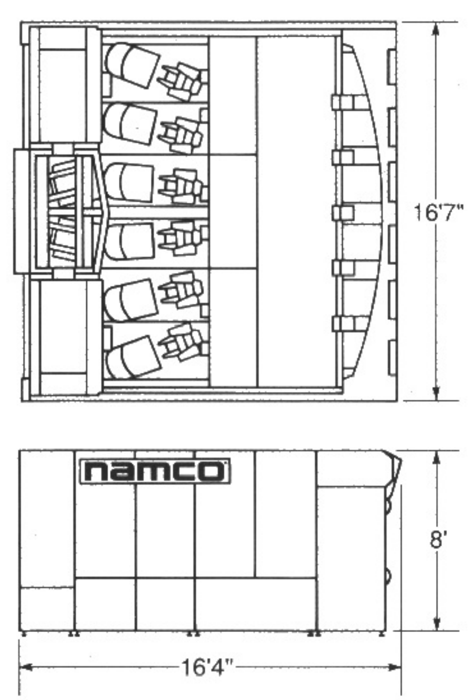
GALAXIAN³™



namco®
The Game Creator

namco

GALAXIAN³

TM

PROJECT DRAGOON

THEATER 6™

INSTALLATION MANUAL

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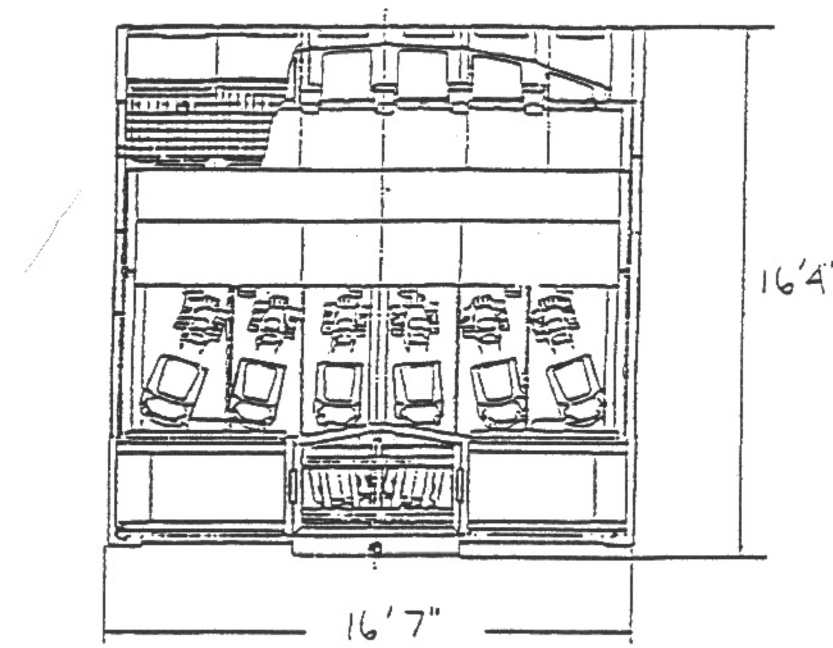
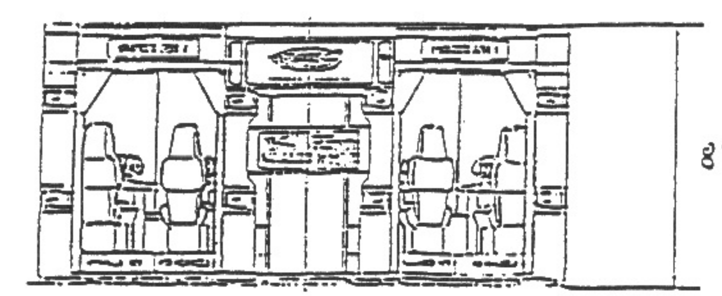
I. SPECIFICATIONS

A.	Power Supply	110v/60Hz
B.	Power Consumption	1400W
C.	Projector System	Two three-tube projectors (for 110" screen)
D.	Weight	2800kg/6200lbs (installed)
E.	Dimensions	16'7"-16'4"-8' (w-d-h) (270 sqft)





NOTE: Specifications are subject to change without prior notice. The manufacturer shall not be liable in any event for incidental or consequential damages in connection with, or arising out of, the remodeling of the machine without our knowledge of such remodeling.

II. PRECAUTIONS

A. Operation of this product should be done with a power source as close to **110v** as possible.

B. Be sure to use a **grounded** outlet and plug.

C. Use two power points capable of **10A** each or a single source (with two outlets) capable of **20A**.

D. **HIGH VOLTAGE** resides inside projector. Use extreme care when making adjustments.

E. The only power switch for the unit is the breaker assembly in Control Box (R).

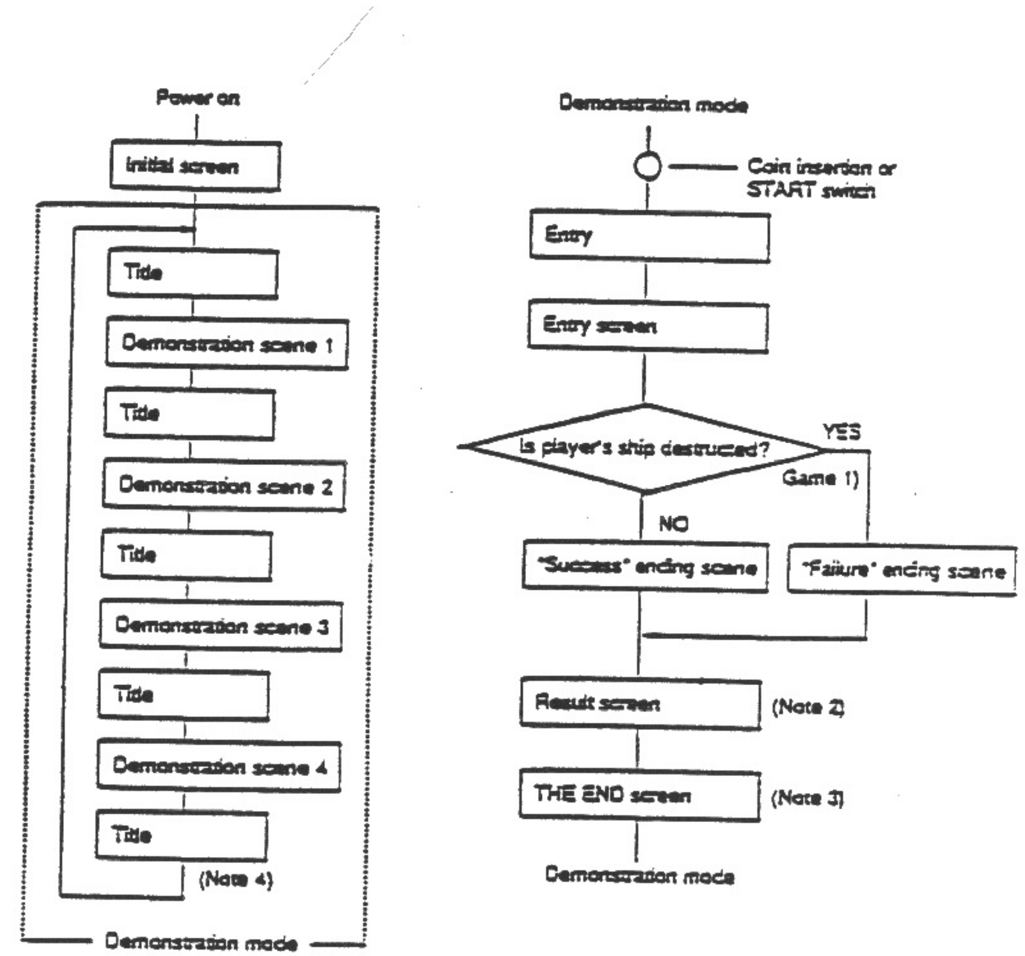
F. Be sure to **remove power before** replacing parts or disconnecting cables.

G. Return any defective PCBs to your distributor for repairs. The IC's could be damaged by the internal voltage generated by a multimeter so **DO NOT** even perform a conductivity test.

III. HOW TO PLAY A GAME

1. Flow of a Game

The flow of a game after you turn on this product is as follows:



(Note 1) • When the shield is damaged more than zero, the ship is destroyed, all players finish the game, and the "failure" ending scene is displayed.

(Note 2) • On the result screen, the ranking of players appears. Only when a player succeeds in a game, a laurel crown appears over the first place. (Note that when only one player plays a game or when there is two or more-way tie for the first place, the laurel crown does not appear.)

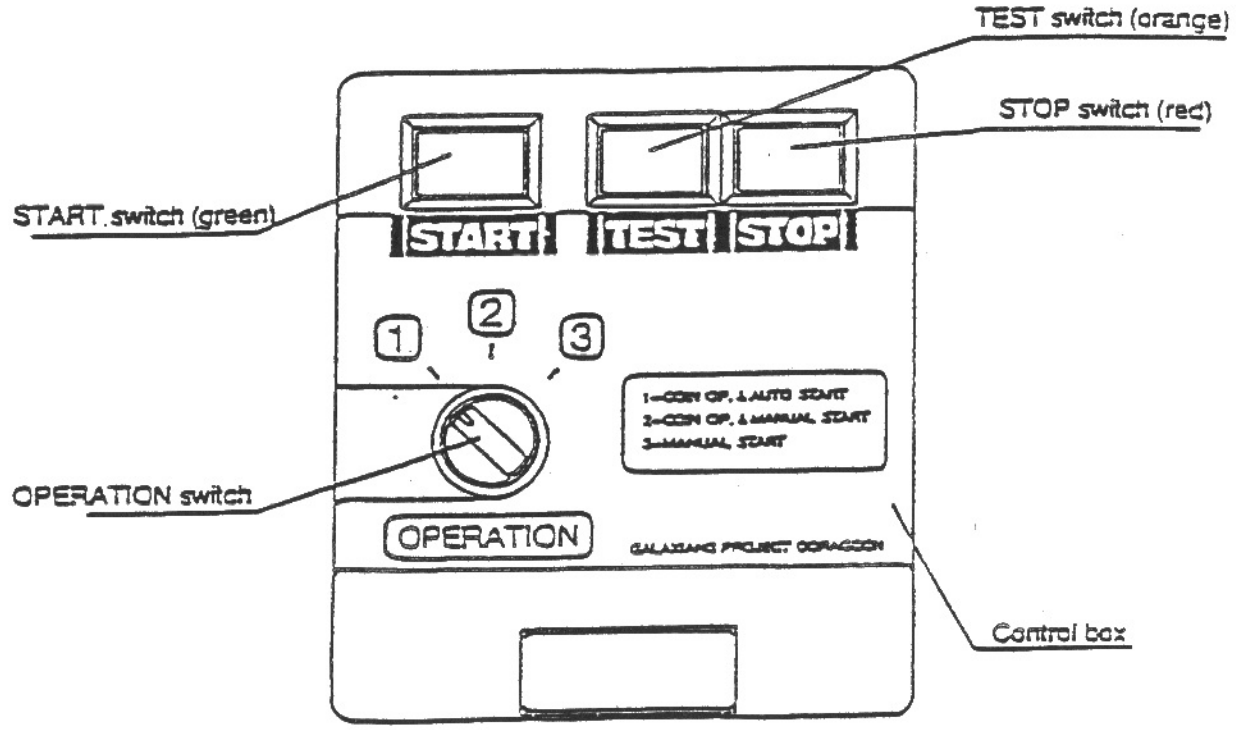
(Note 3) • When OPERATION 1 or 2 is selected, the THE END screen disappears and the entry screen appears five seconds after THE END appears on the THE END screen if a coin is inserted in advance. When a player inserts a coin after THE END appears, the entry screen appears immediately.
When OPERATION 3 is selected, the entry screen appears when the START switch is pressed.

• To exit the game mode in force earlier, press the STOP switch to display the title.

• See the following "4 Operation Switch" of the section 2 for descriptions of OPERATION 1, 2 and 3.

(Note 4) • The game story is told in English when stars are displayed in a background video.

IV. OPERATIONS



The control box is on the Control Assy located on the side of the Gate Assy.

① START switch
Starts a game when the OPERATION switch is set to Operation mode 2 or 3.

② TEST switch
Enters Test mode. When you press this switch again, you exit Test mode, initialize the product, and enables the title screen to appear.

③ STOP switch
When you press this switch during a game, the game stops and the title screen appears.

④ OPERATION switch

1 · · · COIN OP.&AUTO START
- Sets the coin operation mode without a clerk in charge.
- Automatically starts the game in 30 seconds after a player's entry.

2 · · · COIN OP.&MANUAL START
- Sets the coin operation mode with a clerk in charge.
- A clerk prompts a player to start an entry, and press the START switch to start a game when the product is ready for a game.

3 · · · MANUAL START
- Requires a clerk in charge. When the clerk presses the START switch, the entry screen appears.
- A player sitting on the chair can start an entry by pulling the trigger of his/her gun.
- The clerk has to check the entry, then press the START switch to start a game. (This setting is useful for its rapid turnover of players because the players do not pay the game fee by themselves but the clerk collects the fee from them in advance.)

A. BEFORE INSTALLATION

1) Checking where to install:

Location: Decide the place where to install the unit and check to see if it is large enough.

Lighting: Check to see if you can control the lights for the installation site and those for the surrounding area.

Fire equipment & emergency exit: Verify locations of extinguisher, sprinkler and emeregency exits.

Power: Check for available/appropriate power points.

2) Reminder:

In this manual, all units are numbered 1 to 6 from the left, as you face the screen. In the same manner, the **left** unit is called (L), the **middle** one (C) and the **right** one (R). For direction, the **screen** side is called **"front"** and the **gate** side is **"rear"**.

[1] SCREEN BASE

A. Put screen base assemblies at position desired for installation.
Be sure **'C'** base rests on **TOP** of lips from **'L'** and **'R'** bases.

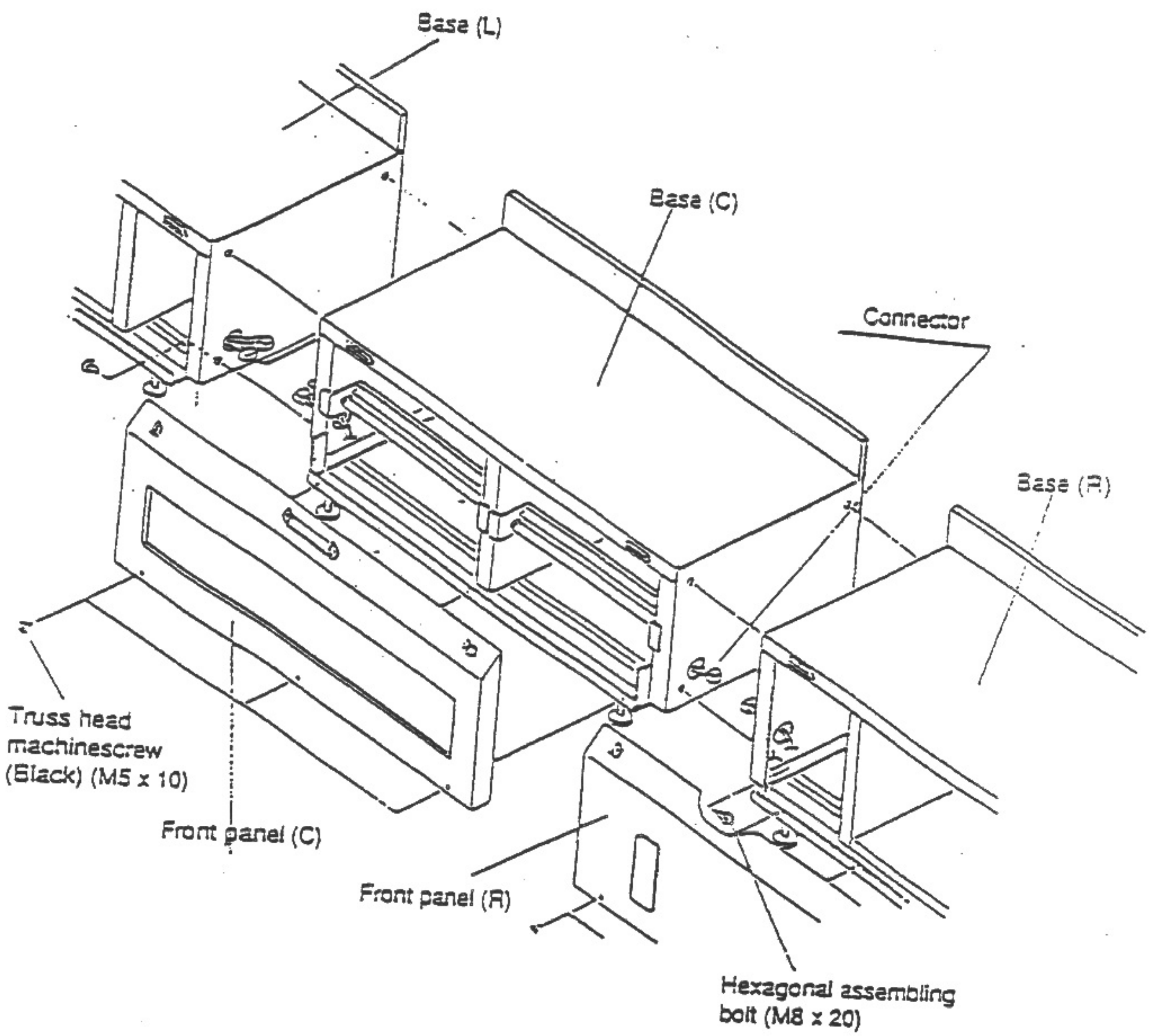
B. Feed cables into associated holes and join connectors.

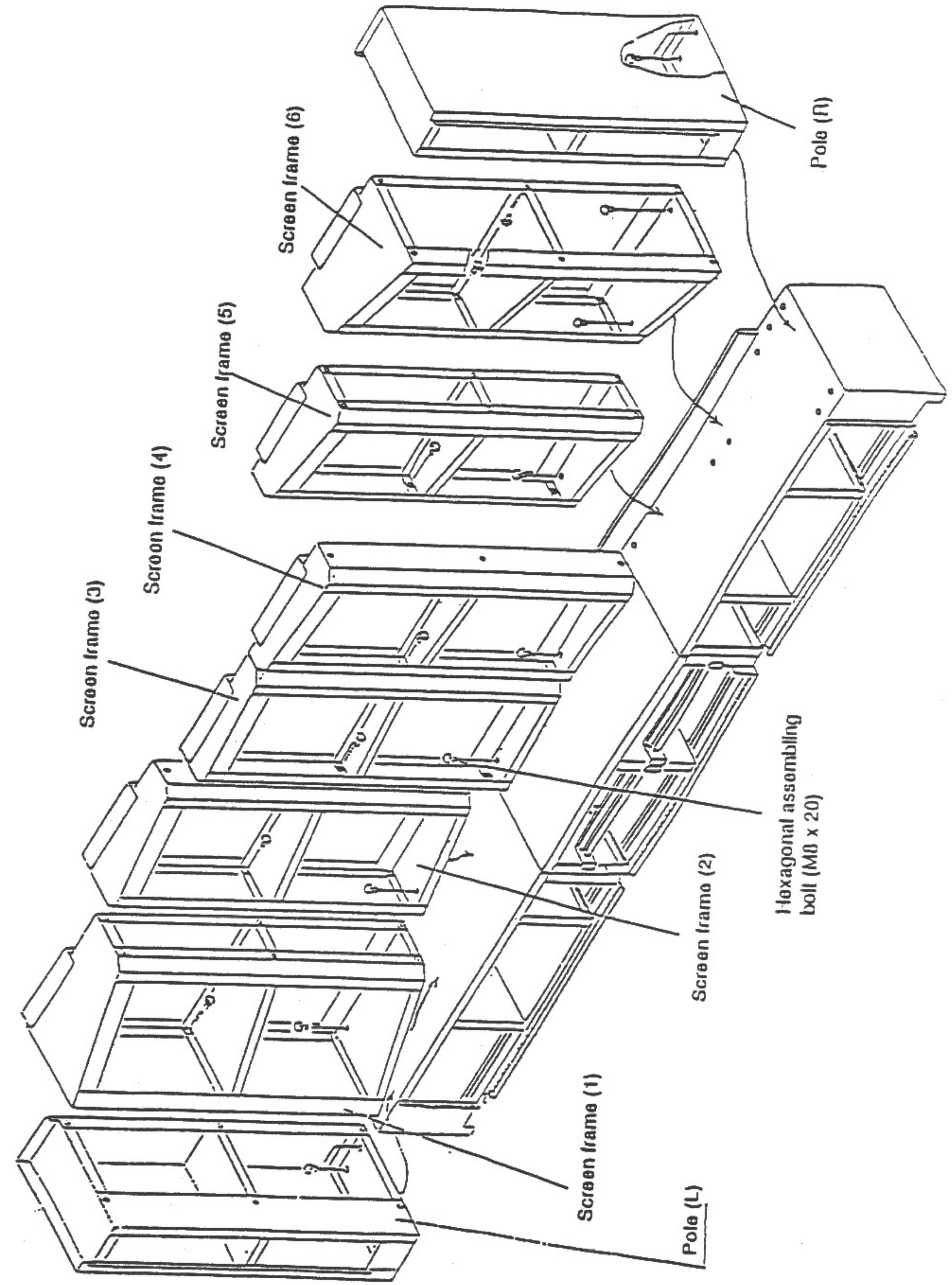
C. Loosely join bases with four **M8-20** bolts (each).

D. Spin level adjusters DOWN (3-3/8") on **'C'** base to raise unit off of casters. Maintain/verify level of unit.

E. Adjust level adjusters on **'L'** and **'R'** bases to level all three screen bases horizontally.

F. Match base edges together and tighten bolts.





[2-1] SCREEN FRAME

A. Exactly center frames '3' and '4' (flush with back edge of base) on screen base assembly and loosely fasten at bottom with **M8-20** bolts.

BE EXTREMELY CAUTIOUS AROUND FRAME EDGES AS SOME OF THEM ARE RAZOR SHARP

B. Align 'mating' edges in middle and fasten together with **M8-20** bolts.

C. Mount screen frame '2' (to the left of frame '3') in the same manner. Repeat with screen frame '1' (to the left of frame '2').

D. Mount screen frame '5' (to the right of frame '4') and '6' (to the right of frame '5').

[2-2] POLES (R) and (L)

A. Mount both poles (flush with back edge of base) and loosely fasten bottoms with **M8-20** bolts.

B. Align outer edges of poles with screen base assembly, verify you can start **M8-20** bolts between poles and screen frames, then tighten down ALL bolts fastening frames and poles to base assembly.

C. Tighten bolts fastening poles to screen frames.

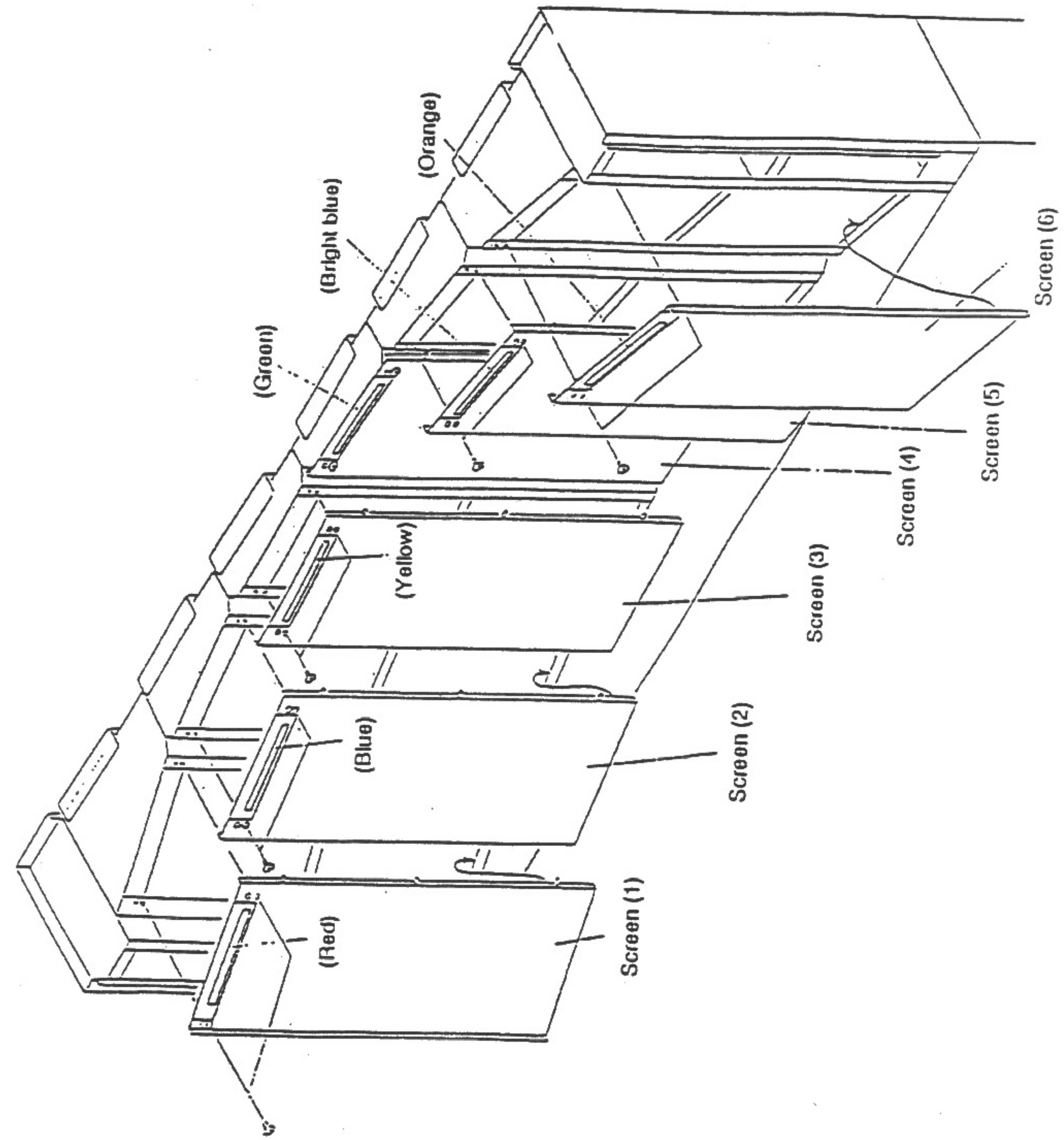
[2-3] SCREEN INSTALLATION

A. Install the '**green**' screen (**4**) by 'hooking' the bottom to the screen frame (bottom) and fastening the top with two black **M5x10** screws in the **LOWER** holes.

B. Install the '**yellow**' screen (**3**) in the same manner, align the joints on the right edge of the '**yellow**' screen with the holes on the left edge of the '**green**' screen and slide the two tightly together (eliminating any gap).

C. Install the (**dark**) '**blue**' (**2**) screen and the '**red**' (**1**) screen in the same manner.

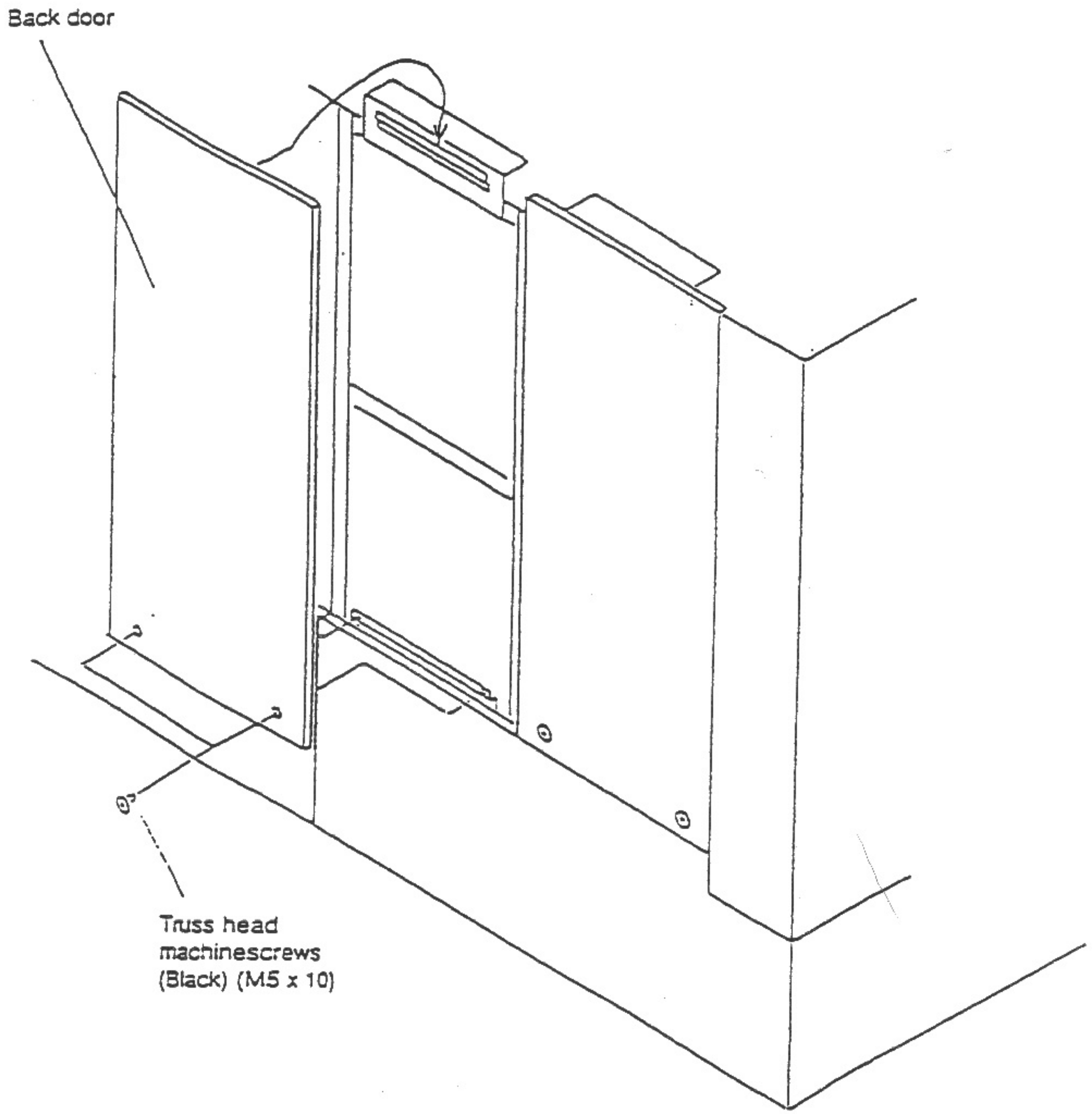
D. Install the (**light**) '**blue**' (**5**) screen and the '**orange**' (**6**) screen in the same manner.



[2-4] BACK DOOR

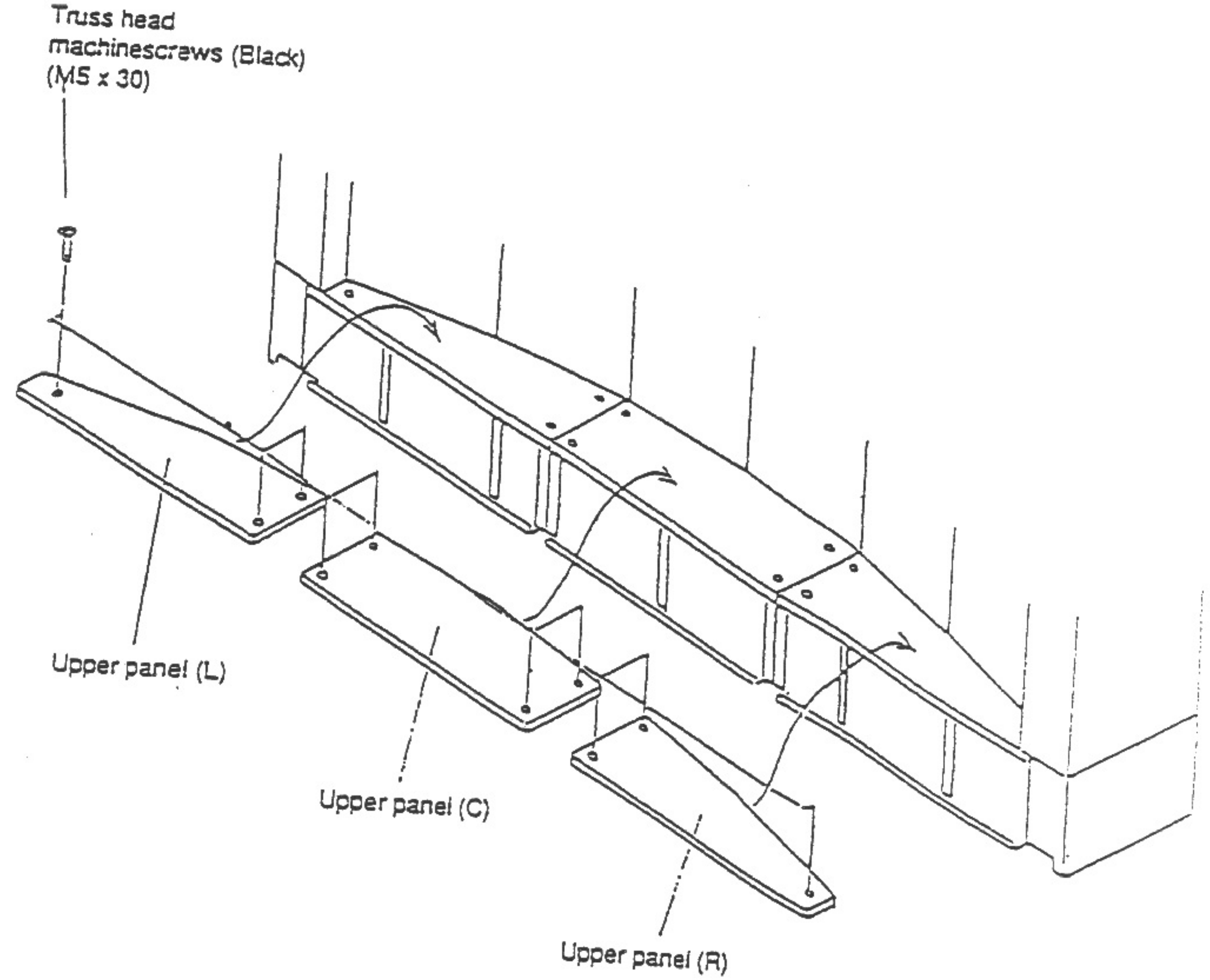
A. Hang the 'folded edge' at the top side of the **back door** assembly on the hook at the back of the **screen frame** and fasten at the bottom with two (black) **M5x10** screws.

