

INTELLABEAM

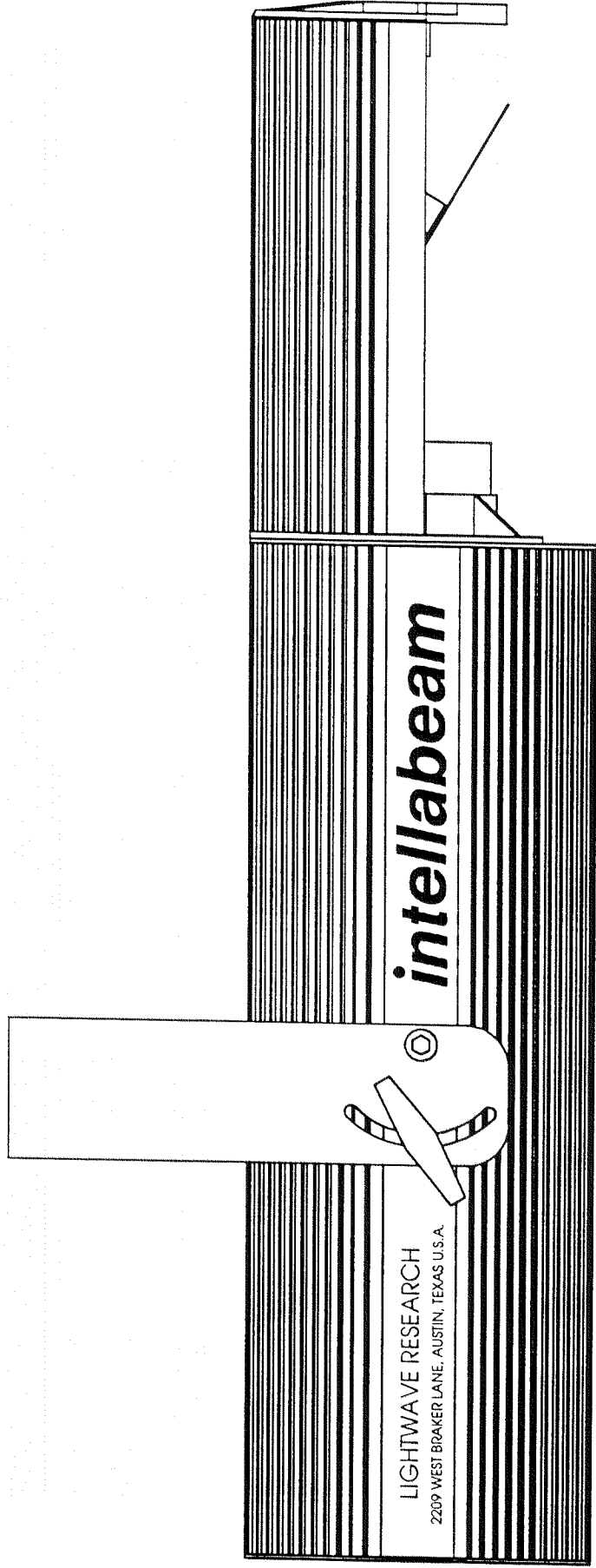


Figure 1. Fixture Side View

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All Doors Removed

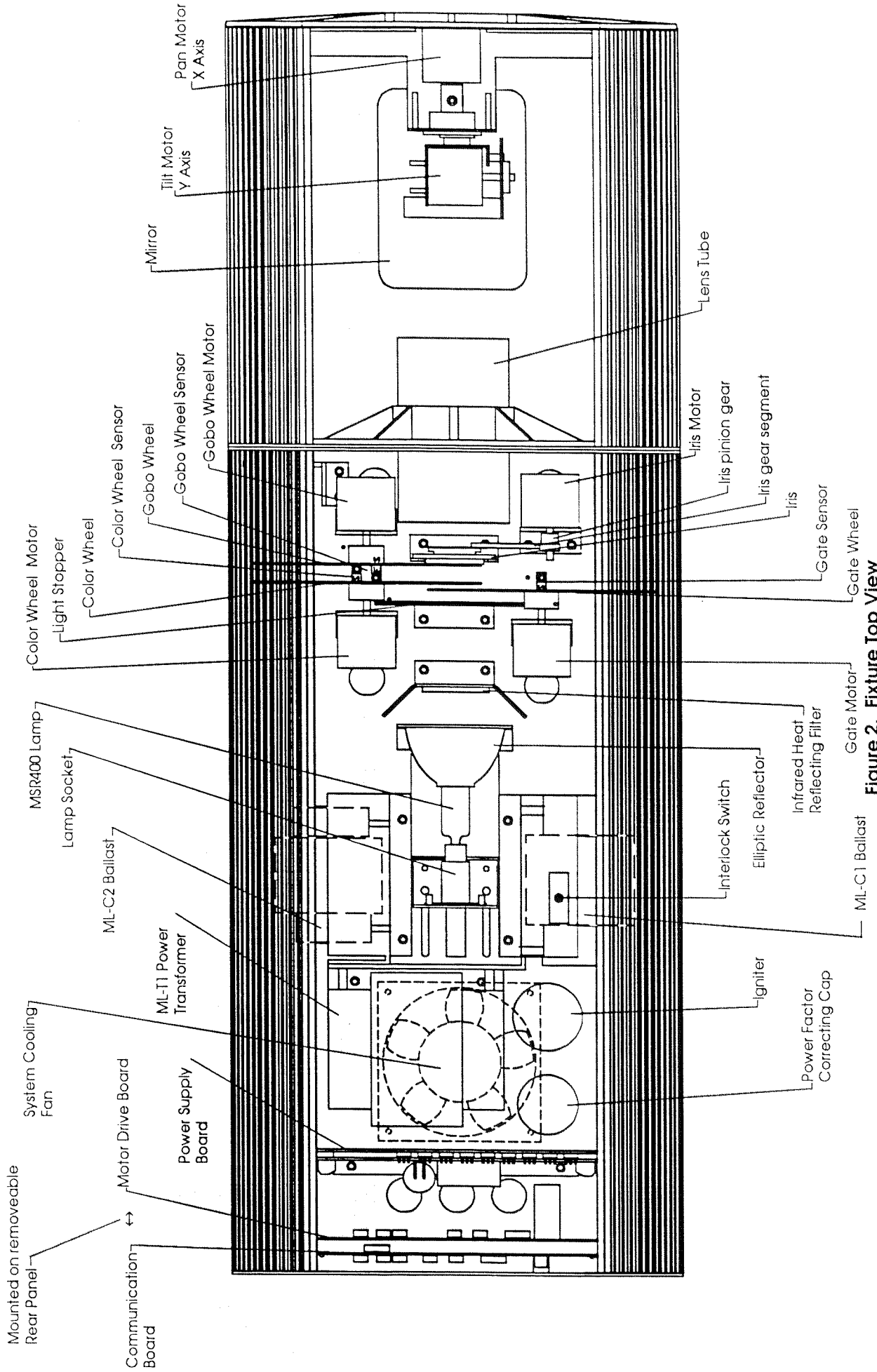


Figure 2. Fixture Top View

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Bottom Access Door Removed

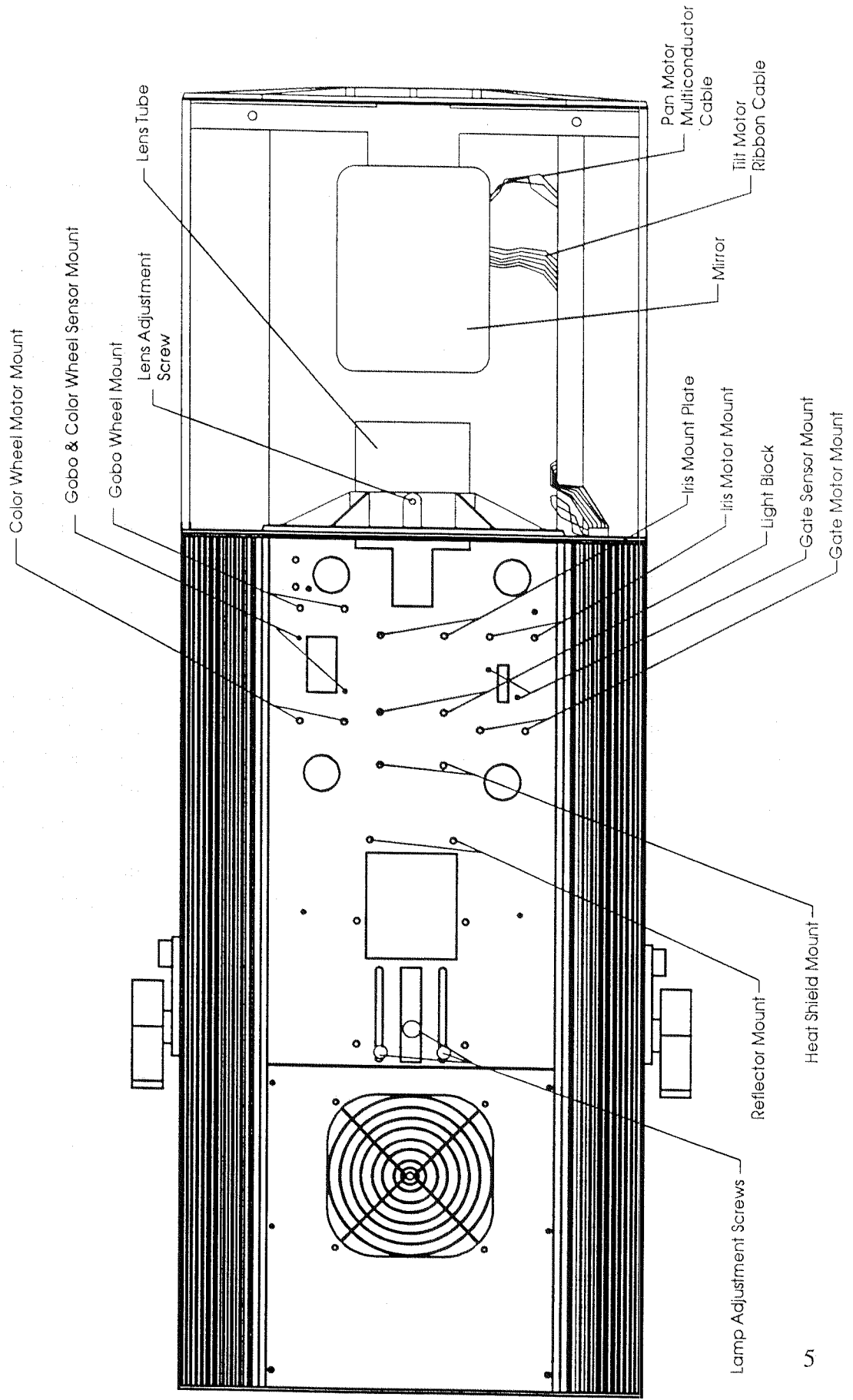


Figure 3. Fixture Bottom View

The Intellabeam Fixture - Description

BOTTOM ACCESS DOOR - found on bottom of fixture body. It allows easy access to the lamp (for alignment), to the wheel position optical sensors, and their associated wiring harnesses. It is secured to the body with a self retaining thumbscrew (see Figure 3. Fixture Bottom View). Be sure to tighten door securely on closure.

REAR PANEL - located on rear of fixture body. It houses the input and output data jacks, DIP switches, power switch and fuse holder (Figure 5. Fixture Rear Panel). The motor drive board and communication board are mounted to the inside of this panel. The power supply board is mounted to the fixture body just inside the rear panel opening.

