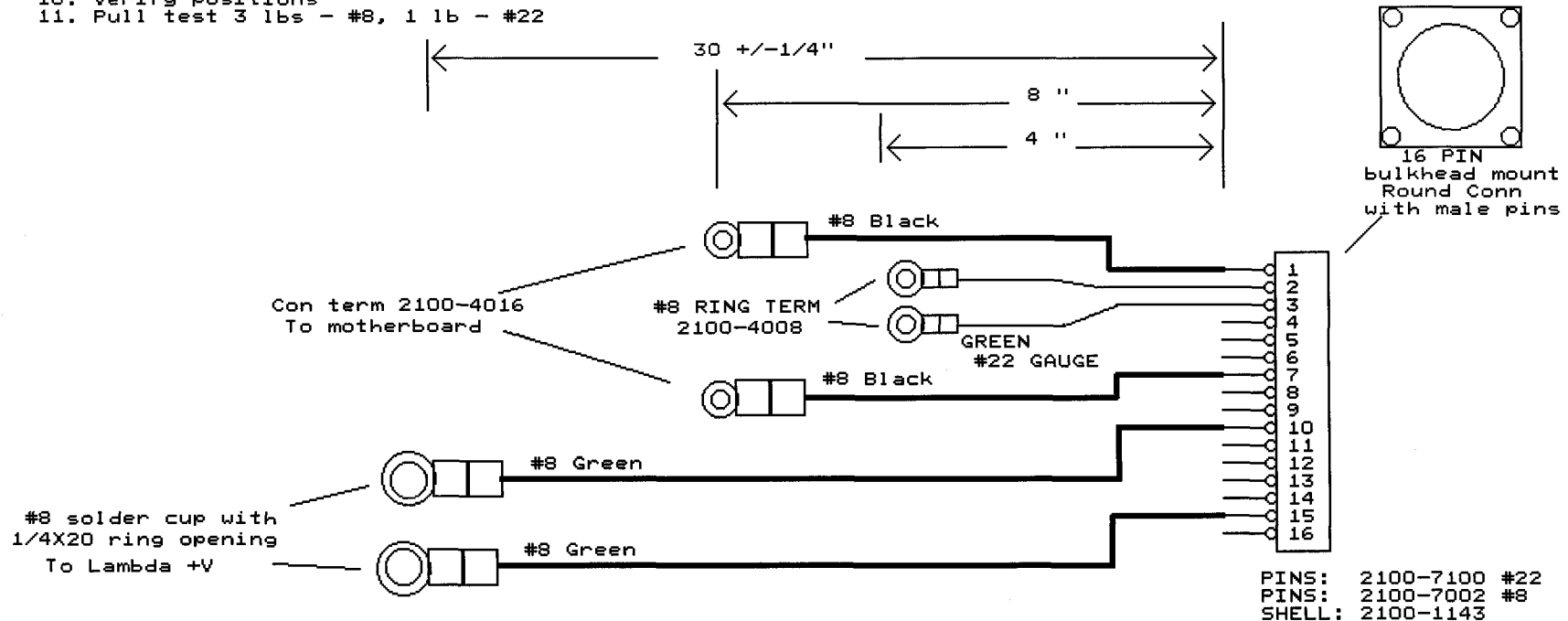
TOOLS: CRIMP TOOLS  
 Molex 1719c  
 Amp Type F  
 DMC M310  
 IDEAL 83-001

Ltr	ECO	By	Date	Appv	Date

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Strip #8 wires 1/4" one end, 3/16" other end
3. Strip #22 wires 1/8" one end, 1/4" other end
4. Crimp 2100-7002 pins on 1/4" #8 wires
5. Solder 2100-4016 ring terms on free ends of black #8 wires.
6. Solder 1/4X20 terminal to free ends of #8 green wires
7. Crimp 2100-7100 pins on 1/8" #22 wires
8. Crimp both # 22 wires into #8 ring terminals.
9. Insert wires into round connector
10. Verify positions
11. Pull test 3 lbs - #8, 1 lb - #22



QTY	LWE#	DESCRIPTION
17"	6000-1004	#8 Black wire
60"	6000-1005	#8 Green wire
8"	6000-0905	#22 Green wire

<b>LIGHTWAVE ELECTRONICS</b>		
Title ASY LIGO HIGH CURRENT LEADS REGULATED		
Size	Document Number	REV
A	0-1814X.PRC	A
Date:	December 1, 1997	Sheet 1 of 1

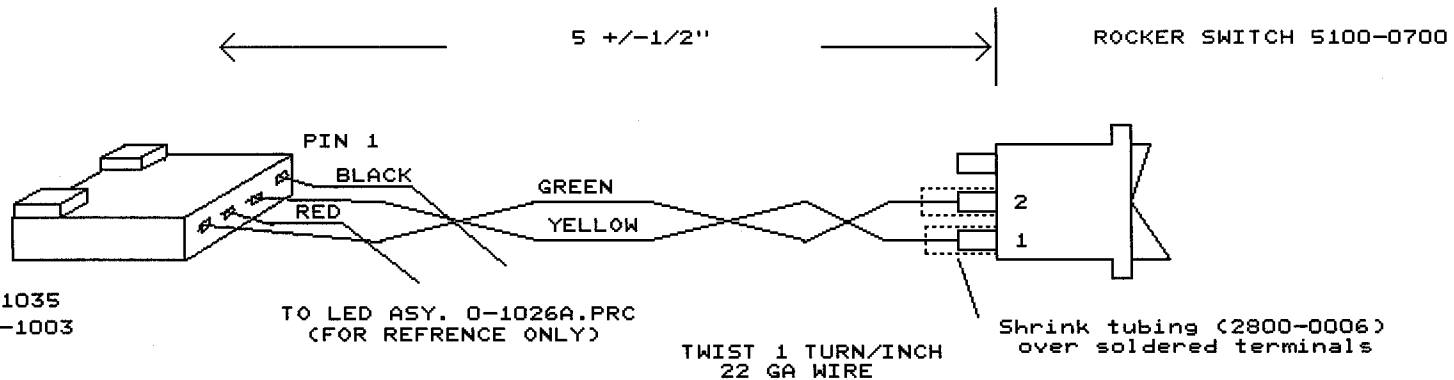
Ltr	ECO	By	Date	Aprv	Date
A	-	KM			

TOOLS: CRIMP TOOLS  
MOLEX 2262

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length and strip ends 1/8".
2. Crimp pins on to one end of wires.
3. Pre-tin other end of wires.
4. Loop wires onto switch terminals and solder.
5. Slip heat shrink over soldered terminals.
6. Twist wires apprx 1 turn/inch.
7. Insert pins into connector.
8. Pull check crimp - 1 lb.
9. Verify right color wire is in the right place.



SHELL: 2100-1035  
PINS: 2100-1003

QTY	LWE#	DESCRIPTION
5"	6000-0904	#22 Yellow
5"	6000-0905	#22 Green

LIGHTWAVE ELECTRONICS		
Title		
ASY LIGO TOGGLE SWITCH SPDT		
Size	Document Number	REV
A	0-1815x.PRC	A
Date:	October 14, 1997	Sheet of 1

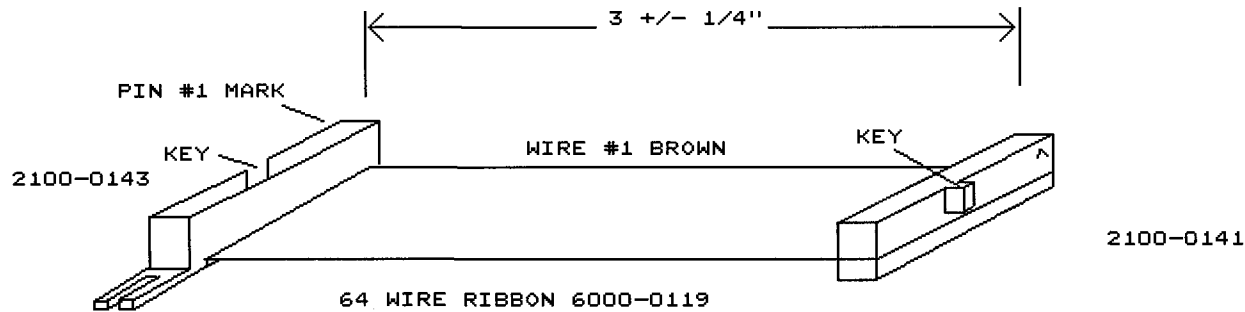
TOOLS: PRESS  
 SKILLS: ELECTRONIC ASM

Ltr	ECO	By	Date	Aprv	Date
A	-	KM			

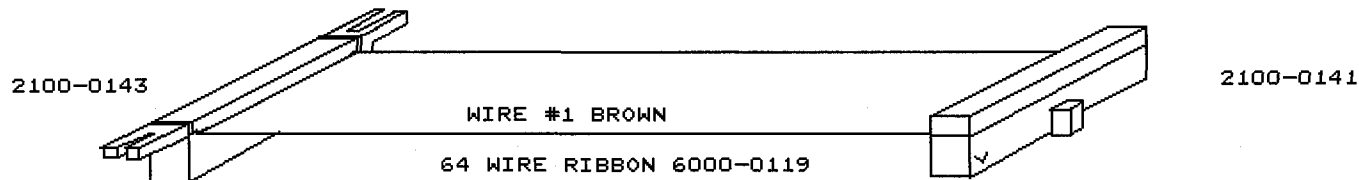
ASSEMBLY PROCEDURE

1. Cut cable to length.
2. Carefully align cable in connector  
 Making sure wires are aligned in pins.
3. Press connector together until latches click on each side.
4. Repeat for other end.
5. Check alignment of wires in connector.
6. Verify that pin 1 of the wire is in pin 1 of the connector.
7. Verify that wire does not extend > 1/8" past connector.
8. Test cable on cable tester and mark OK.

TOP VIEW OF CABLE



BOTTOM VIEW OF CABLE



LIGHTWAVE ELECTRONICS		
Title		
LIGO 64 PIN DATA INTERFACE CABLE		
Size	Document Number	REV
A	0-1831X.PRC	A
Date:	December 1, 1997	Sheet 1 of 1

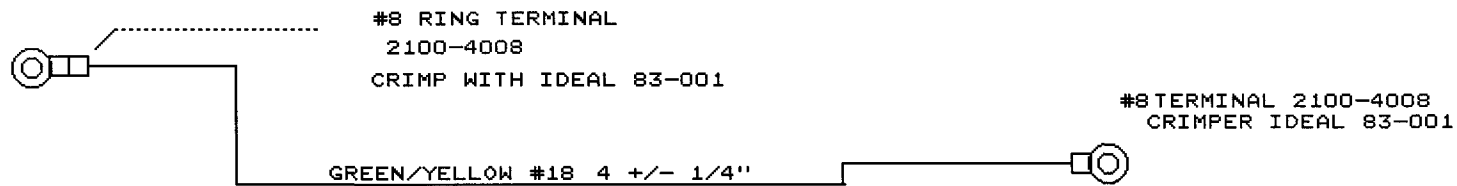
TOOLS: CRIMP TOOLS  
 IDEAL 83-001

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wire to length.
2. Strip both ends of wire (1/4" approx. ).
3. Crimp ring terminals on to stripped wires.
4. Pull check crimp -1lb.