B. Using equal spacing between, install the remaining doors.



[2-5] SCREEN BASE PANELS

A. Install the (C) **upper panel,** using black **M5x30** screws, and then the (L) and (R) **upper panels.**



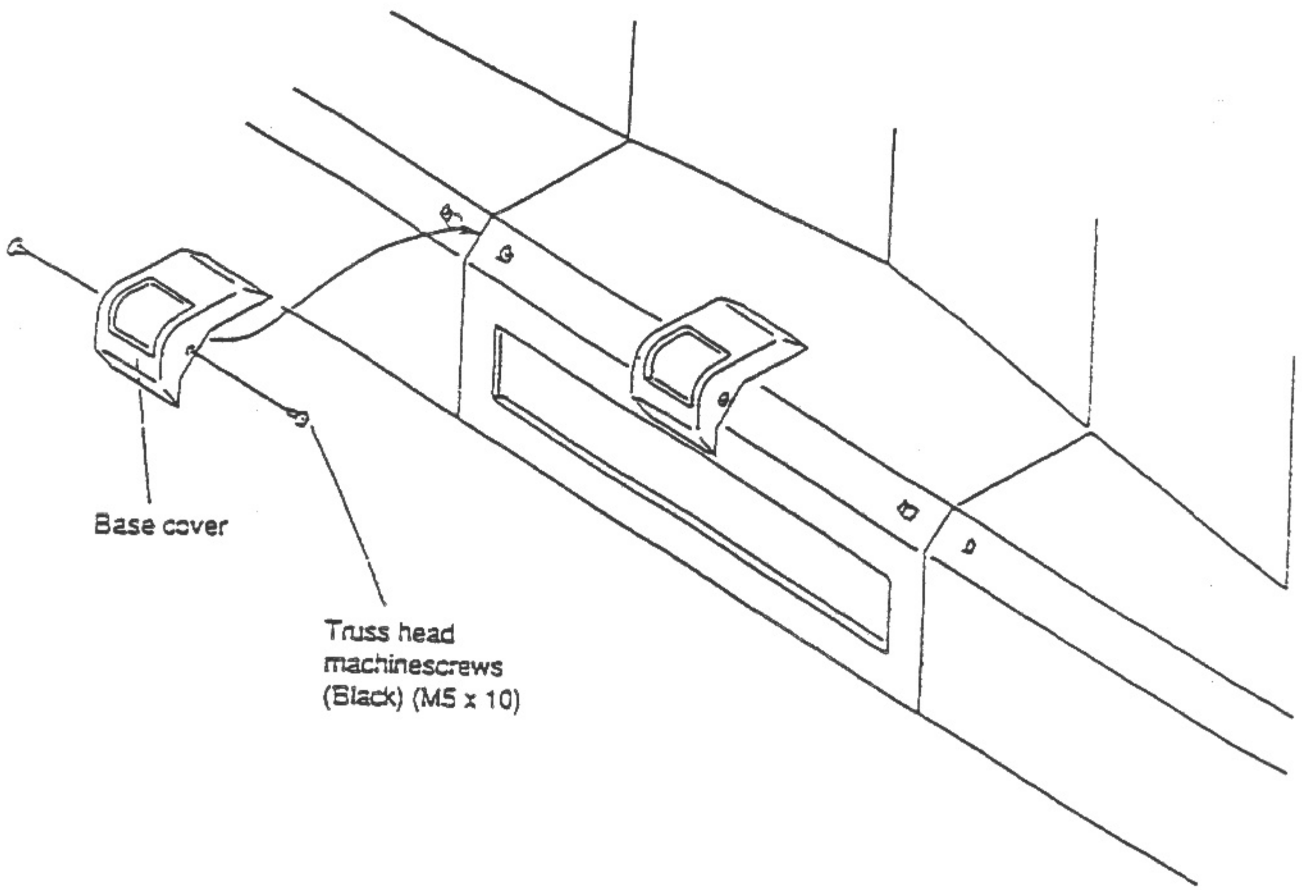
[2-6] FRONT PANEL

A. Verify/install fluorescent lamp(s) in screen base (C).

B. Hang the three **front panels** and fasten with black **M5x10** screws.

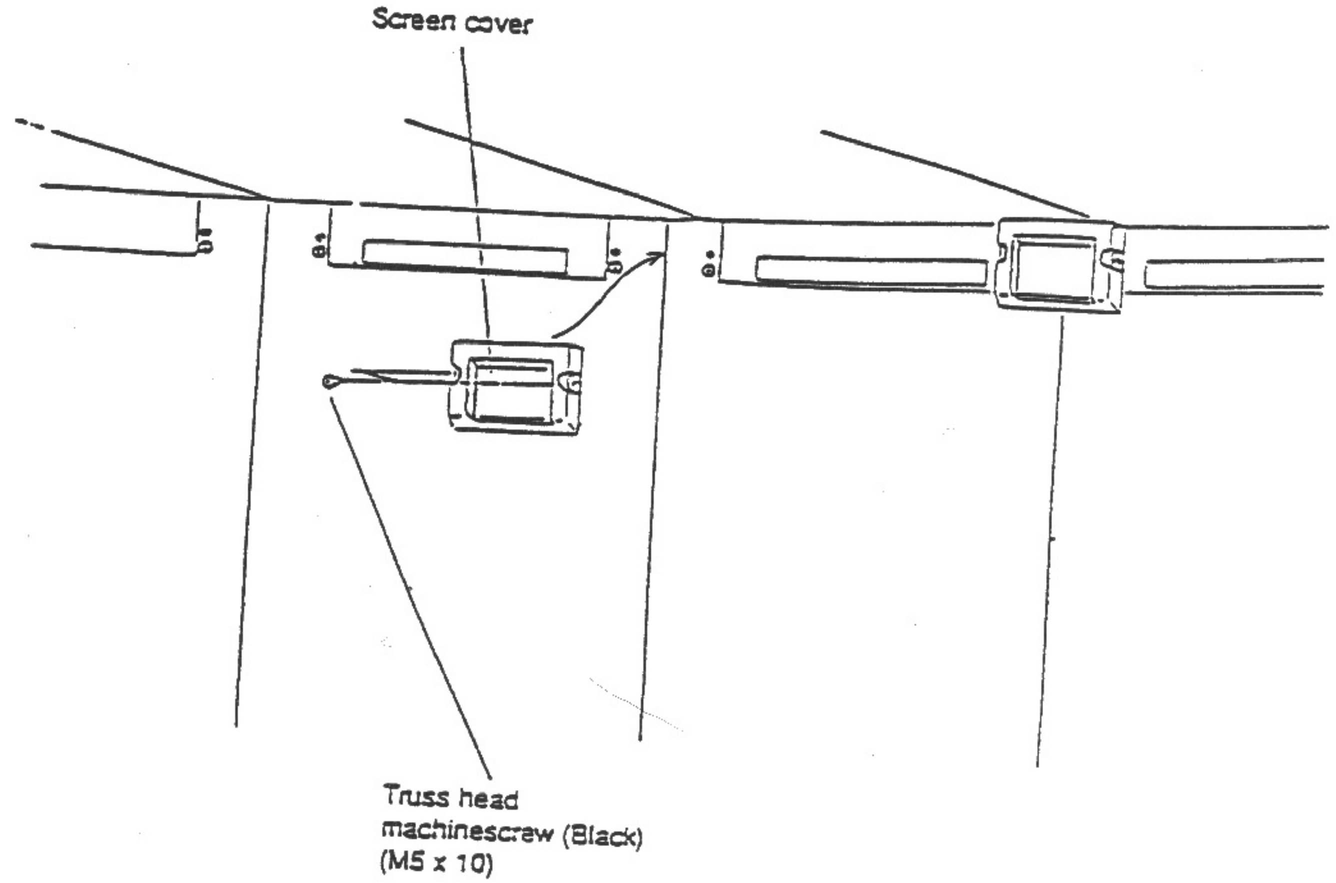
[2-7] BASE COVER

A. Install the five **base covers** on the screen base with black **M5x10** screws. Put the **longer** side of the cover on the **top** side.



[2-8] SCREEN COVER

A. Fasten five **screen covers** on the upper parts of the main screen using **M5x10** screws.



[3-1] WALL BASE

A. Mount **wall base** (B) on the lip of **(LH) screen assembly** and loosely fasten with **M8x20** bolts. Feed the cabling through the holes and join the connectors.

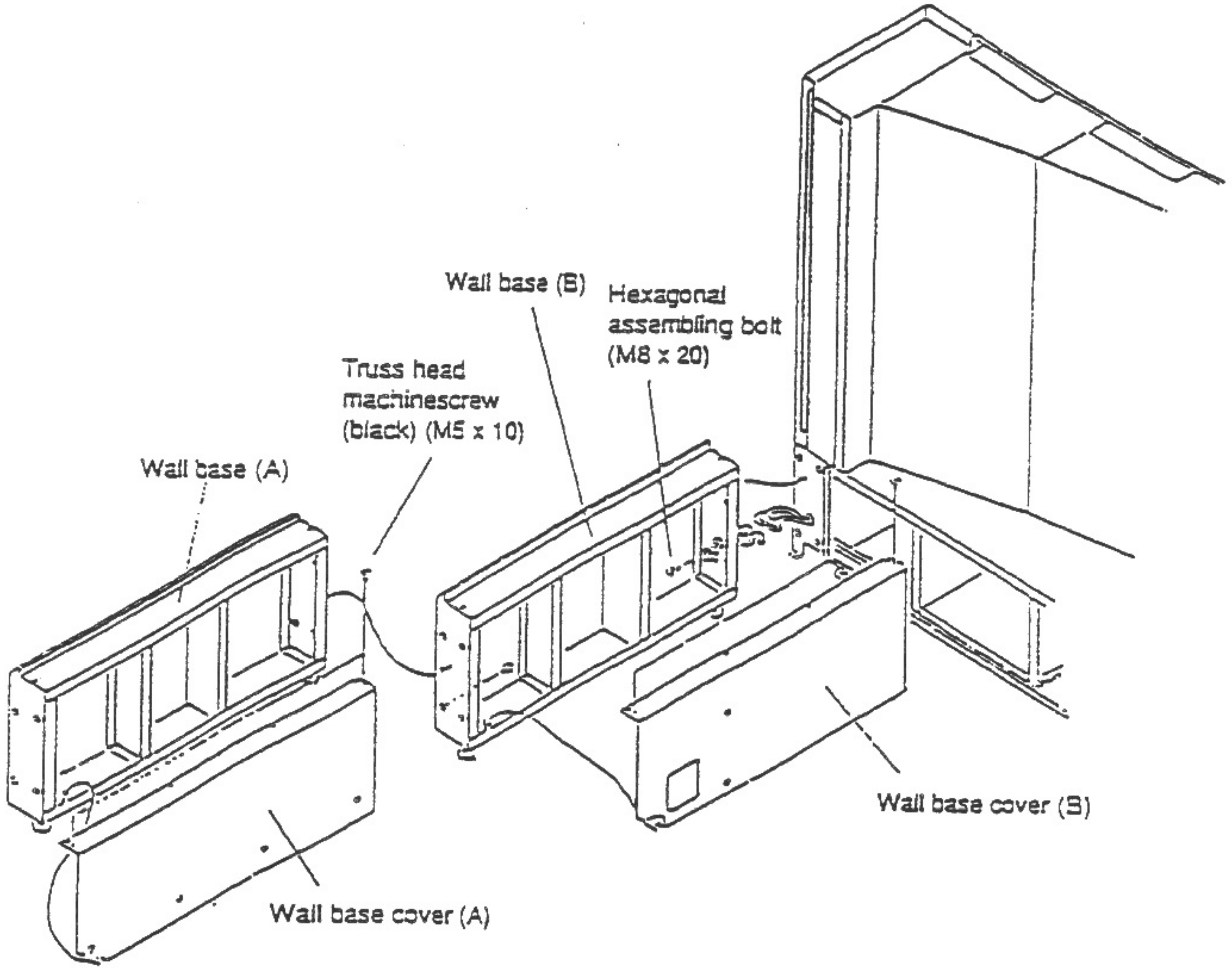
B. Spin the level adjusters DOWN (1--3/4") and align height with screen base. Tighten bolts.

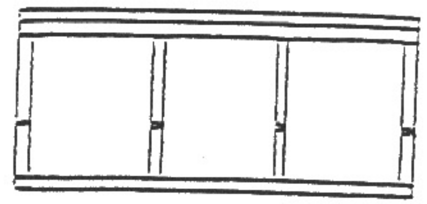
C. In the same fashion, mount **wall base** (B) on (RH) screen assembly.

D. Mount **wall bases** (A) to **wall bases** (B) & (C) with **M8x20** bolts and adjust level adjusters for proper height.

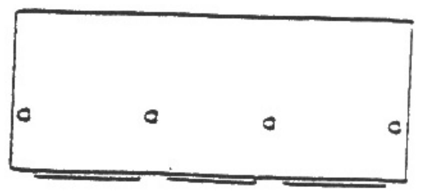
E. Fasten **wall base covers** to **wall bases** using black **M5x10** screws.

** Following completion of the **wall base** installation, roll the (3) **Control Boxes** and (6) **Personal Assemblies** into place.

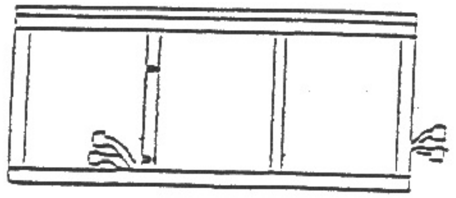




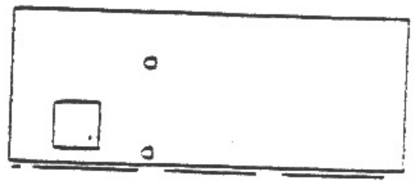
Wall base (A) x 2



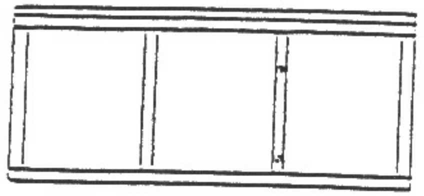
Wall base cover (A) x 2



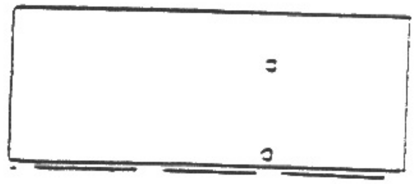
Wall base (B)



Wall base cover (B)



Wall base (C)



Wall base cover (C)

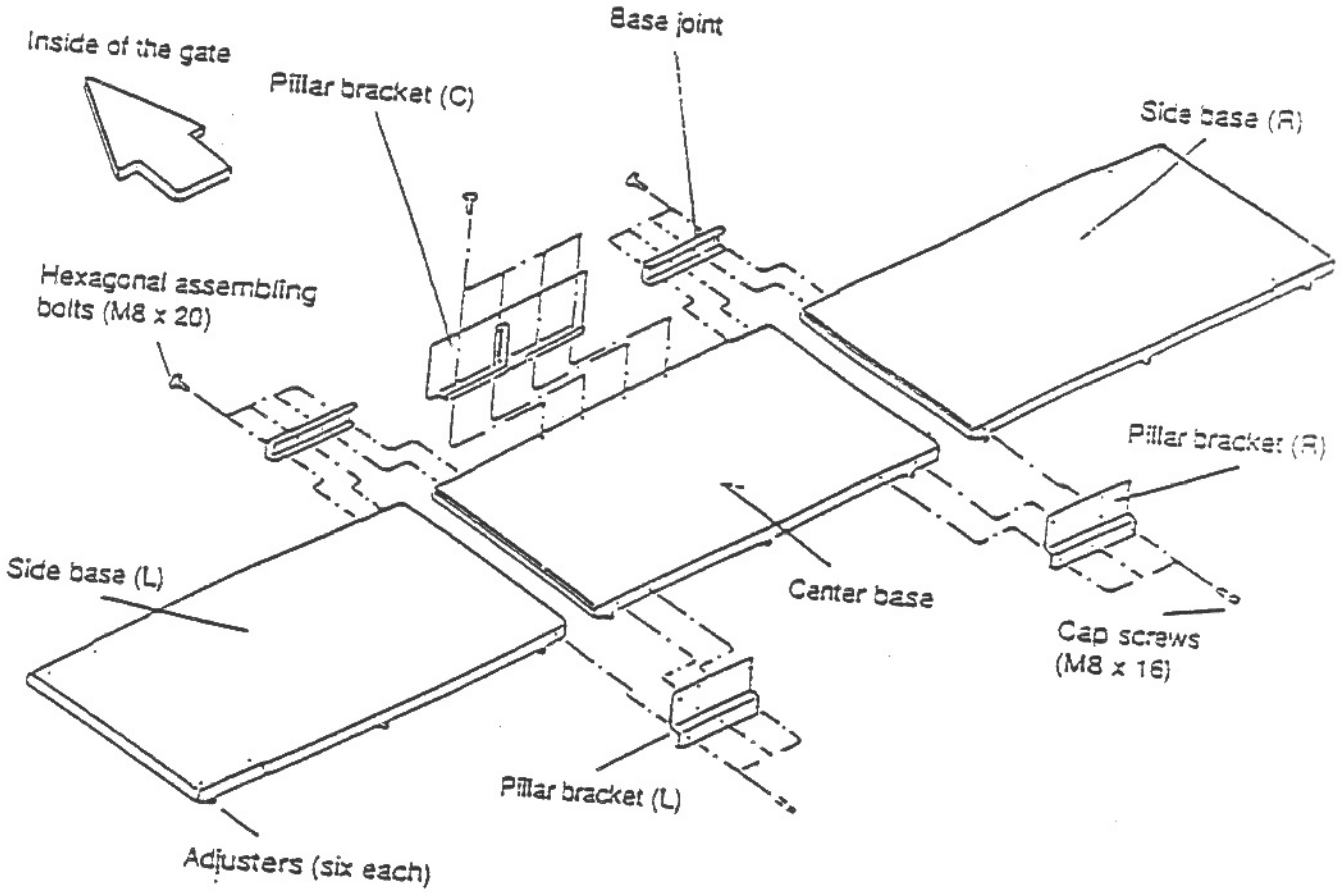
[3-2] GATE (Outer Frame)

A. Roll the **gate base** assemblies (L, C & R) into position at the front of the **wall base** assemblies.

B. Join the **side bases** (L & R) with the **center base** (C) by fastening the **pillar brackets** (L& R) on the OUTSIDE edge of the base with **silver cap M8x20** screws.

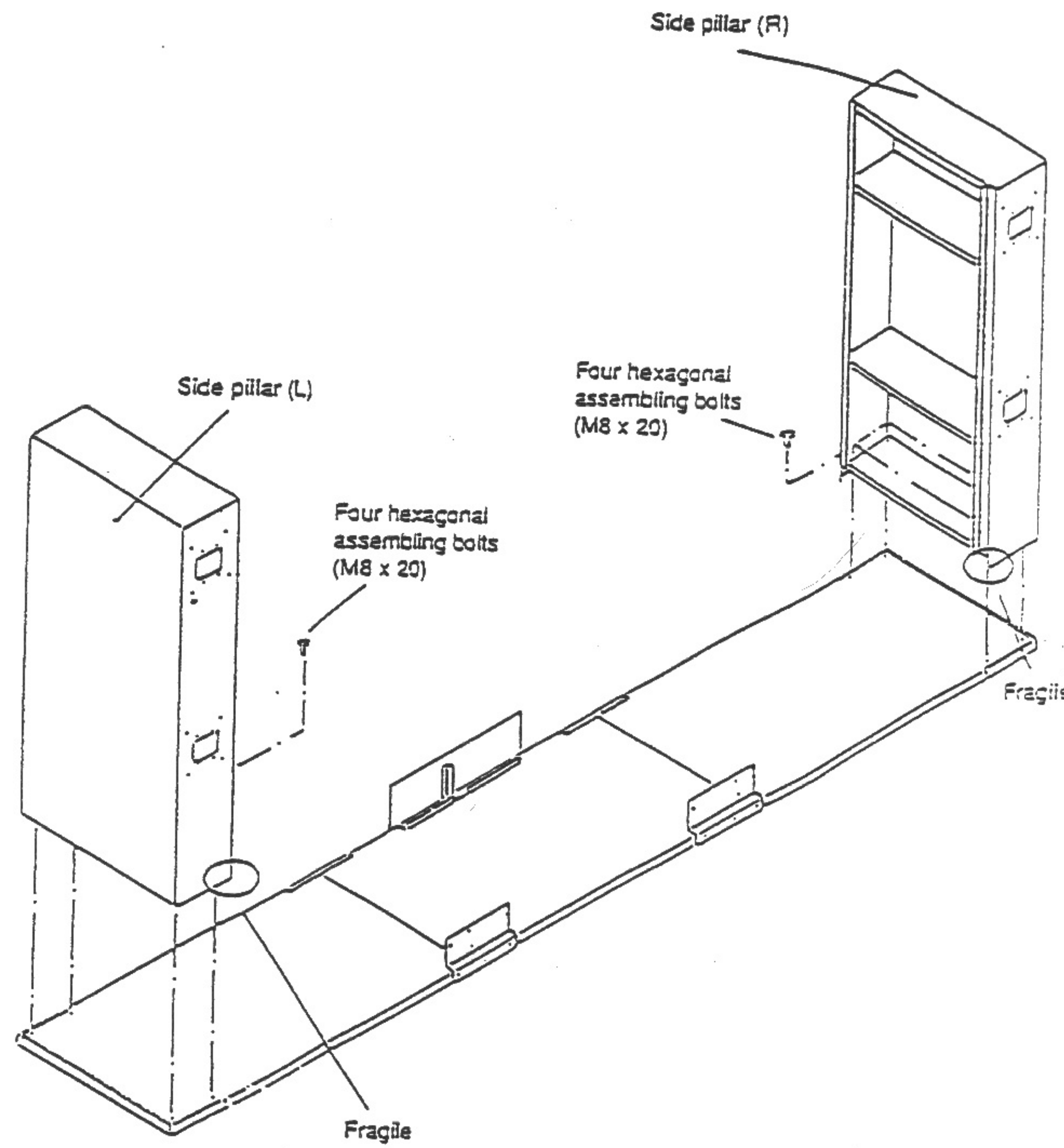
C. Fasten the **base joints** on the INSIDE edge of the base with **M8x20** bolts.

D. Fasten the **pillar bracket** (C) to the INSIDE edge of the **center base** with **M8x20** bolts.



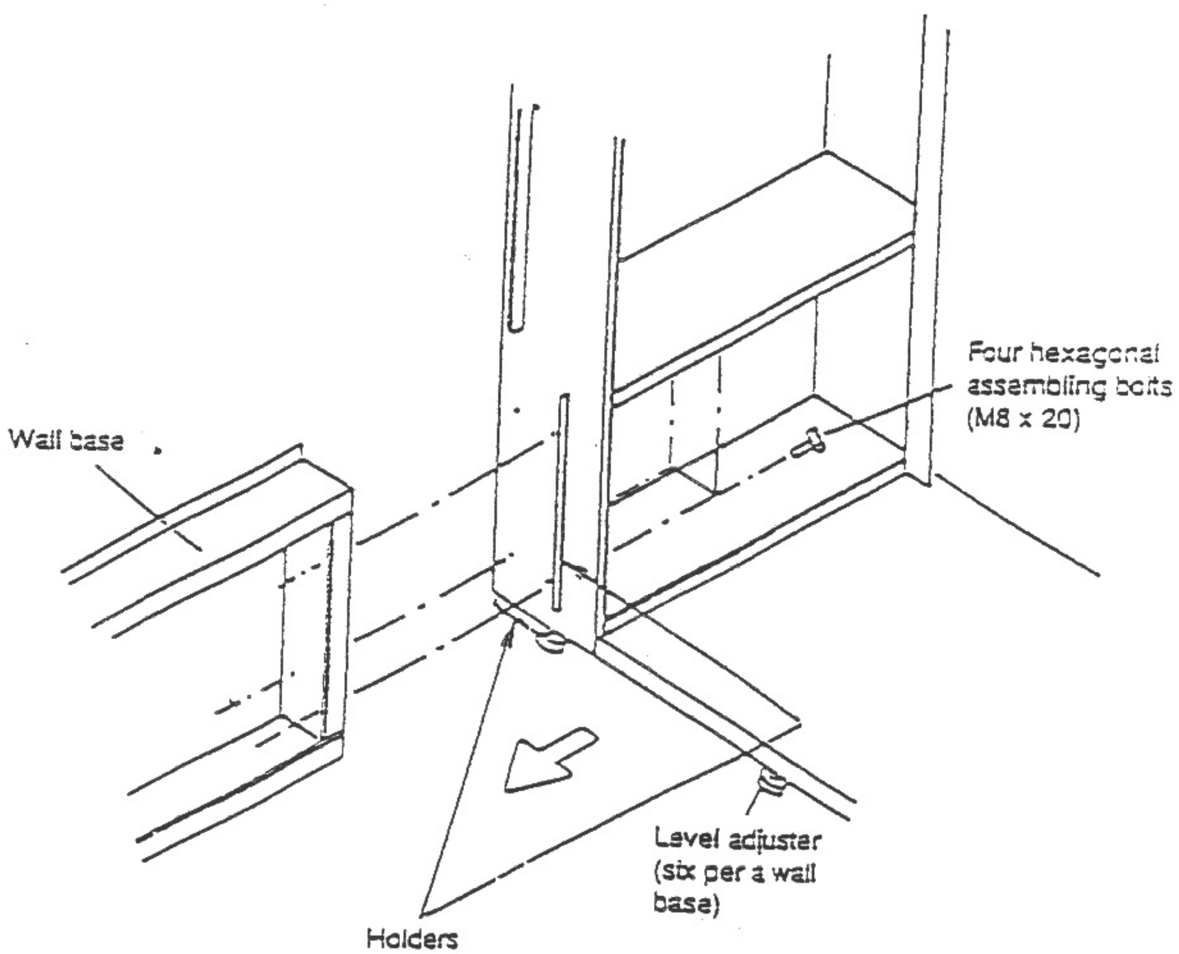
[3-3] PILLAR

A. Fasten the **pillars** (L & R) to the **gate base** assembly using **M8x20** bolts.



B. Move **gate base** and **pillar assembly** up to **wall base assembly**, mount **wall base assemblies** on the lips at the base of the **pillars** and fasten together with **M8x20** bolts.

C. Spin level adjusters DOWN (2-1/2") and adjust for height of **gate base assembly** such that **Personal Assembly** units can NOT roll beyond inside edge of **gate base**.



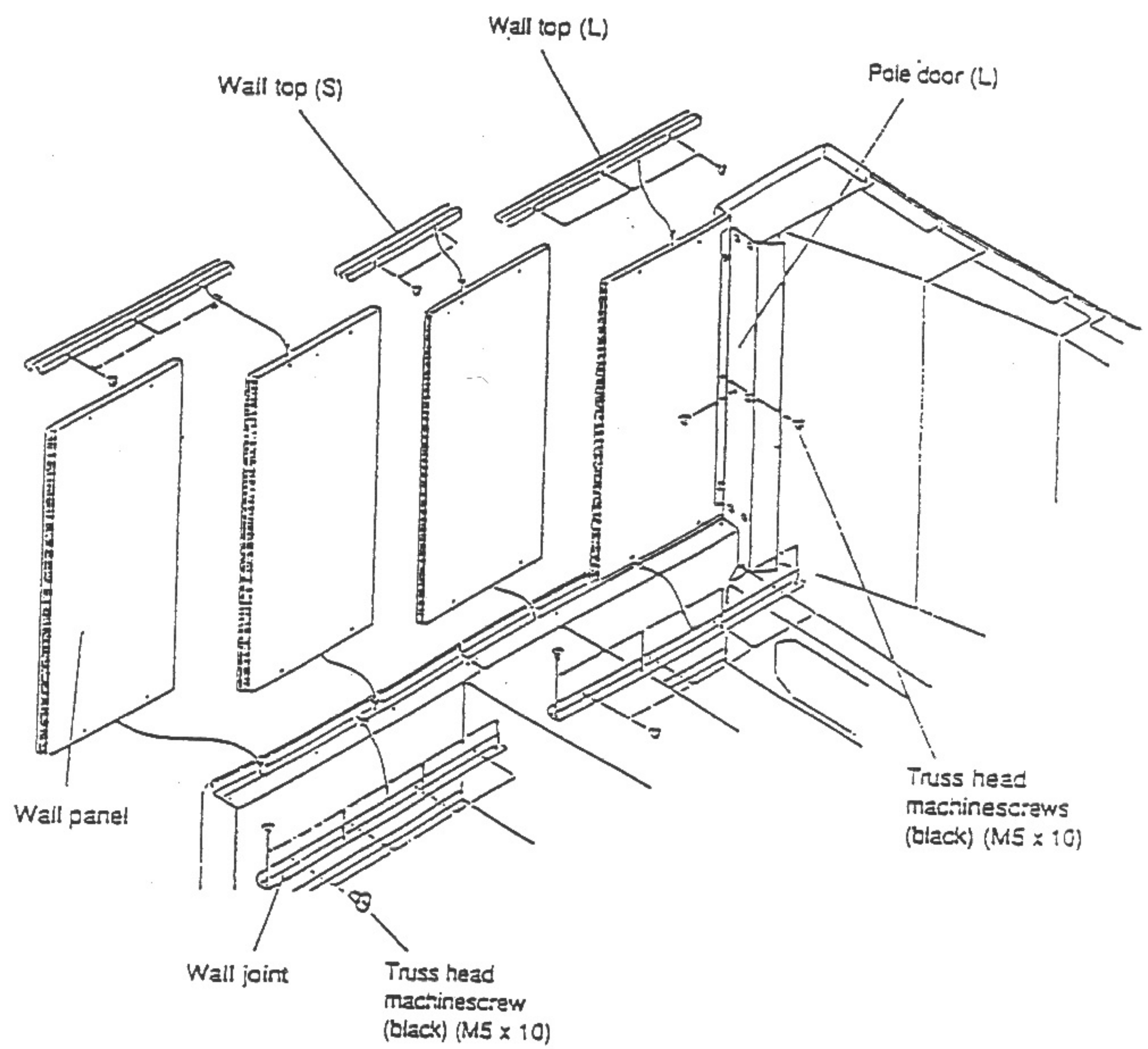
[3-4] WALL PANEL

A. Loosely fasten the **pole doors** (L & R) and the **wall brackets** (L & R) using black **M5x10** screws.

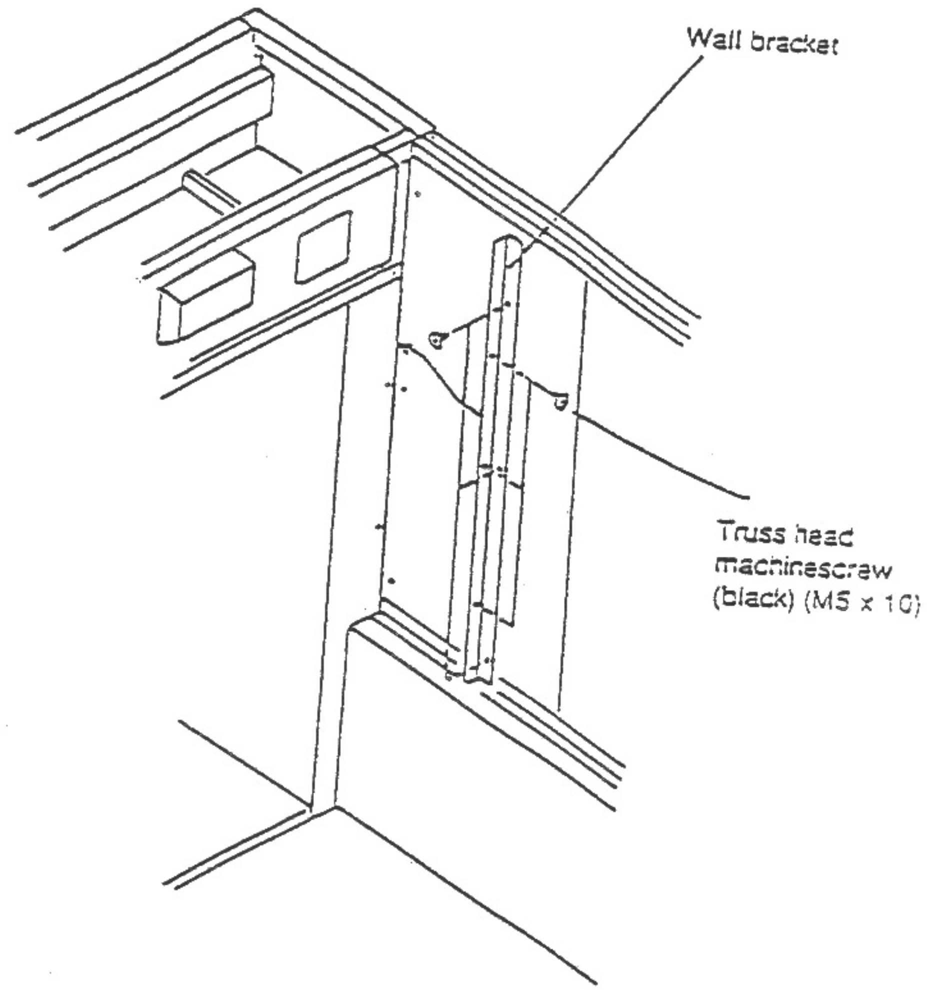
B. Loosely fasten **wall panel** (A) to the (LH) **pole door** using black **M5x10** screws.

C. Mount **wall panel** (B) next to (A) and temporarily fasten **wall top** (L) with black **M5x10** screws.

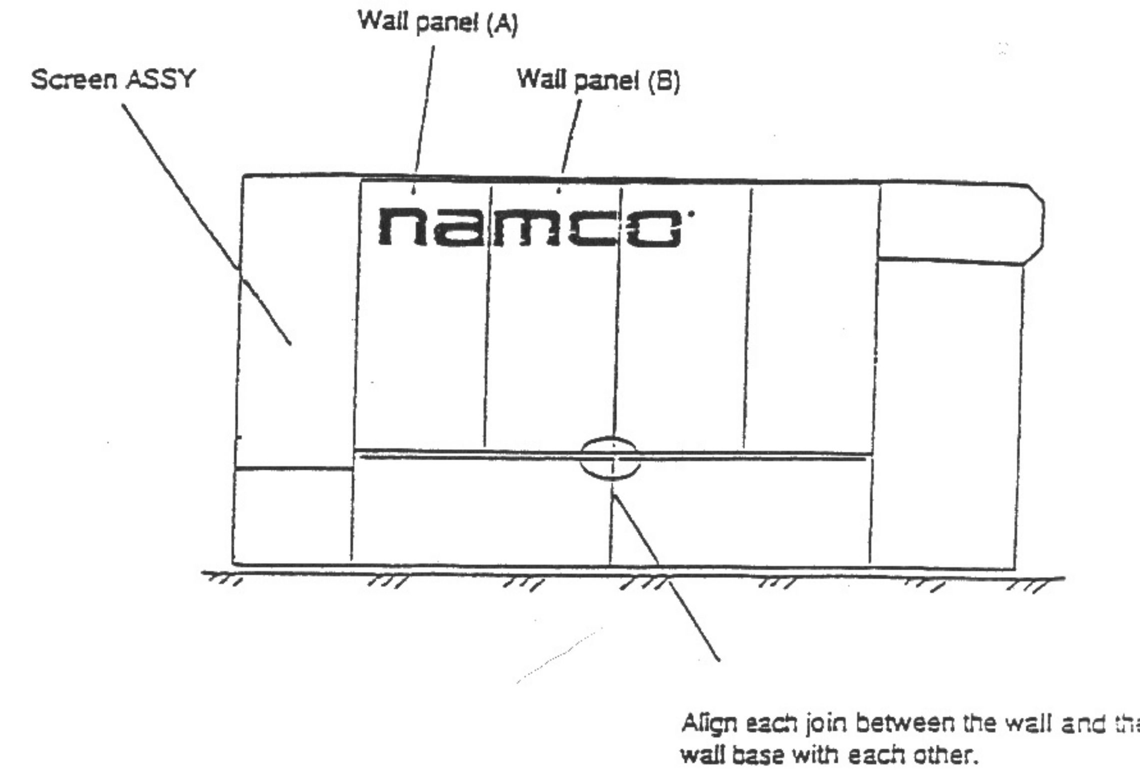
D. In the same manner, fasten **wall panel** (C) and **wall top** (S).

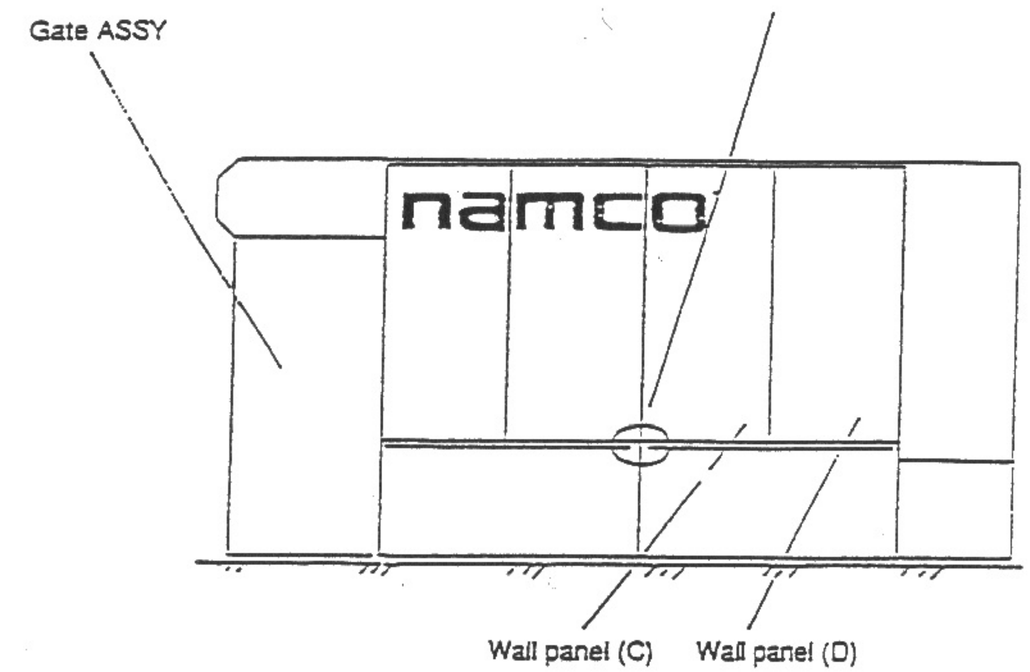


E. Jog **wall panel** (D) in place and loosely fasten to **wall bracket** (L) with black **M5x10** screws.



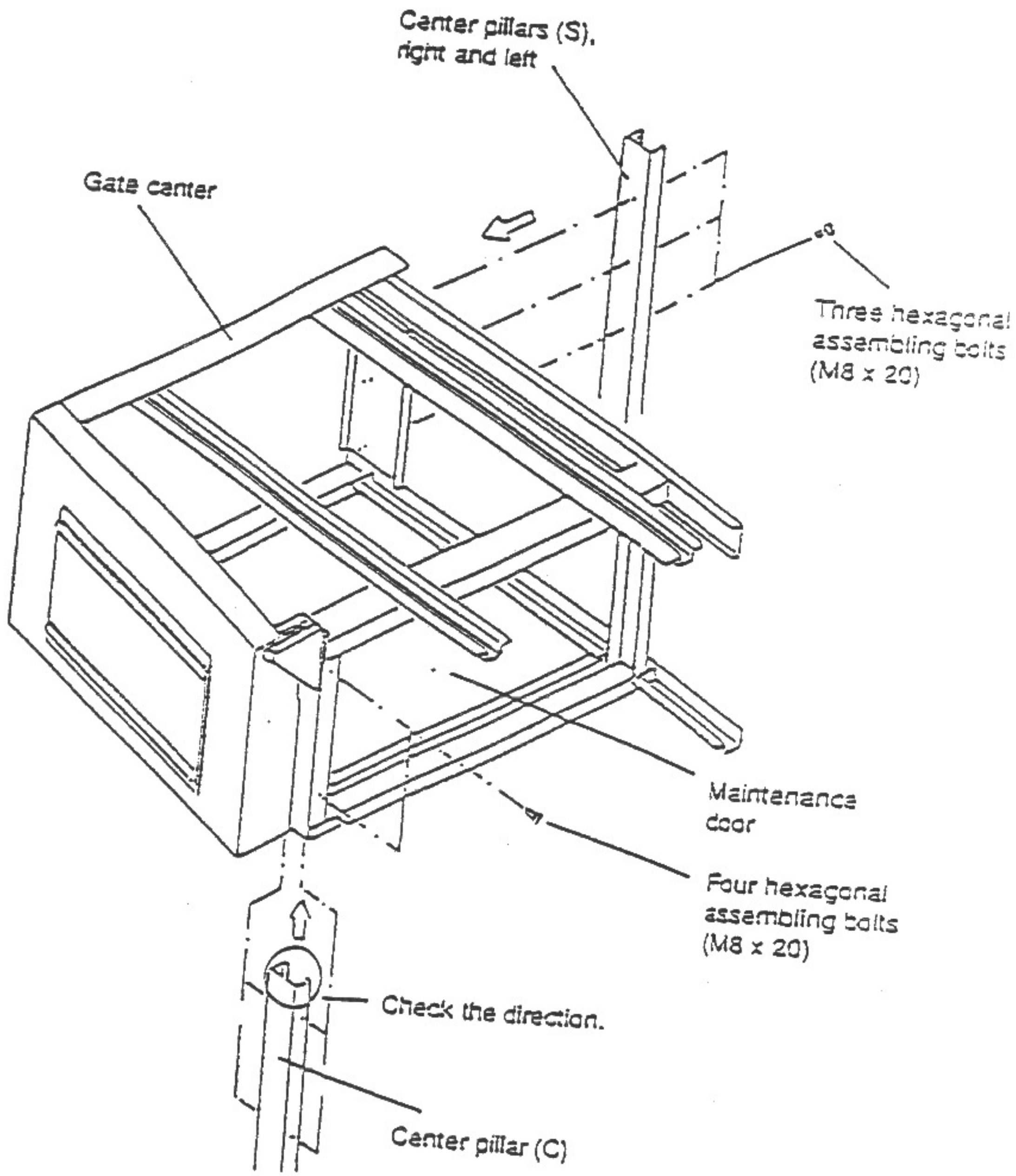
F. Slide all **wall panels** tightly together to eliminate any gaps and tighten down all screws.