All electronic components can be easily accessed with the rear panel removed. All circuit boards use plug-in connectors for wiring, therefore, no de-soldering is necessary should board replacement become necessary. The rear panel is secured to the body with 8 allen screws (see Figure 5. Fixture Rear Panel).

LED INDICATORS - are found on the rear panel. These LED indicators monitor the status of the motors, the fan, and the lamp (see page 23, Maintenance / Troubleshooting and Repair).

CHASSIS - Although most components can be accessed easily through one of the access doors, it is sometimes convenient to remove the entire contents of the fixture body. The chassis is the structural plate where virtually all of the internal components are mounted. To remove the chassis, first remove the rear panel and to disconnect the mirror assembly cables. Then remove the upper fan plate by taking out the six phillips screws that secure it. Next, remove the two screws at the rear of the chassis that hold it in place. After removing these screws, the chassis will slide freely. The entire contents of the fixture can then be removed in one piece providing easy access to the larger electrical components (see Figure 4. Chassis Overview).

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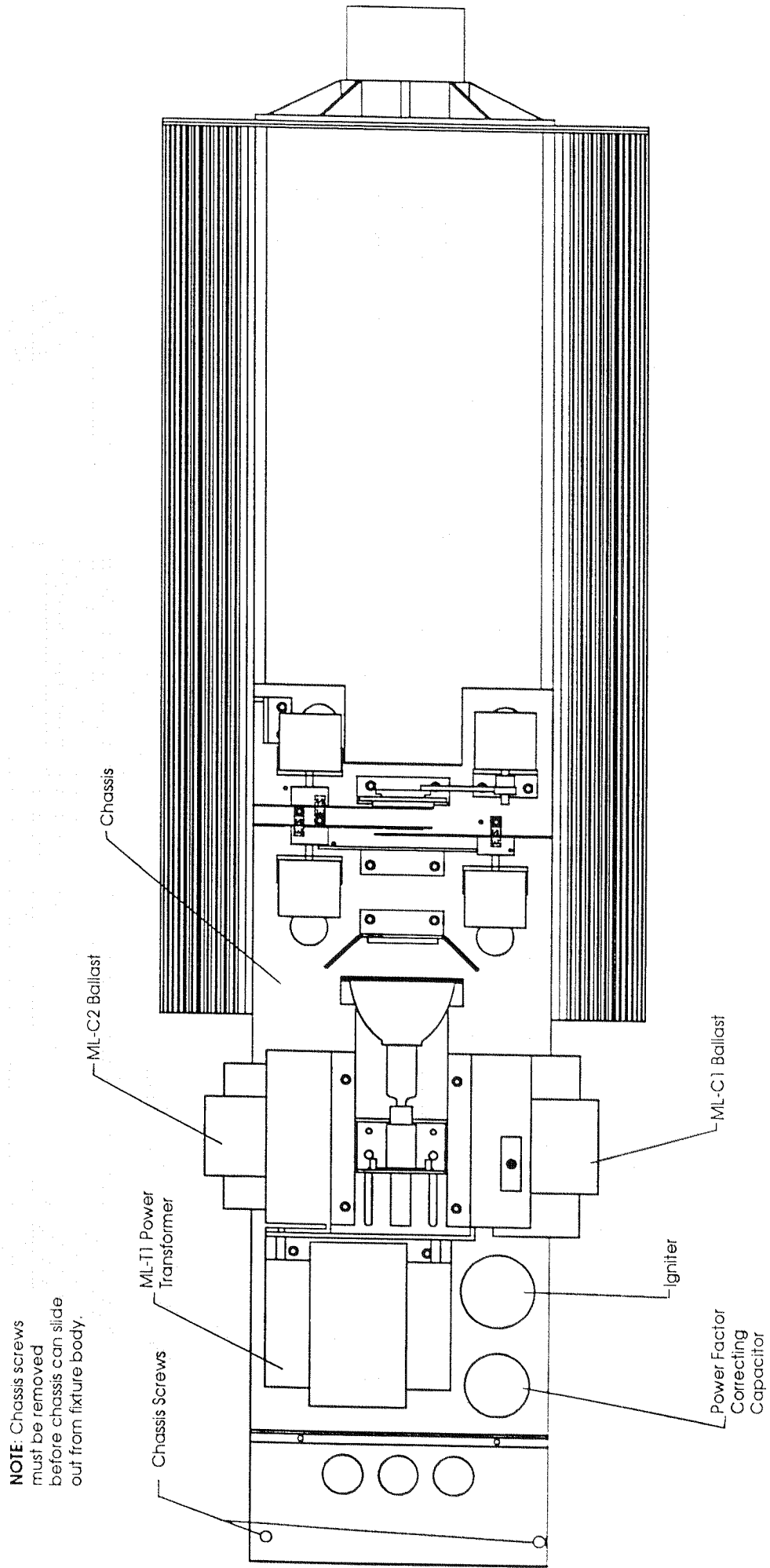