Ltr	ECO	By	Date	Aprv	Date
A	-	KM			



QTY	LWE#	Description
4"	6000-0901	#18 Green/Yellow

LIGHTWAVE ELECTRONICS		
Title		
LIGO LAMBDA P.S. GND STRAP		
Size	Document Number	REV
A	0-1866X.PRC	A
Date:	October 14, 1997	Sheet of 1

Ltr	ECO	By	Date	Aprv	Date
A	-	CR			
A1	-	CR			

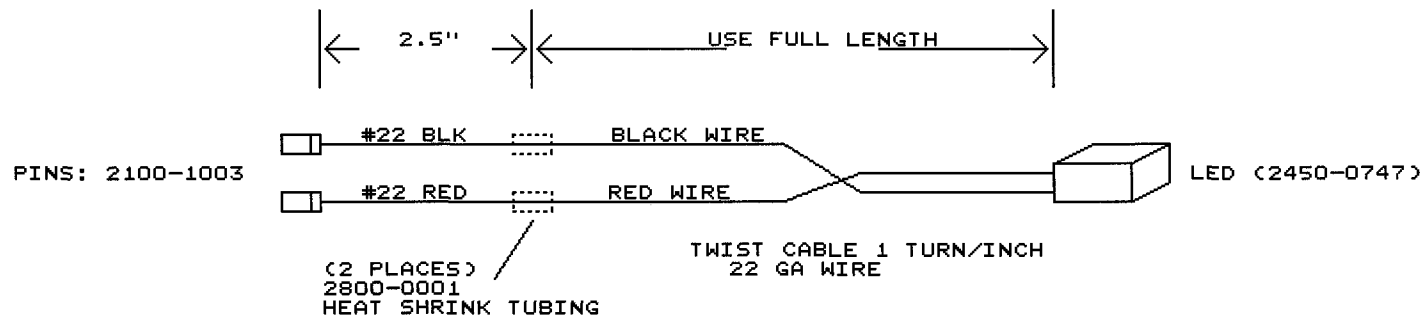
TOOLS: CRIMP TOOLS  
MOLEX 2262

SKILLS: ELECTRONIC ASM

REV A1: CHANGE LENGTH FROM 4.5"  
TO (USE FULL LENGTH)

ASSEMBLY PROCEDURE

1. Solder 2.5" pieces of #22 red and #22 black wire to the LED leads
2. Place 0.5" of heat shrink tubing over each solder joint and shrink down
3. Crimp pins on end of wires.
4. Twist wires into a cable (approx. 1T/inch)



LIGHTWAVE ELECTRONICS		
Title		
ASY LED SQUARE AMBER (LONG)		
Size	Document Number	REV
A	0-1265A1.PRC	A1
Date:	December 2, 1996	Sheet 1 of 1



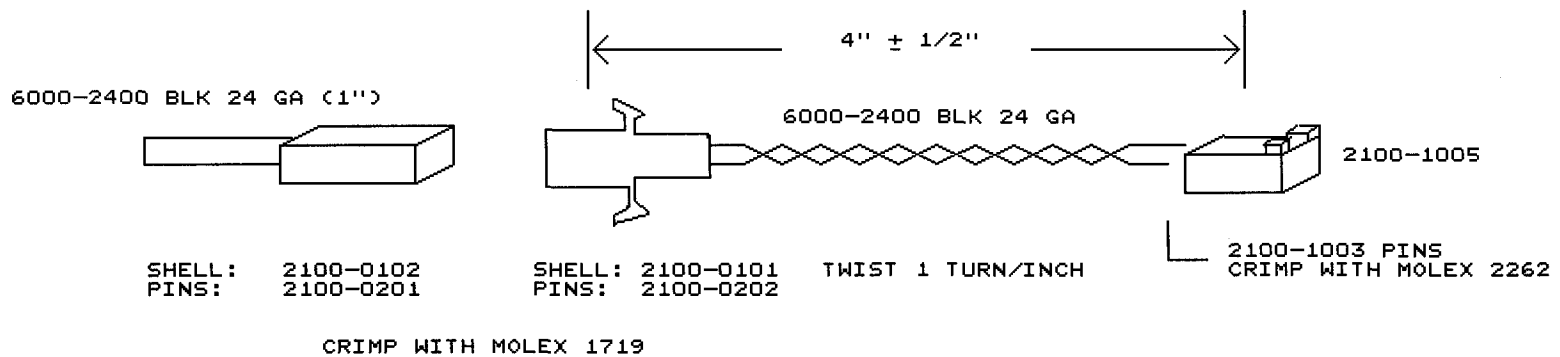
Ltr	ECO	By	Date	Aprv	Date
A	-	FA			

TOOLS: CRIMP TOOLS  
 MOLEX 1719C  
 MOLEX 2262  
 Electronic Asm Tools

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Crimp pins to wires.
3. Insert pins into connector shell.
4. Pull check crimp - 1 lb.



Note: PINS CAN GO INTO EITHER SLOT IN HOUSING

LIGHTWAVE ELECTRONICS		
Title		
ASY JUMPER LOOP		
Size	Document Number	REV
A	0-0362A.PRC	A
Date:	January 16, 1997	Sheet 1 of 1

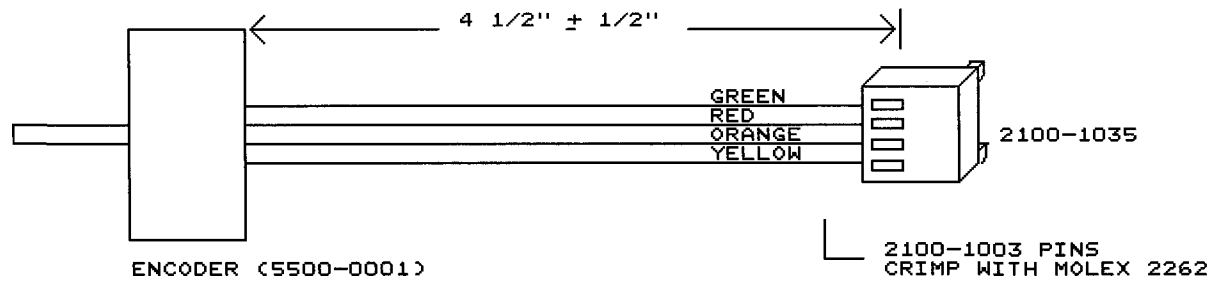
TOOLS: Molex 2262 crimp tool  
Electronic asm tools

SKILLS: ELECTRONIC ASM

Ltr	ECO	By	Date	Apprv	Date
A	-	FA			

ASSEMBLY PROCEDURE \*\*ENCODER IS VERY ESD SENSITIVE\*\*

1. Cut wires to length
2. Strip ends 1/16"
3. Crimp pins on wires.
4. Insert wires into connector.
5. Place star washer and nut onto encode, if not already on.
6. Place asy in ESD shielded bag in Kan Ban.



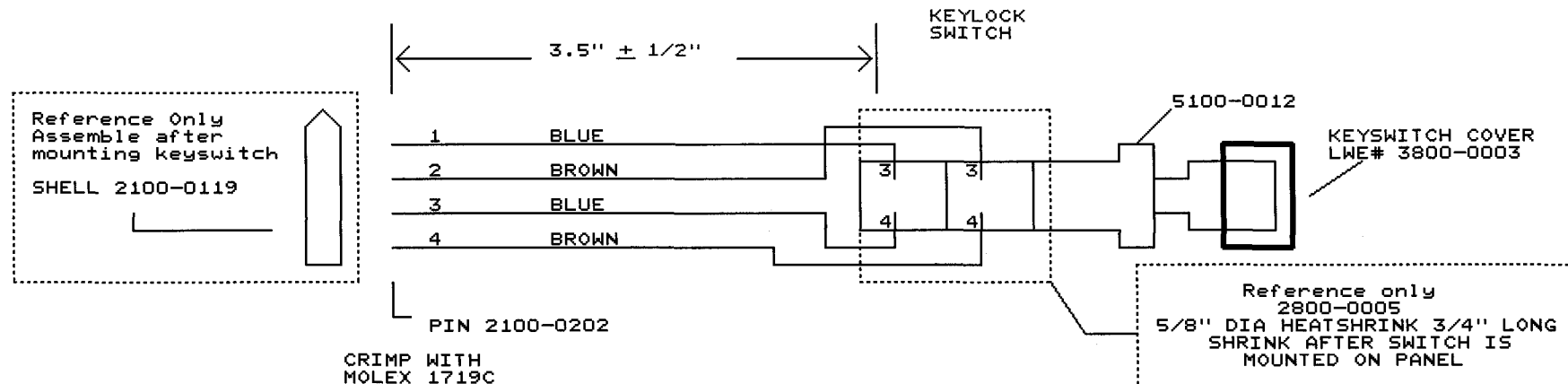
LIGHTWAVE ELECTRONICS			
Title			
ASY OPTICAL ENCODER			
Size	Document Number		REV
A	0-0363A.PRC		A
Date:	August 27, 1996	Sheet	1 of 1

Ltr	ECO	By	Date	Aprv	Date
A	-	FA			

TOOLS  
 Crimper HTR 1719c  
 Electronic Asm tools

ASSEMBLY PROCEDURE

1. Cut 2 blue wires 3.75" 6000-0908, 22 GA LABELED UL/CSA
2. Cut 2 brown wires 4" 6000-0909, 22 GA LABELED UL/CSA
3. Strip both ends 1/8".
4. Pre-tin one end with solder.
5. Loop wires in keyswitch lugs and solder.
6. Route wires close to switch body and twist 1 turn/inch.
7. Trim wires (if necessary) so that they are all the same length
8. Crimp pins on the free end.
9. Use a DVM to "ring out" between the pair of blue wires and brown wires when keyswitch is ON
10. Place the keyswitch cover (3800-0003) on the key not used in the switch
11. Place in proper Kan Ban.



LIGHTWAVE ELECTRONICS		
Title		
KEYSWITCH ASY		
Size	Document Number	REV
A	0-0379A.PRC	A
Date:	August 27, 1996	Sheet 1 of 1

Ltr	ECO	By	Date	Aprv	Date
A	FA				
B	CR				

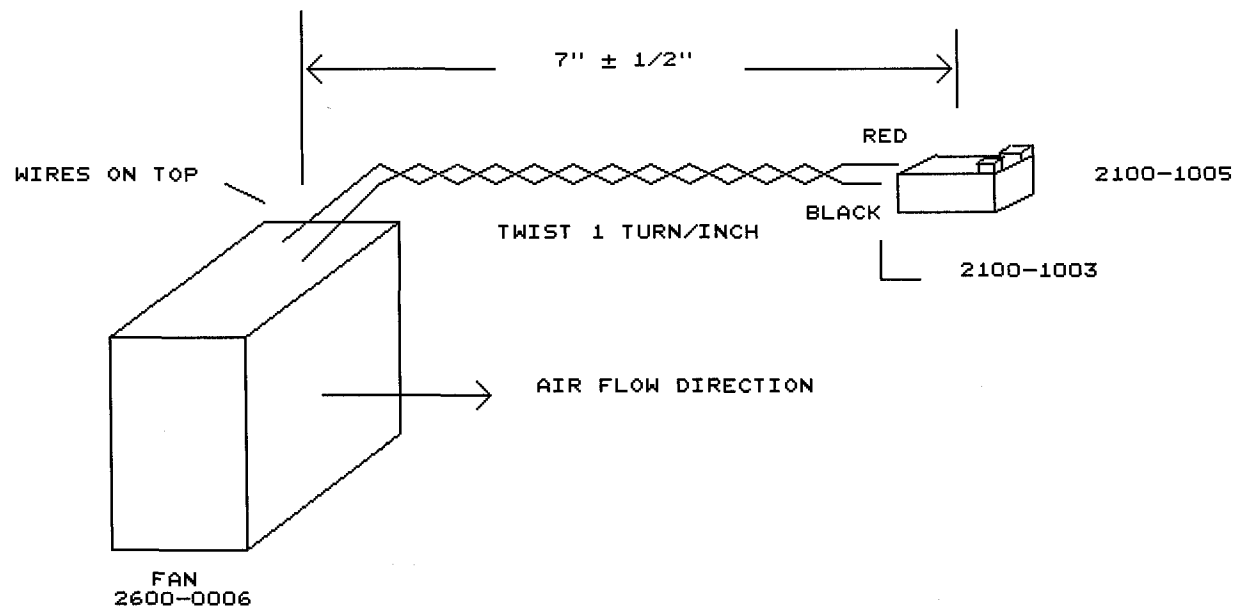
TOOLS: CRIMP TOOLS  
MOLEX 2262  
Electronic Asm Tools

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

WIRE

1. Cut wires to length.
2. Twist wires aprx 1 turn/inch.
3. Crimp wires as per notes.
4. Insert pins into connector shell.
5. Pull check crimp - 1 lb.
6. Verify right color is in the right place.



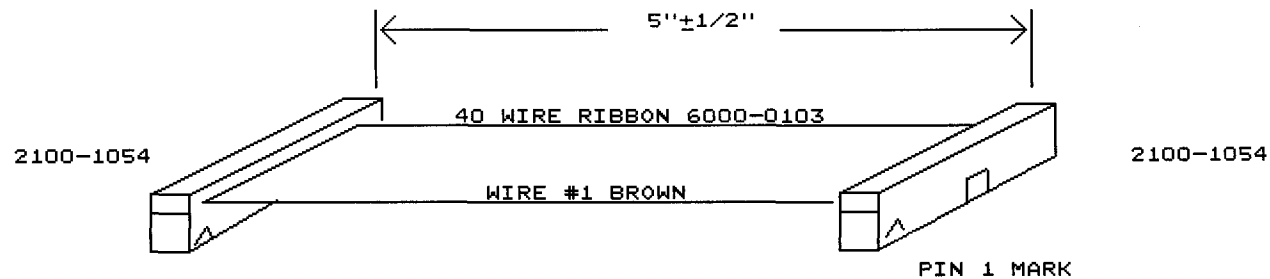
LIGHTWAVE ELECTRONICS		
Title		
ASY FAN		
Size	Document Number	REV
A	0-1038B.PRC	B
Date:	April 16, 1997	Sheet 1 of 1

Ltr	ECO	By	Date	Apprv	Date
A	-	FA			

TOOLS: PRESS  
 SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut cable to length.
2. Carefully align cable in connector  
 Making sure wires are aligned in pins.
3. Press connector together until latches click on each side.
4. Repeat for other end.
5. Check alignment of wires in connector.
6. Verify that pin 1 of the wire is in pin 1 of the connector.
7. Verify that wire does not extend > 1/8" past connector.
8. Test cable on cable tester and mark OK.