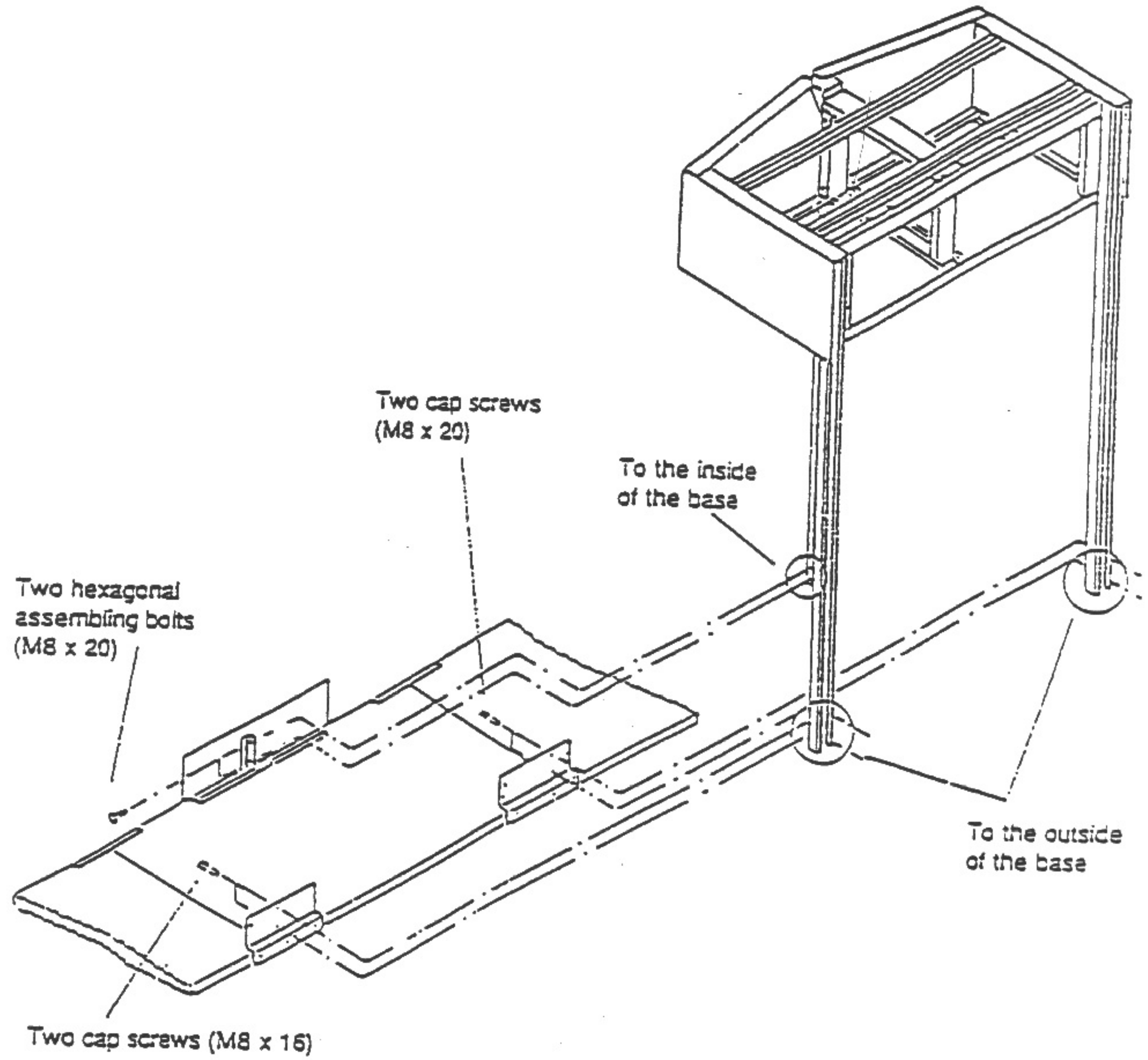
[3-5] GATE (Center)

A. Lay **gate center** on its side and install **center pillar** (C) and **center pillars** (S) using **M8x20** bolts. **Center pillar** (C) has the channel facing inboard.



IMPORTANT: If installation site has a LOW ceiling, impeding access to the game from above, perform **projector hanger bracket installation** (page 38) **BEFORE** installing gate center.

B. This step requires 4 people to lift the **gate center** and fasten it to the **gate base**. Use **M8x20** bolts and be sure to fasten the **center pillar** (C) on the INSIDE of the base and the **center pillars** (S) to the OUTSIDE of the base.



[3-6] GATE ASSEMBLY

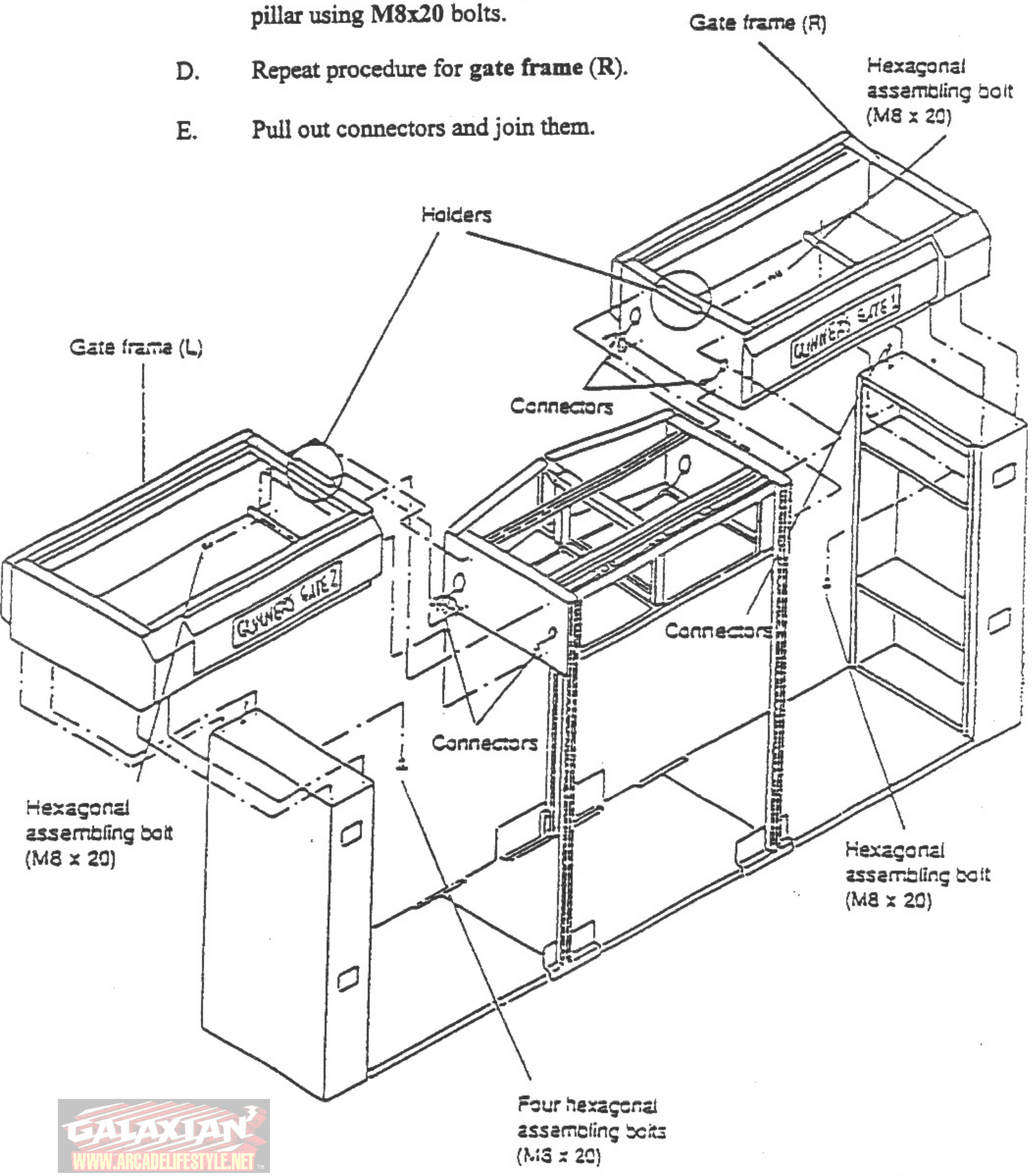
A. Insert any cables/connectors into their appropriate hole for protoection during the next step. Verify/install fluorescent and reflector lamps.

B. At least 3 people are required for this step. Raise the gate **frame** (L) and place it from across the (L) **pillar** so that its **'holder'** rests on top of the **gate center**.

C. Fasten to **gate center** using black **M8x20** bolts and to pillar using **M8x20** bolts.

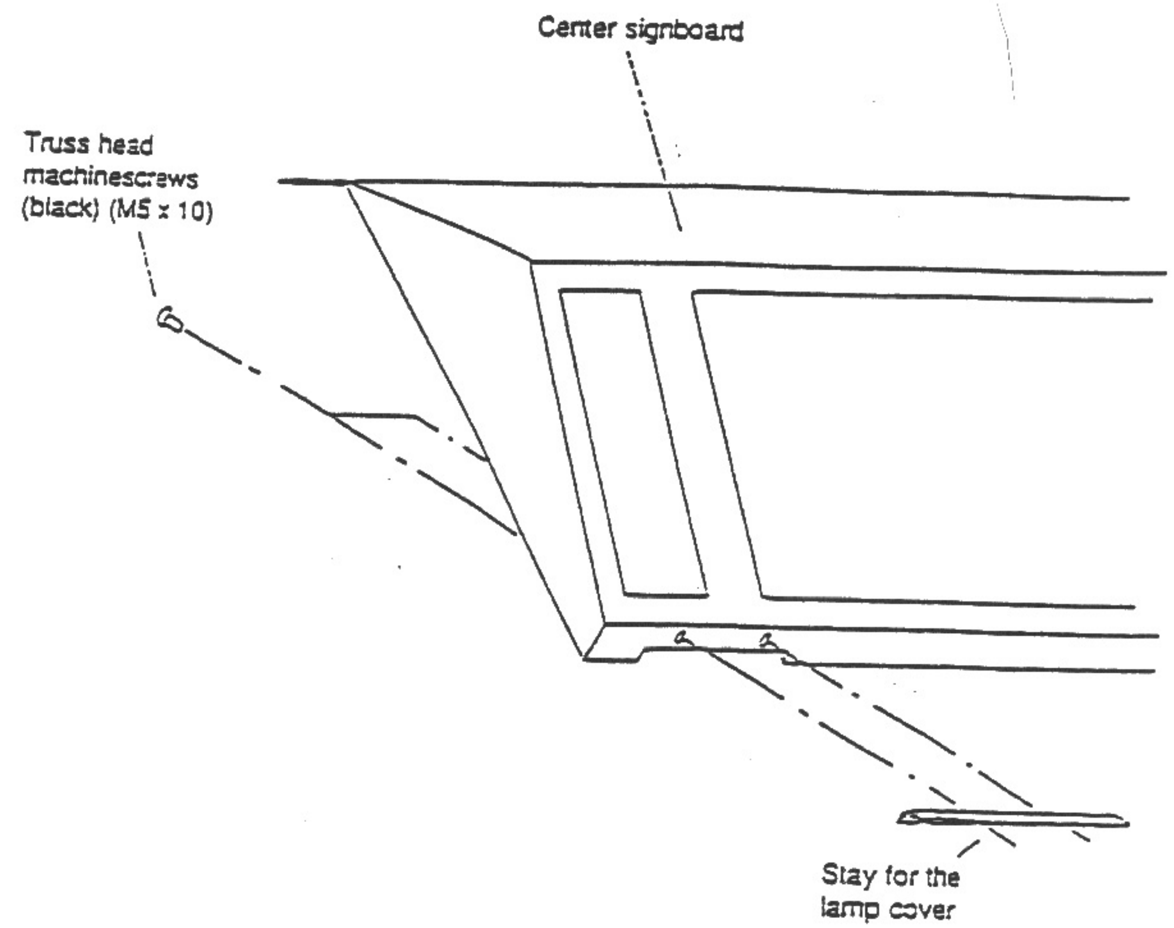
D. Repeat procedure for **gate frame** (R).

E. Pull out connectors and join them.



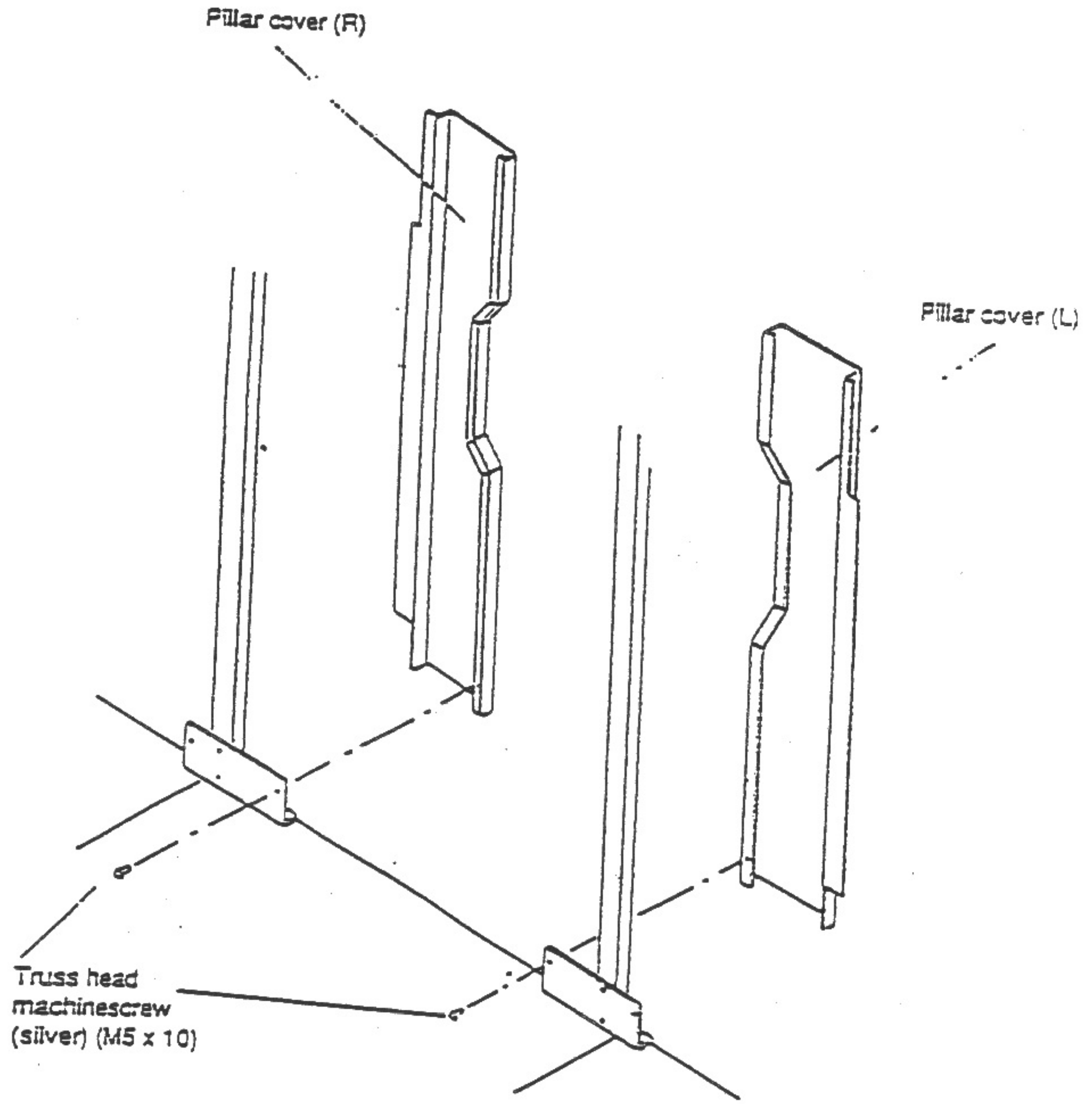
[3-7] SIGNBOARD & GATE ORNAMENTS

A. Loosely fasten the two **'stays'** for the **lamp-covers** on the **center signboard** with black **M5x10** screws.



B. Fasten **pillar covers** (**L & R**) to the **center pillar** (S) with <u>silver</u> **M5x10** screws.

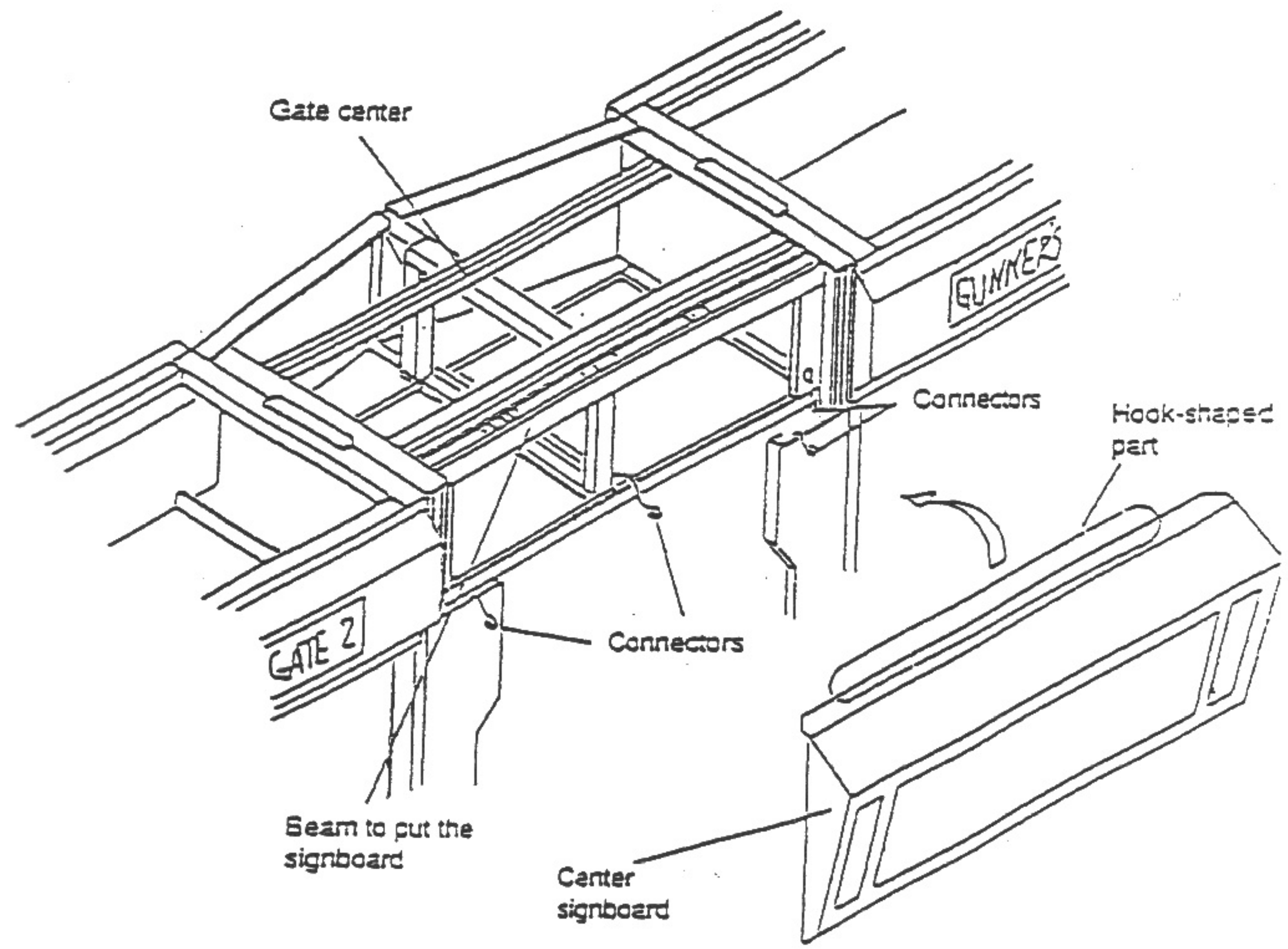
NOTE: Mounting holes here are common for Center Wall as well.



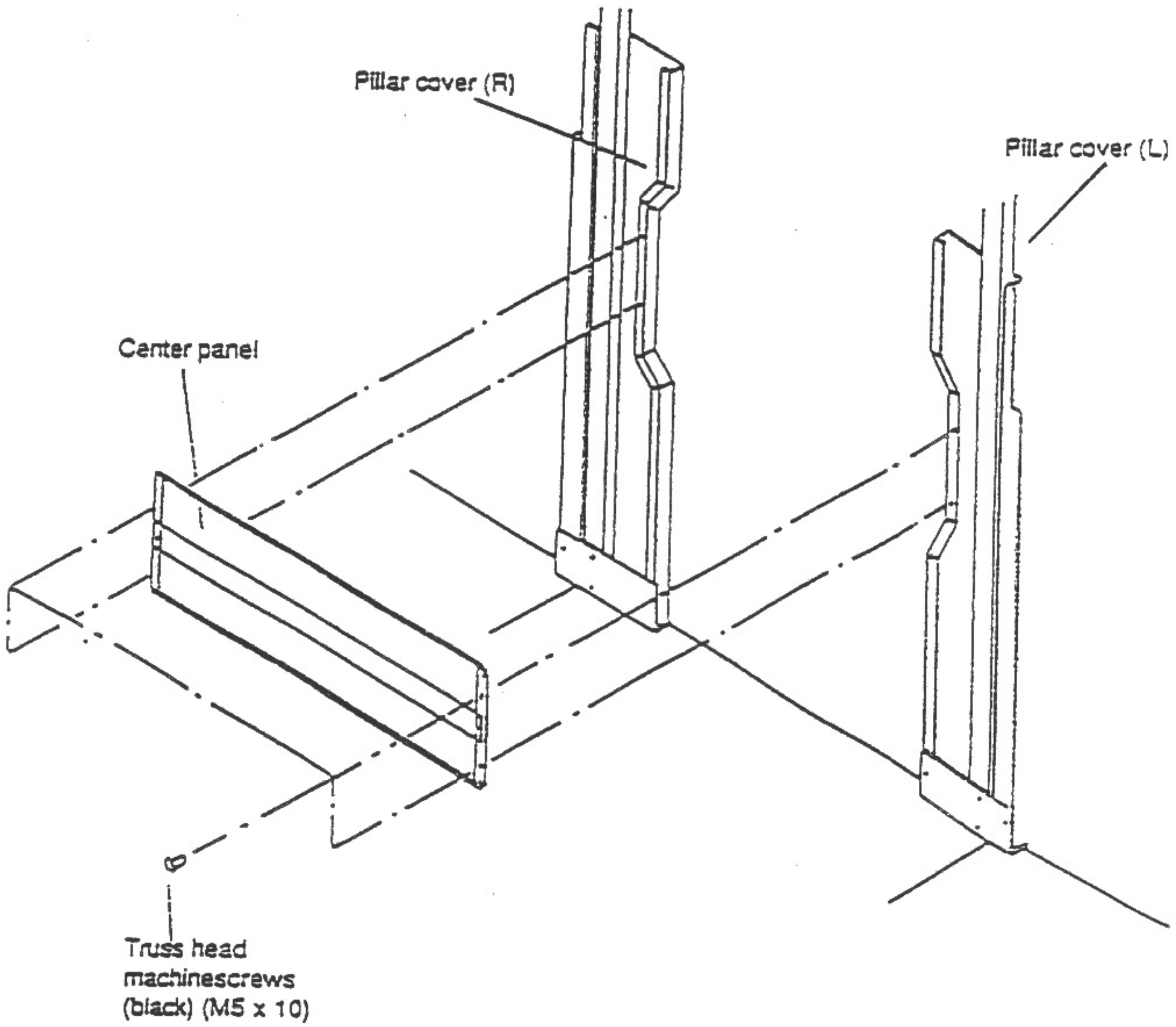
C. Route all cables/connectors between **gate center** and **pillar covers** through appropriate holes and join connectors.

D. Hang **center signboard** on **gate center**.

E. Join connectors between **gate center** and **center signboard**.

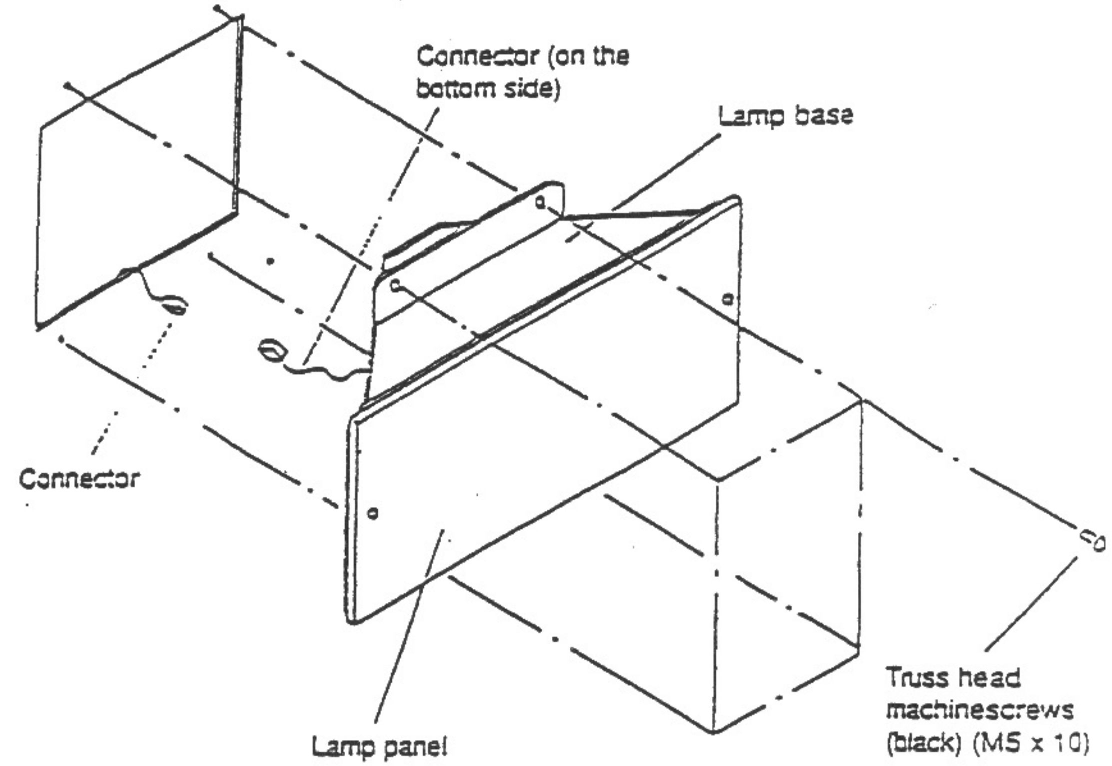


F. Fasten **center panel** on pillar covers (L & R) using black **M5x10** screws.



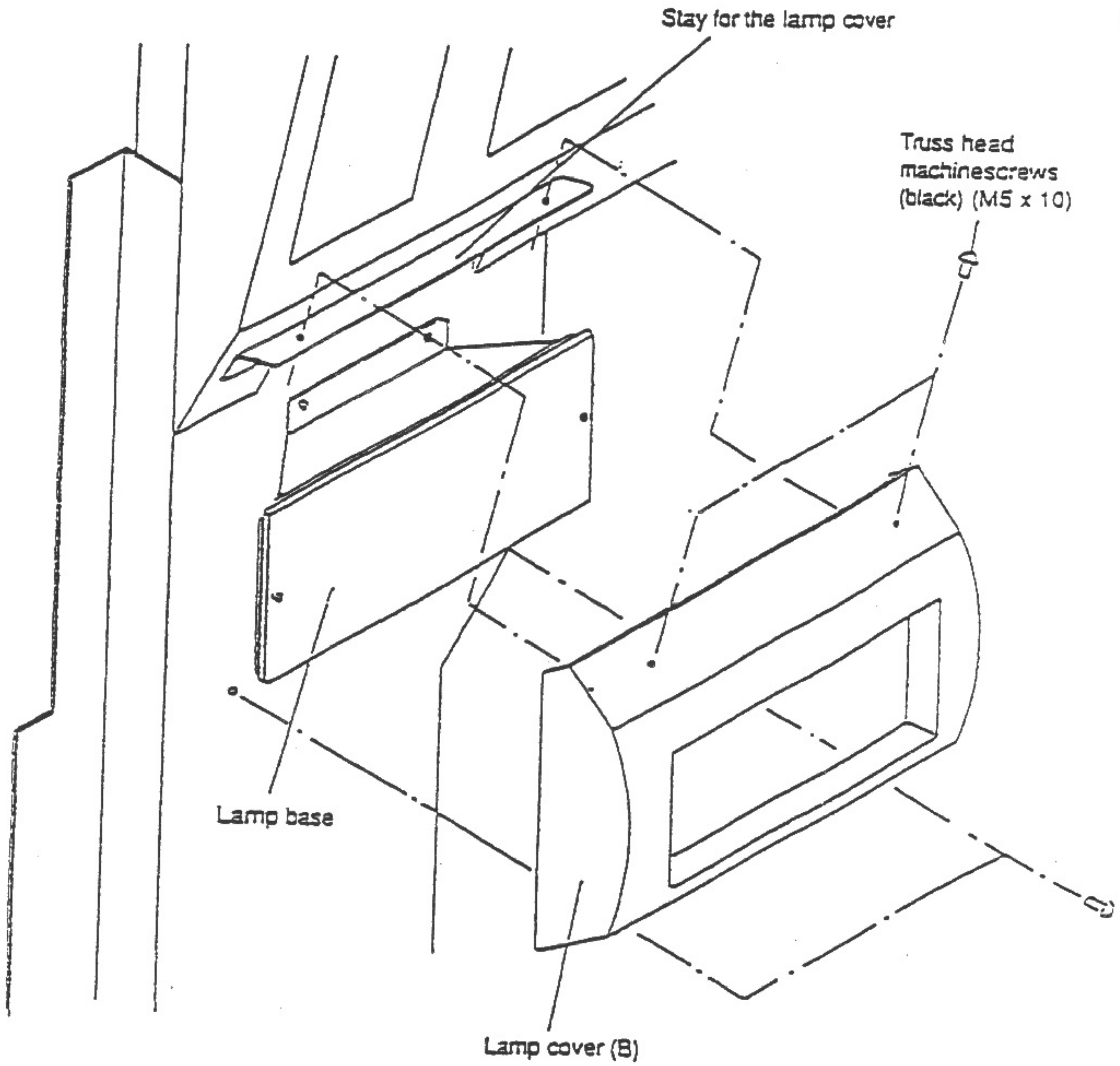
G. Join the connectors for and fasten eight **lamp bases** to the side **pillars** (L & R) and **pillar covers** (L & R) using black **M5x10** screws.

** Facing the unit from the front, the '**entrance**' (LH) side has the **blue** lamps and the '**exit**' (RH) side has the **red** lamps. Also, the **lamp bases** (two red and two blue) that have the bulb inserted '**sideways**' are for installation on the **pillar covers**.

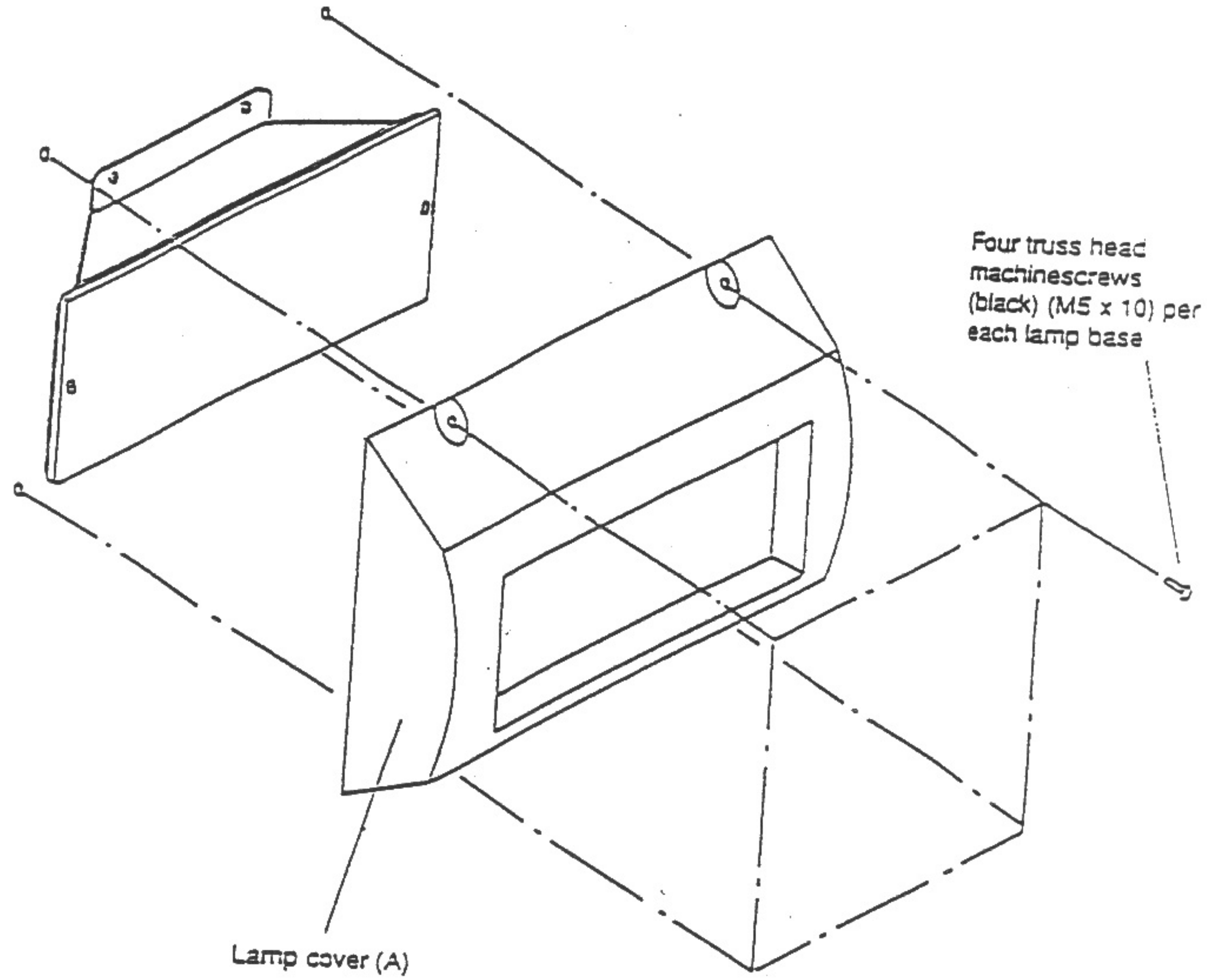


H. Loosely fasten **lamp covers** (B) on the two **lamp bases** located below the **center signboard** using <u>black</u> **M5x10** screws.