Figure 4. Chassis Overview

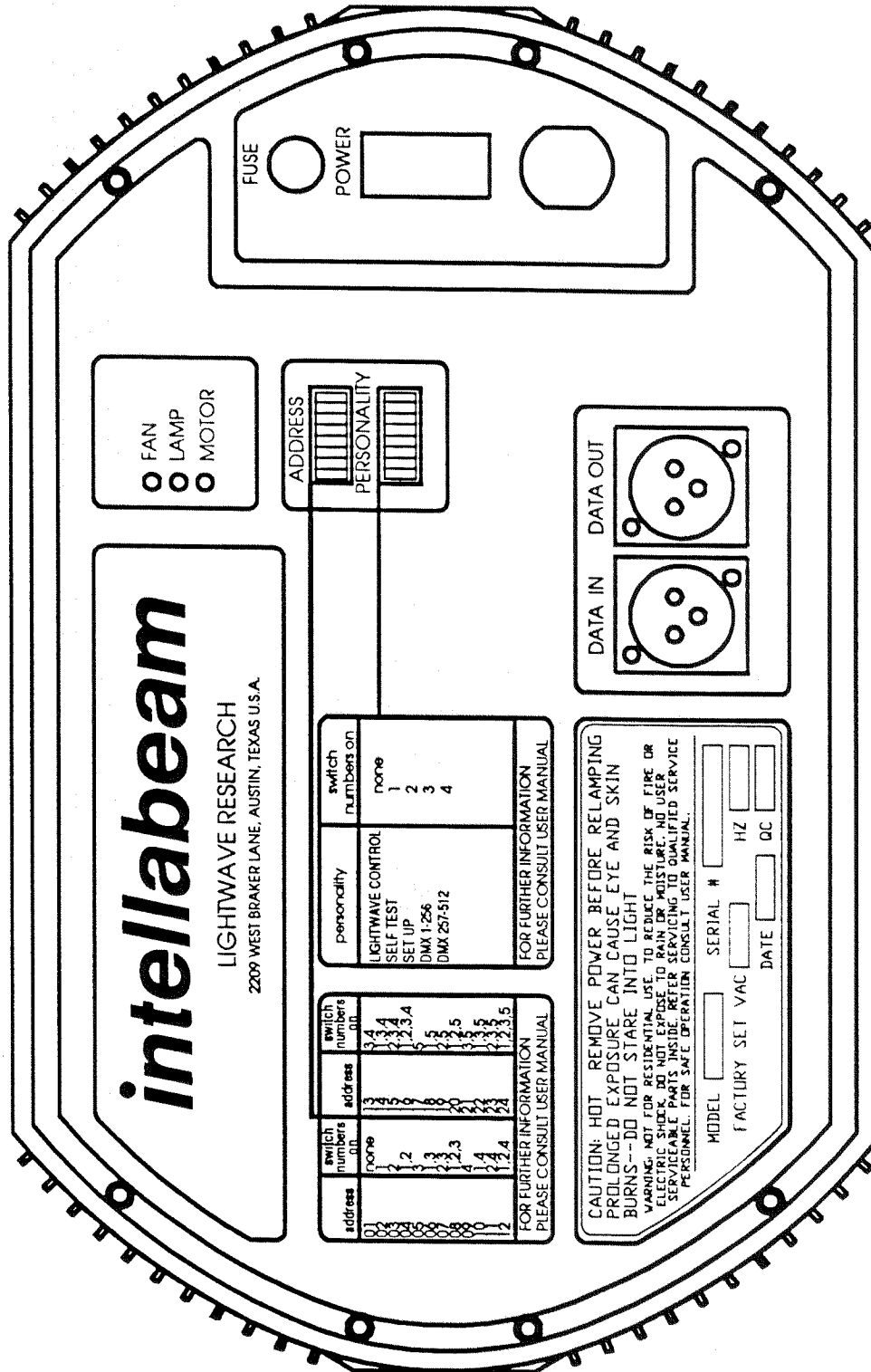


Figure 5. Fixture Rear Panel

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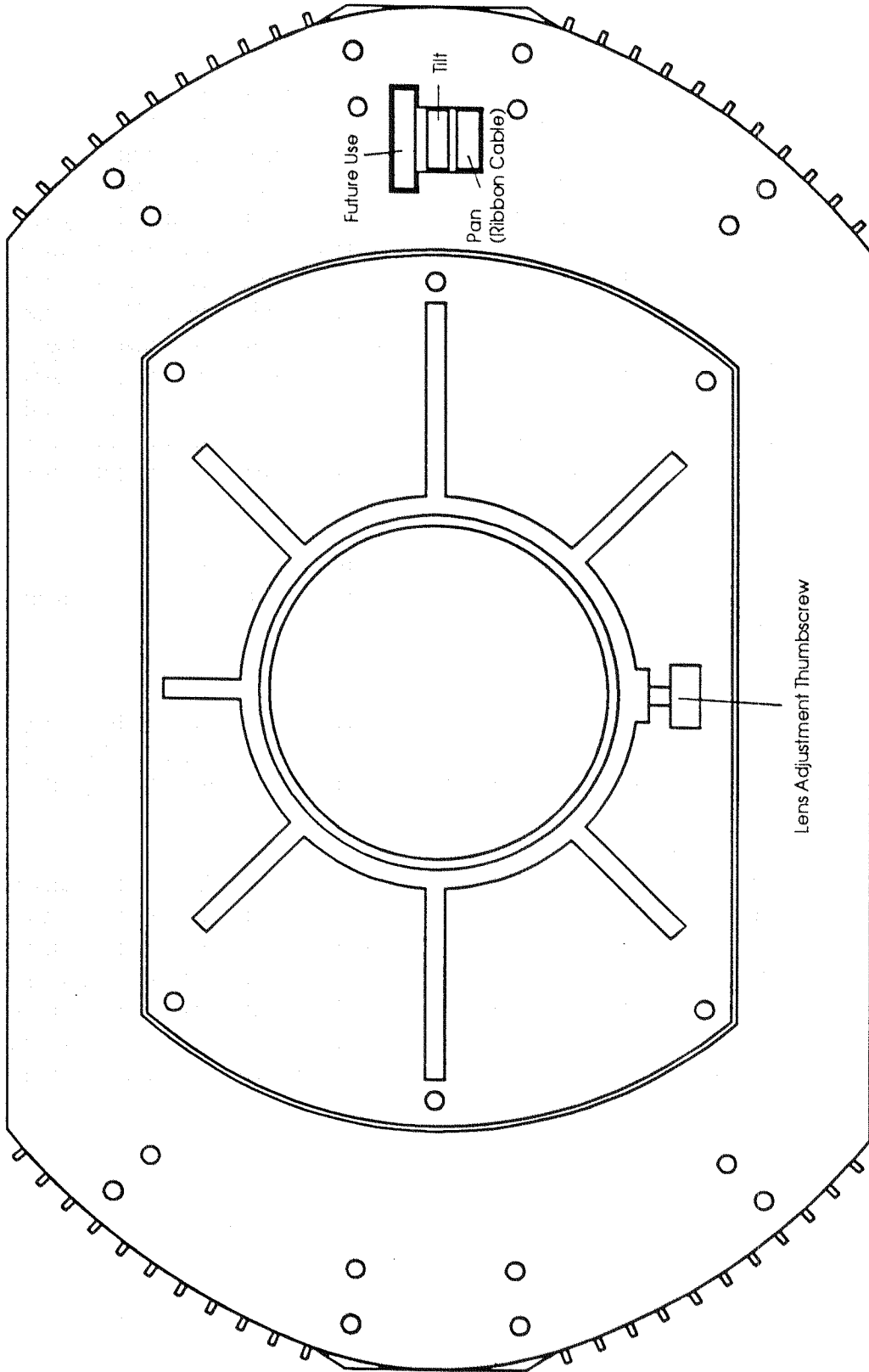