LIGHTWAVE ELECTRONICS		
Title		
ASY CABLE 40 PIN FRONT PANEL		
Size	Document Number	REV
A	0-0364A.PRC	A
Date:	August 27, 1996	Sheet 1 of 1

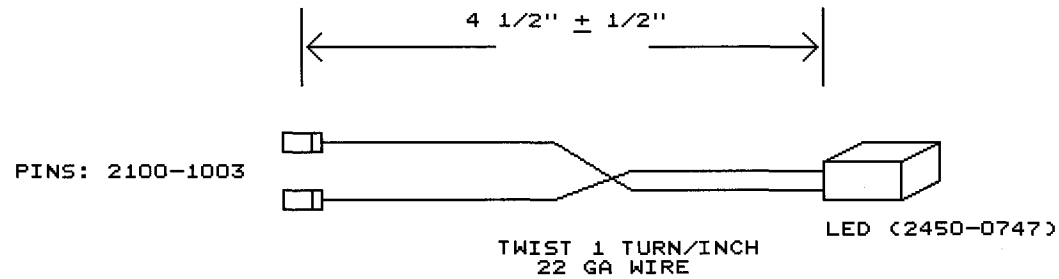
Ltr	ECO	By	Date	Apprv	Date
A	-	CR			

TOOLS: CRIMP TOOLS  
MOLEX 2262

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Twist wires aprx 1 turn/inch.
2. Crimp pins on other end of wires.



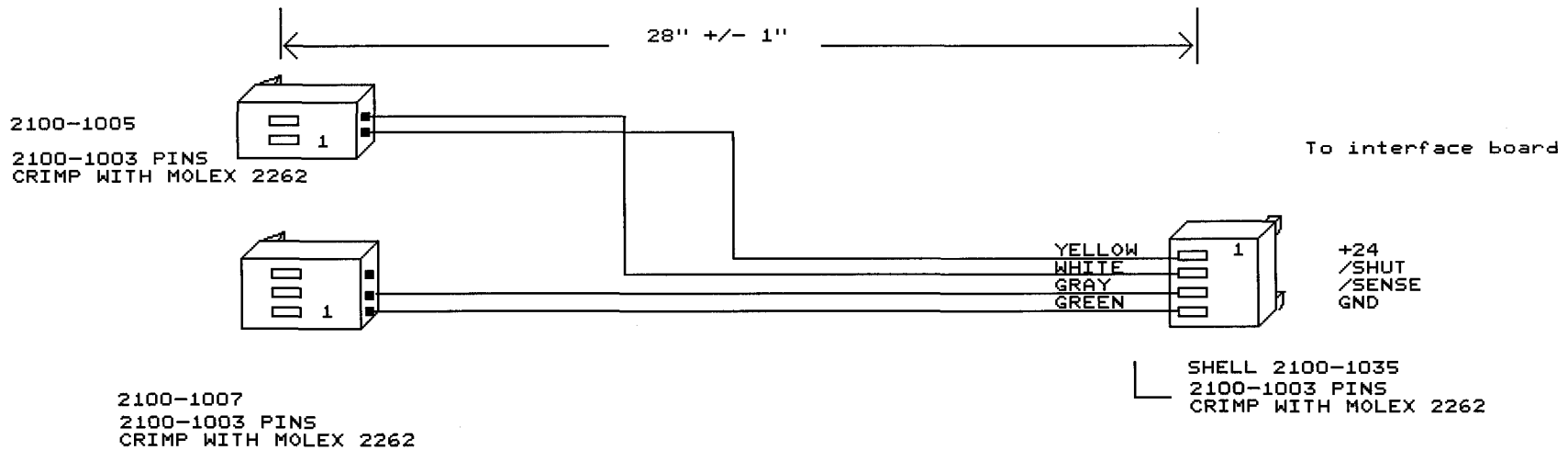
LIGHTWAVE ELECTRONICS		
Title		
ASY LED SQUARE AMBER		
Size	Document Number	REV
A	0-1026A.PRC	A
Date:	August 27, 1996	Sheet 1 of 1

TOOLS: Molex 2262 crimp tool  
Electronic asm tools

SKILLS: ELECTRONIC ASM

1. Cut wires to length
2. Strip ends 1/16"
3. Crimp pins on wires.
4. Insert wires into connectors.

Ltr	ECO	By	Date	Apprv	Date
A	-	KM			



QTY	LWE#	DESCRIPTION
28"	6000-0905	#22 Green wire
28"	6000-0903	#22 Gray wire
28"	6000-0927	#22 White wire
28"	6000-0904	#22 Yellow wire

LIGHTWAVE ELECTRONICS		
Title		
ASY LIGO HEAD SHUTTER CABLE		
Size	Document Number	REV
A	0-1816A.PRC	A
Date:	December 1, 1997	Sheet 1 of 1

Ltr	ECO	By	Date	Appv	Date
A	-	FA			

TOOLS: 3M CONNECTOR PRESS

SKILLS: ELECTRONIC ASM

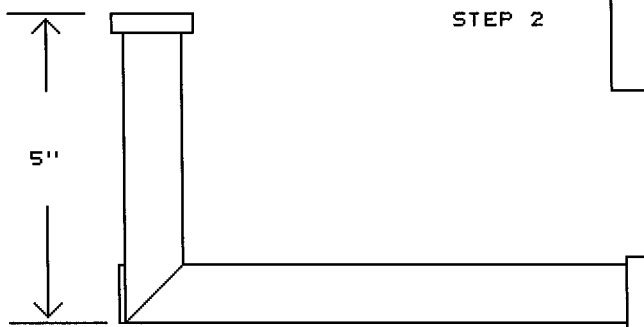
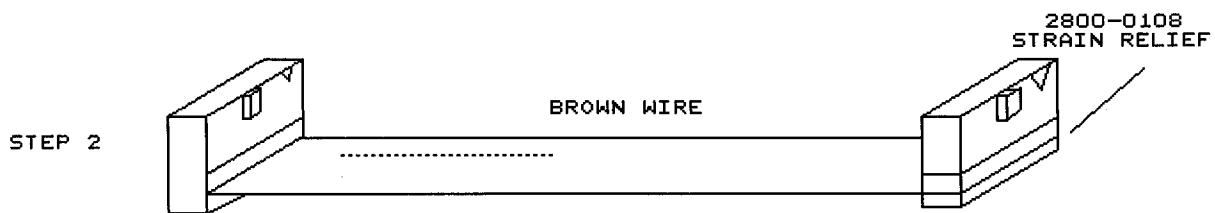
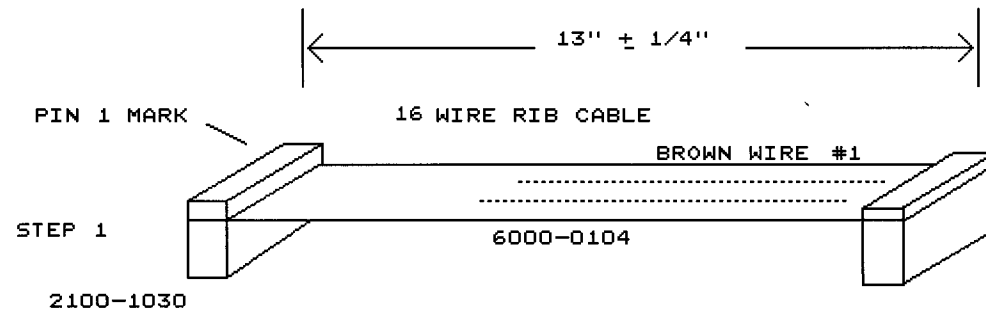
ASSEMBLY PROCEDURE

STEP 1

1. Cut ribbon cable to length.
2. Align cable in connector with brown wire on pin 1.
3. Press connector together until clips lock into place.

STEP 2

4. Fold cable over connector and place strain relief on connector.



LIGHTWAVE ELECTRONICS		
Title		
ASY, CABLE 16 PIN RIBBON		
Size	Document Number	REV
A	0-1817A.PRC	A
Date:	October 24, 1997	Sheet 1 of 1



Ltr	ECO	By	Date	Aprv	Date
A	-	FA			

TOOLS: 3M CONNECTOR PRESS

SKILLS: ELECTRONIC ASM

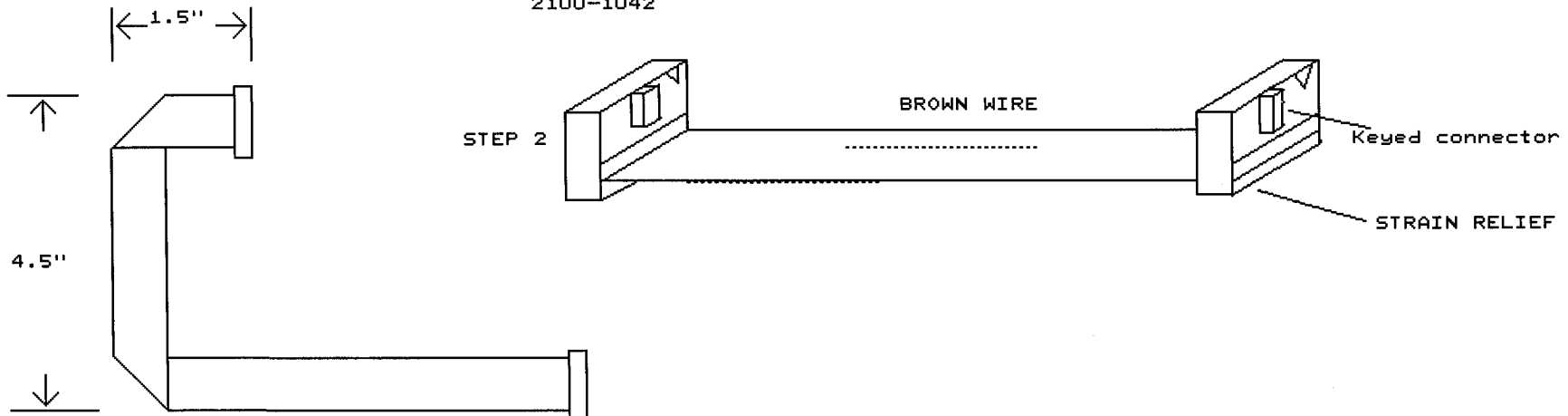
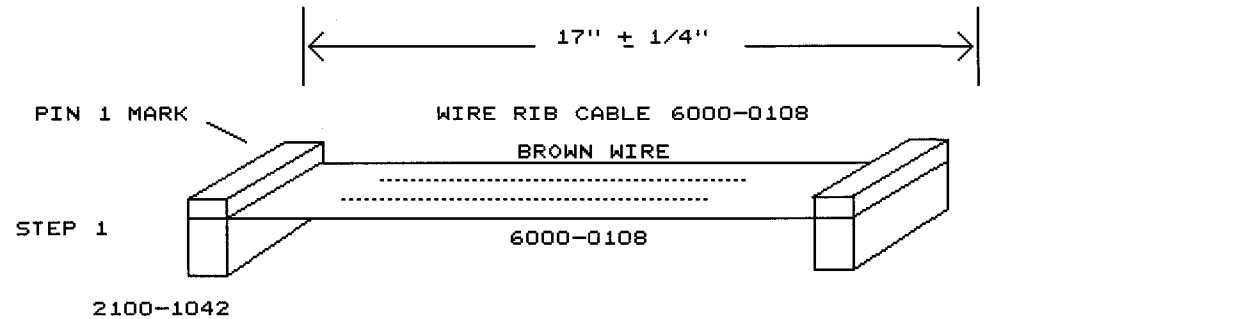
ASSEMBLY PROCEDURE

STEP 1

1. Cut ribbon cable to length.
2. Align cable in connector with brown wire on pin 1.
3. Press connector together until clips lock into place.