I. Adjust the '**stay**' for the **lamp cover** for proper position then tighten down all screws.

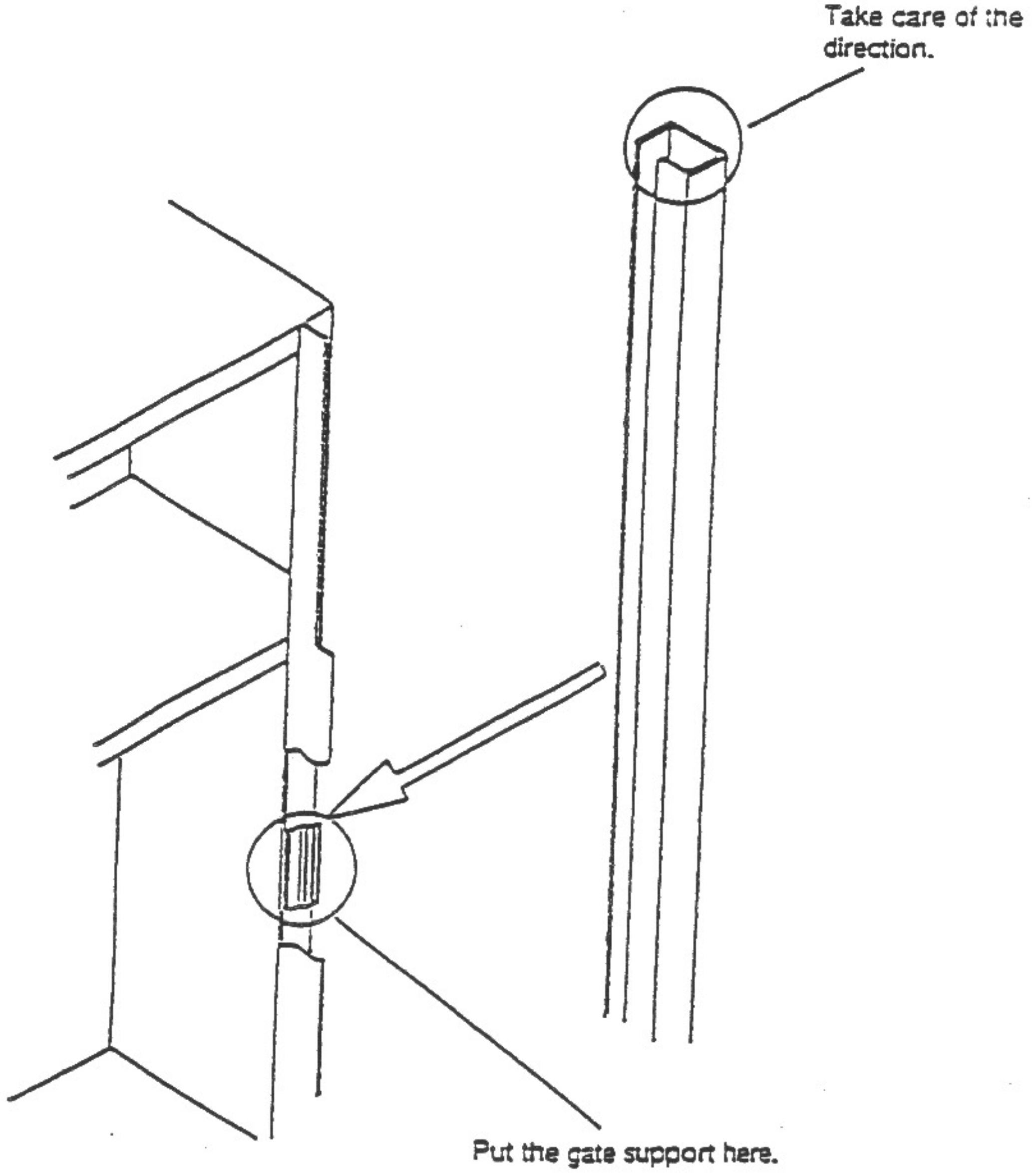


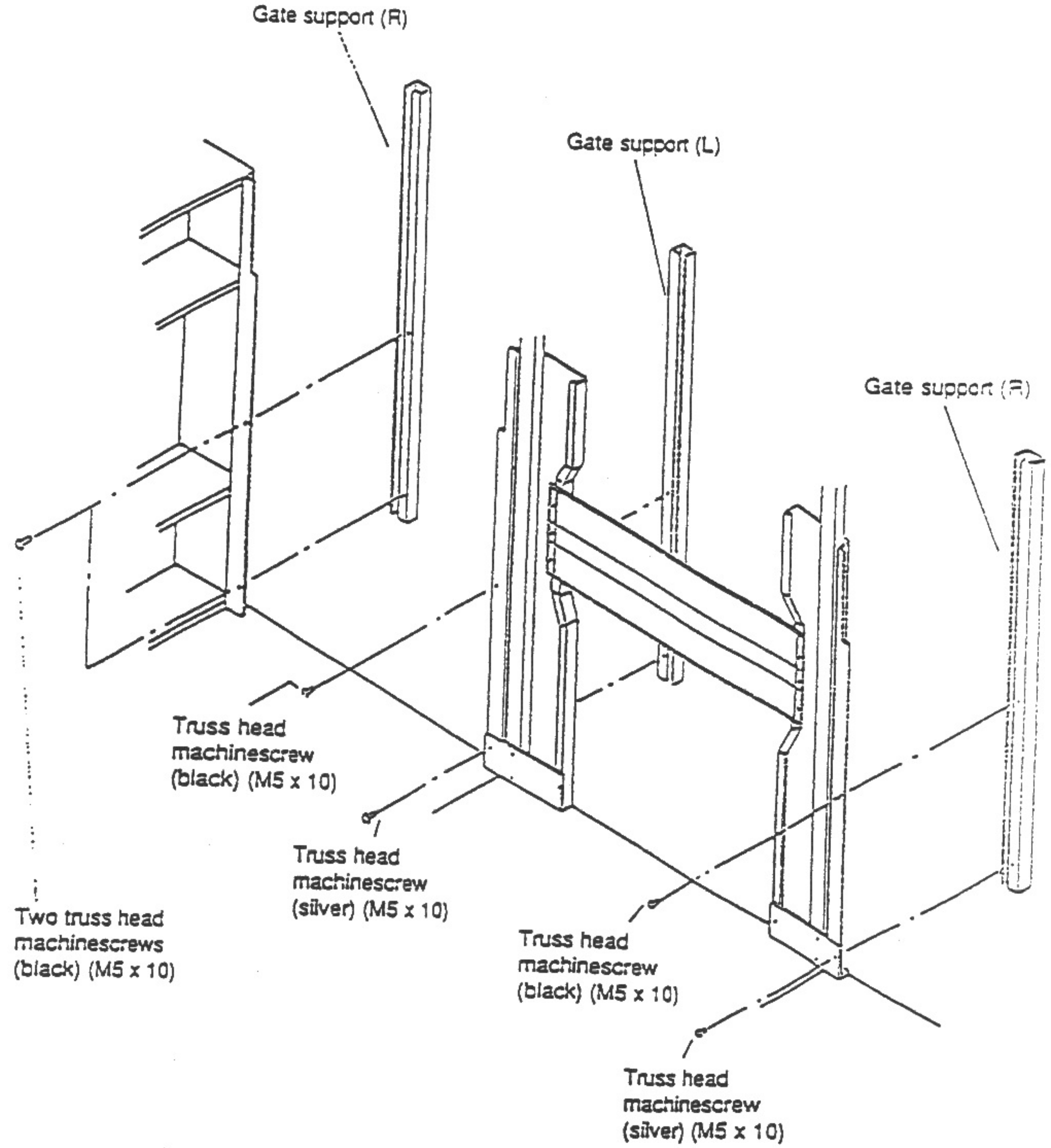
J. Fasten the remaining **lamp covers** with <u>black</u> **M5x10** screws.



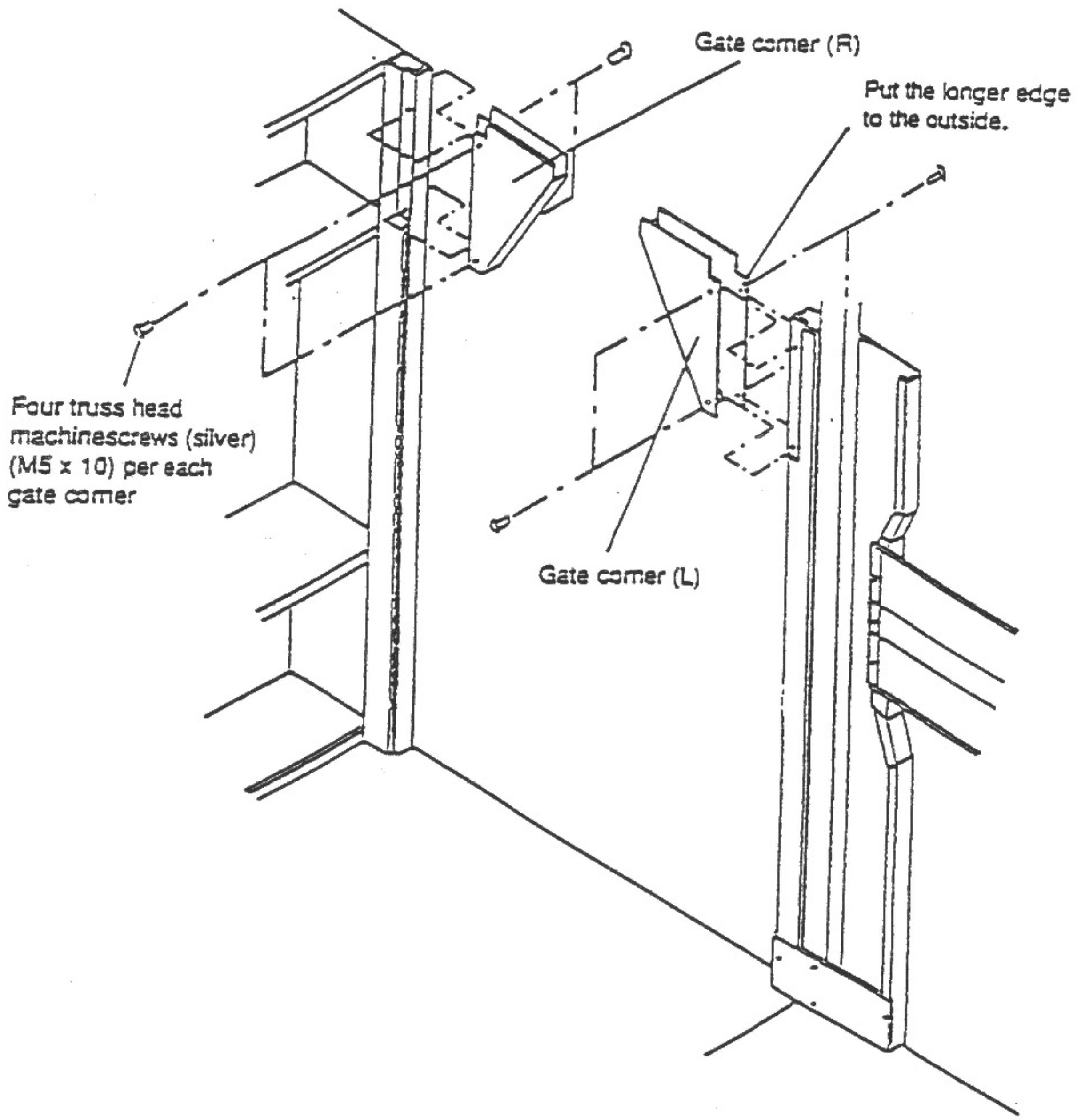
K. Fasten the **gate supports** (L & R) to the **side pillars** (L & R) and the **pillar covers** (L & R).

** Use two black **M5x10** screws for the **side pillars** and one black and one silver **M5x10** screw for the **pillar cover**.

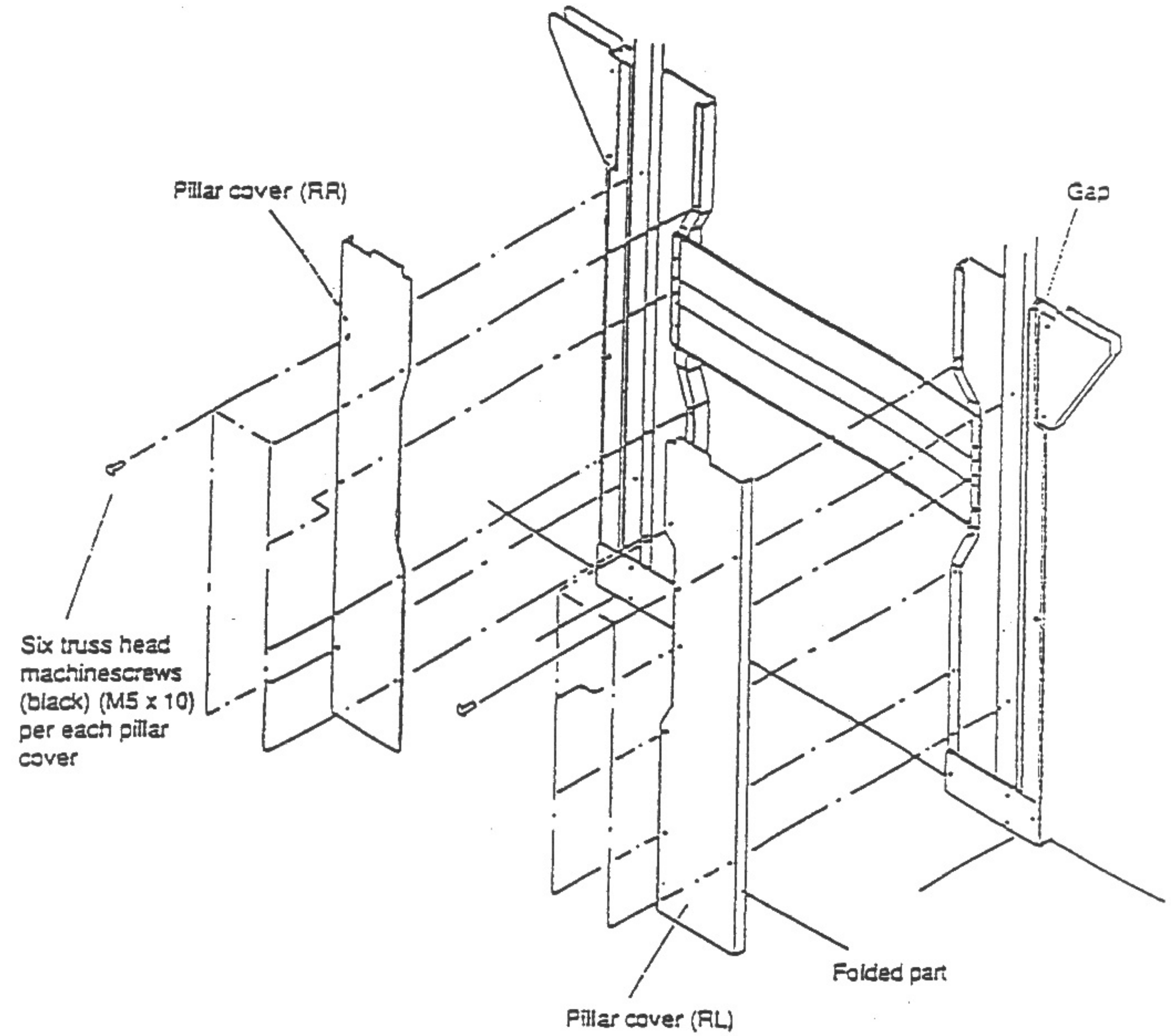




L. Fasten **gate corners** (L & R) to the **gate supports** (L & R) with silver **M5x10** screws.

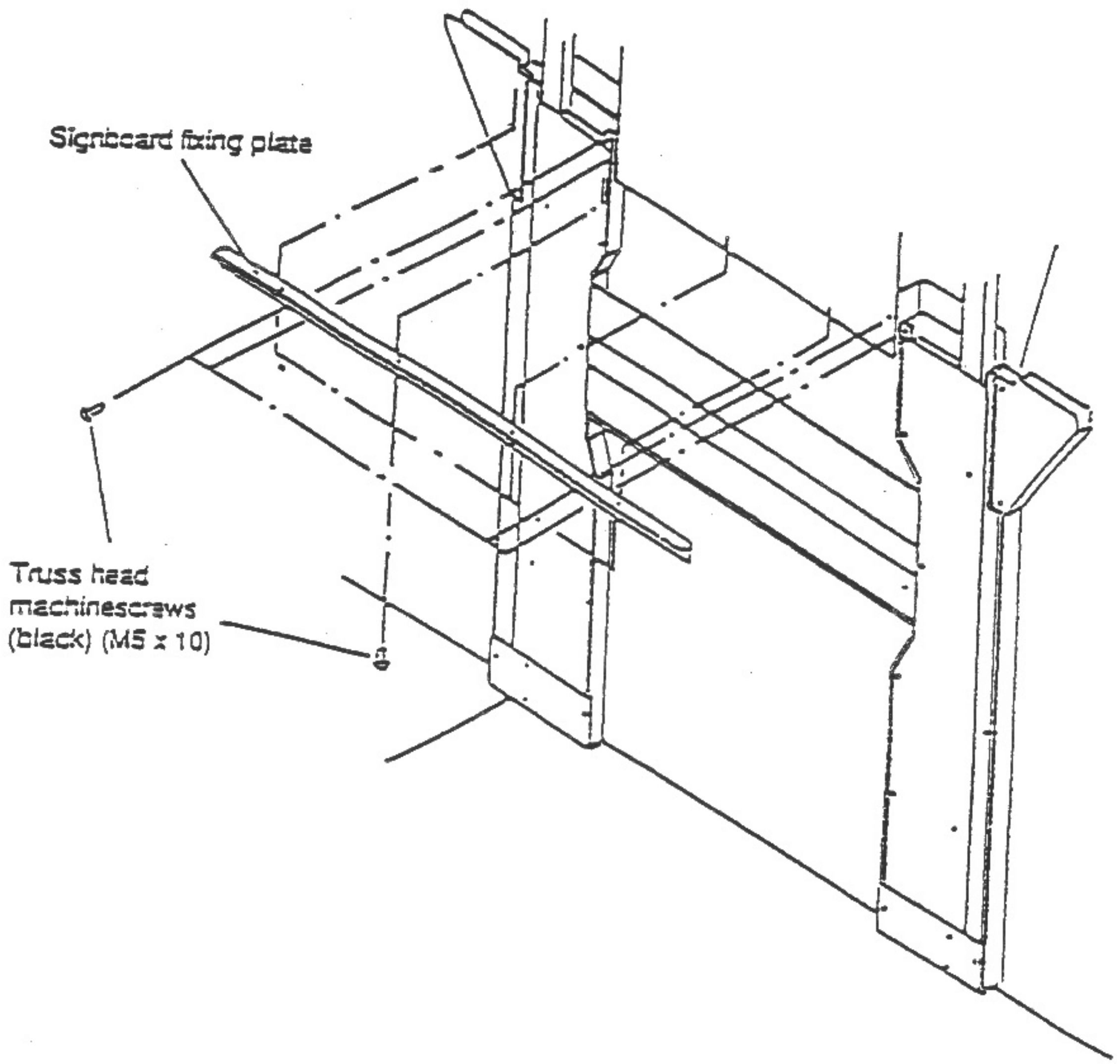


M. Fasten **pillar covers** (RR & RL) to the **pillar covers** (L & R) using black **M5x10** screws.

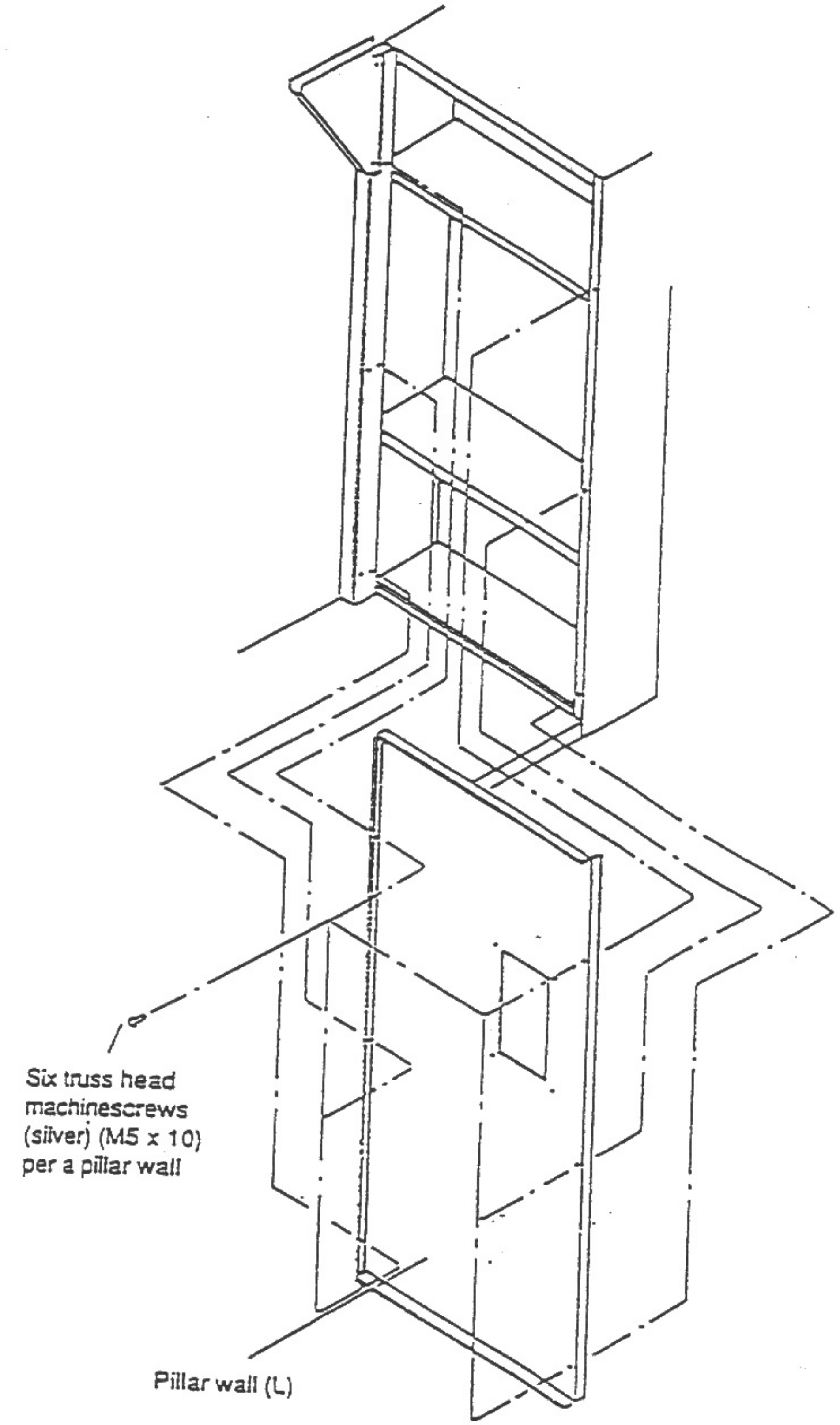


N. Fasten **signboard fixing plate** using black **M5x10** screws.

O. Secure **Center Wall** using black **M5x10** screws.

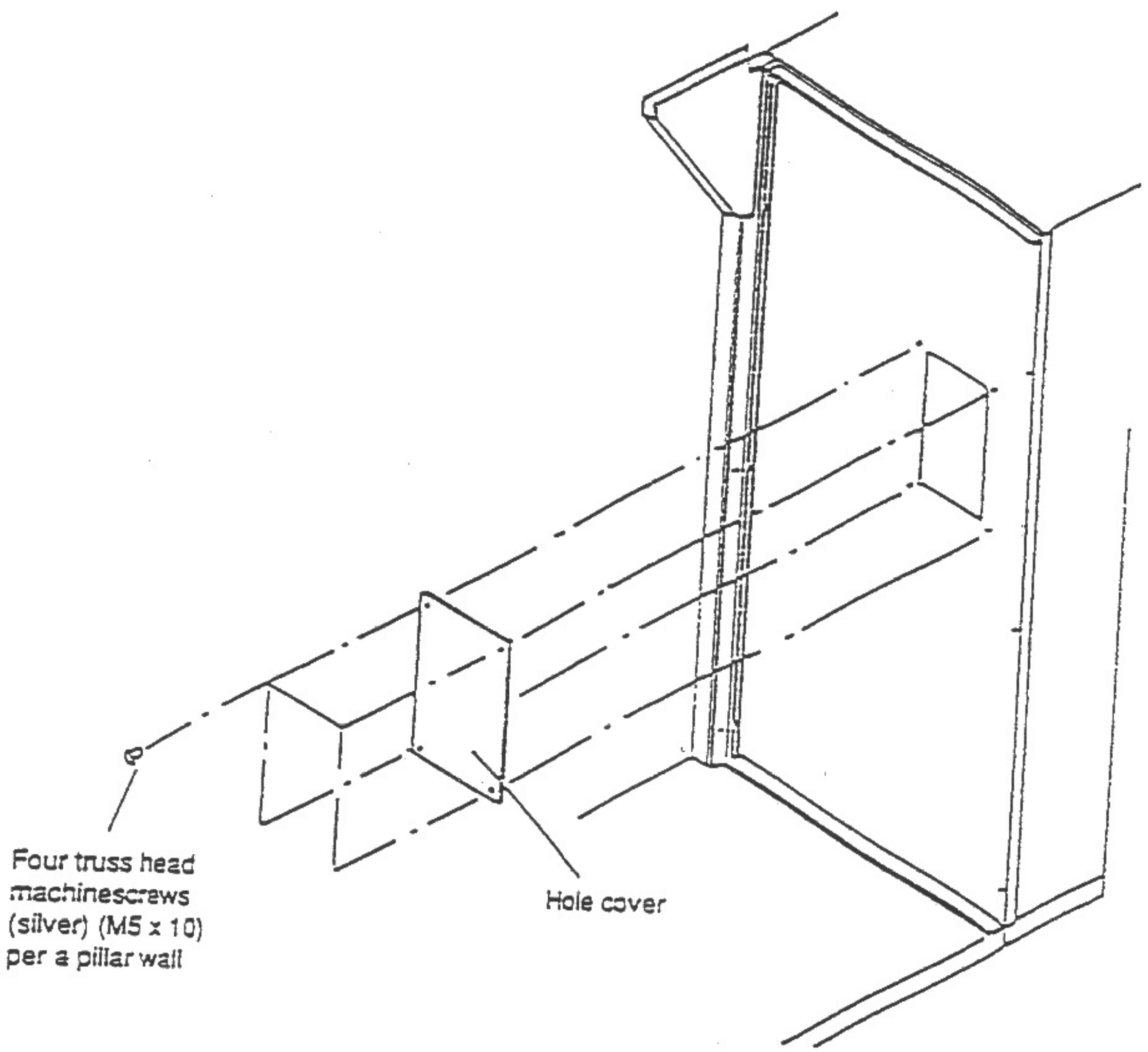


O. Fasten **pillar walls** (L & R) onto the **side pillars** (L & R) with silver **M5x10** screws.



P. Join the connectors of the **control assembly** and fasten to the '**entrance**' (LH) side of the **pillar walls** using silver **M5x10** screws.

Q. Fasten the **hole cover** onto the '**exit**' (RH) side of the **pillar walls** using silver **M5x10** screws.



[4-1] PROJECTOR

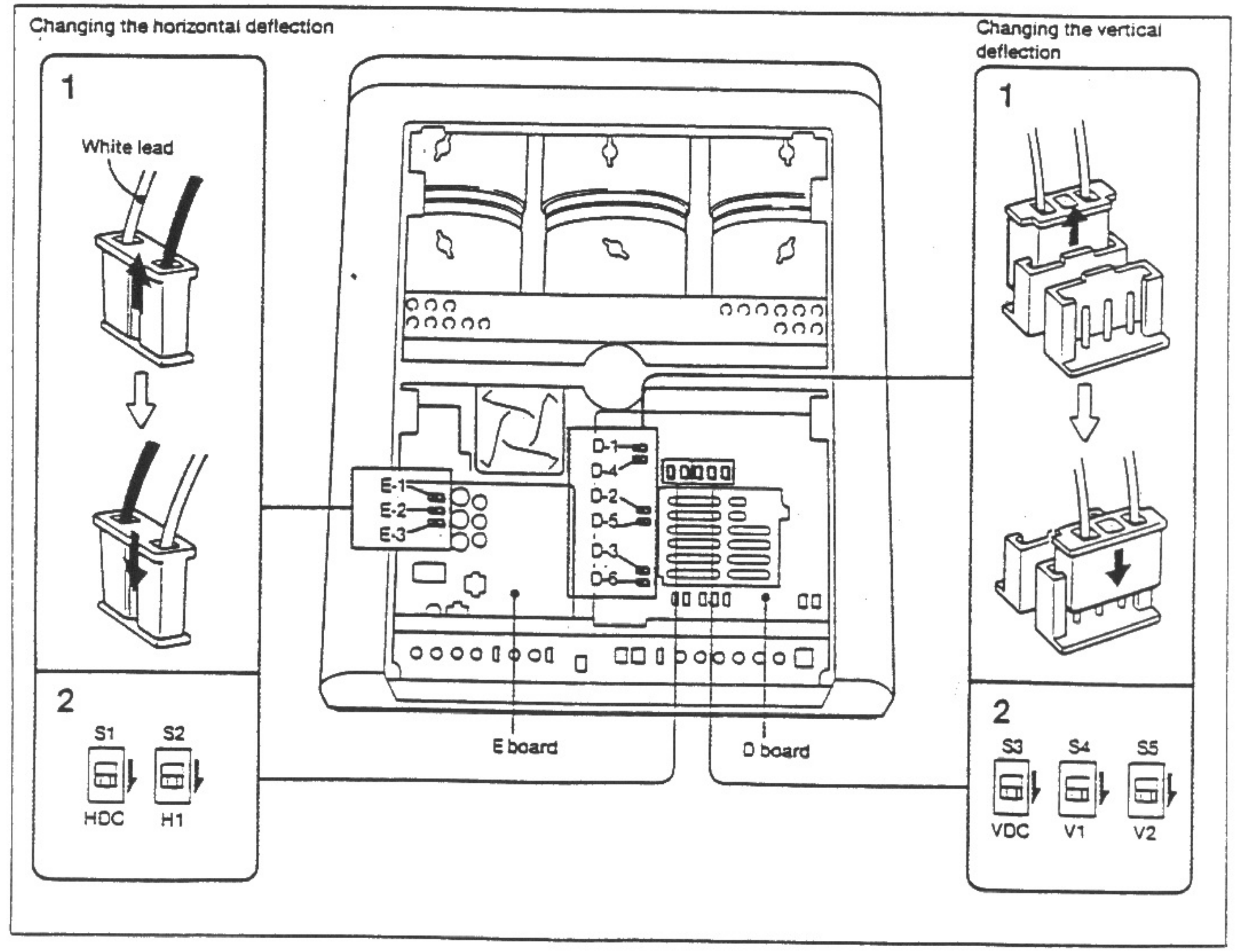
A. If polarity of projector has not been reversed, verify power **OFF**, and **reverse polarity** of horiz & vert deflection:

HORIZ

1. Reverse polarity of connectors **E-1, E-2 & E-3** on **PCB E**.
2. Slide switches **S1 & S2** on **PCB D** towards you.

VERT

1. Swap connectors in **D-1, D-2 & D-3** on **PCB D** to **D-4, D-5 & D-6**.
2. Slide switches **S3, S4 & S5** on **PCB D** towards you.



Preparations

- Make sure that power is not connected.
- Open the top panel.

To change the horizontal deflection

1 Reverse the polarity of connectors E-1, E-2 and E-3 on E board.

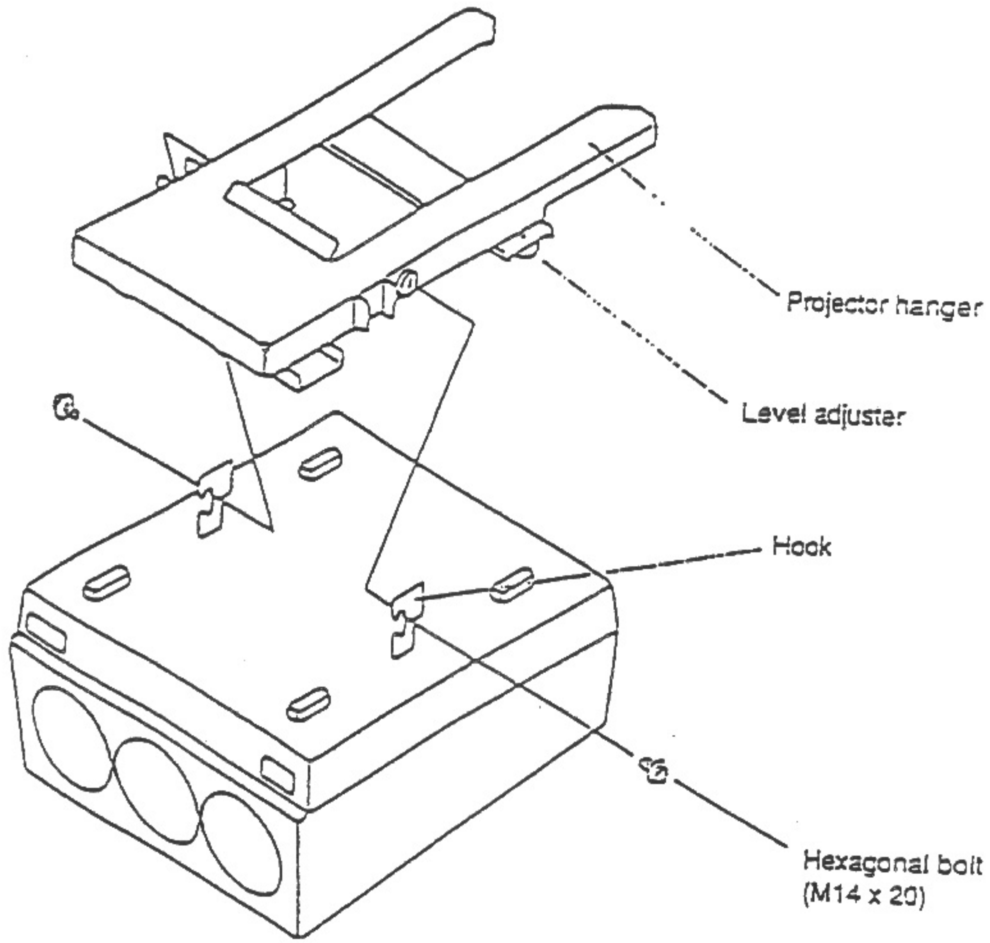
2 Set switches S1 and S2 on D board to the control panel side position.

To change the vertical deflection

1 Move the connectors on D board from receptacles D-1, D-2 and D-3 to receptacles D-4, D-5 and D-6, respectively.

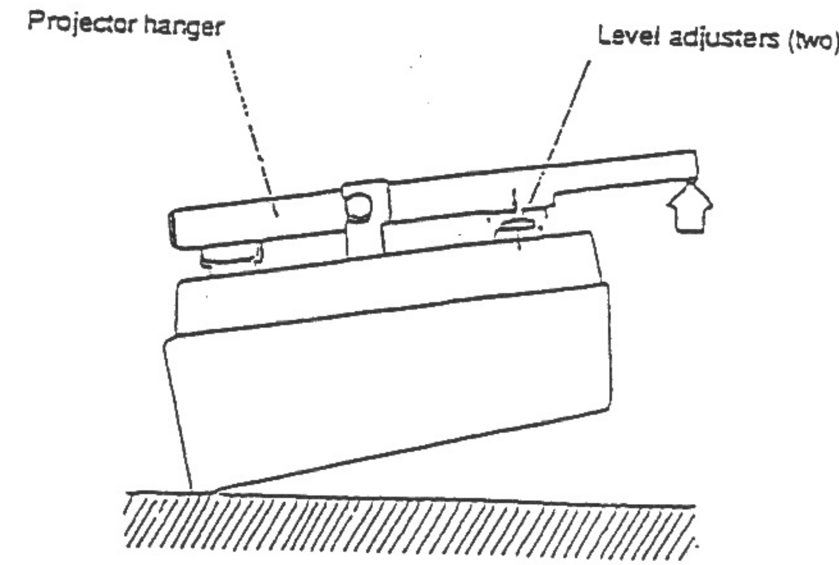
2 Set switches S3, S4 and S5 on D board to the control panel side position.