Figure 6. Fixture Front View

SETUP

UNPACKING

Observe caution to avoid jarring or dropping a carton containing an Intellabeam fixture or controller as they contain fragile glass and electronic parts. Inspect the outside of the carton upon arrival **in the presence of the shipping agent**, and make a note of any aberrations on the shipping bill. Open each carton immediately upon receipt, remove all contents and carefully inspect each item for signs of freight damage. If any damage is found, notify the shipping agent and your authorized High End Systems dealer. The fixture box also contains the yoke and mounting hardware inside of a plastic bag. The mirror will need to be installed onto the mirror mount (see Figure 4. Mirror Installation, page 7) and the lamp will need to be installed and optimized (see LAMP INSTALLATION / OPTIMIZATION page 20). The controller box contains a user manual and a book of schematic diagrams. Store all boxes for future use, especially while transporting fixtures or the controller. Improperly packed equipment sent to the manufacturer for repair may void the warranty and could result in freight damage.

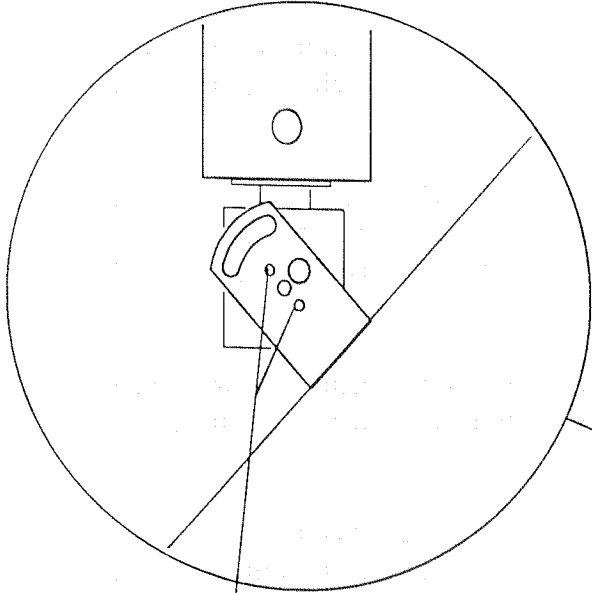
ASSEMBLY

Be certain that the connectors from the mirror assembly are inserted completely into the receptacles located on the fixture body. The longer jack at the top of the mirror head is not used (see Figure 6. Fixture Front View).

CAUTION: IF THESE CONNECTORS ARE NOT COMPLETELY INSERTED WHEN POWER IS APPLIED TO THE FIXTURE, DAMAGE MAY OCCUR. NEVER PLUG OR UNPLUG THIS CONNECTOR WHILE THE FIXTURE HAS POWER TO IT.

The fixture comes preassembled in the carton except for the yoke, which attaches to the fixture with the hardware provided, and the mirror. To attach the yoke, tighten the 5/16" allen head bolt first. The "T" handle bolt's main function is to position the angle of the fixture and it should be tightened down once the fixture is in place (see Figure 1. Fixture Side View). Each yoke has three mounting holes. The fixture may be mounted with a single clamp in the center of the yoke, or with two clamps on either side of the yoke. To attach the mirror, secure it to the mirror mount with the two allen screws provided (see Figure 7. Mirror Installation).

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Mirror Screws

- Mirror Installation Instructions
1. Remove the two 6-32 x .25 screws from hub
 2. Place mirror with mount on hub as shown
 3. Replace the two 6-32 x .25 socket cap screws and tighten with tool supplied with controller
- CAUTION - TIGHTEN MIRROR SCREWS SECURELY**

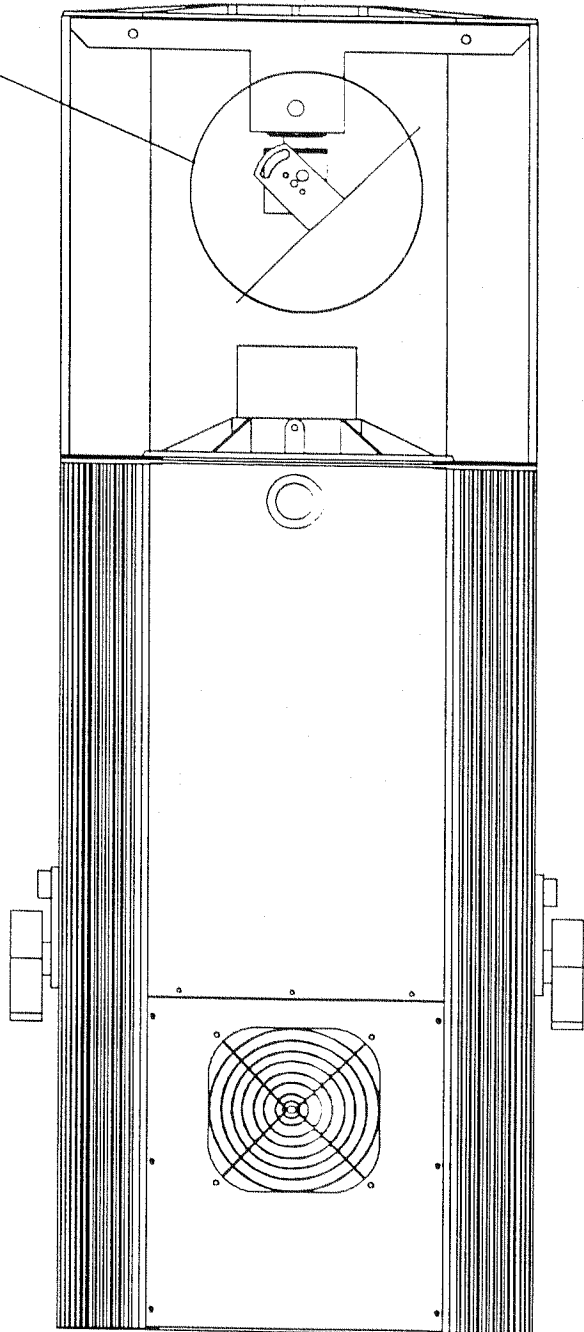


Figure 7. Mirror Installation

The Intellabeam Fixture - Setup

DATA CABLES

The Intellabeam fixture requires a standard 3-pin XLR connector for data input. Data cables should be constructed using shielded, two conductor cable with a male connector on one end and a female connector on the other end. Solder the shield to pin 1, one conductor to pin 2, and the other conductor to pin 3.

NOTE: DO NOT USE THE GROUND LUG ON THE XLR CONNECTORS OR ALLOW THE SHIELD TO CONTACT IT DURING ASSEMBLY AS A GROUND LOOP COULD BE CREATED AND CAUSE ERRATIC FIXTURE BEHAVIOR.

Microphone cables will work if the pin connections are the correct. Each cable should be tested with a VOM for correct polarity and to make certain that neither connector is grounded **before** use!