STEP 2

4. Fold cable over connector and place strain relief on connector.



LIGHTWAVE ELECTRONICS		
Title ASY, CABLE 10 PIN RIBBON		
Size	Document Number	REV
A	0-1818A.PRC	A
Date:	October 14, 1997	Sheet 1 of 1

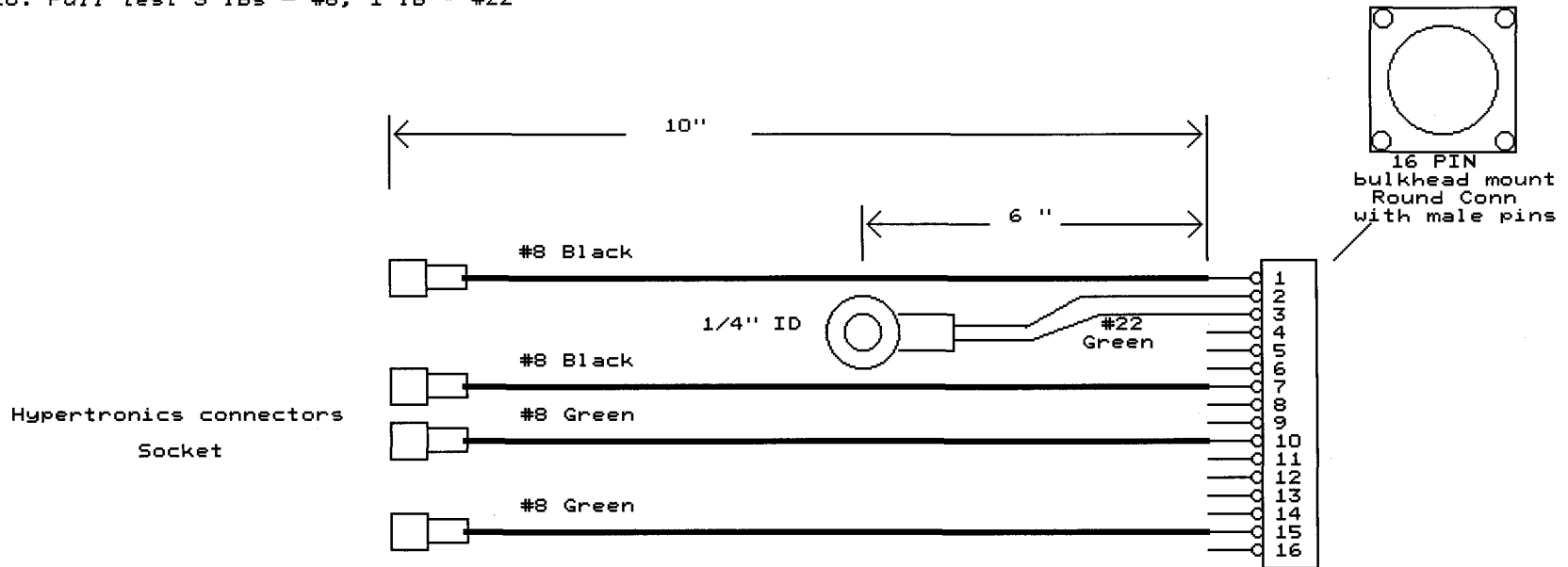
Ltr	ECO	By	Date	Aprv	Date

TOOLS: CRIMP TOOLS  
Molex 1719c  
Amp Type F  
DMC M310

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wires to length.
2. Strip #8 wires 1/4" one end, 3/16" other end
3. Strip #22 wires 1/8" one end, 1/4" other end
4. Crimp 2100-7002 pins on 1/4" #8 wires
5. Crimp hypertronics pins on free ends of #8 wires.
6. Crimp 2100-7100 pins on 1/8" #22 wires
7. Crimp both # 22 wires into large ring terminal.
8. Insert wires into round connector
9. Verify positions
10. Pull test 3 lbs - #8, 1 lb - #22



PINS: 2100-7100 #22  
PINS: 2100-7002 #8  
SHELL: 2100-1143

QTY	LWE#	DESCRIPTION
21"	6000-1004	#8 Black wire
21"	6000-1005	#8 Green wire
13"	6000-0905	#22 Green wire

LIGHTWAVE ELECTRONICS		
Title		
ASY CABLE LIGO HEAD DIODE CURRENT		
Size	Document Number	REV
A	0-1819.PRC	A
Date: September 11, 1997		Sheet 1 of 1

Ltr	ECO	By	Date	Aprv	Date
A	-	CR			

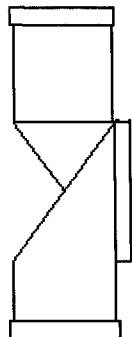
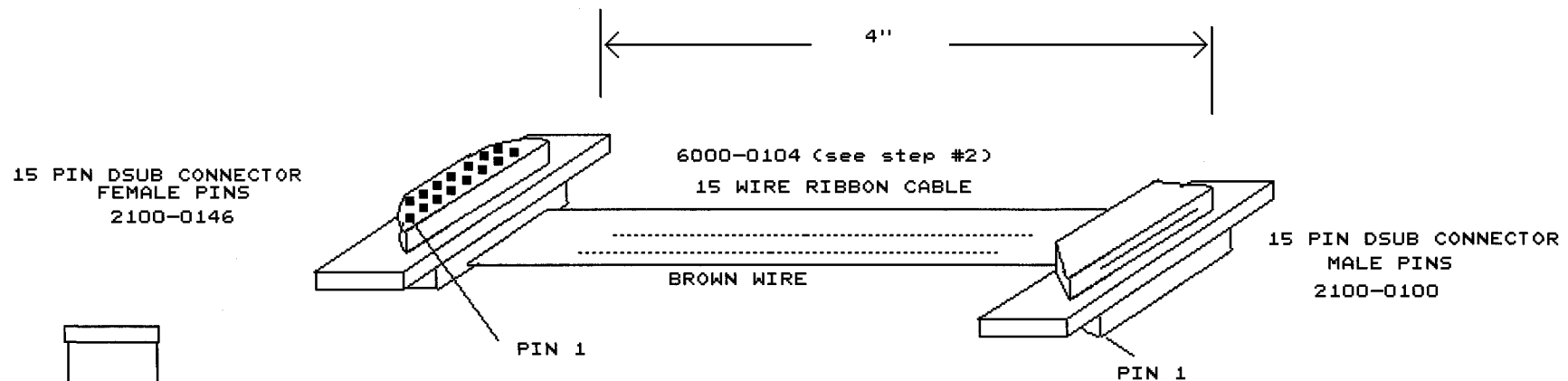
TOOLS: ARBOR PRESS OR SMALL VISE, XACTO KNIFE, CUTTERS

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

STEP 1

1. Cut a 16 conductor ribbon cable to length.
2. Strip the blue wire off the 16 conductor ribbon cable to make a fifteen conductor cable.
3. Press connectors together until clips lock into place.



How cable is folded  
in higher assembly.

LIGHTWAVE ELECTRONICS		
Title		
ASY CABLE 15 PIN DSUB RIB-RIB		
Size	Document Number	REV
A	0-1820A.PRC	A
Date:	December 1, 1997	Sheet 1 of 1

Ltr	ECO	By	Date	Apprv	Date
A	-	KM			

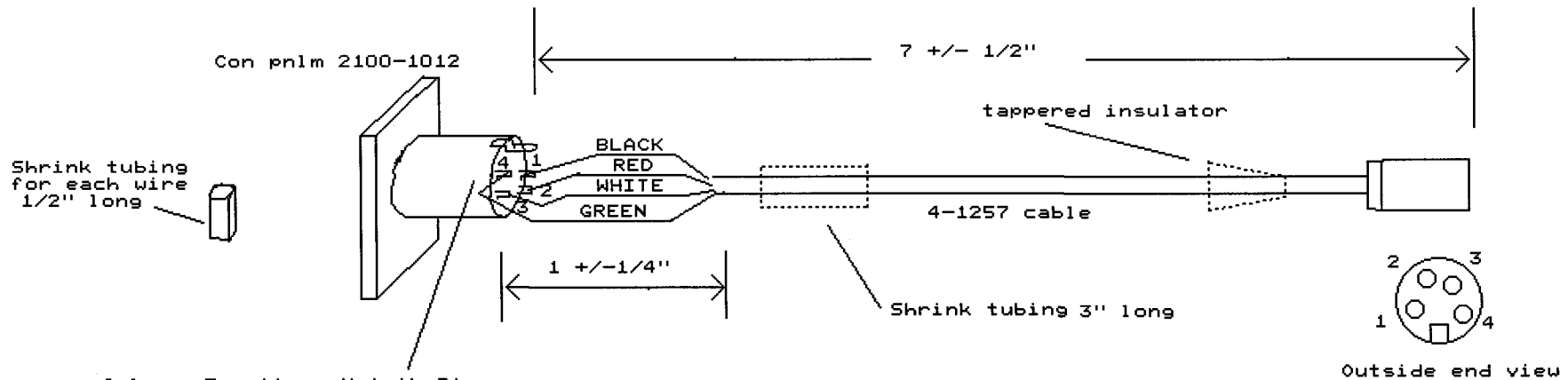
**TOOLS:**

Electronic Asm Tools  
Heat gun

**SKILLS:** ELECTRONIC ASM

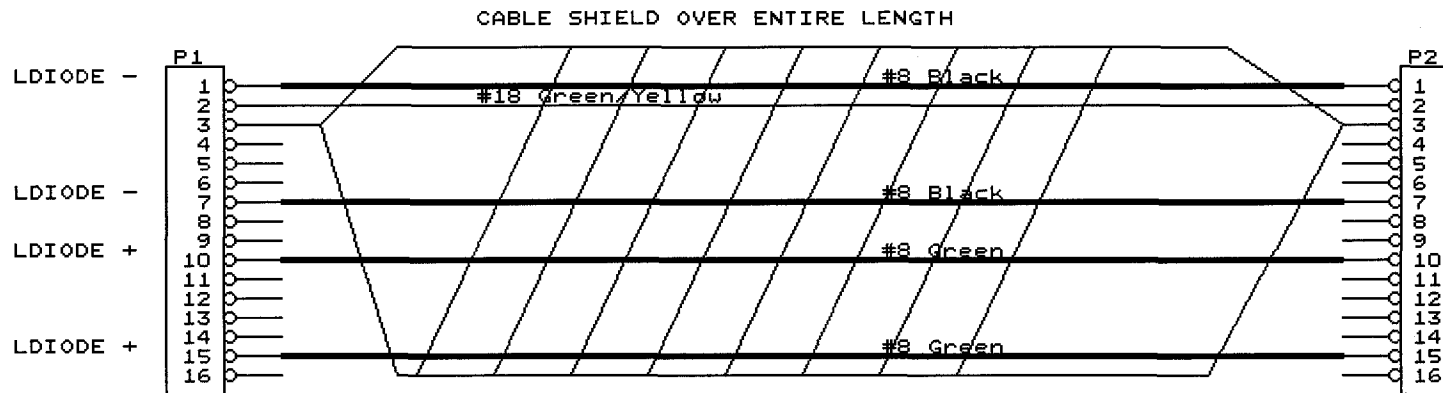
**ASSEMBLY PROCEDURE**

1. Cut 4-1257 cable to length.
2. cut tapered insulator from back of connector.
3. Place it as shown on the cable.
4. Strip outer insulation off to length shown.
5. Place 1" of heat shrink over cable.
6. Strip ends of wire 1/8" and tin with solder.
7. Place small diameter shrink tubing on each wire.
8. Solder wires to connector.
9. Pull small heat shrink over the solder joint and shrink.
10. Pull large heat shrink over wires and shrink.
11. Pull reverse cut insulator over heat shrink.
12. Test cable for continuity (one to one).