B. Loosely fasten the **projector hanger** onto the hook of the **projector** with **M14x20** bolts.

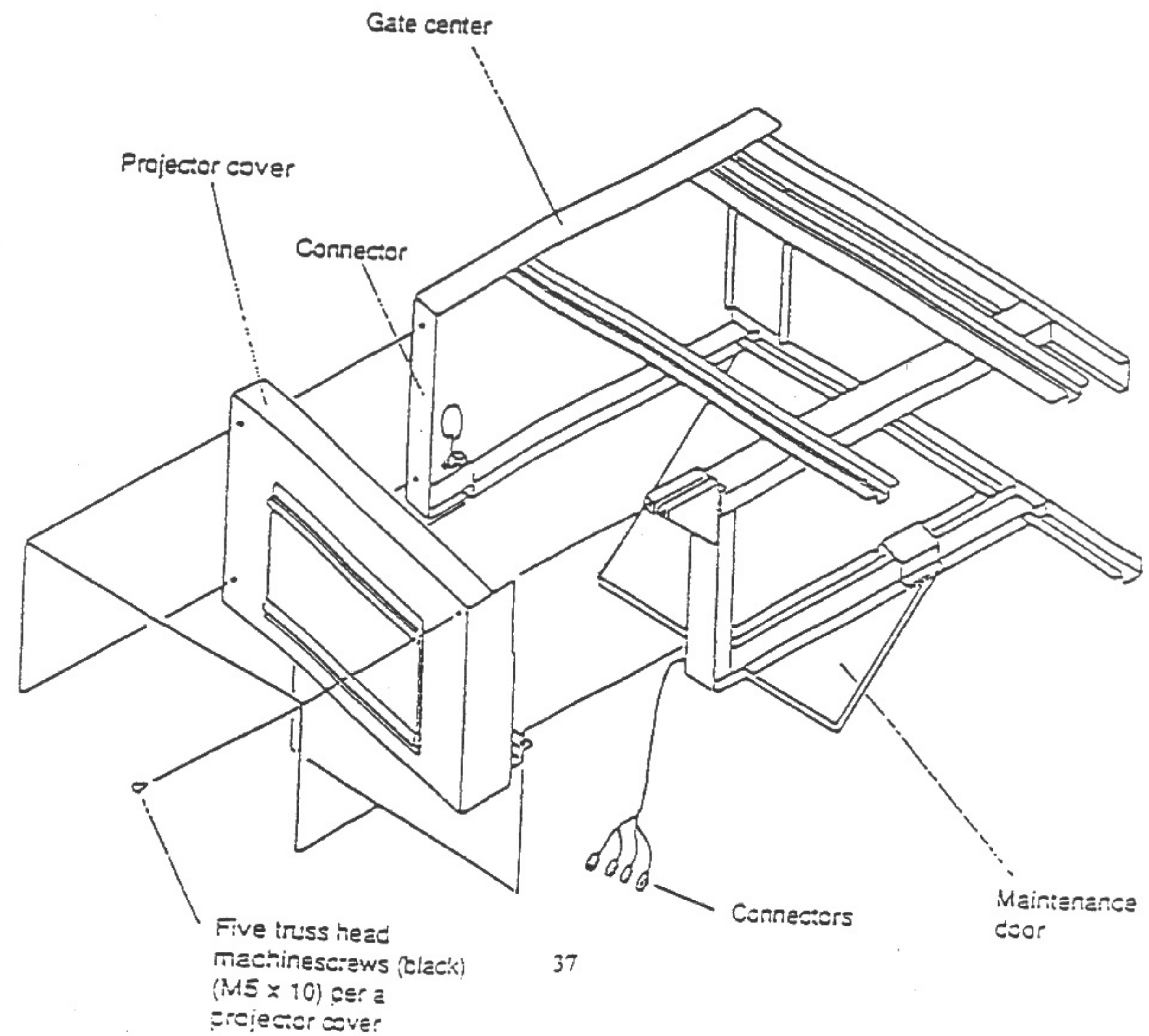


C. To prevent **projector** and **hanger** from rattling, lift rear of **projector hanger** and **LOWER level adjuster**. Rotate **level adjuster** another half-turn once it bottoms out.

D. Tighten bolts on **hooks of projector.**



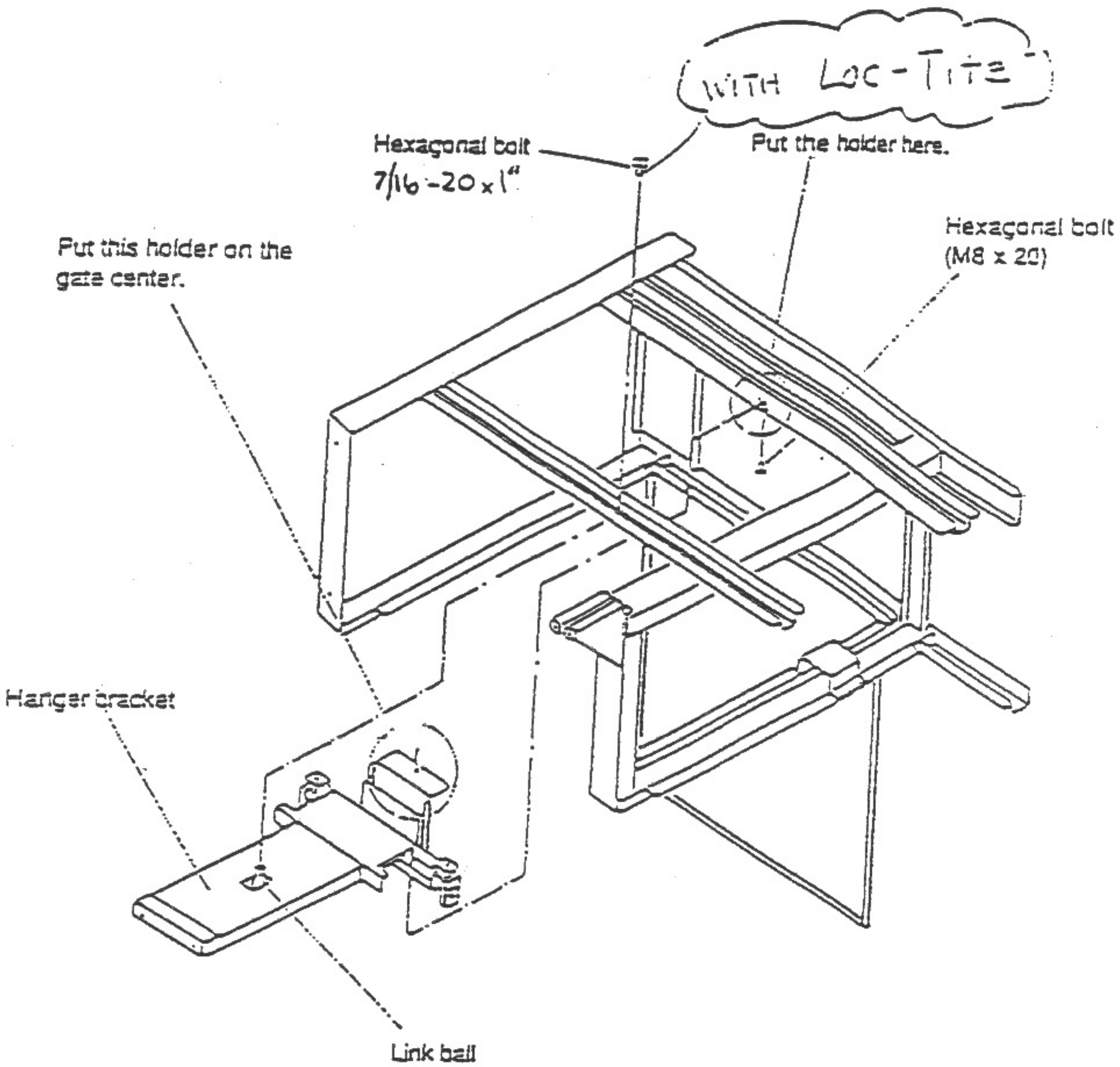
E. Open maintenance doors of **gate center**, remove five black **M5x10** screws (each) of **projector covers** and take them off.



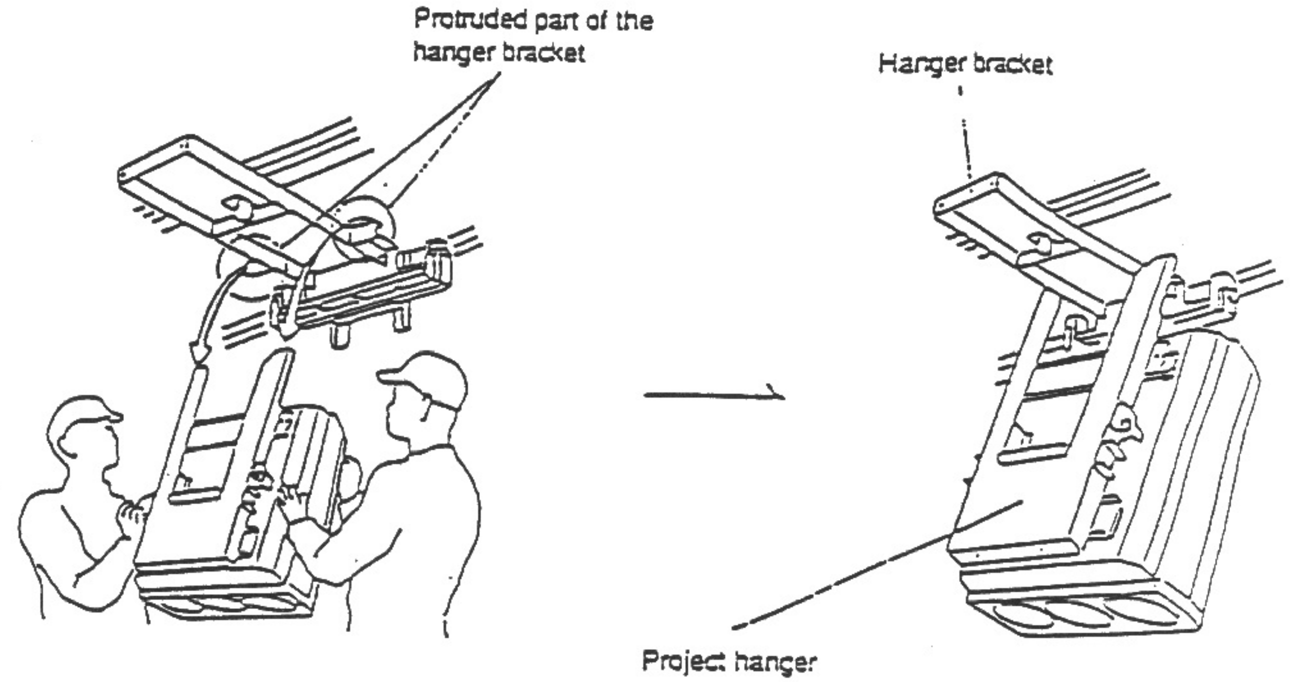
F. Have one person hold the **hanger bracket** in place, with the '**holder**' on <u>top</u> of the <u>rear</u> cross-member of the **gate center**, and fasten it with an **M8x20** bolt.

G. Using **LOC-TITE**, fasten the **link ball** part through the <u>forward</u> cross-member of the **gate center** with a **7/16-20x1"** bolt.

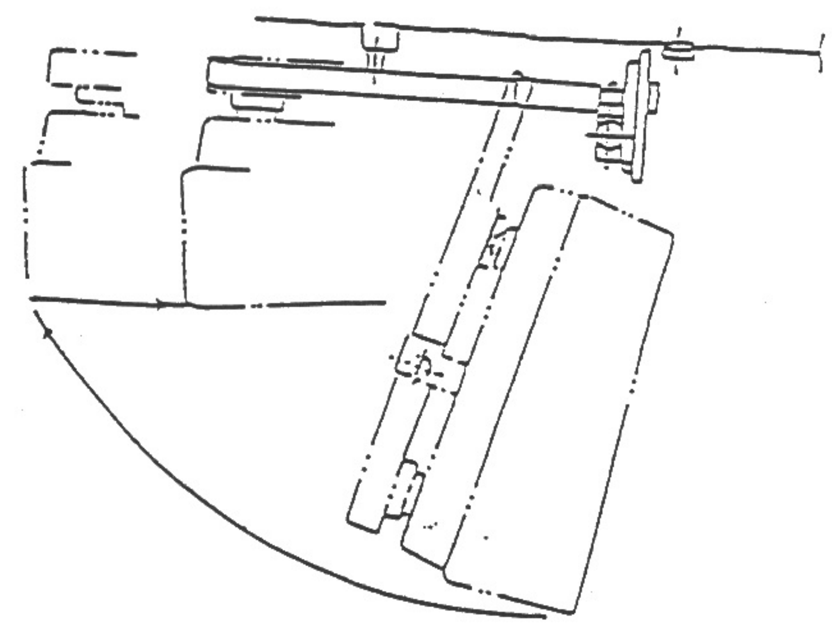
H. Repeat with other projector's **hanger bracket**.



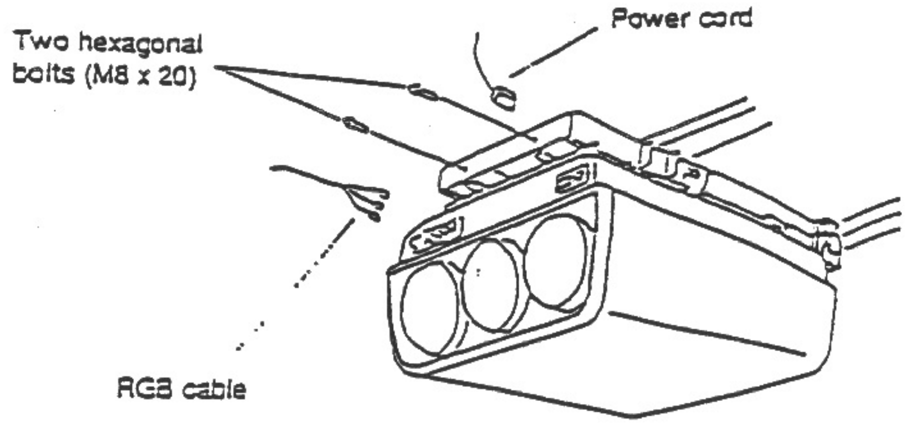
I. Using two people, lift the **projector** to catch the '**hooks**' located at the rear of the **projector hanger**.



J. Swing **projector** to horizontal and slide it back in place.



K. Secure **projector hanger** to **hanger bracket** with **M8x20** bolts.



L. Repeat with other projector.

[4-2] PROJECTOR CABLING

A. Place the **center tunnel** assembly between **Personal Assemblies 3 & 4** and butt it up against the **gate base** assembly at the **center pillar.**

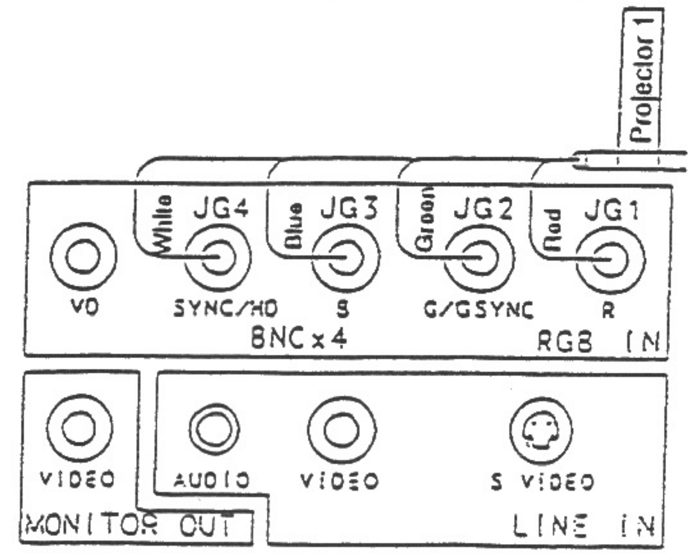
B. Spin the level adjusters DOWN and raise the top level of the **tunnel** to the approximate upper level of the **gate base** assembly.

C. Pass the 2 **quad-BNC** projector cables from the **control box** (C), down the **center tunnel,** through the oblong hole in the center pillar, up the channel and connect appropriately.

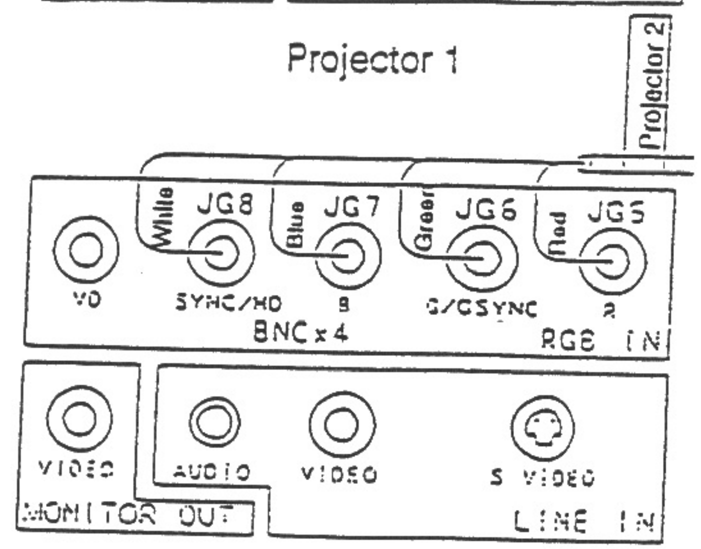
** Facing the screen, the **LH** projector is **No. 1** and the **RH** projector is **No. 2.**

D. Connect the AC-power cables as well and plug into the plug-molds mounted in the **gate center.**

E. Using tie-wraps, strain relief the projector signal and power cables.



Projector 1

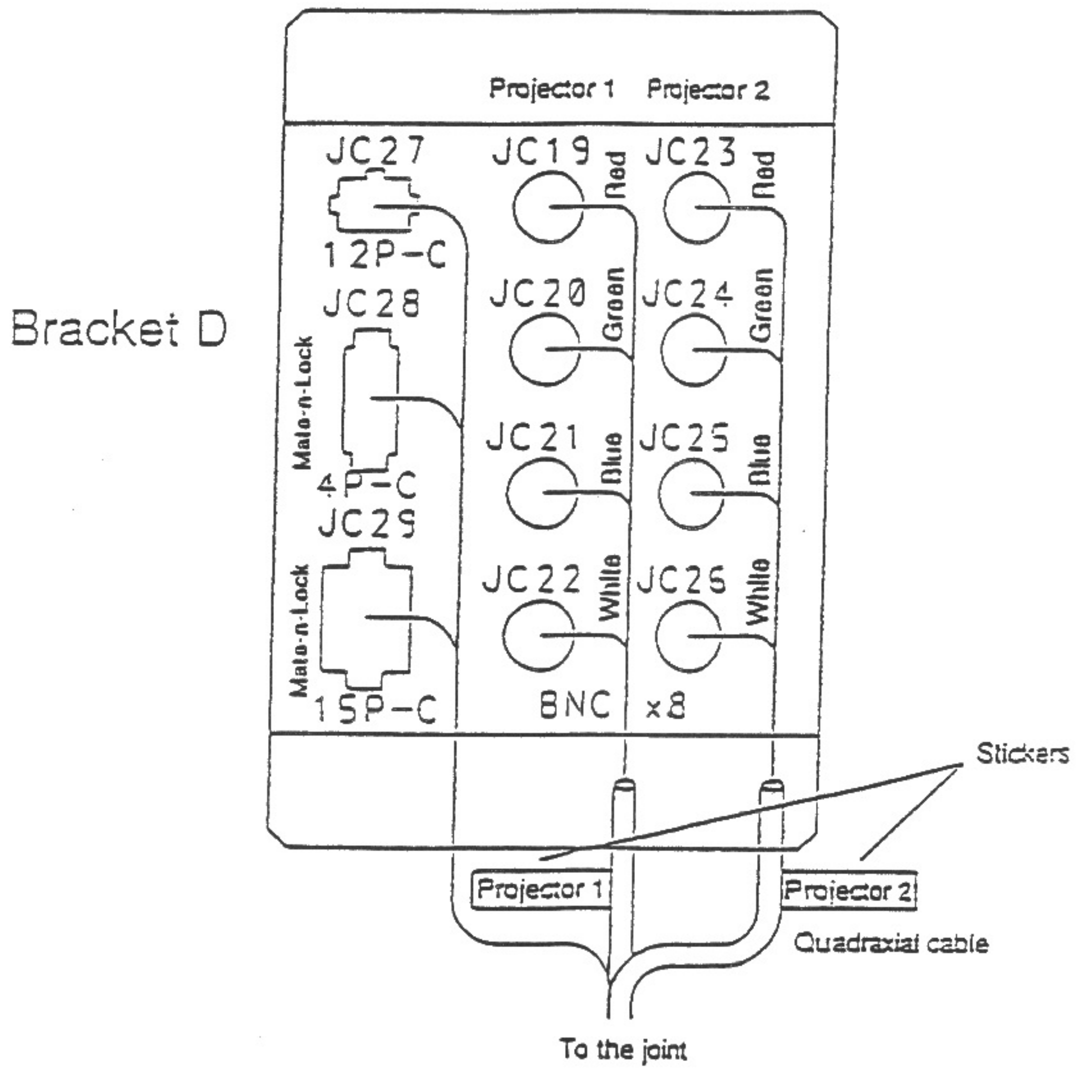


Projector 2

F. Feed the **power/lamp/speaker** (Mate-n-Lock) **cable assembly** along the same path and join the cable-connectors coming from the **gate center**.

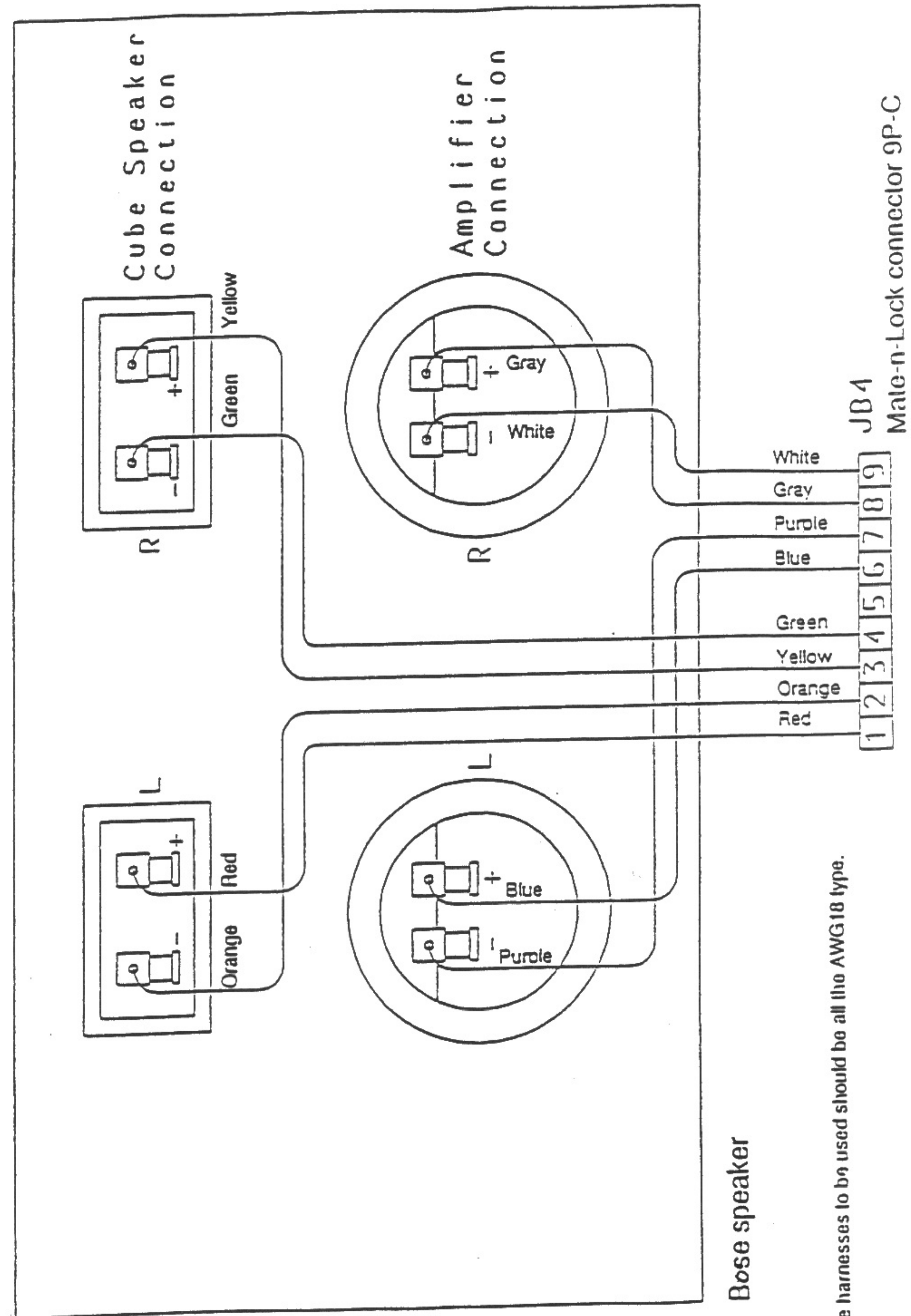
G. Place the **rear speaker assembly** at the foot of the **center pillar**, atop the **center tunnel** and join the connectors there as well.

H. Finally, connect the **2 projector cables** and the **power/lamp/speaker cable** at the **control box** (C).



Note: The connectors which are not indicated are the mini-Mate-n-Lock connectors.

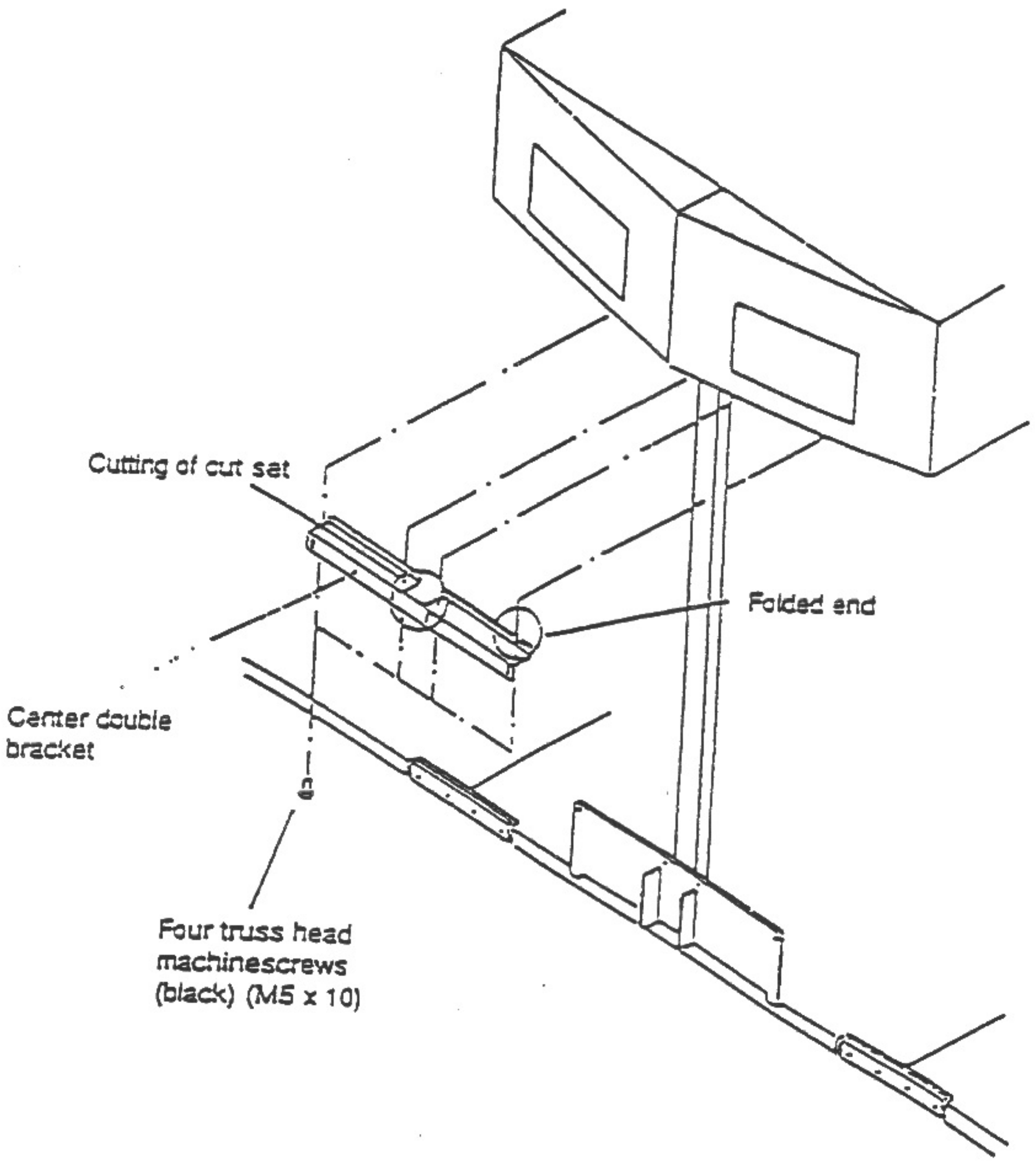
<u>Connections of Control box (C) and the Joints</u>



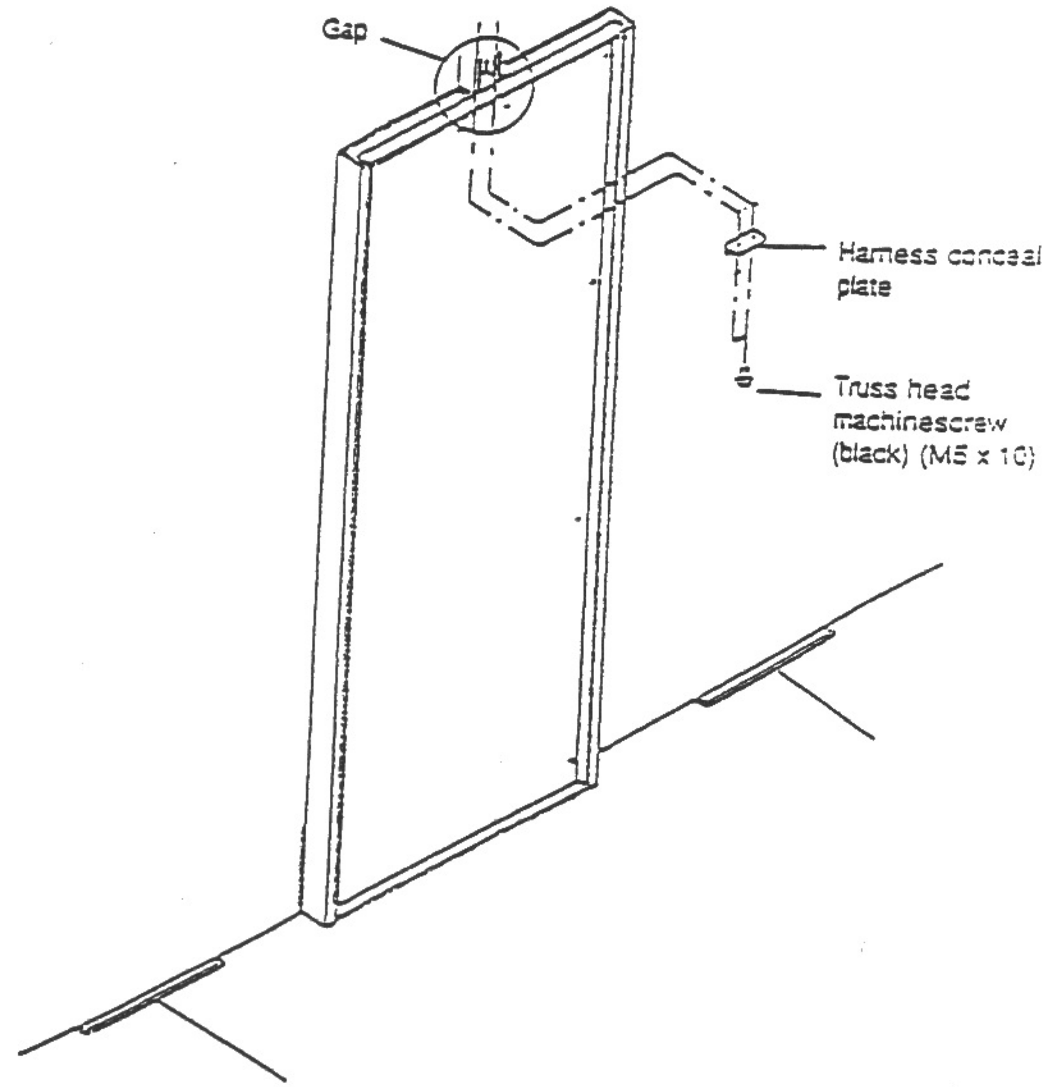
The harnesses to be used should be all the AWG18 type.

[4-3] CENTER WALL

A. Fasten the **projector covers** onto the **gate center**, then the **center double bracket** on it with black **M5x10** screws.



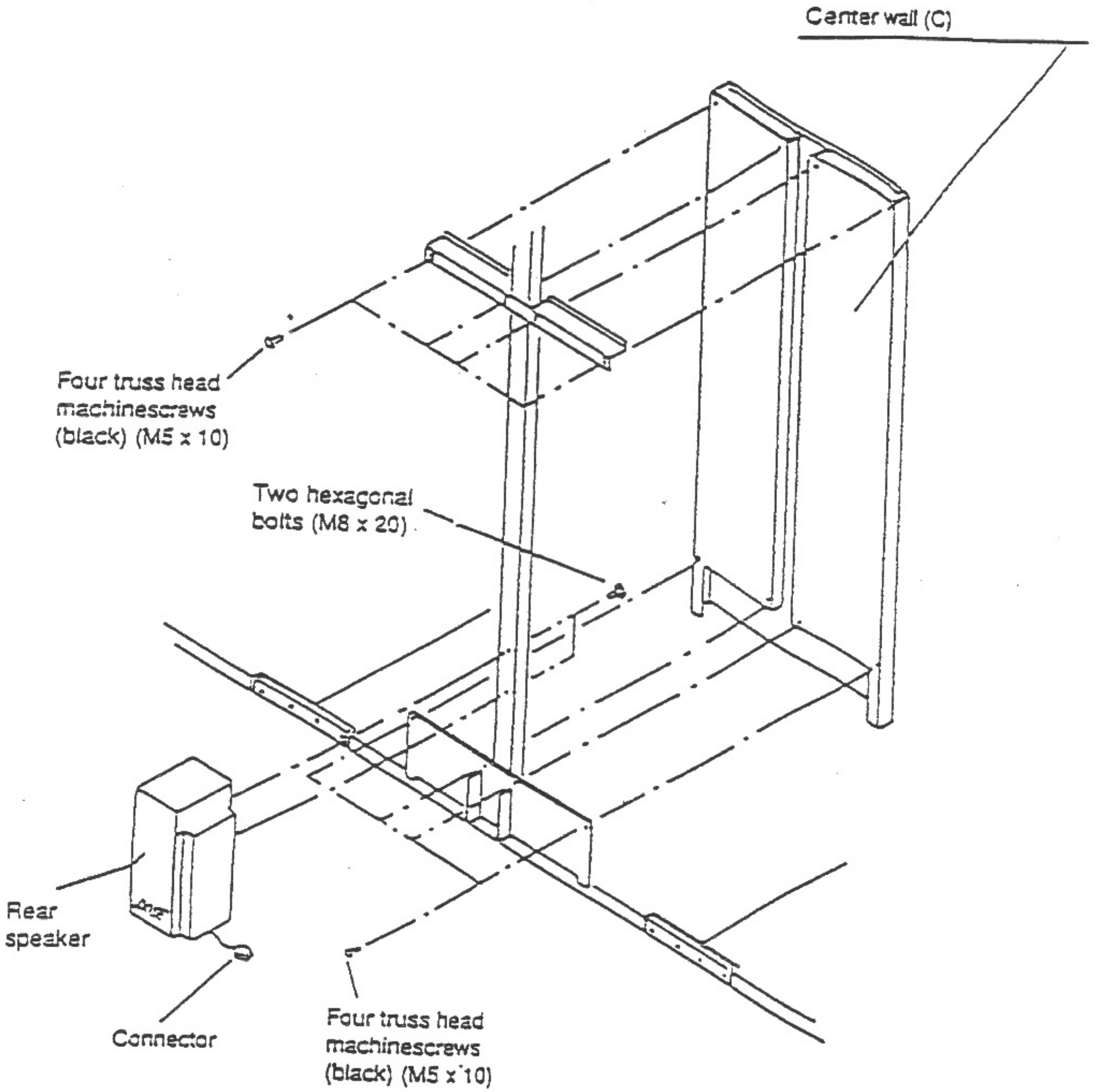
B. Fasten the **harness conceal plate** with black **M5x10** screws so that it conceals any gap between the **center pillar** and the **center wall.**



B. Secure **speaker-hood** to **center pillar** using **carriage bolts**.

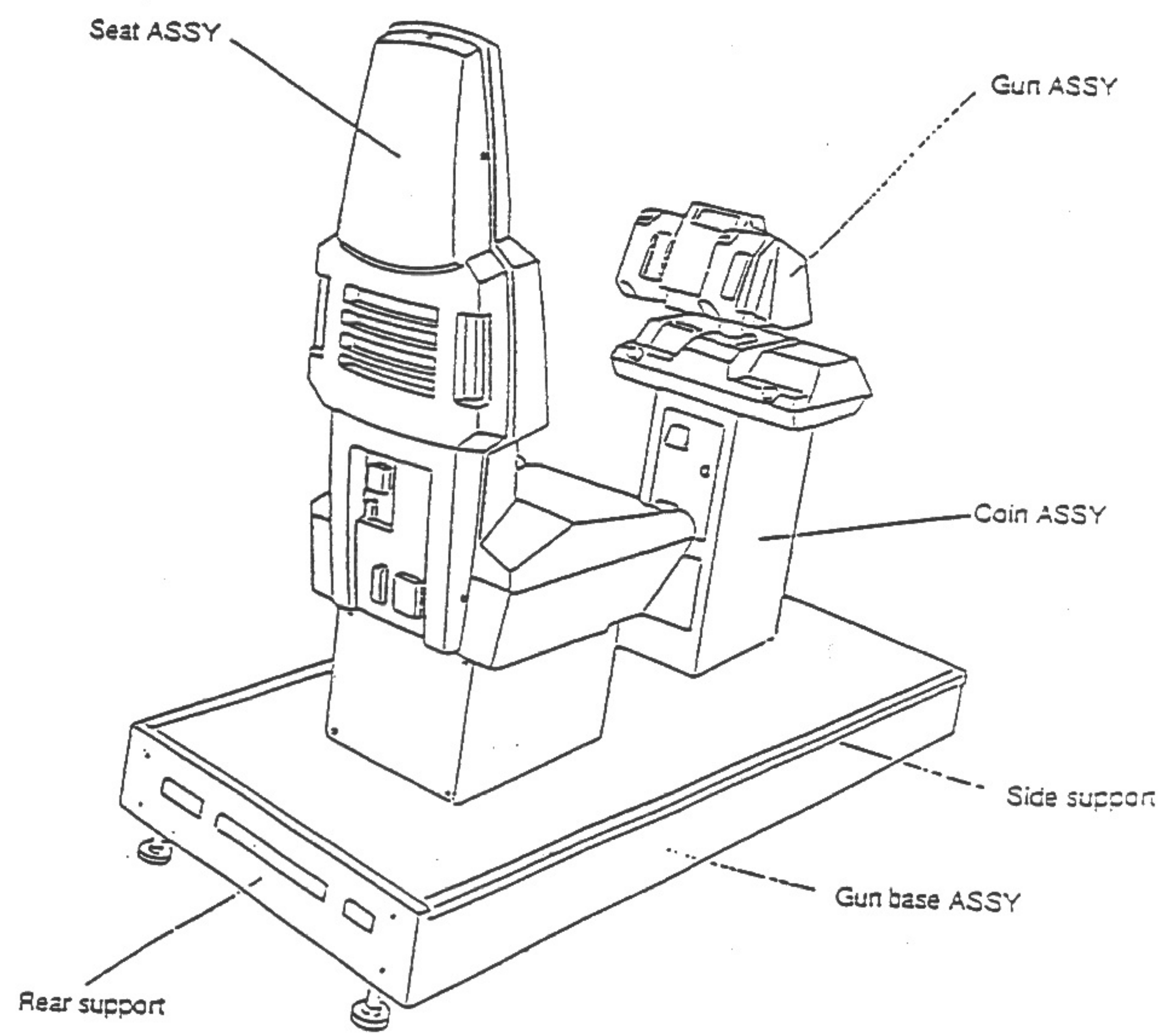
C. Guide **speaker** assembly beneath **hood** and press down on hood to fix in place on **top** of speaker. Fasten **front speaker-mount** to **center tunnel cover**.