The controller should be connected to the input (male XLR connector) of the first fixture with a data cable. The remaining fixtures should be connected from the output connector (female XLR) of the first fixture to the input of the next, and so on, in a daisy-chain fashion. These cables may also be run in parallel at any point, although the daisy-chain method requires only one home run, is easier to troubleshoot, and it insures proper signal strength for larger systems.

POWER REQUIREMENTS

The Intellabeam fixture requires no dimming or switch circuits for operation. The controller will automatically switch the fan and lamp source on upon one of three conditions; 1.) upon initial power up, 2.) upon receiving a Home command, or 3.) upon coming out of fixture Lockout. Once the lamp is switched off, the fan will continue to operate for a period of about two minutes, then it will automatically shut off. The MSR400 fixture draws only 6A at 120V, or 3A at 240V.

VOLTAGE SELECTION

Should it become necessary to operate the Intellabeam at a voltage or frequency other than its factory setting, it may be configured to operate at 100, 120, or 240 Volts at 50 or 60 Hertz by changing the jumpers inside of the fixture. These changes are necessary to maintain correct dimming and to optimize the lamp ballasts.

The Intellabeam Fixture - Setup

To change the operating voltage of the fixture, unplug it and remove the eight 9/64" allen head screws that secure the rear panel. Carefully remove the panel and lower it out of the way. The power supply board will now be in front of you. On the far right hand side of this board is a blue, multi-pin connector labeled "voltage select". The connector can be removed to make the conversion easier. Refer to the following chart (Chart 1. Voltage Configuration) for correct fuse size and pin jumper information.

SELECTION	PIN#	TO	PIN#	SELECTION	PIN#	TO	PIN#
100 VOLTS	1		2	100 VOLTS	1		2
60 HERTZ	5		7	50 HERTZ	5		6
10A FUSE	8		10	10A FUSE	8		9
120 VOLTS	1		3	120 VOLTS	1		3
60 HERTZ	5		7	50 HERTZ	5		6
10A FUSE	8		10	10A FUSE	8		9
230 VOLTS	1		4	230 VOLTS	1		4
60 HERTZ	5		7	50 HERTZ	5		6
5A FUSE	8		10	5A FUSE	8		9

NOTE: AFTER CHANGING THE VOLTAGE SELECTION INTERNALLY, REPLACE THE MAIN FUSE ON THE REAR OF THE FIXTURE WITH A TYPE "T", 5 mm X 20 mm, 250 V, SLO-BLOW FUSE OF THE CORRECT VALUE.

Chart 1. VOLTAGE CONFIGURATION

Refer to Figure 8. Power Supply Board, on the following page for the location of the voltage selection jumpers.

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Note: All connectors will unplug from the board.

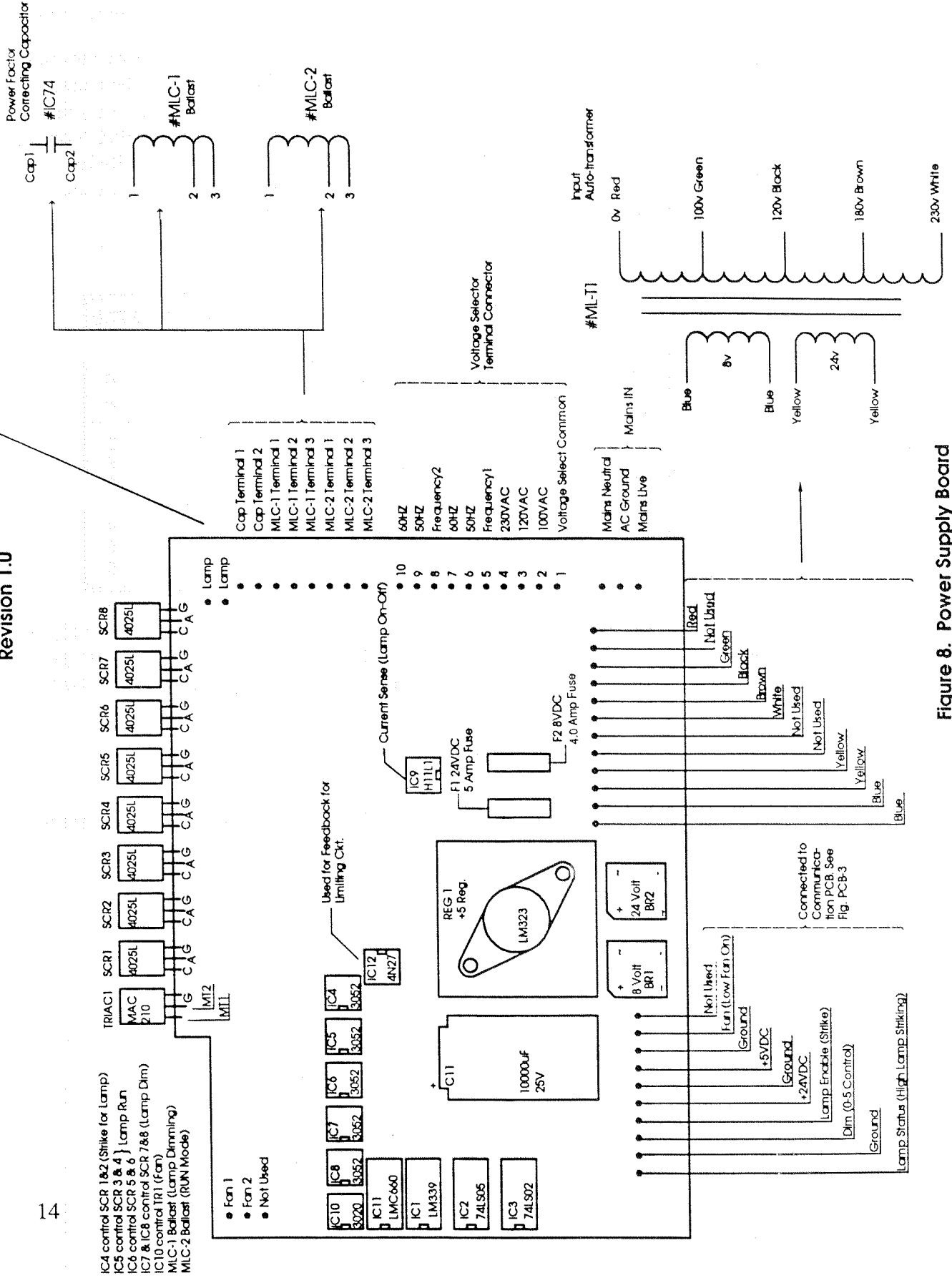
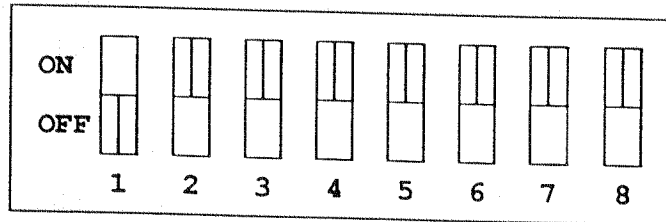


Figure 8. Power Supply Board

FIXTURE CONFIGURATION

Located on the rear of the fixture are two 8-position DIP switches labeled "PERSONALITY" and "ADDRESS". These switches are used for testing, set up, and control of specialized parameters.



TYPICAL 8 POSITION DIP SWITCH

PERSONALITY

The Personality DIP switch on the rear of the fixture (see Figure 5. Fixture Rear Panel) is used to configure the fixture for different purposes. The normal mode of operation is with all switches in the "off" position. This mode allows for normal operation of the fixture with the Intellabeam controller. With switch number one in the "on" position, the fixture is in the Self-test mode. This mode initiates an internal self-diagnostic routine that tests each function of the fixture. With switch number two "on", the fixture is in the Set-up mode. This mode is used to ignite the lamp in order to adjust and focus it without the aid of a controller (see LAMP INSTALLATION, page 20). Switches three and four pertain to using the fixture in conjunction with a DMX512 controller. Since the Address selection DIP switches can only be configured for 256 channels, the Personality DIP switches must be set properly to make the fixture respond to either the first set of 256 channels (channels one through 256) or to the second set of 256 channels (channels 257 through 512). The following chart is a summary of Personality DIP switch settings.