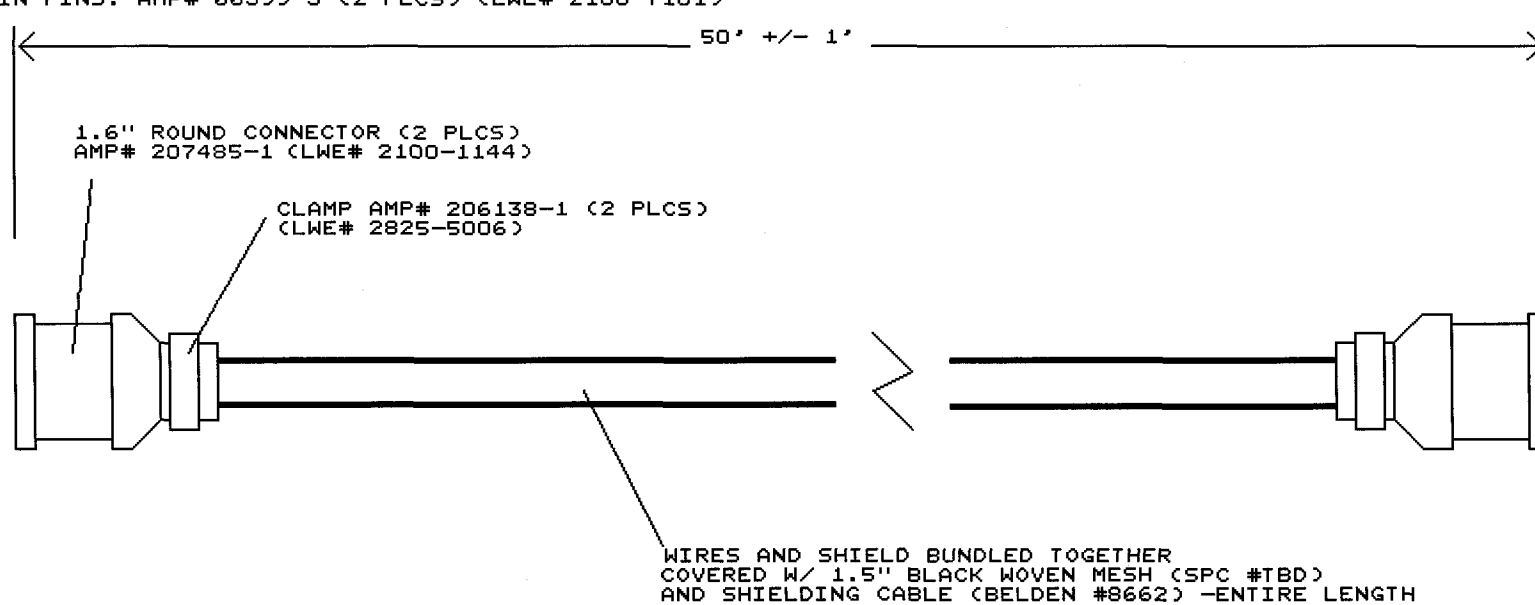


Color	Function	Nutrik Pin
Black	-5V	1
Red	+5v	2
Green	Ret	4
White	+5v	3

<b>LIGHTWAVE ELECTRONICS</b>		
Title LIGO HEAD 126 POWER CABLE (INTERNAL)		
Size	Document Number	REV
A	0-1821X.PRC	A
Date:	October 14, 1997	Sheet 1 of 1



FAT PINS: AMP# 66741-6 (4 PLCS) (LWE# 2100-7003)  
 THIN PINS: AMP# 66399-3 (2 PLCS) (LWE# 2100-7101)



NOTE: ALL TOLERANCES ARE +/- 1/2" UNLESS SPECIFIED  
 ALL WIRES ARE 22 AWG UNLESS NOTED

<b>LIGHTWAVE ELECTRONICS</b>		
Title		
CABLE, LIGO DIODE CURRENT UMB		
Size	Document Number	REV
A	0-1822.PRC	A
Date:	October 14, 1997	Sheet of 1

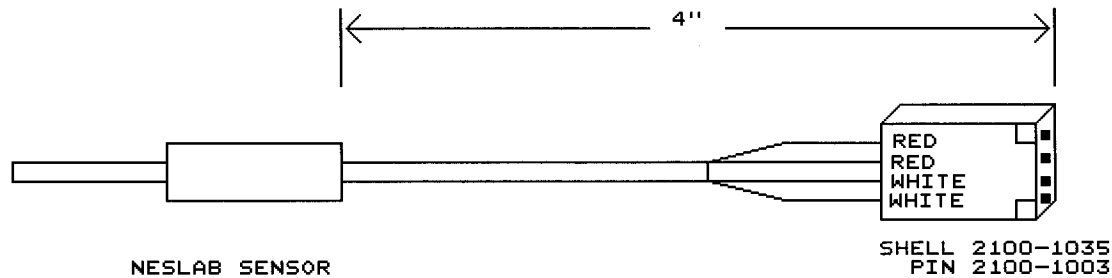
Ltr	ECO	By	Date	Aprv	Date
A	-	FA			

TOOLS: ELECTRONIC ASM  
 CRIMP TOOL: Molex 2262

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut Neslab sensor to length
2. Strip outside cover back 1"
3. Strip wires 1/8"
4. Crimp pins onto wires.
5. Insert pins into connector shell.



LIGHTWAVE ELECTRONICS		
Title		
ASY, CABLE LIGO HEAD THERMISTOR		
Size	Document Number	REV
A	0-1823A.PRC	A
Date: September 11, 1997		Sheet 1 of 1

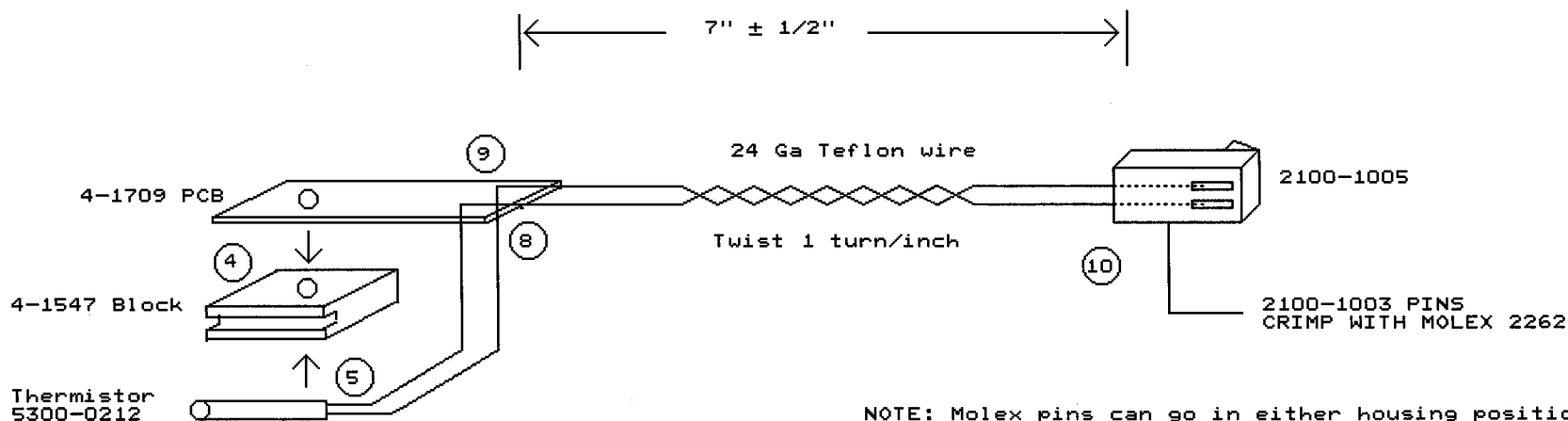
TOOLS CRIMPER 2262  
 ASSEMBLY JIG (# TBD)  
 9/64" BUTTON HEAD DRIVER  
 ELECTRONIC ASM TOOLS

Ltr	ECO	By	Date	Apprv	Date
A	-	FA			
B		FA	11-6-95		

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

- Mix blue epoxy (1600-0501).
- Use 9/64" button head driver to pull the Assembly jig apart. place thermistor blocks (4-1547) over the teflon posts into the jig with each slot facing the jig opening
- Use a swab to spread blue epoxy over the entire top surface of the block
- Place the PCB (4-1709) over the top of epoxy covered block and bolt the jig together around the work in progress
- Turn the jig on its side so that the block slots are pointing up. Apply more blue epoxy to the block slots and insert thermistors (5300-0212) so that the wires are pointing towards the wire pads on the PCB (see diagram)
- Keep the jig standing up and allow epoxy to harden overnight
- After epoxy is dry, Remove work in progress from the jig. Push both thermistor wires up thru the PCB.
- Cut to #24 white teflon wires length and strip 1/8" off of each end.
- Bend one end of each wire and place into PCB (along with the thermistor lead) and solder. The thermistor wires should lay flat on the PCB and not be shorted together.
- Crimp on pins (2100-1003) and insert into housing (2100-1005) and twist wires into a cable (1 turn/in)
- Test resistance with DVM. Reading will be 9 to 11K depending upon temp. Tag defective asy's with Defective Item Tag and place in Defective item area
- Wash each Asy in genesolve (NO ULTRASONIC CLEANER), bake out @ 100c for 3 hrs
- Use finger cots to place each assembly in an ESD shielded bag, place bags in proper Kan-Ban.



LIGHTWAVE ELECTRONICS		
Title ASY THERMISTOR BLOCK		
Size	Document Number	REV
A	0-1111B1.PRC	B1
Date:	November 7, 1996	Sheet 1 of 1

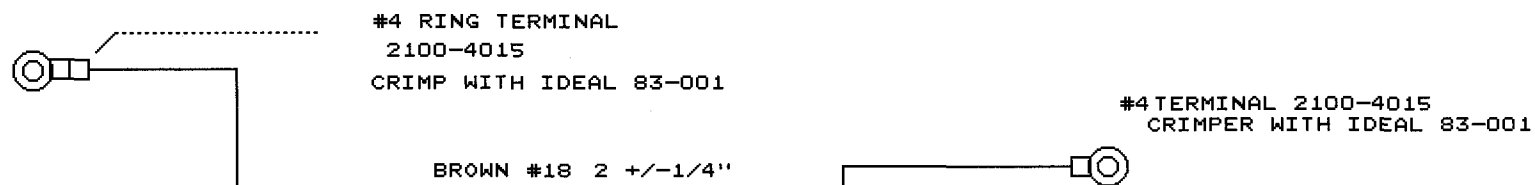
TOOLS: CRIMP TOOLS  
 IDEAL 83-001

SKILLS: ELECTRONIC ASM

ASSEMBLY PROCEDURE

1. Cut wire to length.
2. Strip both ends of wire (1/4" approx. ).
3. Crimp ring terminals on to stripped wires.
4. Place heat shrink over #4 terminals and shrink.
5. Pull check crimp -11b.

Ltr	ECO	By	Date	Apprv	Date
A	-	KM			



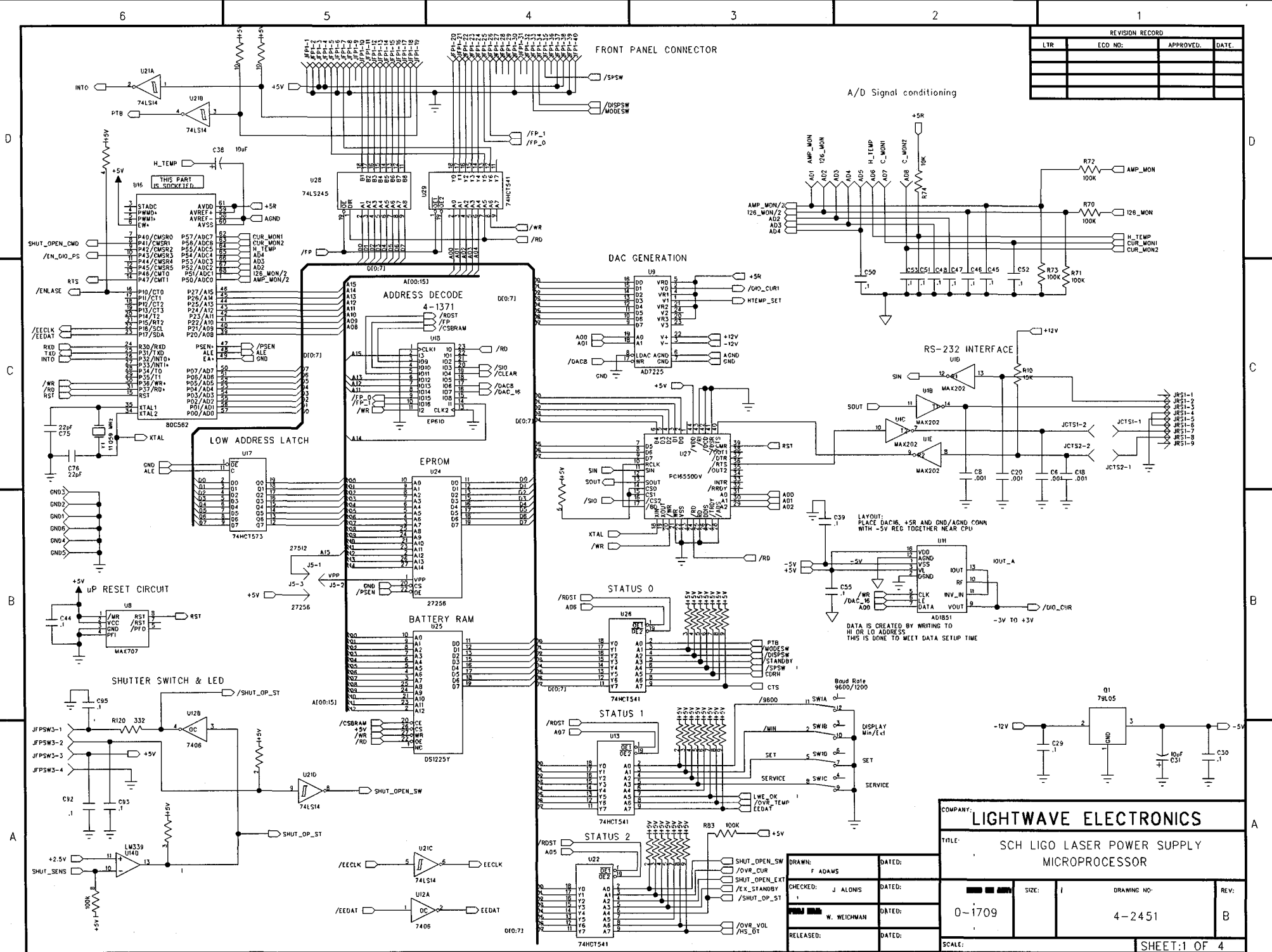
QTY	LWE#	Description
2"	6000-0900	#18 Brown Wire