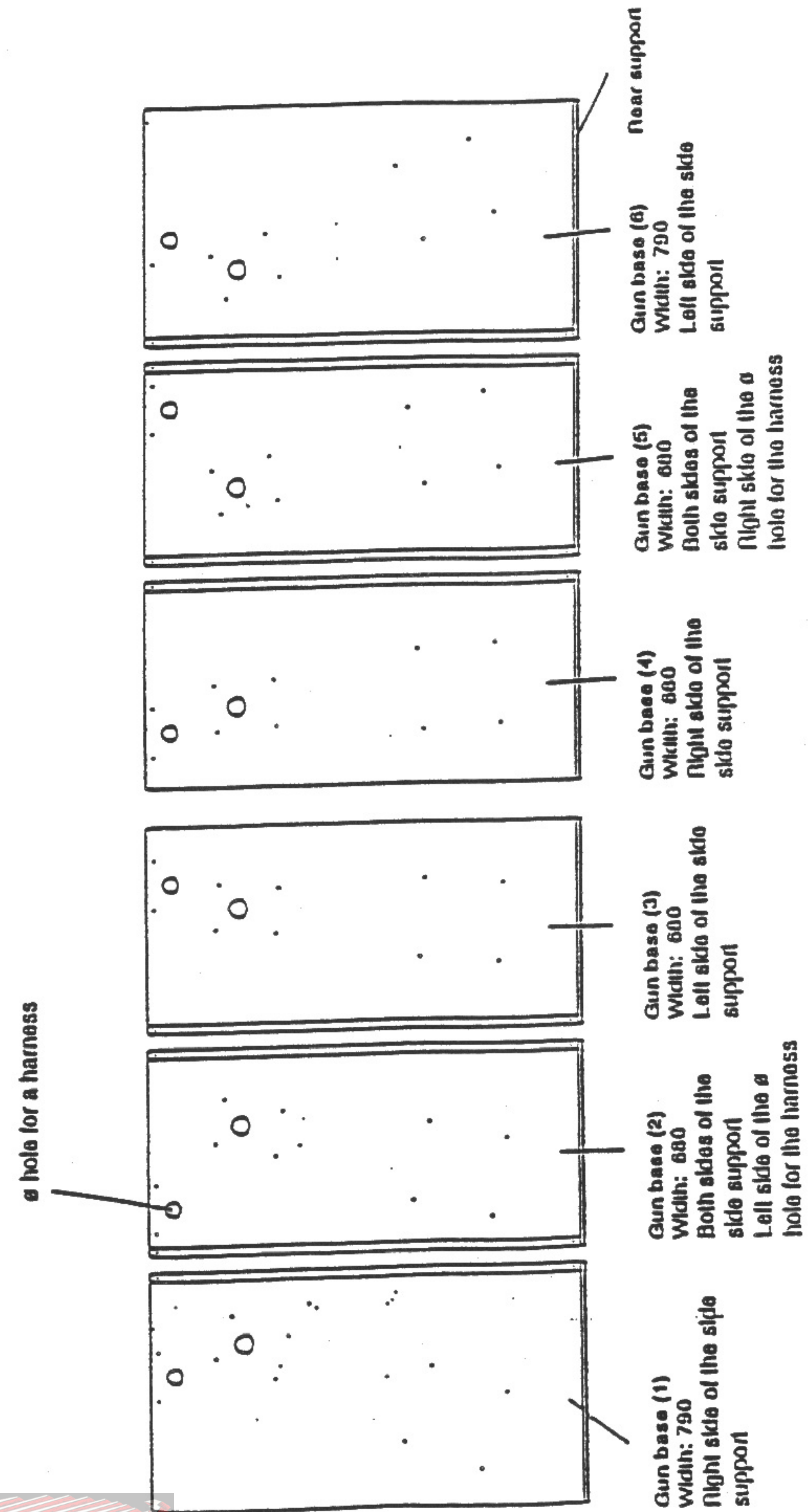
D. Verify cabling is secure *inside* the **center pillar's channel**, then fasten the **center wall** with <u>black</u> **M5x10** screws.



[5] PERSONAL ASSEMBLY

A. Spin the level adjusters DOWN (approx 2-7/8").
Verify/maintain level of each unit.





B. Move assemblies **(3)** and **(4)** up against the **center tunnel** and **gate base**.

1. Verify **gate base** is high enough to prevent **Personal Assemblies** from going back any further.

2. Verify/adjust level adjusters on **center tunnel** for alignment with **Personal Assemblies** height (280 mm).

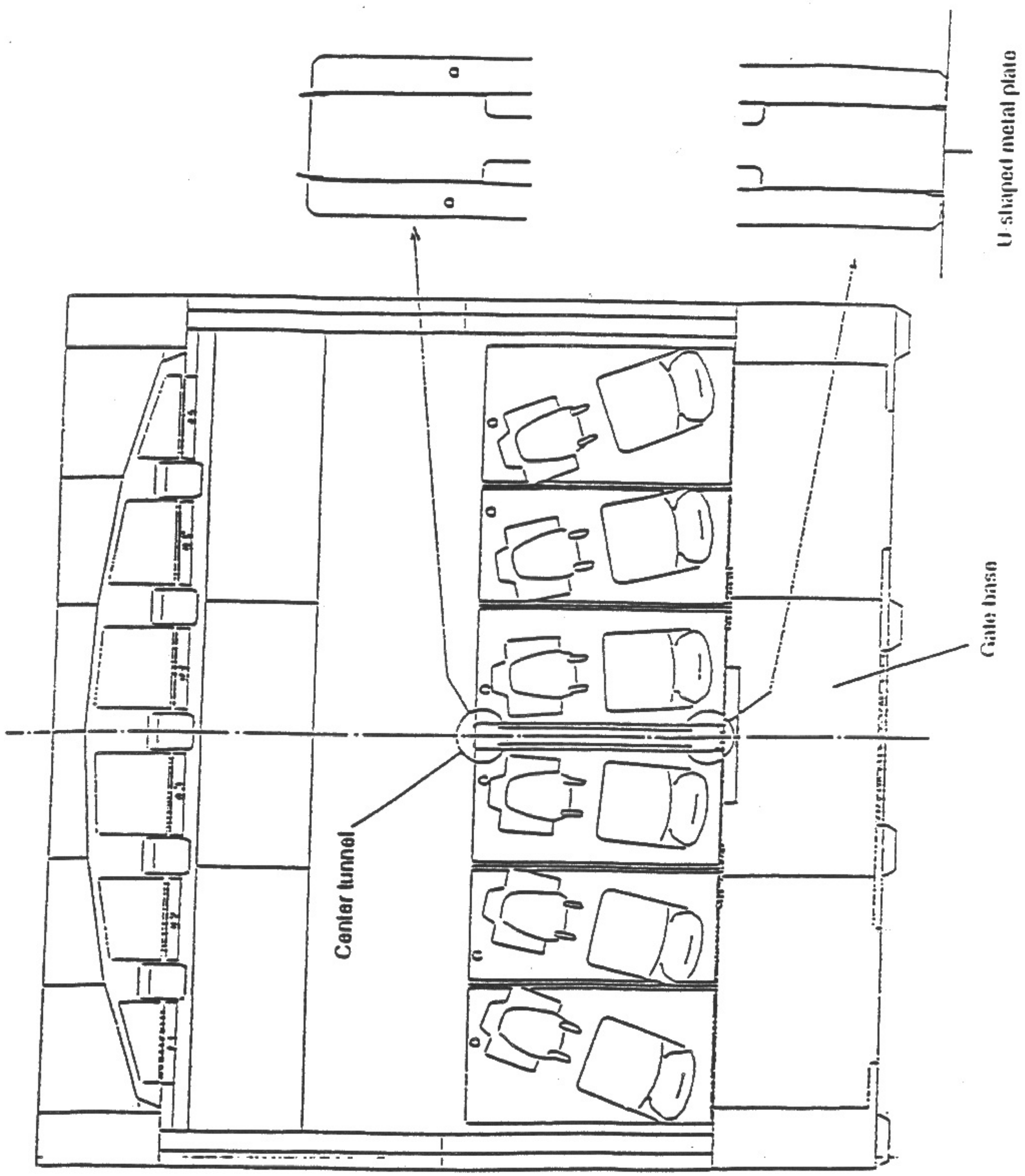
C. Move assemblies **(2)** and **(5)** up against the **gate base** and assemblies **(3)** and **(4)**.

1. Verify/adjust level adjusters on assemblies **(2)** and **(5)** to maintain exact level of assemblies **(3)** and **(4)**.

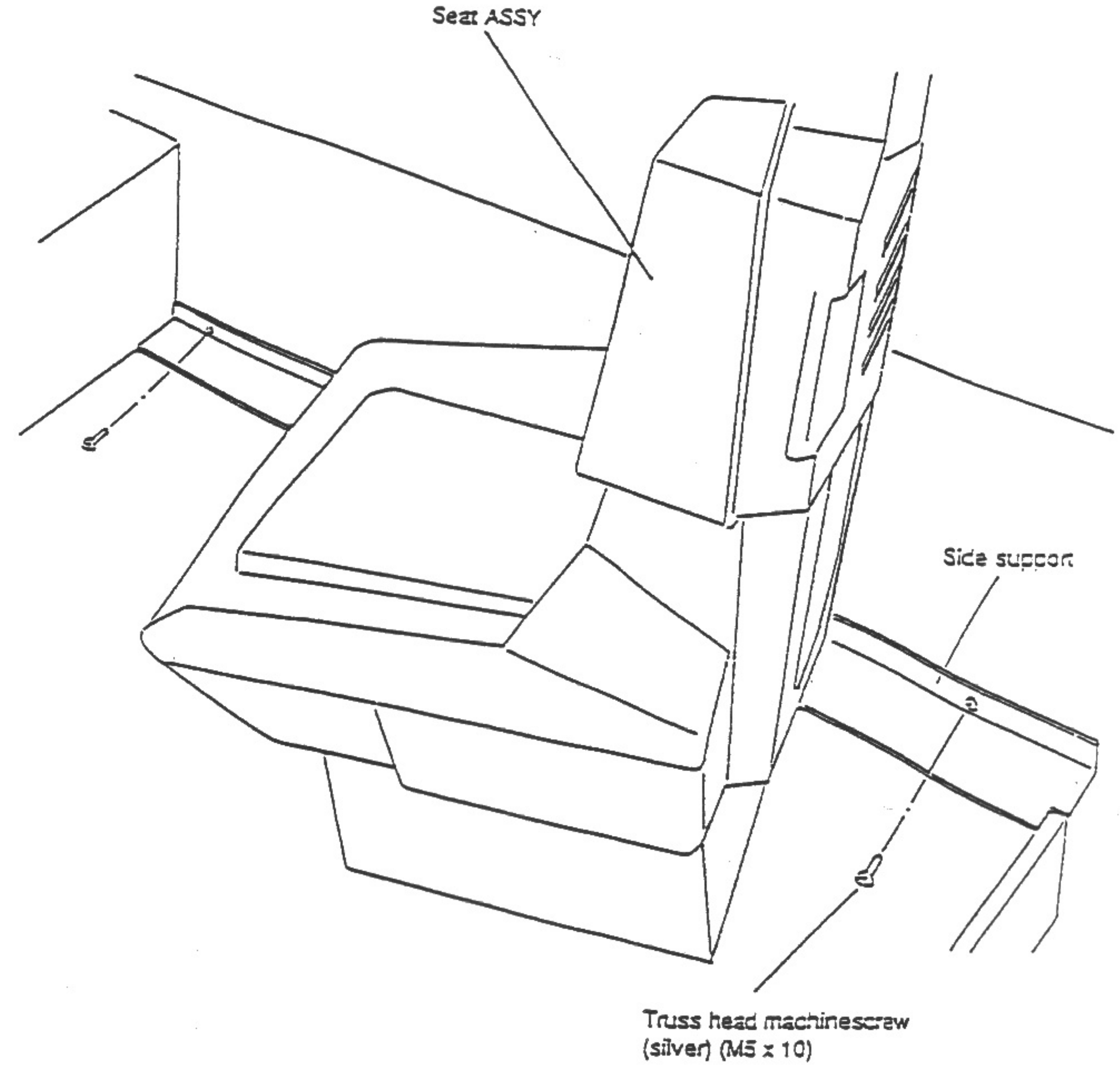
D. Move assemblies **(1)** and **(6)** up against the **gate base** and assemblies **(2)** and **(5)**.

1. Verify/adjust level adjusters on assemblies **(1)** and **(6)** to maintain exact level of **all installed assemblies**.

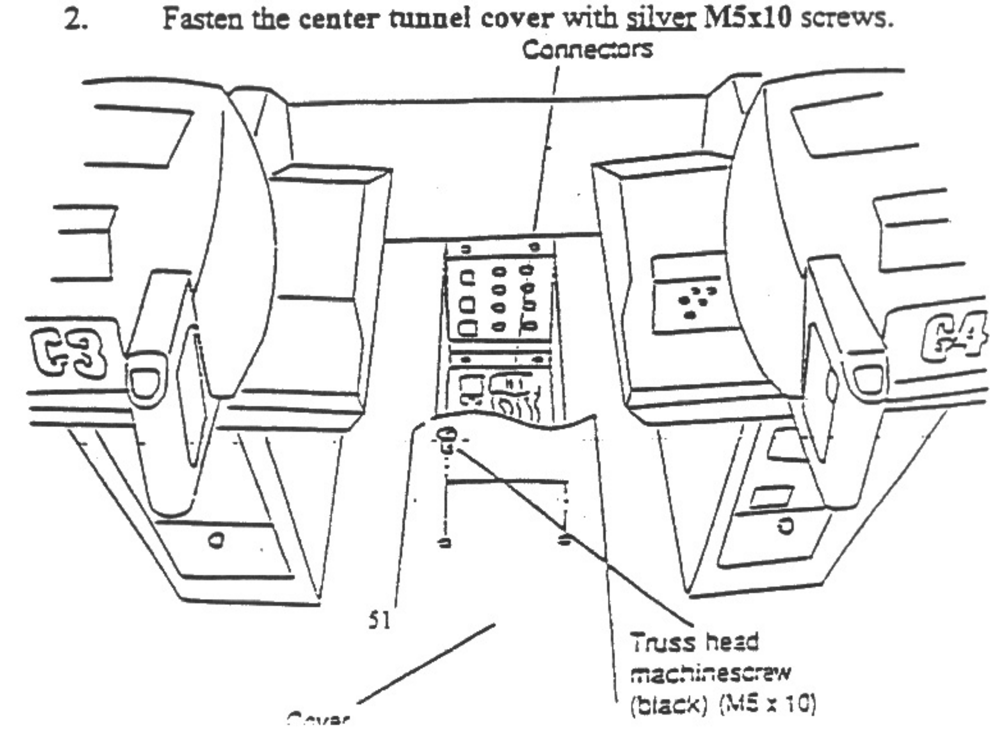
E. Verify **all assemblies** are **flush** up against the **gate base**, exactly level with each other and that the gaps between the end assemblies, **(1)** and **(6)**, and their respective walls are **identical**.



1. Fasten the (L & R) side supports to the wall bases with silver M5x10 screws.



2. Fasten the center tunnel cover with silver M5x10 screws.



[6-1] CONTROL BOX

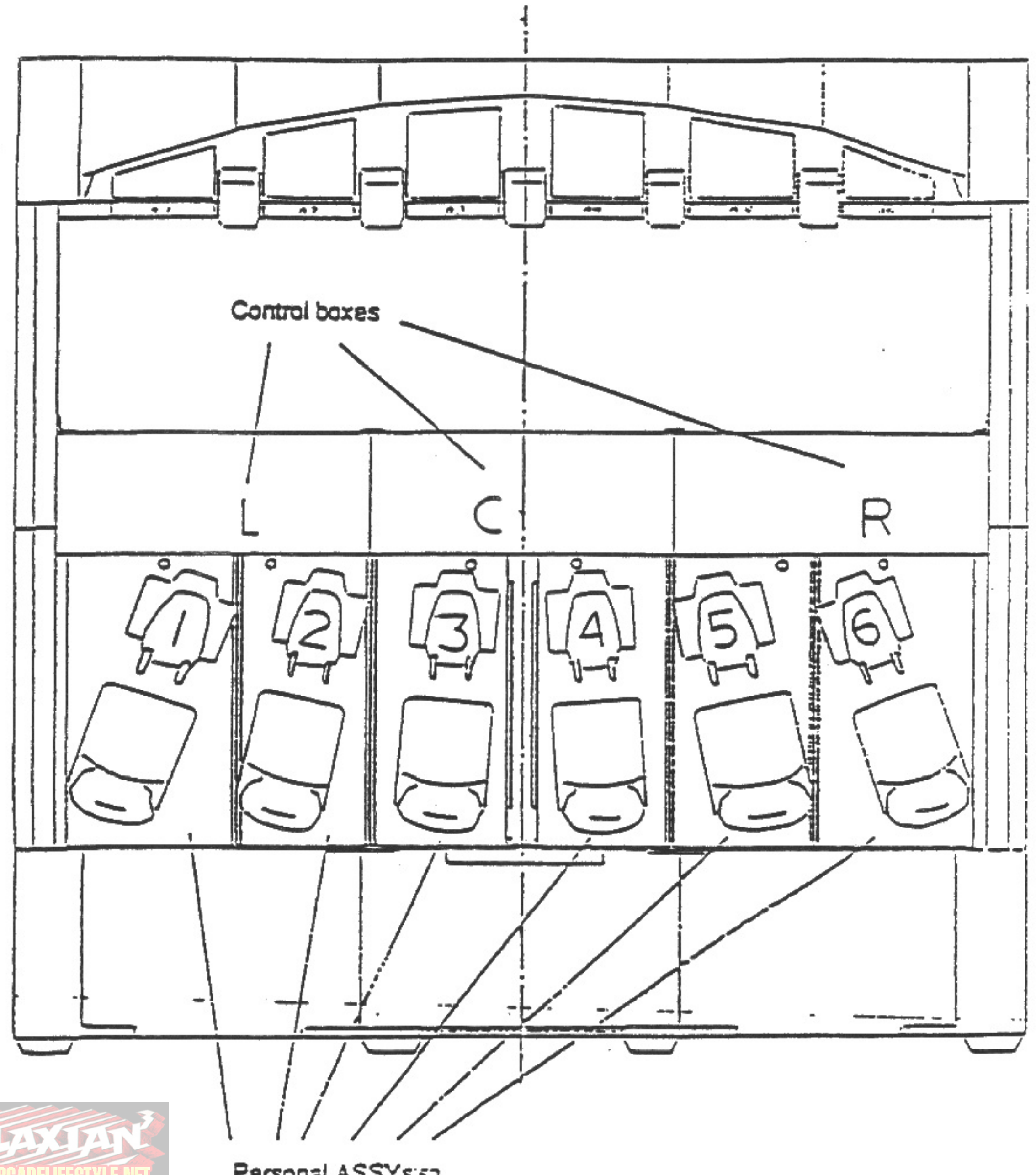
•• There are 3 kinds of control boxes:

(C): Contains **PCB** rack and power control panel.
Four fan motors are located on door.

(L): Contains **Amplifiers & Laser Disc Players.**
Two fan motors are located on door.

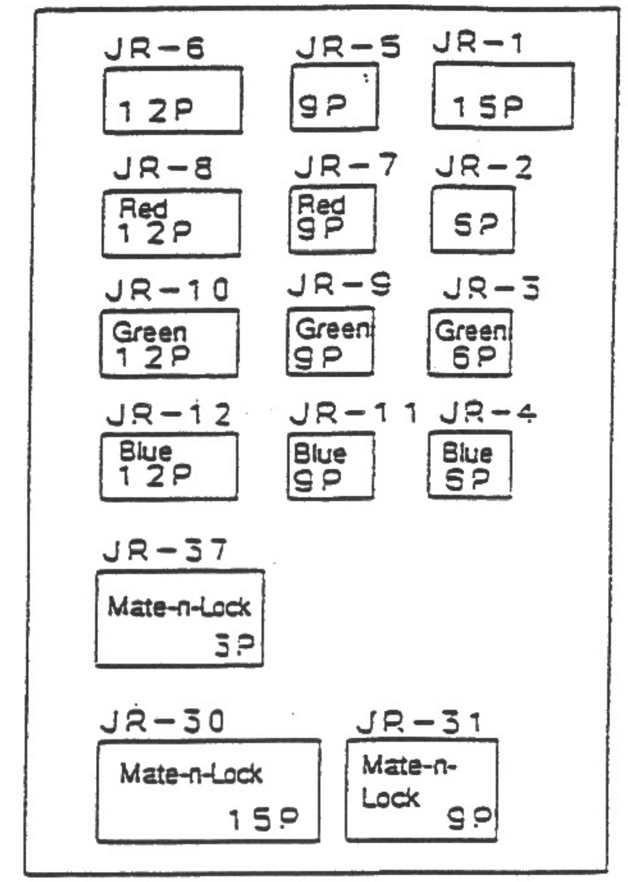
(R): Contains three **Personal Assy PCB's** and power control panel. No fans on door.

A. Verify control boxes are properly positioned, inter-box cables are properly routed, then adjust <u>FRONT SIDE</u> level adjusters to raise units off of casters.



B. Connect the mini-Mate-n-Lock and Mate-n-Lock connectors from **control box** (R), to bracket (A) inside **control box** (C).

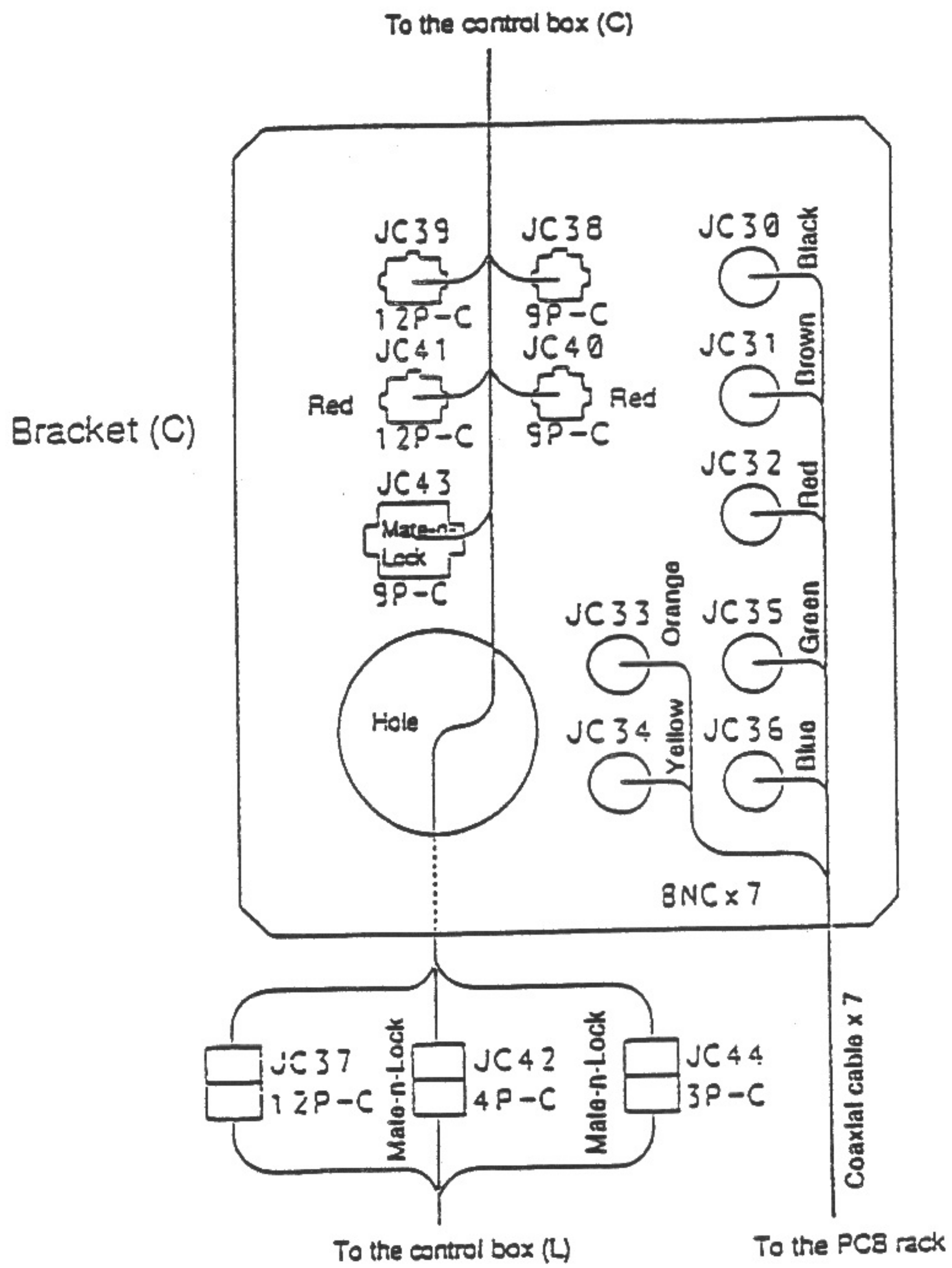
Positions of the connectors to be connected



Note: Fix this bracket to the control box (C).

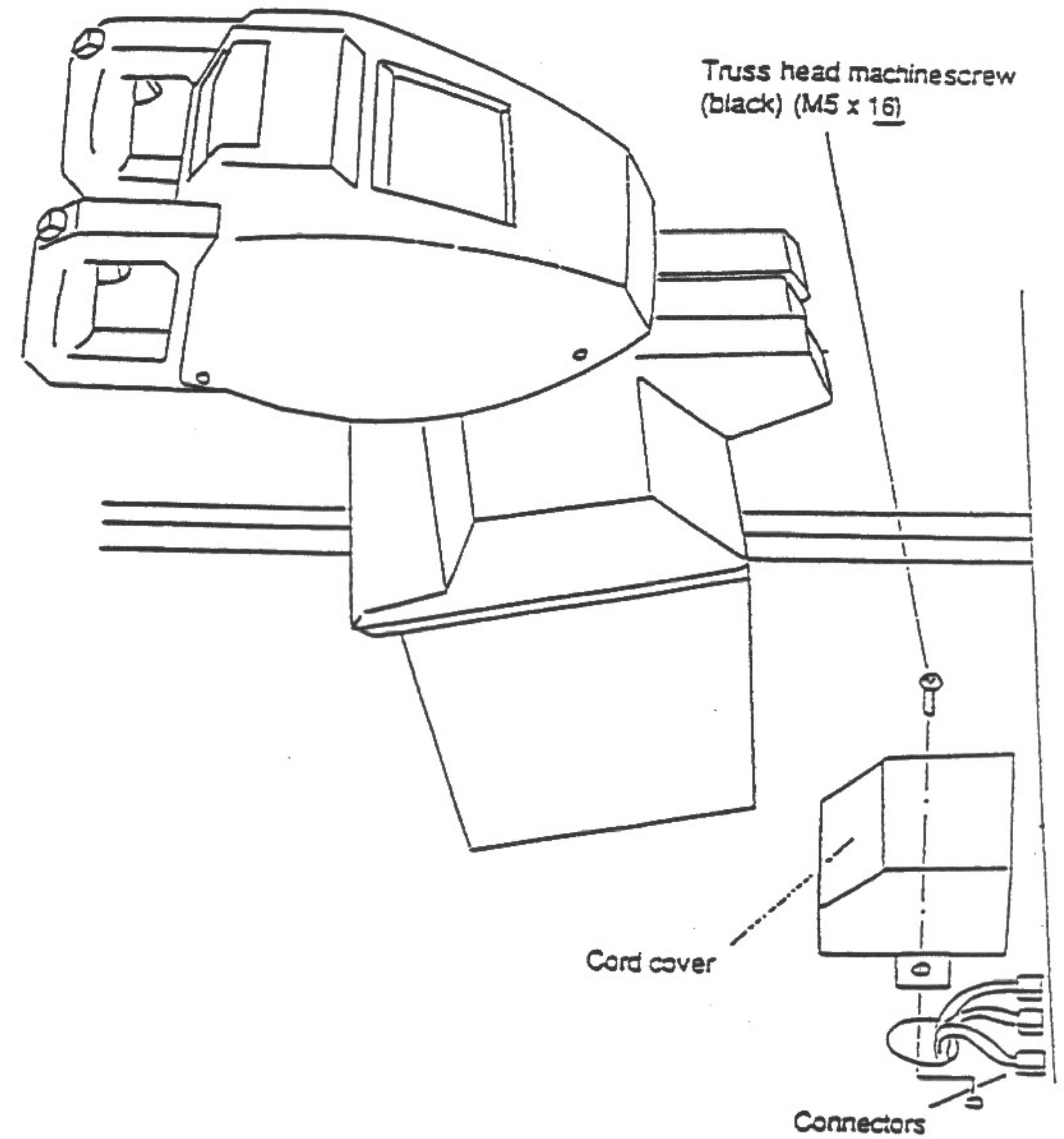
C. Join the connectors of **control box** (L) and that from the **wall base** (L).

D. Connect the mini-Mate-n-Lock, Mate-n-Lock and BNC-coax cables from **control box** (C) to bracket (C) and to the rack harness **inside control box** (L).