SWITCH	CONDITION	RESULT
ALL	(OFF)	Lightwave Research Controller
1	(ON)	Self-test mode.
2	(ON)	Set Up mode
3	(ON)	DMX-512 Controller (1-256)
4	(ON)	DMX-512 Controller (257-512)

NOTE: ONLY ONE SWITCH SHOULD BE ON AT A TIME.

Chart 2. Personality DIP Switch Settings

The Intellabeam Fixture - Setup

ADDRESS

The address DIP switch on the rear of the fixture allows for the selection of up to 512 control addresses. The DIP switch settings corresponding to the fixture addresses are outlined in the following charts. The Lightwave Research Intellabeam controller can address 24 different fixtures simultaneously. The 24 possible address numbers for a single controller are designated on the chart by a dash before the address number and after the DIP switch settings. The switch settings for DMX512 output protocol are also found in the following charts.

NOTE: DMX-512 CONTROL REQUIRES THAT THE PERSONALITY DIP SWITCH ALSO BE SET FOR EITHER LOW (CHANNELS 1-256) OR HIGH (CHANNELS 257-512) ADDRESSES.

DMX-512 CHANNEL AND ADDRESS TABLE

CHANNEL #	SWITCHES ON	CHANNEL #	SWITCHES ON
- 001 (257)	NONE -	046 (302)	1, 3, 4, 6
- 002 (258)	1 -	047 (303)	2, 3, 4, 6
- 003 (259)	2 -	048 (304)	1, 2, 3, 4, 6
- 004 (260)	1, 2 -	049 (305)	5, 6
- 005 (261)	3 -	050 (306)	1, 5, 6
- 006 (262)	1, 3 -	051 (307)	2, 5, 6
- 007 (263)	2, 3 -	052 (308)	1, 2, 5, 6
- 008 (264)	1, 2, 3 -	053 (309)	3, 5, 6
- 009 (265)	4 -	054 (310)	1, 3, 5, 6
- 010 (266)	1, 4 -	055 (311)	2, 3, 5, 6
- 011 (267)	2, 4 -	056 (312)	1, 2, 3, 5, 6
- 012 (268)	1, 2, 4 -	057 (313)	4, 5, 6
- 013 (269)	3, 4 -	058 (314)	1, 4, 5, 6
- 014 (270)	1, 3, 4 -	059 (315)	2, 4, 5, 6
- 015 (271)	2, 3, 4 -	060 (316)	1, 2, 4, 5, 6
- 016 (272)	1, 2, 3, 4 -	061 (317)	3, 4, 5, 6
- 017 (273)	5 -	062 (318)	1, 3, 4, 5, 6
- 018 (274)	1, 5 -	063 (319)	2, 3, 4, 5, 6
- 019 (275)	2, 5 -	064 (320)	1, 2, 3, 4, 5, 6
- 020 (276)	1, 2, 5 -	065 (321)	7
- 021 (277)	3, 5 -	066 (322)	1, 7
- 022 (278)	1, 3, 5 -	067 (323)	2, 7
- 023 (279)	2, 3, 5 -	068 (324)	1, 2, 7
- 024 (280)	1, 2, 3, 5 -	069 (325)	3, 7
025 (281)	4, 5	070 (326)	1, 3, 7
026 (282)	1, 4, 5	071 (327)	2, 3, 7
027 (283)	2, 4, 5	072 (328)	1, 2, 3, 7
028 (284)	1, 2, 4, 5	073 (329)	4, 7
029 (285)	3, 4, 5	074 (330)	1, 4, 7
030 (286)	1, 3, 4, 5	075 (331)	2, 4, 7
031 (287)	2, 3, 4, 5	076 (332)	1, 2, 4, 7
032 (288)	1, 2, 3, 4, 5	077 (333)	3, 4, 7
033 (289)	6	078 (334)	1, 3, 4, 7
034 (290)	1, 6	079 (335)	2, 3, 4, 7
035 (291)	2, 6	080 (336)	1, 2, 3, 4, 7
036 (292)	1, 2, 6	081 (337)	5, 7
037 (293)	3, 6	082 (338)	1, 5, 7
038 (294)	1, 3, 6	083 (339)	2, 5, 7
039 (295)	2, 3, 6	084 (340)	1, 2, 5, 7
040 (296)	1, 2, 3, 6	085 (341)	3, 5, 7
041 (297)	4, 6	086 (342)	1, 3, 5, 7
042 (298)	1, 4, 6	087 (343)	2, 3, 5, 7
043 (299)	2, 4, 6	088 (344)	1, 2, 3, 5, 7
044 (300)	1, 2, 4, 6	089 (345)	4, 5, 7
045 (301)	3, 4, 6	090 (346)	1, 4, 5, 7

DMX channels 1-256 require personality switch 3 to be on, channels 257-512 (in parentheses) require personality switch 4 to be on.

DMX-512 CHANNEL AND ADDRESS TABLE

CHANNEL #	SWITCHES ON	CHANNEL #	SWITCHES ON
091 (347)	2, 4, 5, 7	136 (392)	1, 2, 3, 8
092 (348)	1, 2, 4, 5, 7	137 (393)	4, 8
093 (349)	3, 4, 5, 7	138 (394)	1, 4, 8
094 (350)	1, 3, 4, 5, 7	139 (395)	2, 4, 8
095 (351)	2, 3, 4, 5, 7	140 (396)	1, 2, 4, 8
096 (352)	1, 2, 3, 4, 5, 7	141 (397)	3, 4, 8
097 (353)	6, 7	142 (398)	1, 3, 4, 8
098 (354)	1, 6, 7	143 (399)	2, 3, 4, 8
099 (355)	2, 6, 7	144 (400)	1, 2, 3, 4, 8
100 (356)	1, 2, 6, 7	145 (401)	5, 8
101 (357)	3, 6, 7	146 (402)	1, 5, 8
102 (358)	1, 3, 6, 7	147 (403)	2, 5, 8
103 (359)	2, 3, 6, 7	148 (404)	1, 2, 5, 8
104 (360)	1, 2, 3, 6, 7	149 (405)	3, 5, 8
105 (361)	4, 6, 7	150 (406)	1, 3, 5, 8,
106 (362)	1, 4, 6, 7	151 (407)	2, 3, 5, 8
107 (363)	2, 4, 6, 7	152 (408)	1, 2, 3, 5, 8
108 (364)	1, 2, 4, 6, 7	153 (409)	4, 5, 8
109 (365)	3, 4, 6, 7	154 (410)	1, 4, 5, 8
110 (366)	1, 3, 4, 6, 7	155 (411)	2, 4, 5, 8
111 (367)	2, 3, 4, 6, 7	156 (412)	1, 2, 4, 5, 8
112 (368)	1, 2, 3, 4, 6, 7	157 (413)	3, 4, 5, 8
113 (369)	5, 6, 7	158 (414)	1, 3, 4, 5, 8
114 (370)	1, 5, 6, 7	159 (415)	2, 3, 4, 5, 8
115 (371)	2, 5, 6, 7	160 (416)	1, 2, 3, 4, 5, 8
116 (372)	1, 2, 5, 6, 7	161 (417)	6, 8
117 (373)	3, 5, 6, 7	162 (418)	1, 6, 8
118 (374)	1, 3, 5, 6, 7	163 (419)	2, 6, 8
119 (375)	2, 3, 5, 6, 7	164 (420)	1, 2, 6, 8
120 (376)	1, 2, 3, 5, 6, 7	165 (421)	3, 6, 8
121 (377)	4, 5, 6, 7	166 (422)	1, 3, 6, 8
122 (378)	1, 4, 5, 6, 7	167 (423)	2, 3, 6, 8
123 (379)	2, 4, 5, 6, 7	168 (424)	1, 2, 3, 6, 8
124 (380)	1, 2, 4, 5, 6, 7	169 (425)	4, 6, 8
125 (381)	3, 4, 5, 6, 7	170 (426)	1, 4, 6, 8
126 (382)	1, 3, 4, 5, 6, 7	171 (427)	2, 4, 6, 8
127 (383)	2, 3, 4, 5, 6, 7	172 (428)	1, 2, 4, 6, 8
128 (384)	1, 2, 3, 4, 5, 6, 7	173 (429)	3, 4, 6, 8
129 (385)	8	174 (430)	1, 3, 4, 6, 8
130 (386)	1, 8	175 (431)	2, 3, 4, 6, 8
131 (387)	2, 8	176 (432)	1, 2, 3, 4, 6, 8
132 (388)	1, 2, 8	177 (433)	5, 6, 8
133 (389)	3, 8	178 (434)	1, 5, 6, 8
134 (390)	1, 3, 8	179 (435)	2, 5, 6, 8
135 (391)	2, 3, 8	180 (436)	1, 2, 5, 6, 8