LIGHTWAVE ELECTRONICS		
Title Shield Jumper Wire (ligo head)		
Size	Document Number	REV
A	0-1963X.PRC	A
Date:	December 2, 1997	Sheet of 1





REVISION RECORD			
LTR	ECO NO.	APPROVED	DATE



LAYOUT: PLACE DAC16, +5R AND GND/ACND CONN WITH +5V REG TOGETHER NEAR CPU

DATA IS CREATED BY WRITING TO HI OR LO ADDRESS THIS IS DONE TO MEET DATA SETUP TIME

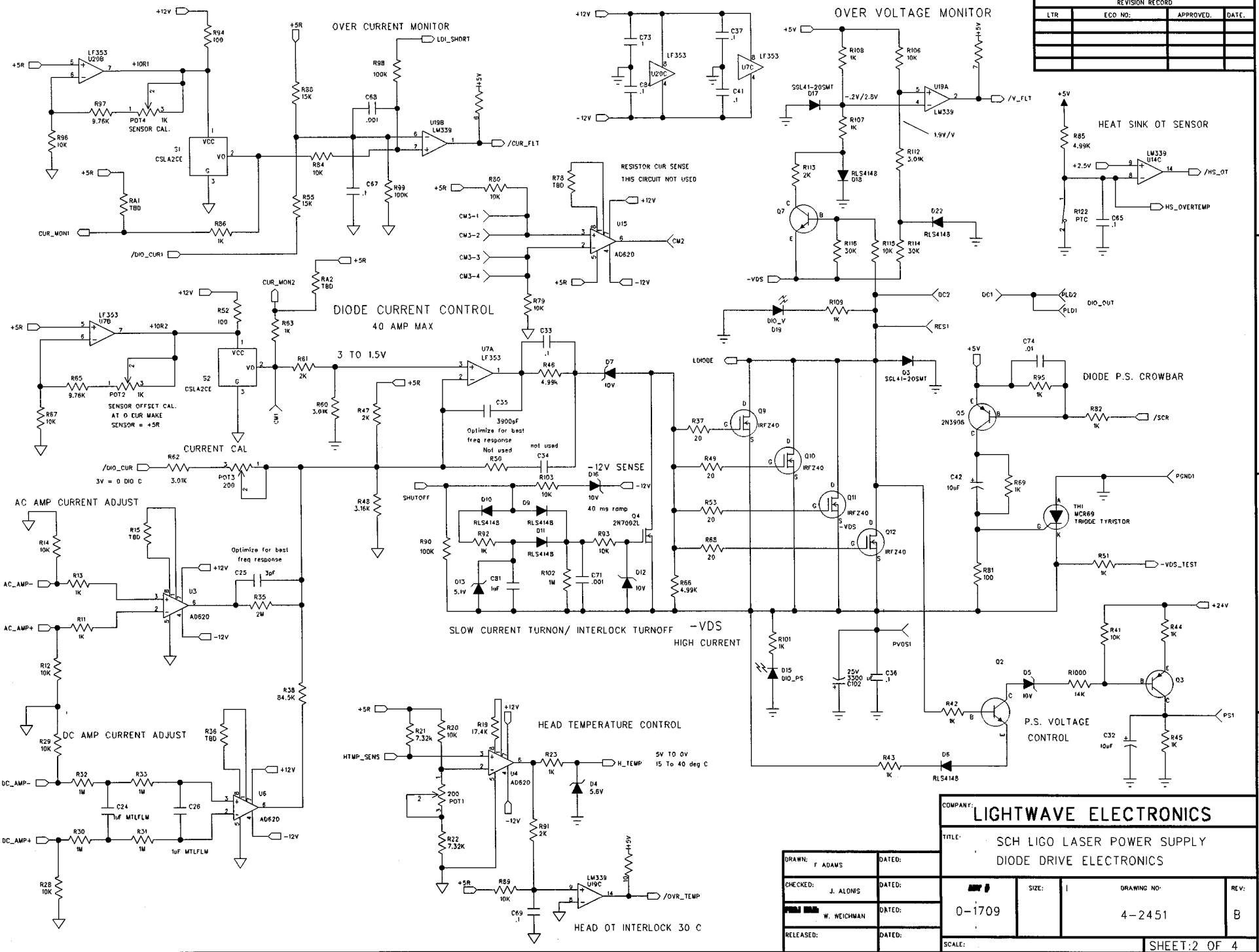
COMPANY: **LIGHTWAVE ELECTRONICS**

TITLE: **SCH LIGO LASER POWER SUPPLY MICROPROCESSOR**

DRAWN: F ADAMS	DATED:
CHECKED: J ALONIS	DATED:
RELEASED: W. WEICHMAN	DATED:

SIZE: 1	DRAWING NO: 4-2451	REV: B
SCALE: SHEET: 1 OF 4		

REVISION RECORD			
LTR	ECO NO.	APPROVED	DATE

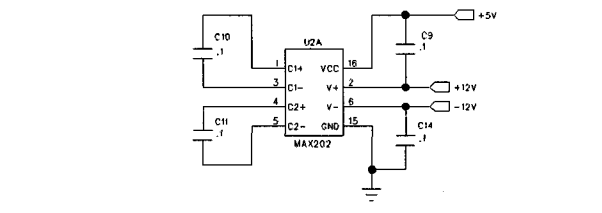
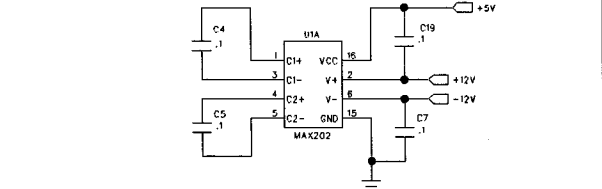
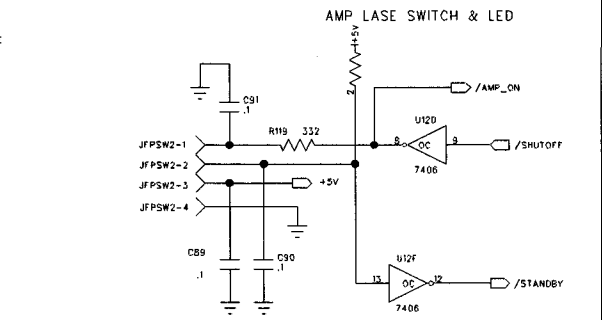
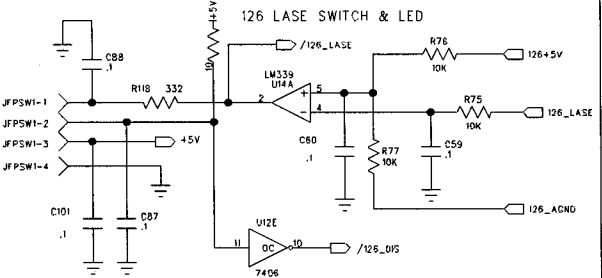
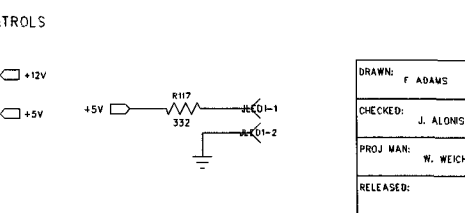
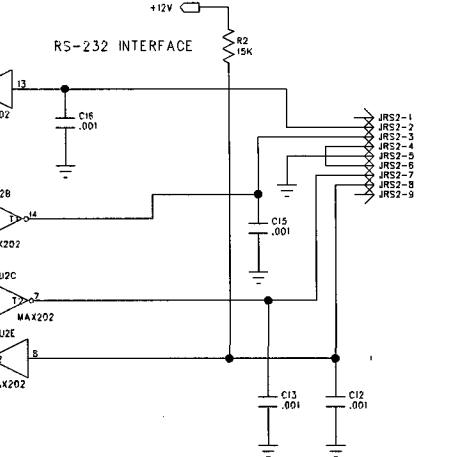
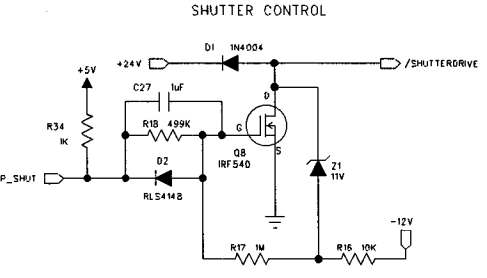
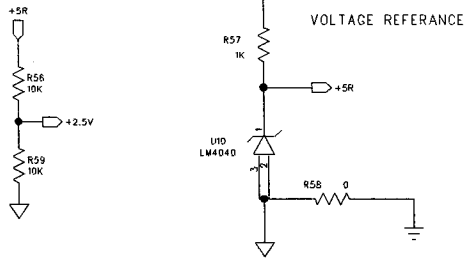
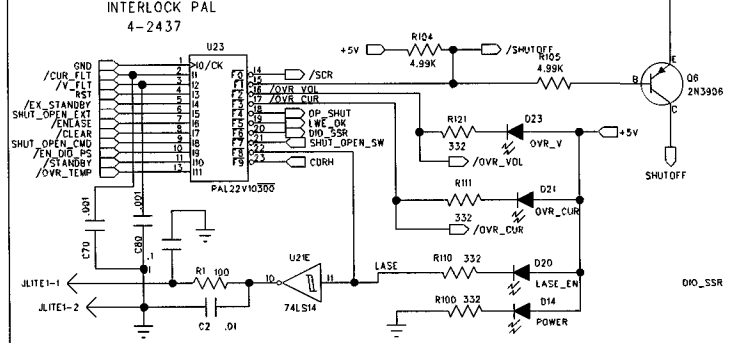
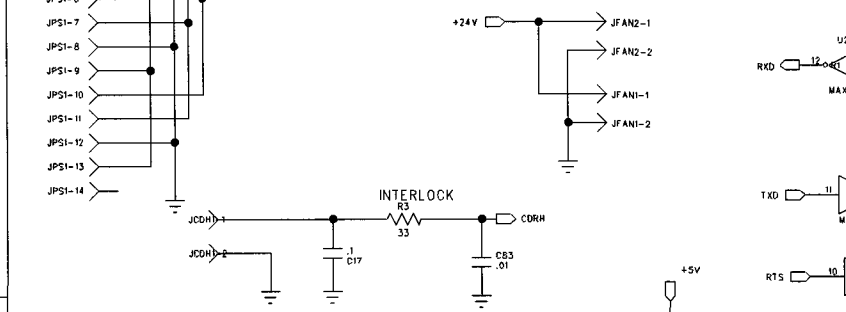
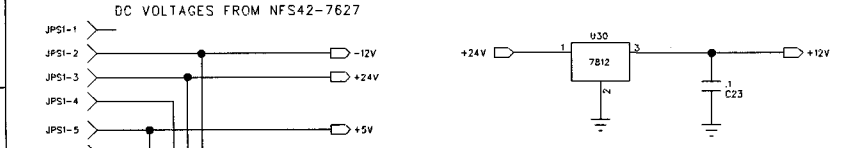
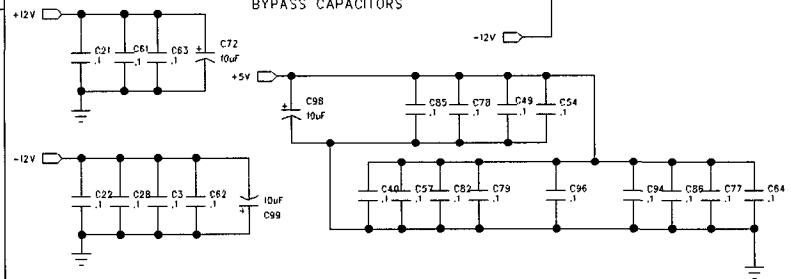
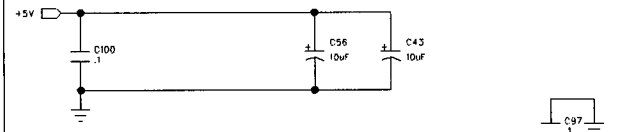
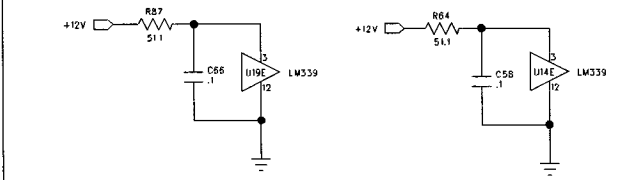