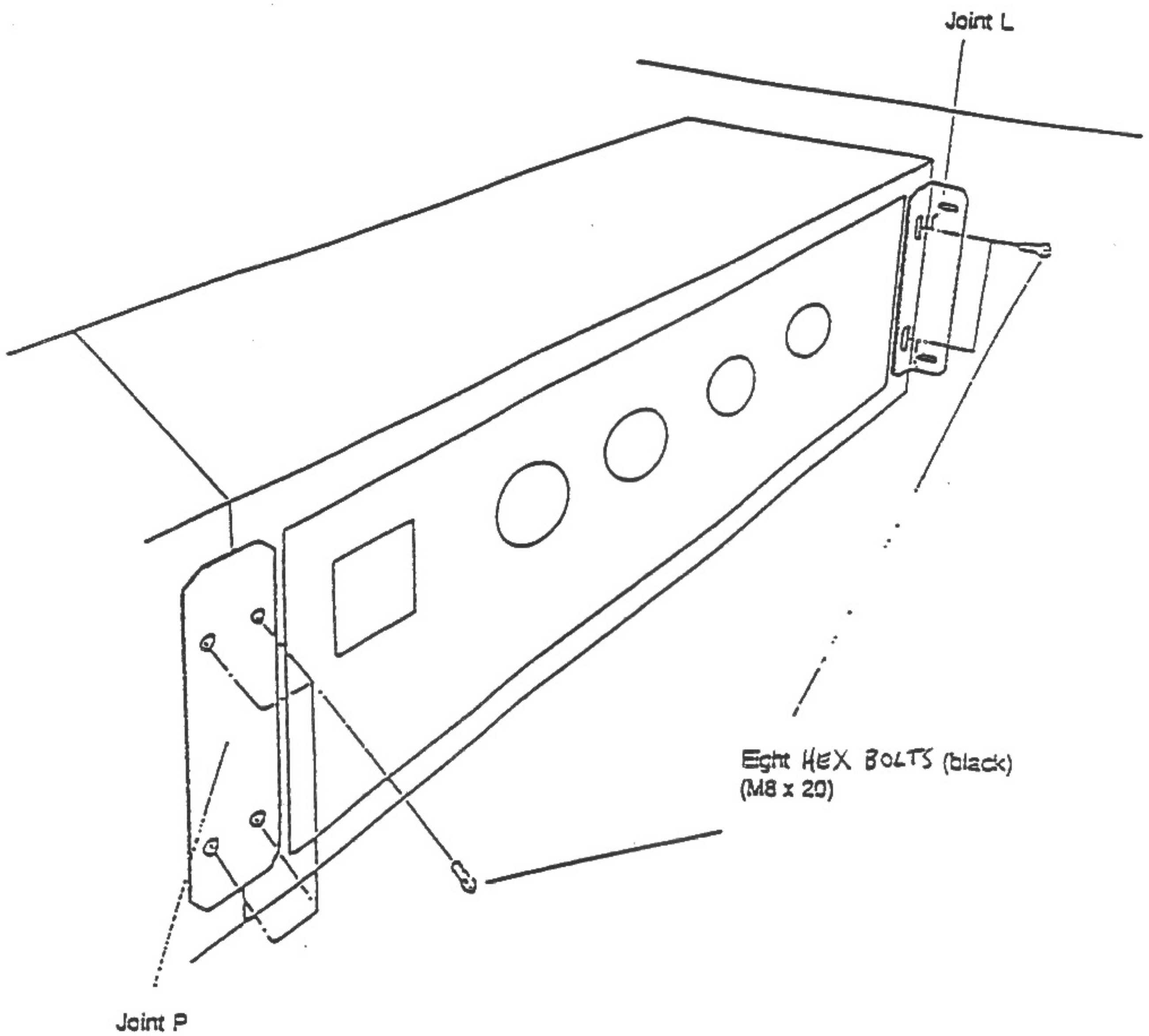


E. Remove the **cord covers** on each **Personal Assembly** and join the connectors from the associated **control box.**

F. Replace the **cord covers** when done using black **M5x16** screws.



G. Fasten joints (P) and (L) to the appropriate **control boxes** and wall **bases** using black **M8x20** screws.

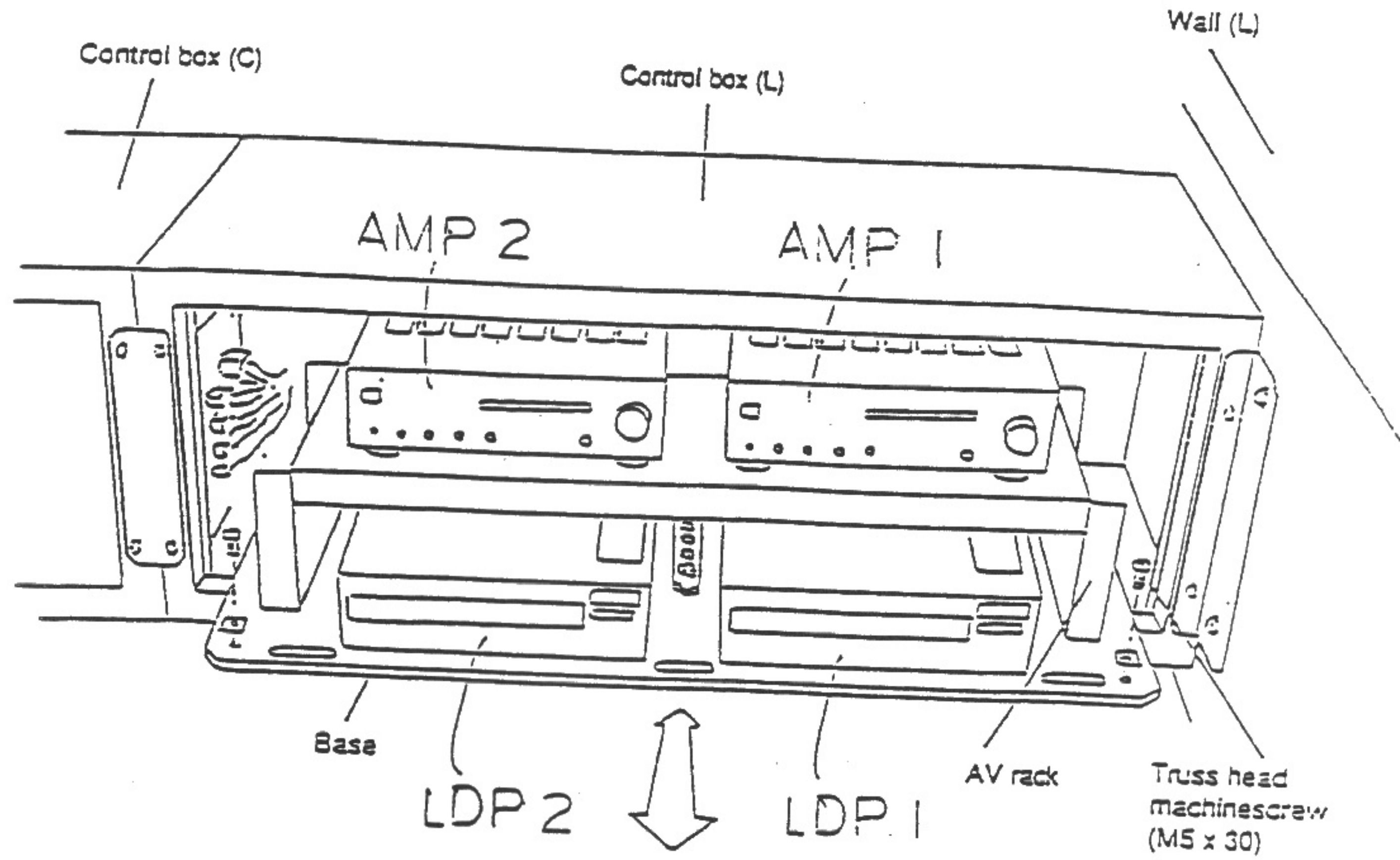


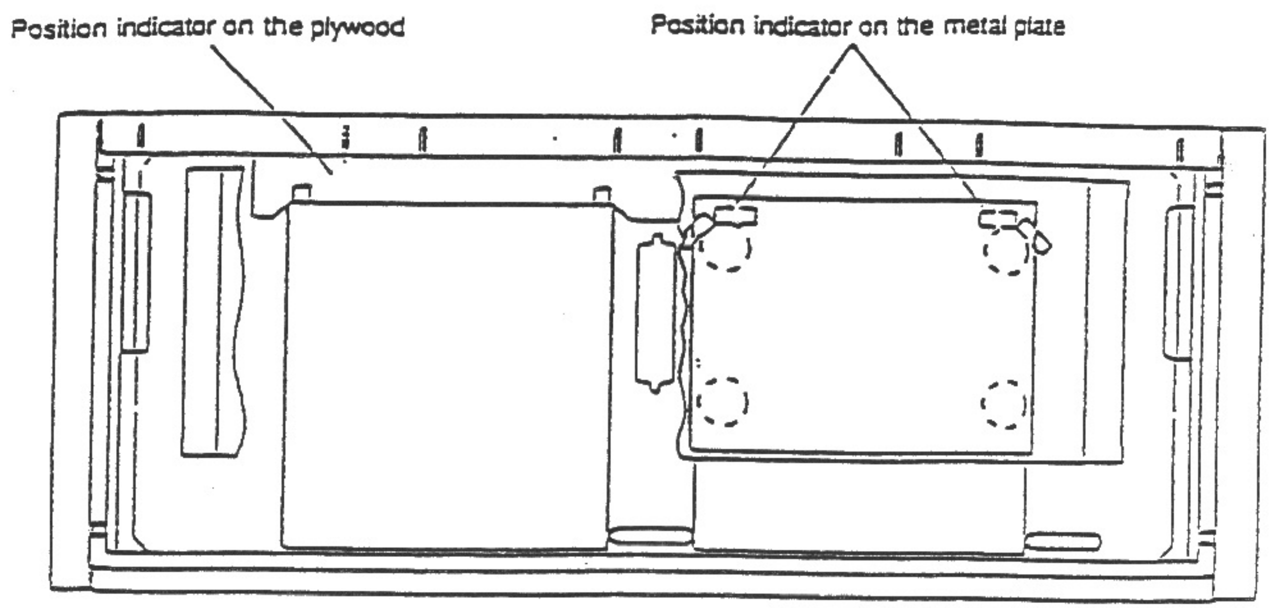
[6-2] LASER DISC and AMP

A. In **control box** (L), pull out the combined plywood base with AV rack and set it directly in front of the unit.

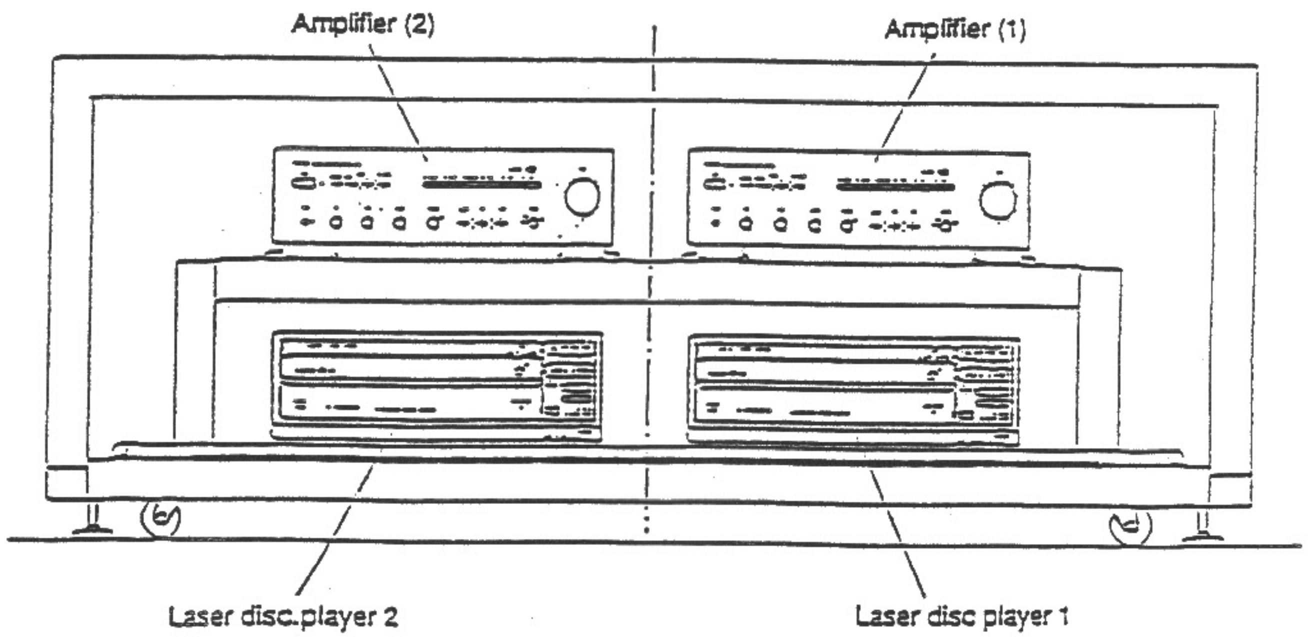
1. Set the **75 ohm switch** of LDP 1 to **ON** and LDP 2 to **OFF**.

2. **Install the LDPs** on the lower rack, backed up against the guides.





Control box (L)



B. Attach speaker harness assembly to speaker terminals on both amplifiers.

C. Install the **amplifiers** on the upper rack and set the switches/controls as follows:

SPEAKERS A	=	ON
SPEAKERS B	=	OFF
SUBSONIC FILTER	=	OFF
PURE DIRECT	=	ON
INPUT	=	CD
BASS	=	0
TREBLE	=	0
BALANCE	=	0
LOUDNESS	=	FLAT
VOLUME	=	12

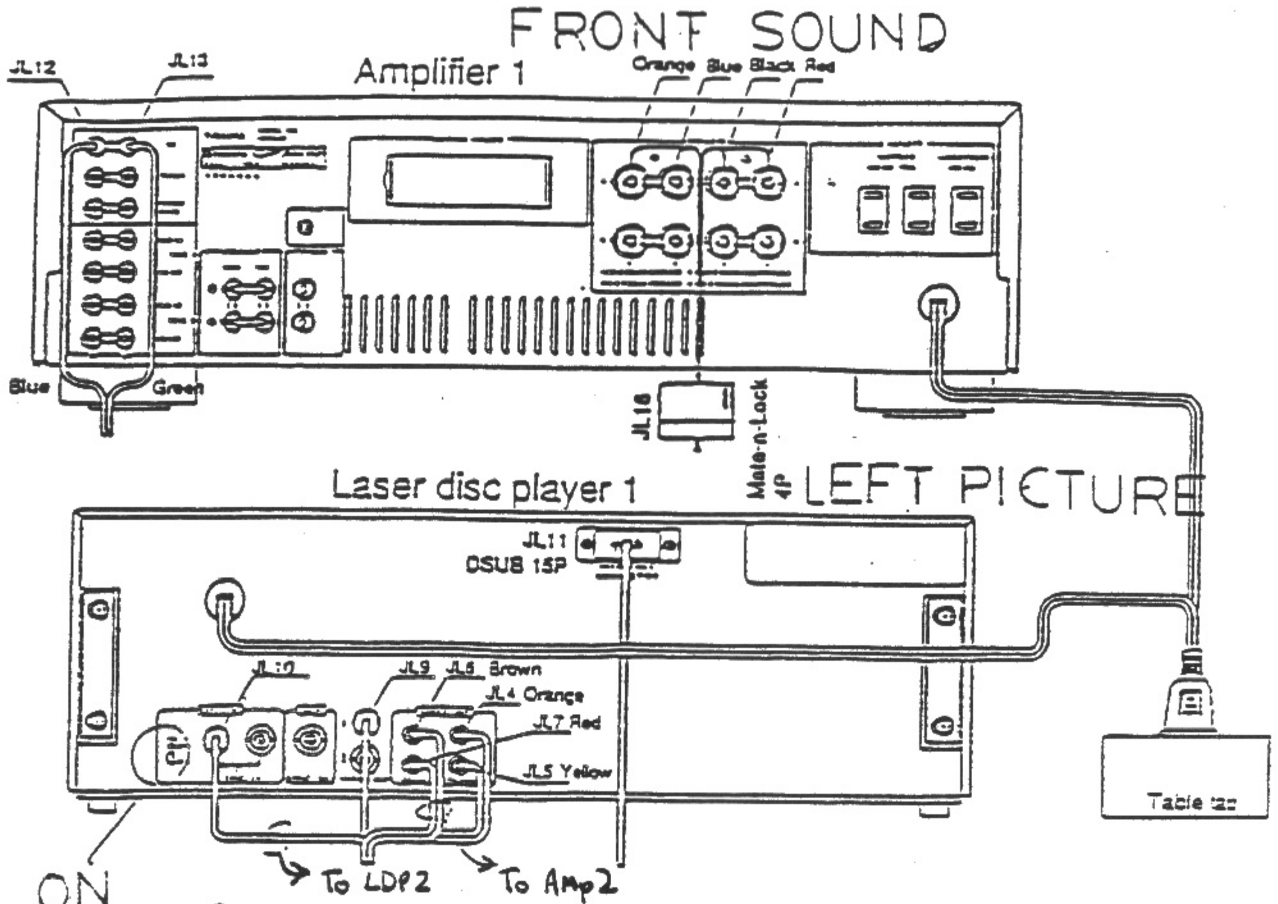
D. Make all cable connections between **amplifiers, laser disc players** and **bracket** (**C**).

INTERNAL CABLES (already routed):

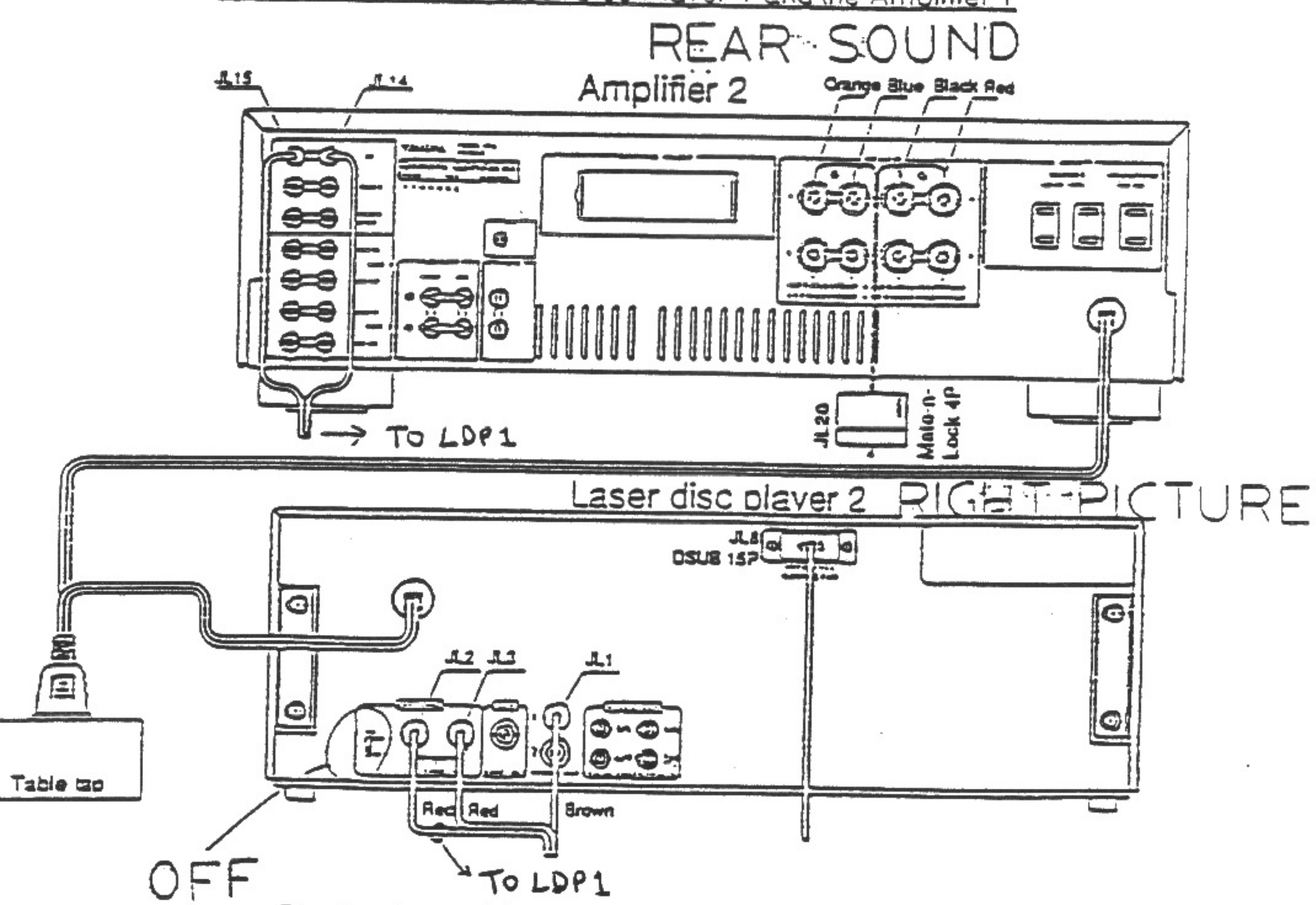
Blue	(RCA)	to	AMP 1 CD - R
Green	(RCA)	to	AMP 1 CD - L
Orange	(RCA)	to	LDP 1 SOUND 1/L
Yellow	(RCA)	to	LDP 1 SOUND 2/R
Black	(BNC-RCA)	to	LDP 1 VIDEO 1
Brown	(BNC-RCA)	to	LDP 2 VIDEO 1
Red	(BNC)	to	LDP 2 SYNC 1

EXTERNAL CABLES (supplied separately):

Brown	(RCA)	from	AMP 2 CD - L	to	LDP 1 SOUND 3/L
Red	(RCA)	from	AMP 2 CD - R	to	LDP 1 SOUND 4/R
Red	(BNC)	from	LDP 2 EXT SYNC 2	to	LDP 1 EXT SYNC 1



Connections of the Laser Disc Player 1 and the Amplifier 1



Connections of the Laser Disc Player 2 and the

[6-3] PCB

A. Open door of **control box** (C), disconnect **fan & lighting** cables and remove the door.

B. Disconnect all the connectors on **bracket** (B) and the connectors **JC30** to **JC36** on **bracket** (C).

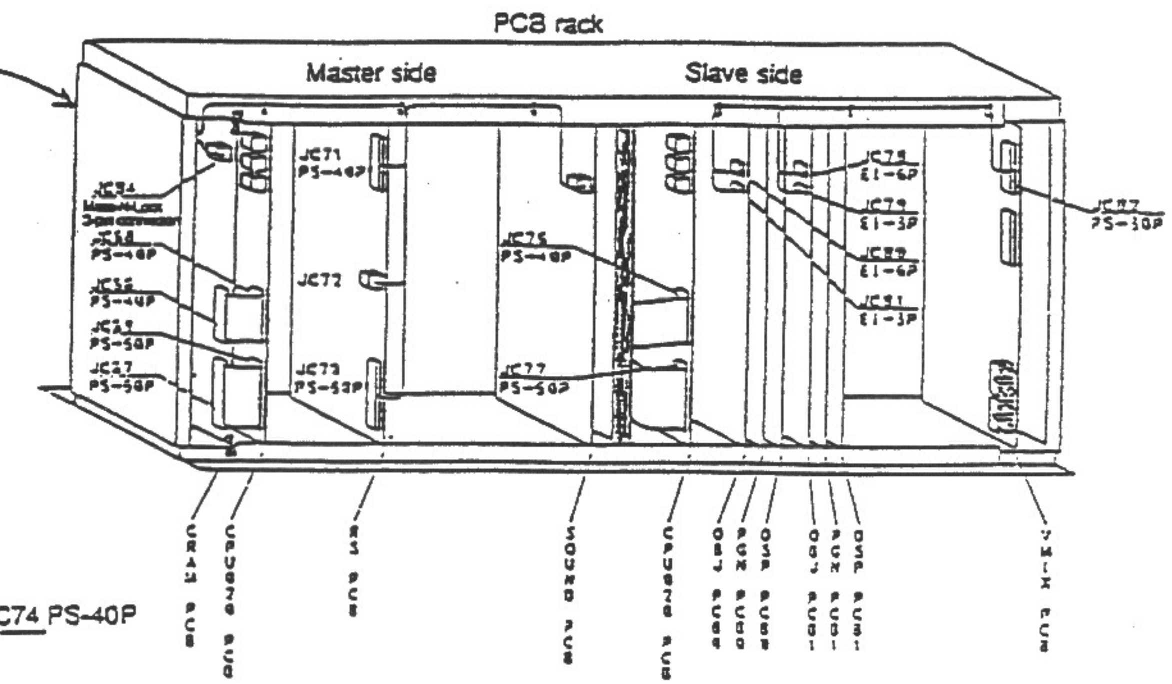
C. Remove the two **M5x30** screws holding the PCB rack and base in place and pull it out.

D. Install the **CRAM PCB** as follows:

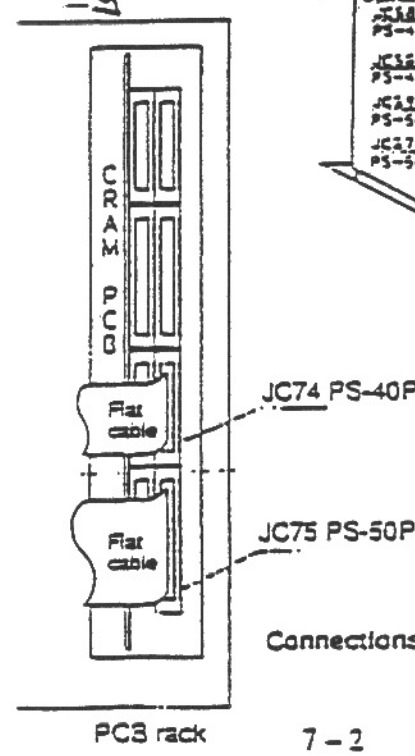
1. Remove the **PCB fixing brackets** on the **left-most** slot.

2. Slide the **CRAM PCB** in place, components facing left.

3. Connect the **three** connectors on the **front** and **two** at the **rear**.



Connections of the PCBs



Connections of the Rear Side of the CRAM-PCB

7 – 2

4. Reinstall **PCB fixing brackets**, replace **PCB rack and base** in **control box** and reconnect all connectors removed.

E. Install the Master **CPU020 PCB** next and connect the **two ribbon cables** coming from the **CRAM PCB**.

** The Master CPU020 PCB is identical to the Slave EXCEPT for its **ROM** and **jumper pin settings**.

F. Install the **RS PCB** and connect its **three** cables.

G. Install the **Sound PCB** and connect its **one** cable.

H. Install the Slave **CPU020 PCB** and connect the **two ribbon cables**.

I. Install **both sets** of **OBJ**, **PGN** & **DSP** cards and connect the **two** cables (each) to the **OBJ** cards.

** The **first set** of **OBJ**, **PGN** & **DSP** boards function for the **RIGHT** side while the **second set** functions for the **LEFT** side.

J. Lastly, install the **VMIX PCB** and connect its cable.

K. Reconnect the **fan & lighting** cables and close the door.

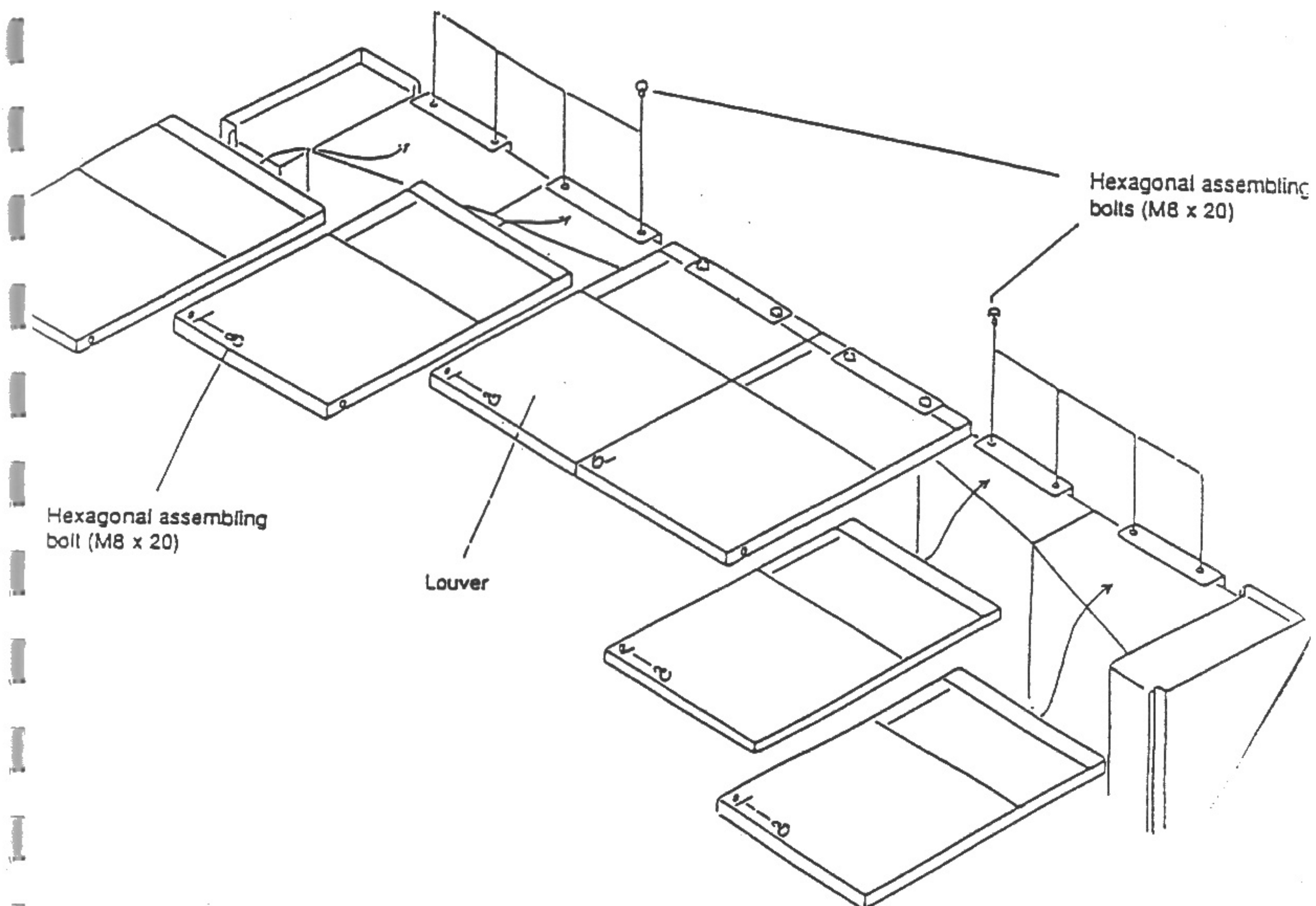
[7] ROOF

A. Place **screen roofs** (3) and (4) on the **frames** and slide them between the **brackets** located at the back.

1. **Loosely fasten** at **front** and **rear** with **M8x20** bolts.

B. **Similarly** install screen roofs (2), (5), (1) and (6).

1. **Align screen roofs** to the **center**, **eliminate** any **gaps between them**, **make them flush** with the **rear wall** and **tighten** down all bolts.



C. Lay three **roof support sections** on **top** of the **screen roofs** at the **rear** and three more on **top** of the **front gate assemblies**.

D. Assemble all **roof poles** and place **three** of them in the **middle slots** of the **roof support sections**.

E. Take the remaining two **roof poles** and insert them into the **sleeves** at each **end** of the **canvas roof cover**.

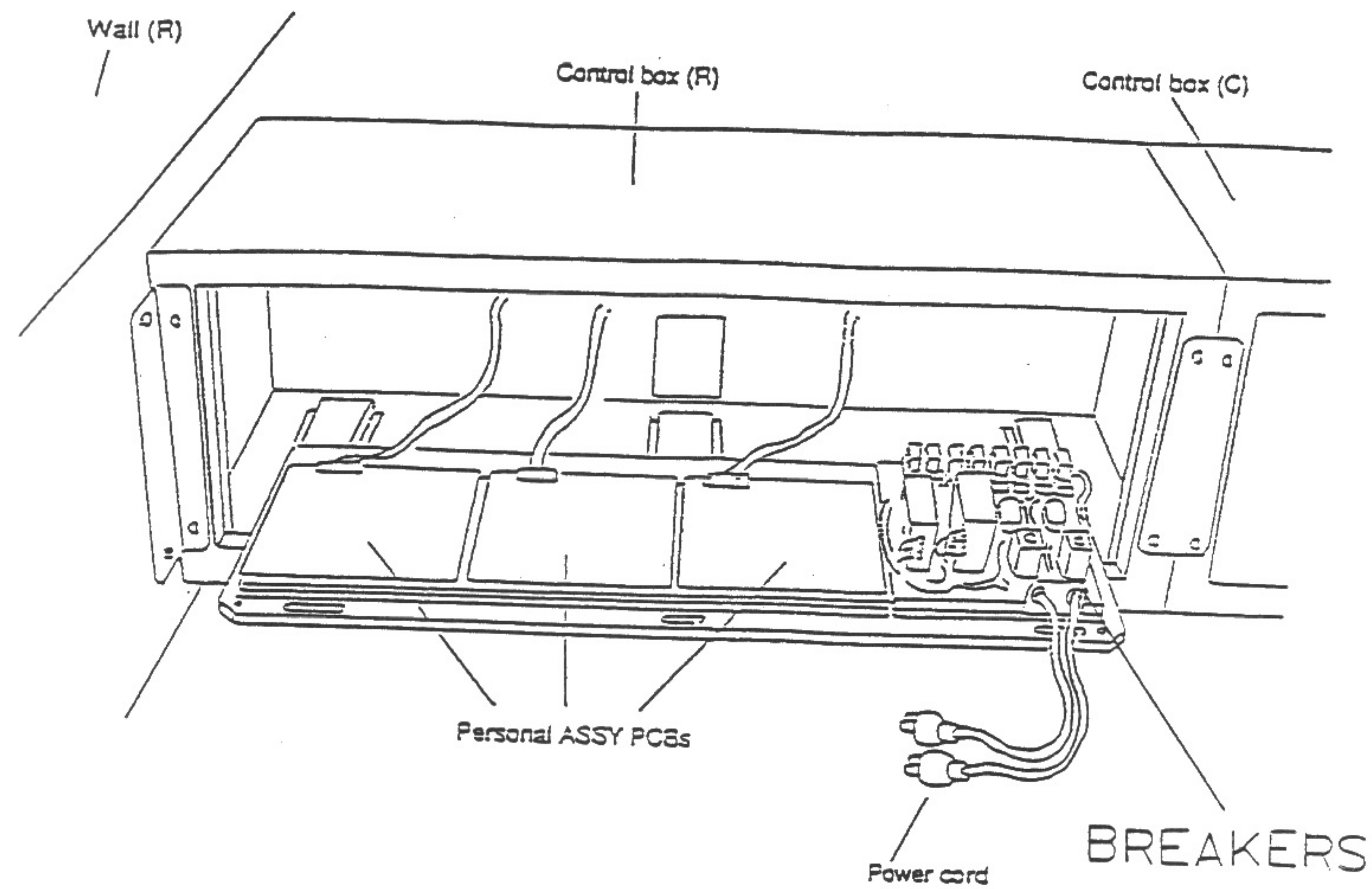
F. Roll the **canvas roof cover** up length-wise (from roof pole to roof pole) and, with one person at the **rear** and another at the **front**, roll it out on **top** of the **roof poles** (inserting the two 'end' poles into the **first** and, eventually, the last **slot**).

** Before rolling out roof cover, verify you've properly positioned **fan-hole** in **canvas** for proper roof cover/fan installation.

G. Place **fan assembly** over **fan-hole** in canvas, so that its resting on **screen roof assembly**, and trail the power cord over the rear.

[8] ADJUSTMENT and TEST

A. Ensure **breakers** in **control box** (R), are **OFF**. Plug power cords into AC sockets, throw breakers **ON** and verify power has been applied to game.



B. **Laser Disc Player** initialization:

1. Turn power **OFF** to the **laser disc player**, then turn it ON again.

2. Press the **OPEN/CLOSE** switch to **extend** the disc table and insert the laser disc, **B** side (English) **up**.

3. Press the **OPEN/CLOSE** switch again to **retract** the disc table into the player.

4. Repeat for other laser disc player.

** If it becomes necessary to change **versions** later, this can be accomplished using the **OPTIONS** menu when **TEST** mode is selected via the **Control Switch**.

C. CPU020 PCB LED Indications

1. At power up, LED's status internal testing and initialization. Operation is in numerical sequence and when complete, each LED illuminates.

2. When an error is detected concerning LED's 1-8, those LED's greater than that of the failure (but less than 9) stop checking operations.

3. LED's 9-16 do not stop checking regardless of error.

Table 1 (M): master unit (S): slave unit

LED		Master CPU PCB checking information	Why the LED does not light
16	Green		
15	Red		
14	Yellow		
13	Green	(S) The OBJ PCB palette is initialized.	
12	Red	(S) The PGN PCB is initialized.	
11	Yellow	(S) The DSP PCB is initialized.	
10	Green	Slave data starts being transferred.	
9	Red	Slave programs are transferred.	
8	Yellow	(S) The CPU PCB is powered on.	
7	Green	The C-RAM PCB is initialized.	The C-RAM PCB or bus cable has an error.
6	Red	The RS PCB is initialized.	The RS PCB has an error.
5	Yellow	Object data is initialized.	————————
4	Green		
3	Red		
2	Yellow	Programs are transferred.	(M) The CPU PCB has an error.
1	Green	The main RAM is tested.	(M) The CPU PCB has an error.

4. During a game, LED's 2-6 may light.

Table 2

LED		Flashing/Lighting condition				
		1	2	3	4	5
16	Green	○	○	○	○	○
15	Red					
14	Yellow					
13	Green					
12	Red					
11	Yellow					
10	Green					
9	Red					
8	Yellow					
7	Green					
6	Red					●
5	Yellow				●	●
4	Green				●	●
3	Red			●	●	●
2	Yellow		●	●	●	●
1	Green	●	●	●	●	●

Lighting Conditions

1 .... The initial screen is displayed immediately after initialization (power-on).
2 .... Demonstration mode (The title is displayed or the product is demonstrating a game.)
3 .... The entry screen is displayed.
4 .... The product is playing a game.
5 .... The result screen is displayed.