DMX channels 1-256 require personality switch 3 to be on, channels 257-512 (in parentheses) require personality switch 4 to be on.

DMX-512 CHANNEL AND ADDRESS TABLE

CHANNEL #	SWITCHES ON	CHANNEL #	SWITCHES ON
181 (437)	3, 5, 6, 8	226 (482)	1, 6, 7, 8
182 (438)	1, 3, 5, 6, 8	227 (483)	2, 6, 7, 8
183 (439)	2, 3, 5, 6, 8	228 (484)	1, 2, 6, 7, 8
184 (440)	1, 2, 3, 5, 6, 8	229 (485)	3, 6, 7, 8
185 (441)	4, 5, 6, 8	230 (486)	1, 3, 6, 7, 8
186 (442)	1, 4, 5, 6, 8	231 (487)	2, 3, 6, 7, 8
187 (443)	2, 4, 5, 6, 8	232 (488)	1, 2, 3, 6, 7, 8
188 (444)	1, 2, 4, 5, 6, 8	233 (489)	4, 6, 7, 8
189 (445)	3, 4, 5, 6, 8	234 (490)	1, 4, 6, 7, 8
190 (446)	1, 3, 4, 5, 6, 8	235 (491)	2, 4, 6, 7, 8
191 (447)	2, 3, 4, 5, 6, 8	236 (492)	1, 2, 4, 6, 7, 8
192 (448)	1, 2, 3, 4, 5, 6, 8	237 (493)	3, 4, 6, 7, 8
193 (449)	7, 8	238 (494)	1, 3, 4, 6, 7, 8
194 (450)	1, 7, 8	239 (495)	2, 3, 4, 6, 7, 8
195 (451)	2, 7, 8	240 (496)	1, 2, 3, 4, 6, 7, 8
196 (452)	1, 2, 7, 8	241 (497)	5, 6, 7, 8
197 (453)	3, 7, 8	242 (498)	1, 5, 6, 7, 8
198 (454)	1, 3, 7, 8	243 (499)	2, 5, 6, 7, 8
199 (455)	2, 3, 7, 8	244 (500)	1, 2, 5, 6, 7, 8
200 (456)	1, 2, 3, 7, 8	245 (501)	3, 5, 6, 7, 8
201 (457)	4, 7, 8	246 (502)	1, 3, 5, 6, 7, 8
202 (458)	1, 4, 7, 8	247 (503)	2, 3, 5, 6, 7, 8
203 (459)	2, 4, 7, 8	248 (504)	1, 2, 3, 5, 6, 7, 8
204 (460)	1, 2, 4, 7, 8	249 (505)	4, 5, 6, 7, 8
205 (461)	3, 4, 7, 8	250 (506)	1, 4, 5, 6, 7, 8
206 (462)	1, 3, 4, 7, 8	251 (507)	2, 4, 5, 6, 7, 8
207 (463)	2, 3, 4, 7, 8	252 (508)	1, 2, 4, 5, 6, 7, 8
208 (464)	1, 2, 3, 4, 7, 8	253 (509)	3, 4, 5, 6, 7, 8
209 (465)	5, 7, 8	254 (510)	1, 3, 4, 5, 6, 7, 8
210 (466)	1, 5, 7, 8	255 (511)	2, 3, 4, 5, 6, 7, 8
211 (467)	2, 5, 7, 8	256 (512)	ALL ON
212 (468)	1, 2, 5, 7, 8		
213 (469)	3, 5, 7, 8		
214 (470)	1, 3, 5, 7, 8		
215 (471)	2, 3, 5, 7, 8		
216 (472)	1, 2, 3, 5, 7, 8		
217 (473)	4, 5, 7, 8		
218 (474)	1, 4, 5, 7, 8		
219 (475)	2, 4, 5, 7, 8		
220 (476)	1, 2, 4, 5, 7, 8		
221 (477)	3, 4, 5, 7, 8		
222 (478)	1, 3, 4, 5, 7, 8		
223 (479)	2, 3, 4, 5, 7, 8		
224 (480)	1, 2, 3, 4, 5, 7, 8		
225 (481)	6, 7, 8,		

DMX channels 1-256 require personality switch 3 to be on, channels 257-512 (in parentheses) require personality switch 4 to be on.

The Intellabeam Fixture - Setup

LAMP INFORMATION

Each fixture comes from the factory supplied with an MSR 400 lamp. The lamp is packaged inside of a lamp carton for shipping purposes, so it is necessary to install the lamp into the fixture by carefully following the lamp installation and adjustment instructions. When installing the lamp, be sure to retain the protective sleeve over the quartz envelope during insertion. **Never touch the bulb with bare hands.** If it is touched, remove all oil and grease using a cloth moistened with methylated spirit before operating the lamp.

INSTALLATION AND REPLACEMENT

To install the lamp in the fixture, make sure the power is turned off to the unit. Remove both the bottom access door and the top access door. Position the lamp socket as far back as possible to the rear of the fixture (refer to Figure 9. Lamp Adjustment, for the location of the lamp adjustment screws). With the lamp adjustment screws loose, slide the socket back and insert the end of the lamp into the reflector slightly to allow the base of the lamp to fit into the socket. Once the lamp is properly seated, slide the reflector forward until its opening is past the arc gap of the lamp. Replace the top access door. After lamping and positioning the fixtures in their desired locations, apply power and ignite the lamps. The lamps may be ignited one of two ways; 1. the personality DIP switches on the back of the fixtures can be set to the setup mode (#2 ON), or 2. the individual fixtures can be addressed by the controller (at maximum intensity setting). If the Intellabeam controller is used, it is simplest to go to a non-initialized page (one that is not programmed) and open the gates (see page 39, CREATING A LOOP).

ADJUSTMENT AND FOCUS

Once the gate is open and the beam is visible, the lens tube at the front of the fixture will need to be adjusted for a sharp focus on the floor or a wall. This is accomplished by loosening the thumbscrew securing the lens tube in the fixture (Figure 6. Fixture Front View) and adjusting the position of the lens tube.

OPTIMIZATION

The lamp must be correctly positioned in the reflector to maximize the light output and the uniformity of the beam. The following discussion will assist you in optimizing the lamp in order to obtain the maximum output and sharpness from your fixtures.