COMPANY: **LIGHTWAVE ELECTRONICS**

TITLE: SCH LIGO LASER POWER SUPPLY  
DIODE DRIVE ELECTRONICS

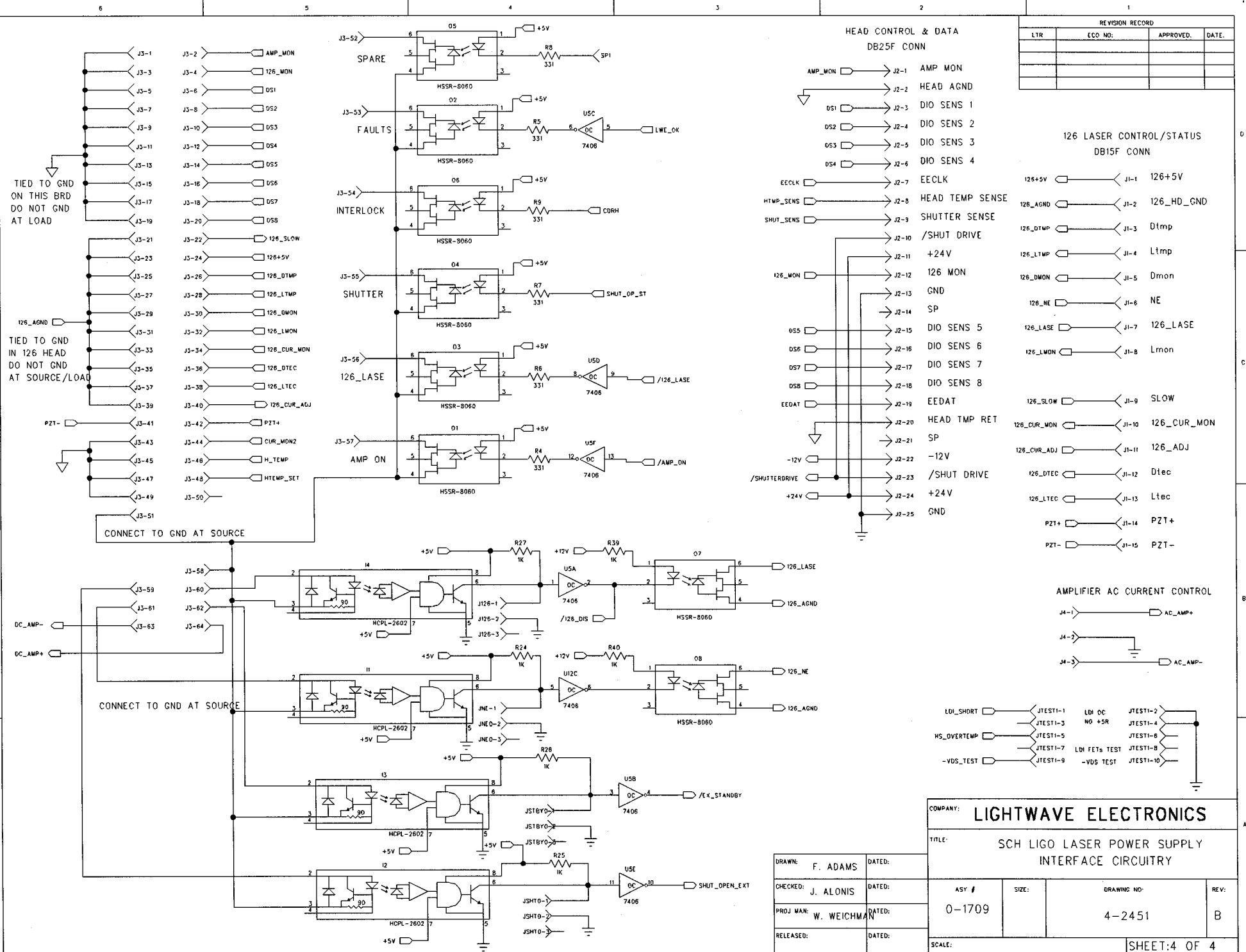
DRAWN: F ADAMS	DATED:	SCALE:	SIZE: 1	DRAWING NO: 4-2451	REV: B
CHECKED: J. ALONS	DATED:				
W. WEICHMAN	DATED:	0-1709		SHEET: 2 OF 4	
RELEASED:	DATED:				

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



COMPANY: LIGHTWAVE ELECTRONICS			
TITLE: SCH LIGO LASER POWER SUPPLY MISC CIRCUITRY			
DRAWN: F. ADAMS	DATED:	ASY #	SIZE:
CHECKED: J. ALONIS	DATED:	0-1709	DRAWING NO: 4-2451
PROJ MAN: N. WEICHMAN	DATED:	REV: B	SCALE:
RELEASED:	DATED:	SHEET: 3 OF 4	

REVISION RECORD			
LTR	ECO NO.	APPROVED.	DATE.

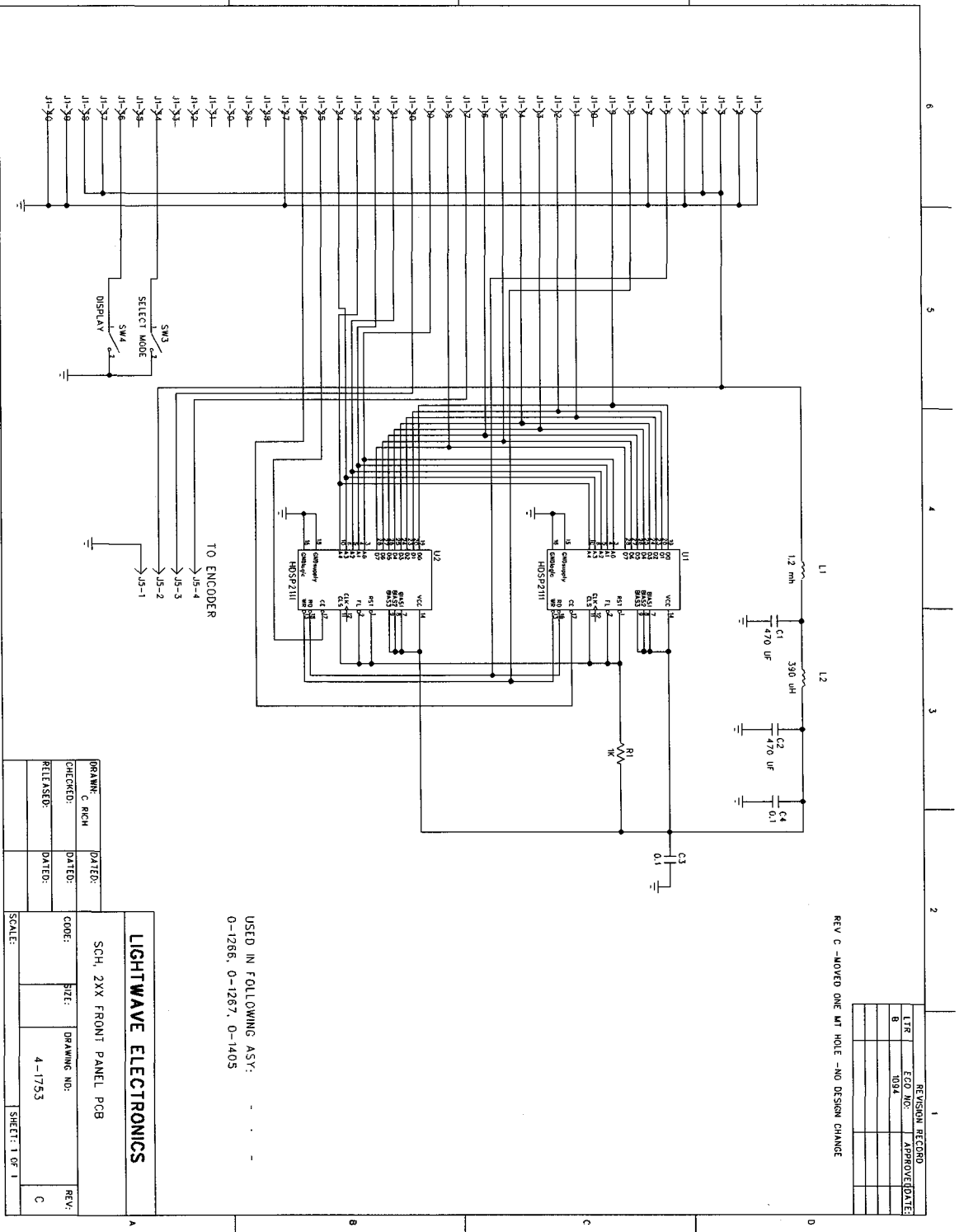


COMPANY: **LIGHTWAVE ELECTRONICS**

TITLE: **SCH LIGO LASER POWER SUPPLY INTERFACE CIRCUITRY**

DRAWN: F. ADAMS	DATED:	ASY #	SIZE:	DRAWING NO:	REV:
CHECKED: J. ALONIS	DATED:	0-1709		4-2451	B
PROJ MAN: W. WEICHMAN	DATED:				
RELEASED:	DATED:				

SCALE: SHEET: 4 OF 4



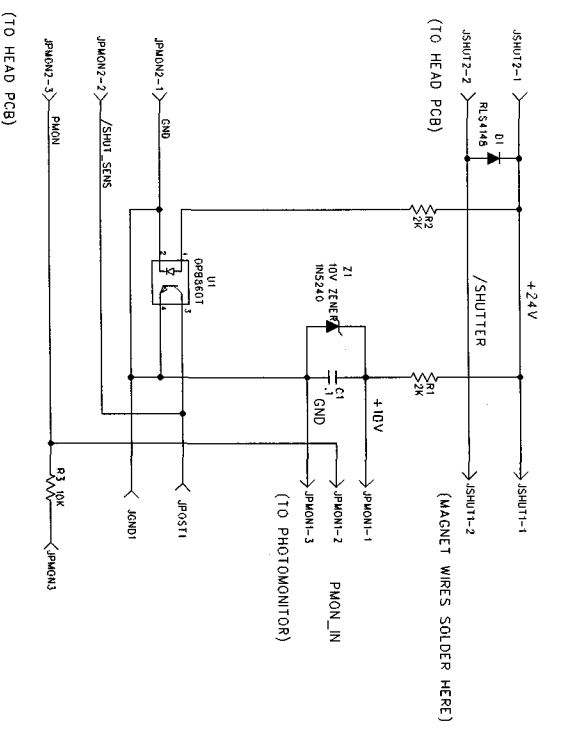
REVISION RECORD		
LTR	EGO NO.	APPROVE/DATE
8	1094	