The Intellabeam Fixture - Setup

Remove the bottom access door to reveal three lamp adjustment thumbscrews (Figure 9. Lamp Adjustment). With the lamps on and the beams sharply focussed on the floor or a wall, loosen the two black thumbscrews slightly and slide the lamp back and forth in the reflector to obtain the brightest, most evenly distributed beam. Once you are satisfied that the intensity and the beam distribution is optimal, then re-tighten the thumbscrews. Next, adjust one setting at a time to further optimize the output. Loosen one of the black thumbscrews and adjust the left to right alignment of the lamp, tighten it back down, and adjust the other side. Then adjust the height of the lamp using the white thumbscrew in the center. The lens tube may also need adjustment again after the lamp is optimized. Be certain to securely tighten the lens tube retaining thumbscrew once you have finished.

REPLACEMENT

If a lamp failure occurs, be sure to observe the diagnostic LED indicators (see page 23, DIAGNOSTIC LED INDICATORS) to make sure that the failure is not a symptom of another problem. If a lamp fails to strike on initial power up and the yellow LED indicator on the rear panel of the fixture is flashing, then the lamp may be bad, or it is too hot to strike. If the lamp does strike initially but then extinguishes by itself, or if power is interrupted to the unit, then the lamps will have to cool down for a period of 10 to 15 minutes before trying to re-start the lamp.

CAUTION: ALWAYS ALLOW THE LAMP TO COOL FOR 10 TO 15 MINUTES BEFORE ATTEMPTING TO REPLACE OR RE-STRIKE IT. TO REPLACE THE LAMP, FOLLOW THE LAMP INSTALLATION, ADJUSTMENT AND OPTIMIZATION INSTRUCTIONS OUTLINED IN PARTS A., B., AND C. ABOVE.

INTELLABEAM

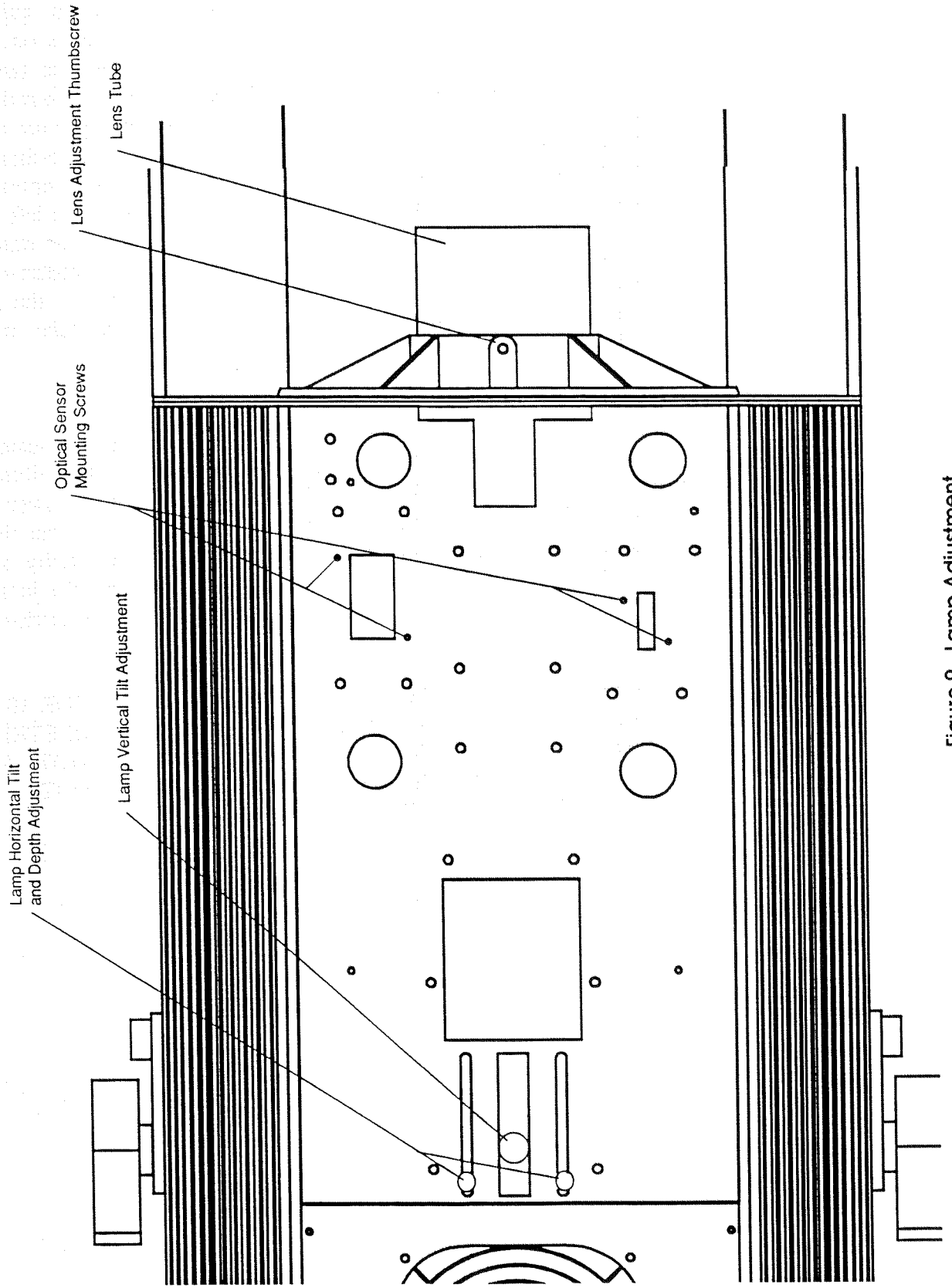


Figure 9. Lamp Adjustment

AVERAGE LIFE

The MSR 400 lamp has an average life of 500 hours. Lamps are rated by the lamp manufacturer for average service life based upon a statistical sample of a group of test lamps. The actual life is directly dependent upon the input voltage and the number of times it is turned on and off. High voltages and spikes that normally contribute to the premature failure of a lamp do not adversely affect the Intellabeam lamp due to the voltage regulation in the hybrid power supply. But the number of times a lamp is switched on and off will have a definite impact on the life of the lamp. In addition, as a lamp ages, it tends to lose some of its intensity. Normally, this is not noticeable because all of the lamps in a system are aging at approximately the same rate. But if one lamp is replaced before the others in the system, it could be noticeably brighter.

MAINTENANCE / TROUBLESHOOTING AND REPAIR

General maintenance and cleaning should be done on a regular basis. When doing so, all power should be shut off to the unit as well as to the controller.

GENERAL MAINTENANCE AND CLEANING

CAUTION: BEFORE OPENING ANY OF THE ACCESS DOORS TO CLEAN THE FIXTURES, MAKE SURE THAT THE POWER IS DISCONNECTED TO PREVENT POSSIBLE ELECTRICAL SHOCK OR ACCIDENTAL EXPOSURE TO ULTRAVIOLET RADIATION.

The fixtures should be kept clean of all dust and dirt that could cause overheating or malfunctions. To clean, use a soft cloth or a tissue. For the lens and mirror, a mild glass cleaning solution should be used. Be careful not to apply too much pressure near the edges of the mirror when cleaning. To clean the color wheel, gobo wheel, gate wheel, iris, reflector and infrared filter, open the top access door by loosening the thumbscrew. The stepper motors and other internal components should be cleaned with a feather duster or a low pressure compressed air source to remove any accumulated dirt or dust. Special care should be taken when cleaning around the iris because it is very thin, delicate metal and can be easily damaged. The color wheel can be removed and cleaned with a glass cleaning solution and a soft cloth. Be sure that all wheels are replaced in their proper orientation or they could be mismatched with the rest of the system.

DIAGNOSTIC LED INDICATORS

Each Intellabeam fixture has three LED indicators on the rear panel near the line cord. The fan indicator is red, the lamp indicator is yellow, and the motor indicator is green. Their purpose is to indicate the logic activity of their corresponding circuits.