REV C -MOVED ONE MT HOLE -NO DESIGN CHANGE

USED IN FOLLOWING ASY:  
 0-1266, 0-1267, 0-1405

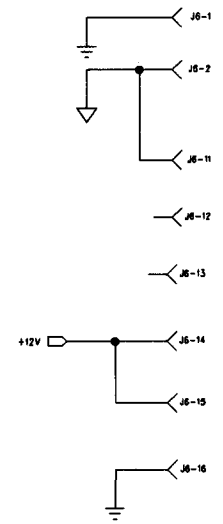
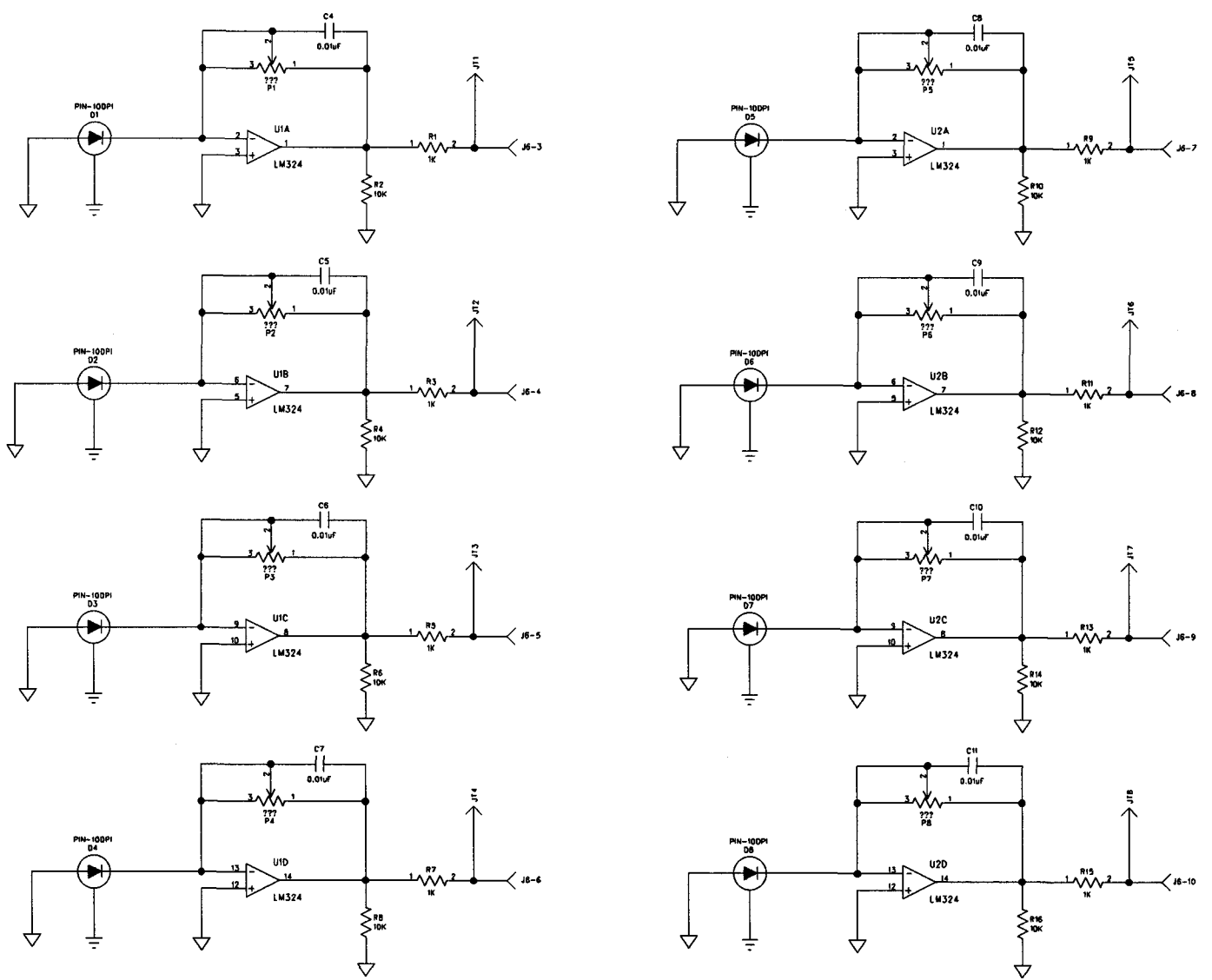
<b>LIGHTWAVE ELECTRONICS</b>		DATE:	REV:
SCH, 2XX FRONT PANEL PCB		DATE:	C
DRAWN: C RCH	DATE:	SIZE:	DRAWING NO:
CHECKED:	DATE:	4-1753	
RELEASED:	DATE:	SCALE:	SHEET: 1 OF 1

REVISION RECORD		
TR	ECO NO.	APPROVE/DATE

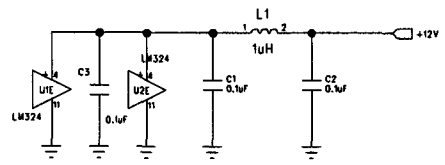
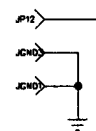
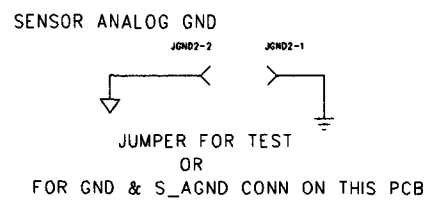


COMPANY LIGHTWAVE ELECTRONICS			
TITLE: PCB, MAGNET SHUTTER, 2XX (USED IN ASY 0-1505)			
DRAWN: F. Adams	DATE:	CODE:	DRAWING NO:
CHECKED:	DATE:	SIZE:	4-204.2
QUALITY CONTROL:	DATE:	RELEASED:	DATE:
SCALE: SHEET 1 OF 1			REV: B

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



SET POTS FOR 8V NOMINAL OUTPUT



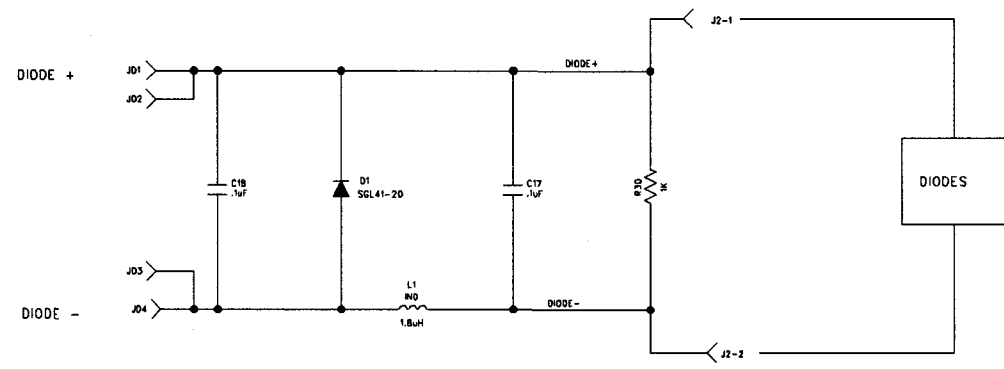
<b>LIGHTWAVE ELECTRONICS</b>			
TITLE: SCH LIGO DIODE SENSOR			
DRAWN: F. ADAMS	DATED:	USED ON ASY #:	DRAWING NO:
DESIGN BY: F. ADAMS	DATED:	0-169B	4-2429
REV ENG: J. ALONIS	DATED:		REV: X
PROD ENG: W. WIECHMAN	DATED:		
SHEET: 1 OF 1			



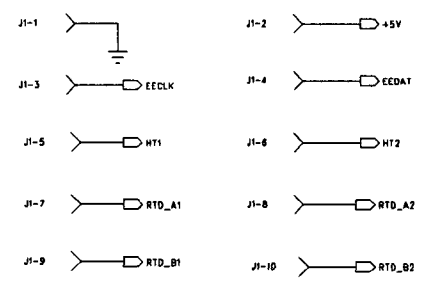
6 5 4 3 2 1

REVISION RECORD			
LTR	ECO NO:	APPROVED	DATE:

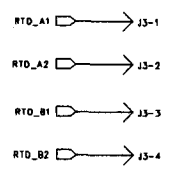
### DIODE CURRENT FILTER & ESD SUPPRESSION CIRCUIT



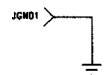
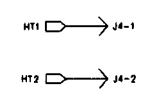
#### TO HEAD INTERFACE



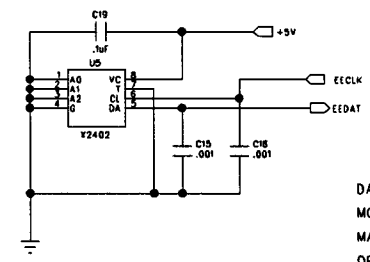
#### CHILLER TEMP SENSE



#### HEAD TEMP SENSE



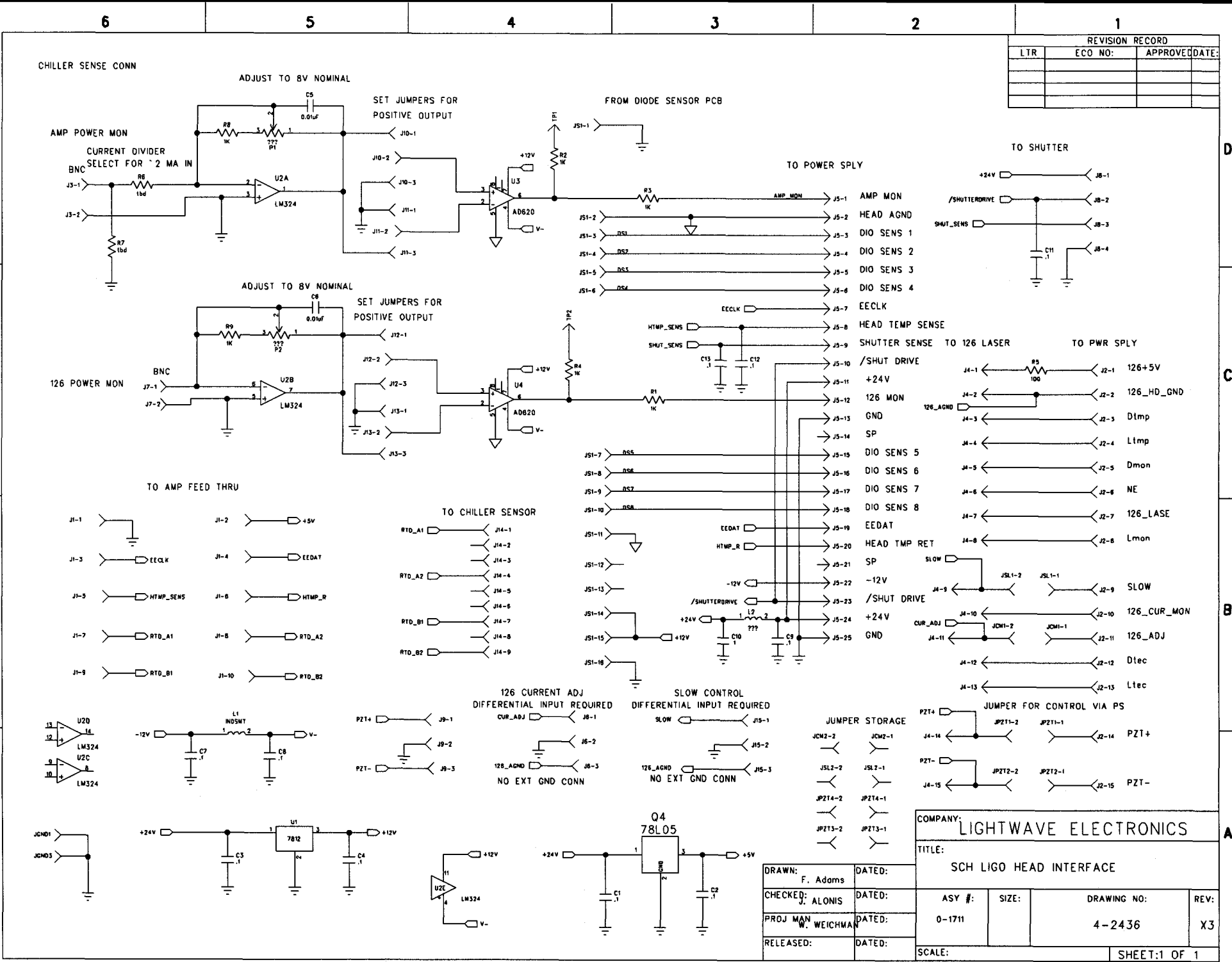
#### EEPROM



DATA STORED:  
 MODEL #  
 MAX DIO CUR  
 OP DIO CUR  
 HEAD TEMP  
 HOURS

COMPANY: LIGHTWAVE ELECTRONICS			
TITLE: SCH LIGO AMPLIFIER FEED THRU			
DRAWN: F. Adams	DATED:	CODE:	SIZE:
CHECKED: J. ALONIS	DATED:	DRAWING NO: 4-2435	REV: X2
PROJ MAN W. WEICHMAN	DATED:	SCALE:	
RELEASED:	DATED:	SHEET: 1 OF 1	

REVISION RECORD			
LTR	ECO NO:	APPROVED	DATE:



COMPANY: LIGHTWAVE ELECTRONICS			
TITLE: SCH LIGO HEAD INTERFACE			
DRAWN: F. Adams	DATED:	ASY #: 0-1711	SIZE:
CHECKED: J. ALONIS	DATED:	DRAWING NO: 4-2436	REV: X3
PROJ MAN: W. WEICHMA	DATED:	SCALE:	SHEET: 1 OF 1
RELEASED:	DATED:		