○: flashing
●: lighting

– See Appendix A, page 2A for **Slave CPU** and **RS** PCB LED indications

D. **Initial Screen** indications:

1. Whenever **power** is applied OR when you turn the **TEST** switch **ON**, the **Initial Screen** appears:

```
     NAMCO GALAXIAN                      SCREEN   0      — ①

     BOOT      ROM              ******* (?????????) ******
② —  FB        RAM     O   O    HDSP INFORMATION          — ④
                                ROM  :  OK
                                RAM  :  OK
                                PTR  :  OK
     HDSP      RAM     O   O    SUM  :  OK
                                IDC  :  OK
     HDSP      BOOT    O   O    CPU  :  COMPLETE
                                DSP  :  COMPLETE
     PLT       RAM     O   O    CRC  :  OK
                                CRC  :  OK FROM DSP
     LD        START   O   O    ID   :  NG

③ —  DIRECTION  315' -              0'
```

1 . . . . . Displays the screen number (0 = L, 1 = R)
2 . . . . . Displays operating status as follows:

		A	B	
FB	RAM	O	O	Condition of OBJ PCB
HDSP	RAM	O	O	Condition of DSP PCB
HDSP	BOOT	O	O	Condition of DSP PCB
PLT	RAM	O	O	Condition of OBJ PCB
LD	START	O	O	Condition of LDP

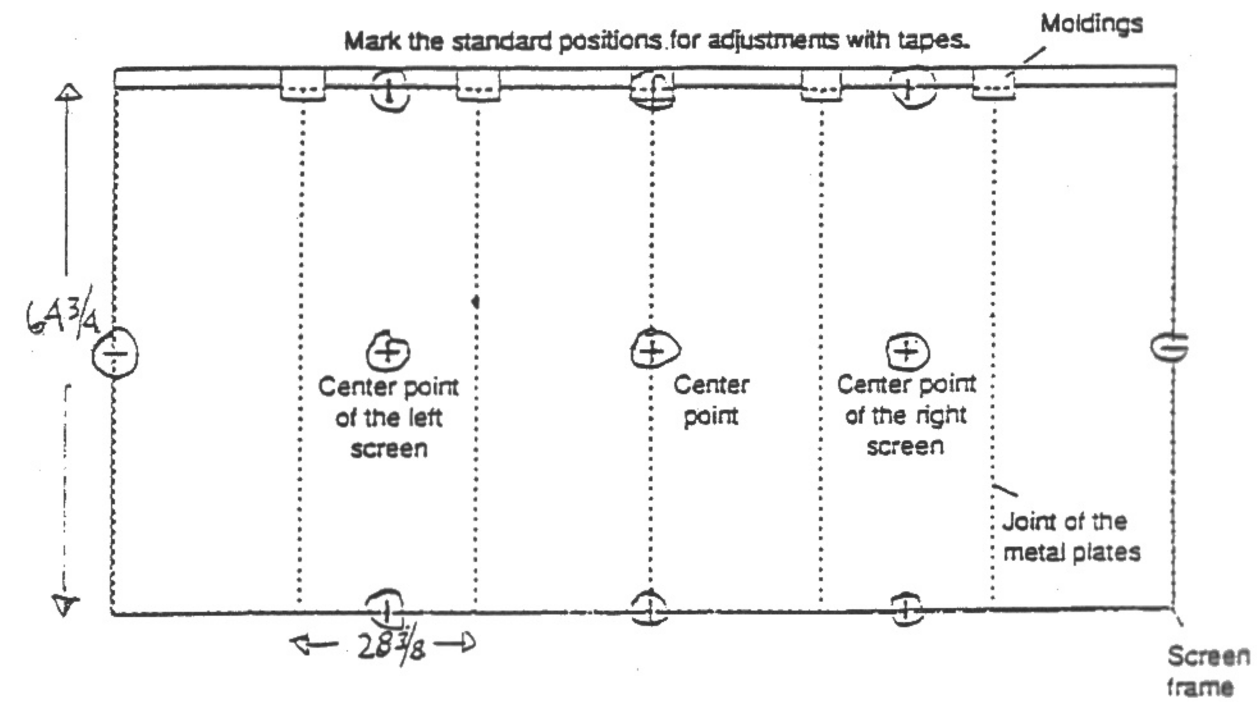
A = Left Side   B = Right Side
O = Normal Operation   X = Malfunction

3 . . . . . Number between 0 to 315 degrees for Screen 0 (left)
Number between 0 to 45 degrees for Screen 1 (right)
4 . . . . . Indicates error information for DSP PCB

(screen displayed above is of a correctly operating unit)

E. **Projector Adjustment and Alignment**

1. Mark the screen as indicated.



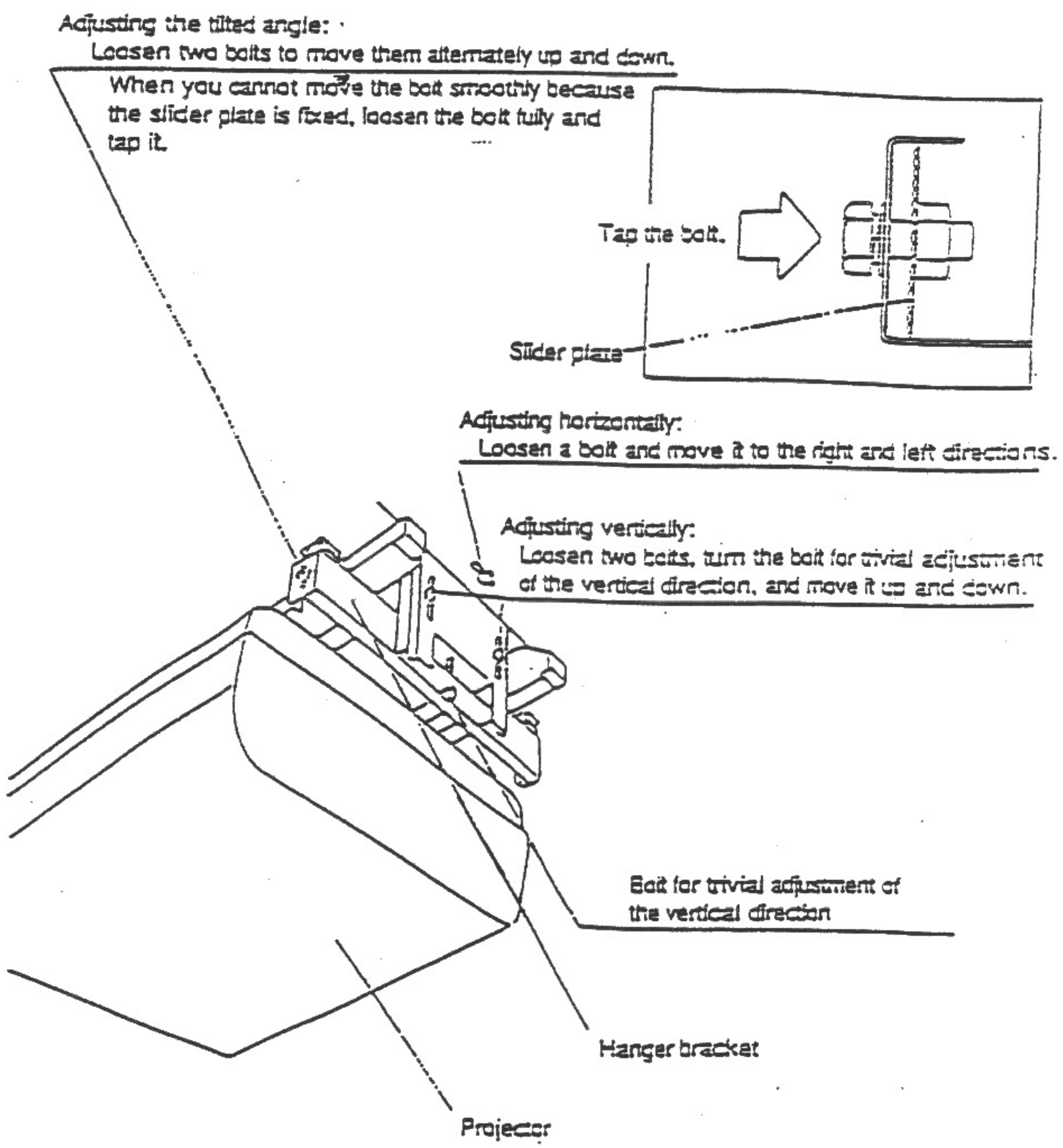
Personal guides: H TAPE = 13.5   V TAPE = 31.5
H MARK = 14 3/16   V MARK = 32 3/8

PERFORM FOLLOWING STEPS ON <u>BOTH</u> PROJECTORS

2. Set the **NORM/TEST** switch on the projectors to **TEST**. Set the **BAR** switch to **HATCH**.

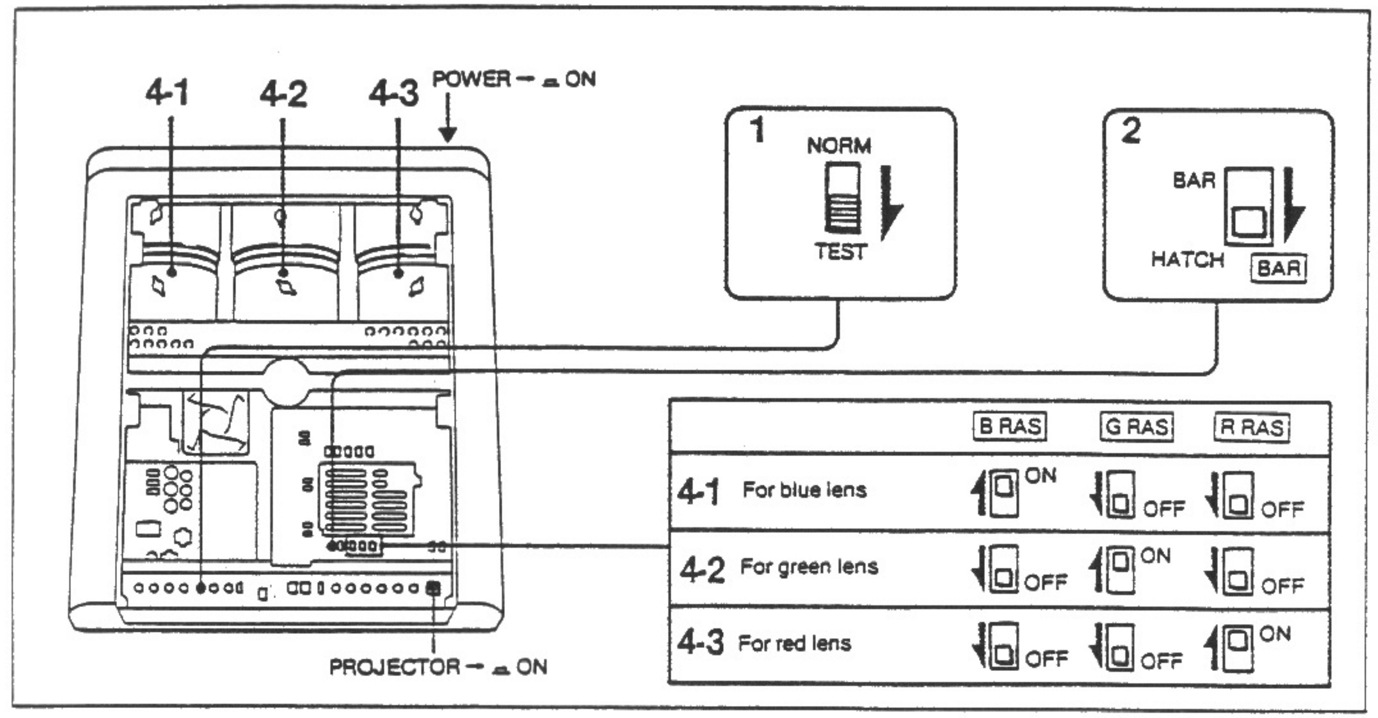
   a. Using a 1/2" nutdriver, adjust the positions of the projectors to 'fit' the screens and approximately center/level horizontally.

   b. If a **white square** does **NOT** appear near the upper right corner, the **polarity change** process was made incorrectly.



3. Adjust the **lens focus.**

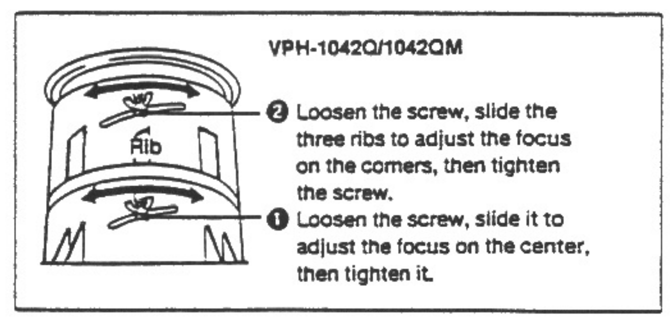
   a. Using the table/diagram below, set the switches for the **BLUE** lens.



		B RAS	G RAS	R RAS
4-1	For blue lens	ON	OFF	OFF
4-2	For green lens	OFF	ON	OFF
4-3	For red lens	OFF	OFF	ON

   b. Loosen the **butterfly nuts** on the BLUE lens and adjust **center focus**. Tighten that nut. Adjust **focus** in all four **corners**. Tighten that nut.

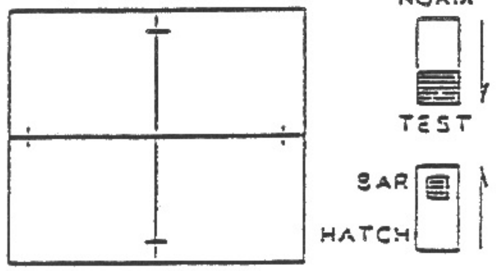
   c. Repeat for the **RED** and **GREEN** lens.



F. Reset the switches to project the **CROSS** pattern in the GREEN light.

1. Use the registration adjustment controls (**CENT, SKEW & MAIN-V-BOW**) to put the **center** and **four ends** of the **cross pattern** over the marks on the screen.

Cross pattern



2. If necessary, **adjust** the **physical** positions of the projectors (step 8-E-2a) to correct a **tilted** horizontal line.

3. Set the **NORM/TEST** switch to **NORM.**

4. Turn the **(control assembly) TEST** switch **ON**, press trigger **1 (LH)** of any gun, move the gun (up or down) until **SCREEN TEST** is backlit and squeeze trigger **2** (RH) to select.

5. **SCREEN TEST** menu will appear:

— SCREEN TEST —

CROSS	HATCH2 (LD, PCB)	a
CROSS	HATCH2 (PCB)	b
COLOR	BAR1 (LD)	c
COLOR	BAR2 (PCB	d

IN = PUSH TRIGGER 2 SWITCH
EXIT = PUSH TRIGGER 1 SWITCH

6. Squeeze trigger and select **CROSS HATCH2** pattern for display.

CROSS HATCH2

7. Use the registration adjustment controls (SIZE, LIN, MAIN-H-PIN, & MAIN-H-KEYS) to display the pattern within the marked area of the screen correctly.

8. Set the (control assembly) TEST switch OFF.

9. Set the projector's NORM/TEST switch to TEST.

G. Reset the switches to project the CROSS pattern in the RED light (over the adjusted green light).

1. Use the registration adjustment controls (RV 2 to 4 and RH 6 to 8) to move the **RED** cross pattern over the **GREEN** cross pattern completely.

DO NOT MOVE THE GREEN CROSS PATTERN.

REMEMBER that when **selecting** adjustment **controls,** due to the **polarity reversals,** the diagram indicating which part of the screen a particular control affects is actually the **opposite** of it (if diagram indicates upper left, control actually affects lower right).

2. Set the BAR switch to display the CROSS HATCH pattern.

3. Adjust the RV CENT control so the red and green **horizontal** lines **converge** in the **middle** of the screens.

4. Adjust the RV SIZE (and RV LIN control if necessary) so the red and green **horizontal** lines **converge** at the upper and **lower sides** of the screens.

5. Use the RV SKEW and RV BOW controls for adjustment **if the horizontal** lines **do not converge** in the **middle.**

6. Use the registration adjustment controls (RV 5: TILT-1 through TILT-4) so that the **horizontal** lines **converge** at the **corners** of the screens.

7. Adjust the **RH CENT** control so the red and green vertical lines **converge** in the **middle**.

8. Adjust the **RH SIZE** control (and **RH LIN** if necessary) so the red and green vertical lines **converge** at the right and left **sides.**

9. Adjust the **RH SKEW** and **RH BOW** controls so the red and green **vertical** lines **converge** in the **middle**.

10. Adjust the **RH 9: TILT-1** through **TILT-4** controls so that the red and green **vertical** lines **converge** at the **corners**.

H. Reset the switches to project the **CROSS** pattern in the **BLUE** light (over the adjusted green light).

1. Perform the same **registration/convergence** adjustments using the **BLUE** controls.

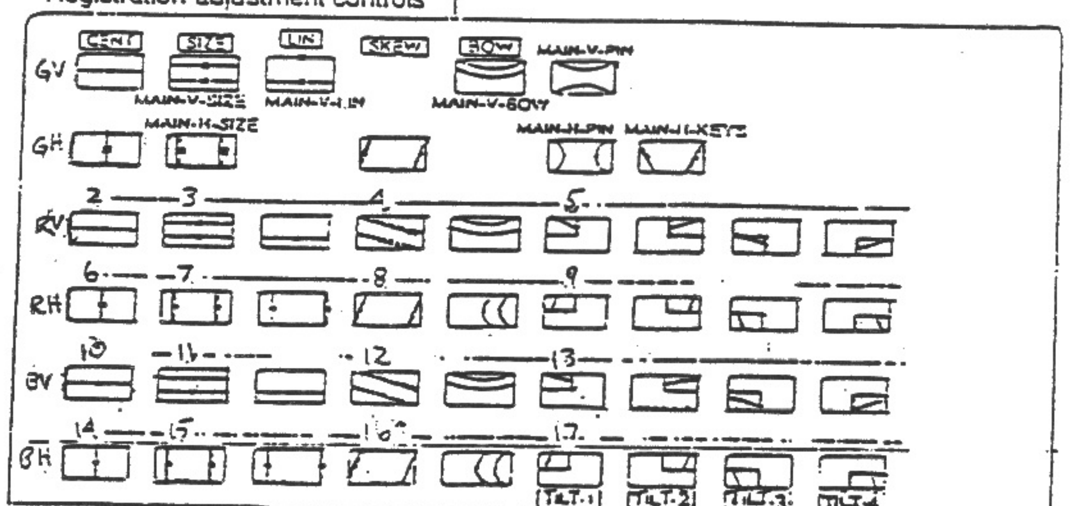
I. Project **all** colors of **cross hatch** patterns and **verify/adjust** so that they all **overlap** completely.

J. Align screens with one another so that **central vertical** overlap is **minimal** and **horizontal lines match up**.

K. Reset the **NORM/TEST** switch to **NORM** and remove the marking tape from the screens.

L. Press **START** at control assembly and verify/adjust screens line up.

Registration adjustment controls

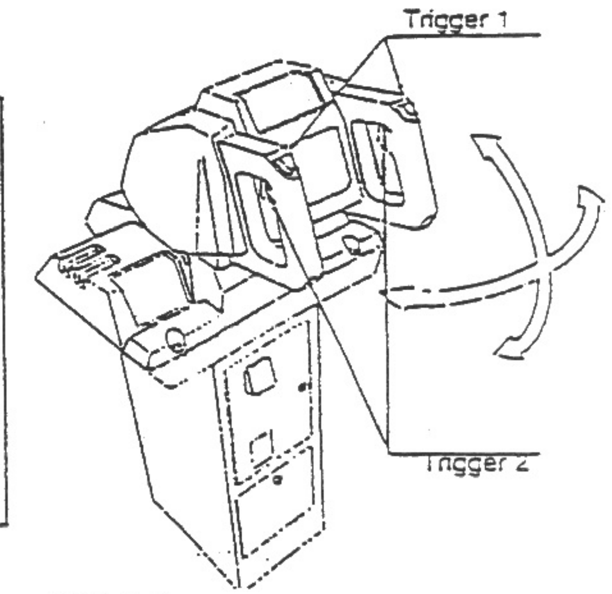


M. **Gun Settings:**

1. At the **control assembly**, press the **TEST** switch while pressing the **START** switch and **screen A** will appear:

Screen A

— GUN 1 SETTING —
(1 – 6)
SET GUN LEFT—DOWN SIDE MAX
(RIGHT—UP SIDE)
AND PUSH TRIGGER2 SWITCH
VOLUME : X = *** Y = ***
EXIT = PUSH TEST SWITCH



2. You can now set the gun whose LED lights up.

a. **Move** the gun to the **left** and **down**, as indicated on screen A, and **squeeze trigger 2.**

b. Next, **move** the gun to the **right** and **up** and **squeeze trigger 2** again.

c. When the gun-sight moves **smoothly** and together with the gun, it is **operating normally**.

d. If operation is abnormal, squeeze trigger 2 and screen A will reappear. Repeat the procedure.

3. To set **another** gun, **press** trigger 1 on it and the **LED** should illuminate. Repeat previous procedure for each gun.

4. When all guns have been set, press **TEST** switch again.

N. TEST MENU

1. Whenever the **TEST** switch of the **control assembly** has been selected, the **Test Menu** appears.

(On the left screen)

```
                 — TEST MENU —

                 GAME OPTIONS
                 SWITCH   TEST
                 SOUND    TEST
                 EFFECT   TEST
                 SCREEN   TEST
(Note 1) ———————— (ADS     MODE)

  IN  = PUSH       TRIGGER 2      SWITCH
  EXIT = PUSH      TEST           SWITCH
```

2. **Operations** from the Test Menu are performed from any gun that has had **trigger 1** pressed.

3. **Select** whichever item you want by **moving** the gun **up** or **down** and then squeezing **trigger 2**. The selected test menu will appear.

4. To **exit** the Test **mode**, press the **Test** switch.

O. Game Options

1. The **Game Options** menu appears:

(On the left screen)

```
                 — GAME OPTIONS —

GAME COST         :  3 COINS 1 CREDIT —— a
                     (1–9) (S)
ATTRACT SOUND     :  ON (OFF)         —— b
RANK              :  5 (1–8)          —— c
LD SIDE           :  A (JAPANESE)     —— d
                     (B ENGLISH))
ENTRANCE          :  RIGHT (LEFT)     —— e
DATA SAMPLING     :  OFF (ON)         —— f
FREE PLAY         :  NO (YES)         —— g

          EXIT = PUSH TRIGGER1 SWITCH
```

(**Select** item to be changed by moving gun **up/down** and change it by moving gun **right** or **left**)

a. **GAME COST**: Sets the game fee.

b. **ATTRACT SOUND**: Sets sound ON/OFF during demonstrations.

c. **RANK**: Sets difficulty of game from 1 (easiest) to 8 (hardest).

d. **LD SIDE**: Changing language from English to Japanese.

e. **ENTRANCE**: Selects which gate lamp is flashed during entry (R or L).

f. **DATA SAMPLING**: When set to **OFF**, ADS MODE will not appear on test menu and ADS will not function.

g. **FREE PLAY**: **NORMALLY** set to **NO**. When set to **YES**, game does not end when shield becomes 0.

P. Switch Test

1. As you activate each switch, its position on the screen is indicated in RED.

2. X and Y values of VOLUME change whenever you move the gun.

3. Pressing trigger 1 returns you to the TEST MENU.

(On the left screen)

```
                 — SWITCH TEST —

CONTROL          :    START TEST STOP
                      OPERATION 1 2 3
PERSONAL 1       :    SERVICE
                      COIN COUNT 0
                      VOLUME X=***  Y=***
                      TRIGGER 1 2
PERSONAL 2       :    ???
PERSONAL 3       :    ???

          EXIT = PUSH TRIGGER1 SWITCH
```

(On the right screen)

```
                 — SWITCH TEST —

CONTROL          :    START TEST STOP
                      OPERATION 1 2 3
PERSONAL 1       :    SERVICE
                      COIN COUNT 0
                      VOLUME X=***  Y=***
                      TRIGGER 1 2
PERSONAL 2       :    ???
PERSONAL 3       :    ???

          EXIT = PUSH TRIGGER1 SWITCH
```


Q. SOUND TEST

1. Select item for test by moving the gun up or down.

```
                       — SOUND TEST —

a —— SOUND                  F—L   :  00 (00–FF)
                            F—R   :  00 (00–FF)
                          F—L, R  :  00 (00—FF)
b —— SPEAKER                CHK   :  FRONT—RIGHT)
                                     (FRONT—LEFT)
                                     (REAR-RIGHT)
                                     (REAR-LEFT)
c —— PERSONAL SPEAKER CHK

      ON   =  PUSH      TRIGGER 2      SWITCH
      EXIT =  PUSH      TRIGGER 1      SWITCH
```

a. SOUND
By moving the gun right or left, you can specify the number indicating the volume to be output. Squeezing trigger 2 causes the sound (corresponding to the number) to be output.

b. SPEAKER CHK
Positioning the cursor over this item and squeezing trigger 2 outputs sound automatically (in 'front right, front left, rear right and rear left' order).

c. PERSONAL SPEAKER CHK
Positioning cursor over this item and squeezing trigger 2 will test the Personal Speaker.

R. EFFECT TEST

1. Select each item by moving the gun up or down. Squeezing trigger 2 initiates the test.

— EFFECT TEST —

GATE	(R)	LAMP	a
	(L)	LAMP	
REAR		LAMP	b
REF.		LAMP	c
FLASH		LIGHT	d
HIT		LED	e
VIBRATION		1	f
		1	

ON	=	PUSH	TRIGGER 2	SWITCH
EXIT	=	PUSH	TRIGGER 1	SWITCH

a. GATE LAMPS (R & L)
Lights the pillar lamps located outside of the entrance/exit.

b. REAR LAMP
Lights a BLUE fluorescent lamp located INSIDE, above entrance/exit gate.

c. REF. LAMP
Lights a RED reflector lamp.

d. FLASH LIGHT
Lights three flash lights, one by one.

e. HIT LED
Flashes the LED at each gun.

f. VIBRATION 1,2

1: Vibrates gun when a player fires and outputs its sound.

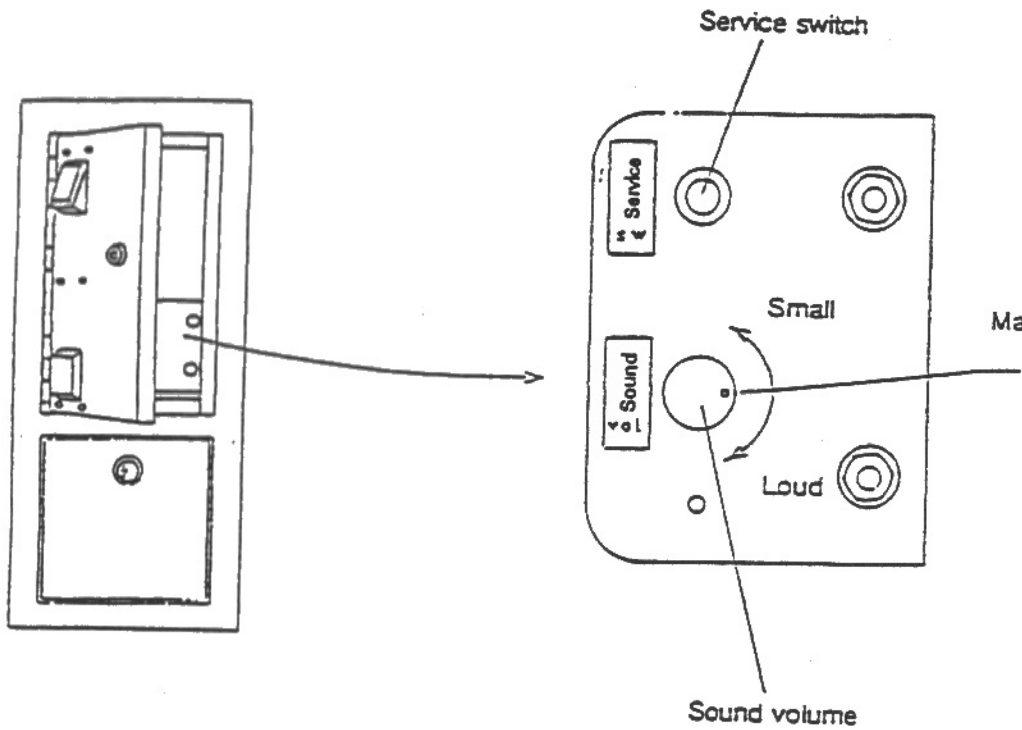
2: Vibrates gun when a player is shot.

S. ADS MODE

1. To activate ADS, set DATA SAMPLING = ON.

T. Adjusting Personal Assembly

1. Open coin door of Personal Assembly to view/adjust volume control and service switch.



a. SOUND VOLUME CONTROL
Adjust volume of each Personal Assembly speaker.

b. SERVICE SWITCH
Use for increasing number of credits without activating counter.

[9] WIRING DIAGRAMS

-------- **Configuration**

-------- **Power** Connections

-------- Connections of the **PCB Rack 1**

-------- Connections of the **PCB Rack 2**

-------- Connections of the **PCB Rack 3**

-------- Connections of the **Joints**

-------- Connections of the **Gate (R)**

-------- Connections of the **Gate (L)**

-------- Connections of the **Gate (C)**

-------- Connections of the **Signboard**

-------- Connections of the **Operation Box**

-------- Connections of the **Wall (L)**

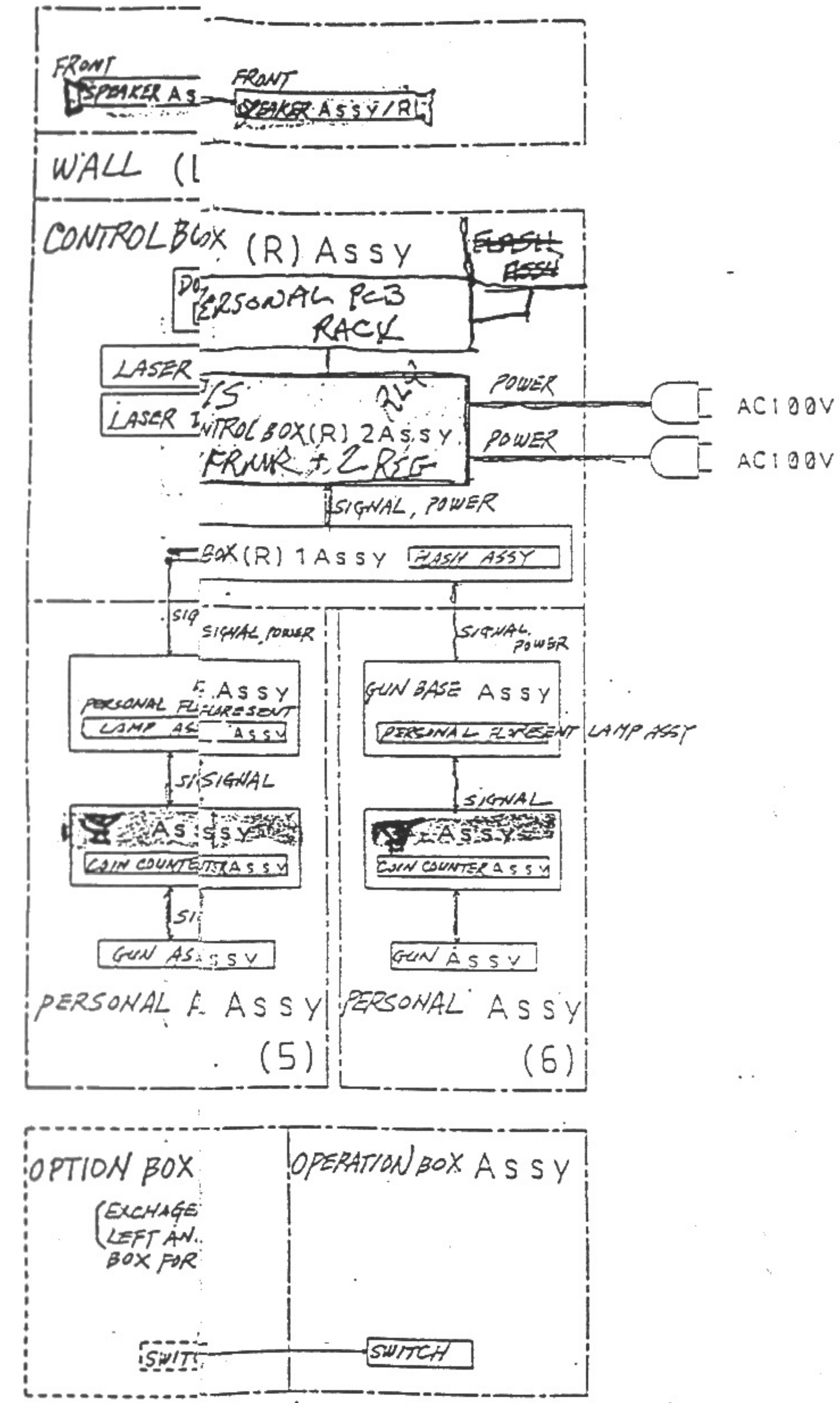
-------- Connections of the **Screen Base**

-------- Connections of the **Personal Assemblies**

-------- Connections (1) and (2) of the **Control Box (R) Assembly**

-------- Connections of the **Control Box (L) Assembly**

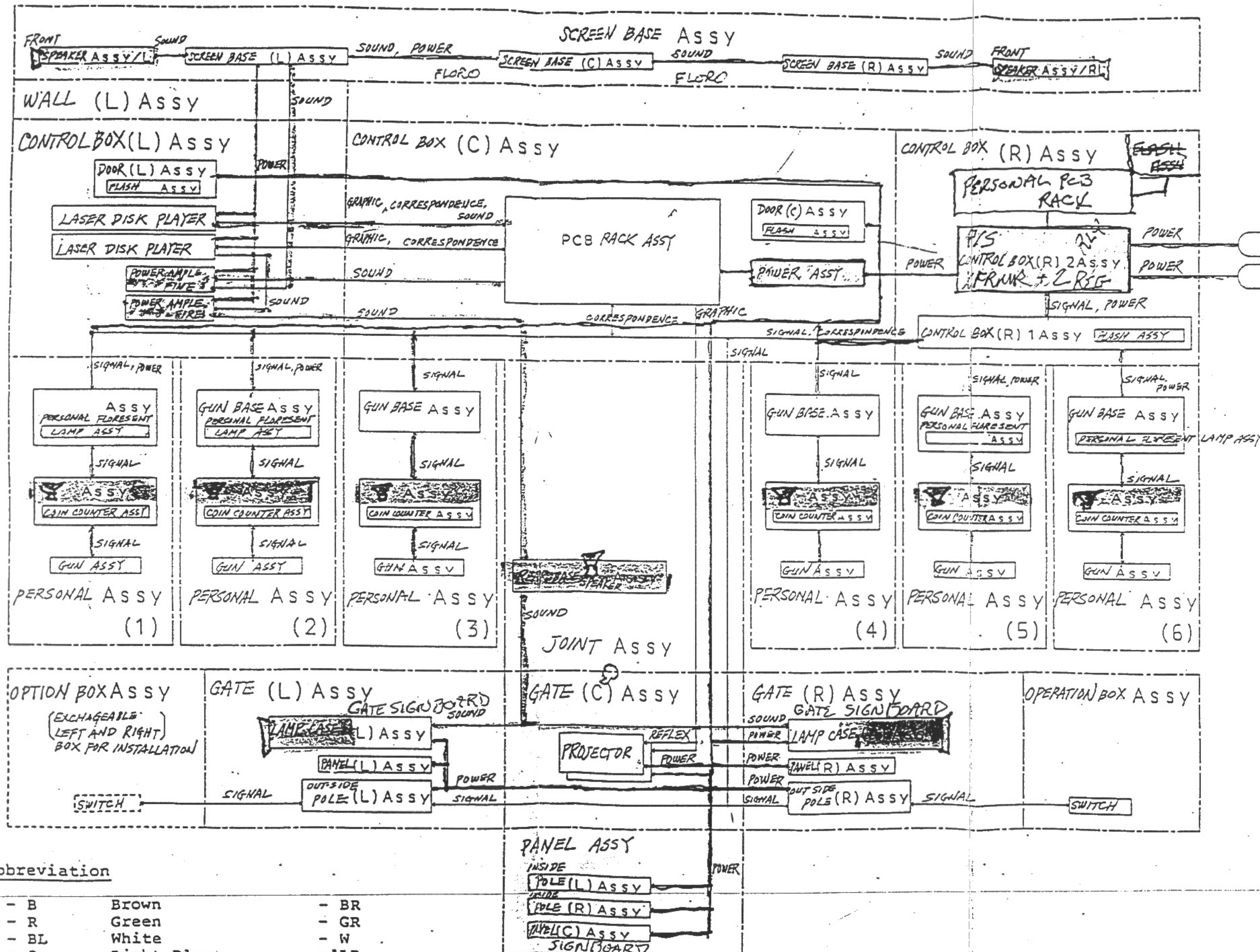
-------- Connections of the **Control Box (C) Assembly**



Color Abbreviation

Black	-	B
Red	-	R
Blue	-	BL
Orange	-	O
Yellow	-	Y
Purple	-	P
Grey	-	GY

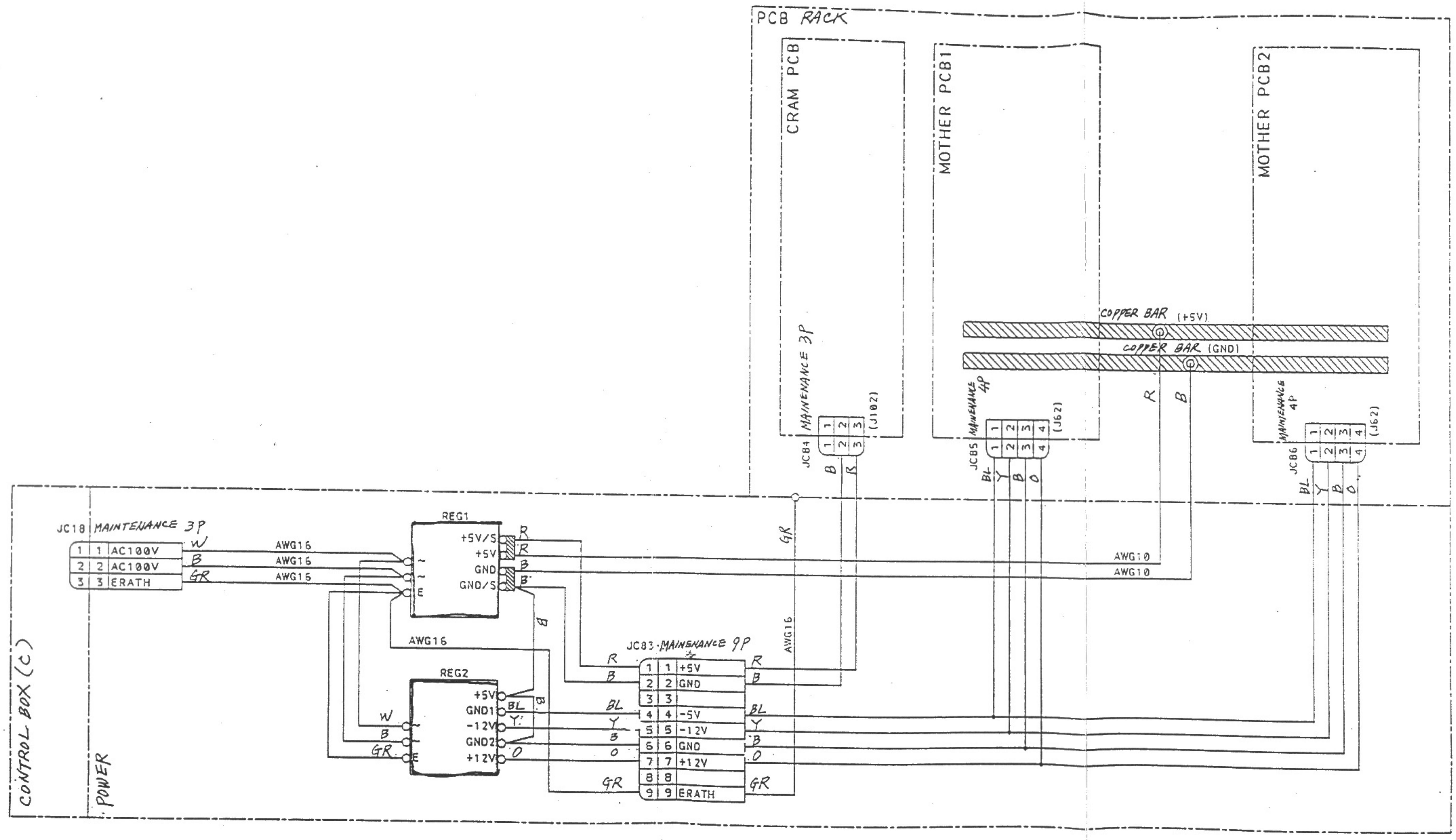
WHOLE CONSTRUCTION DIAGRAM



Color Abbreviation

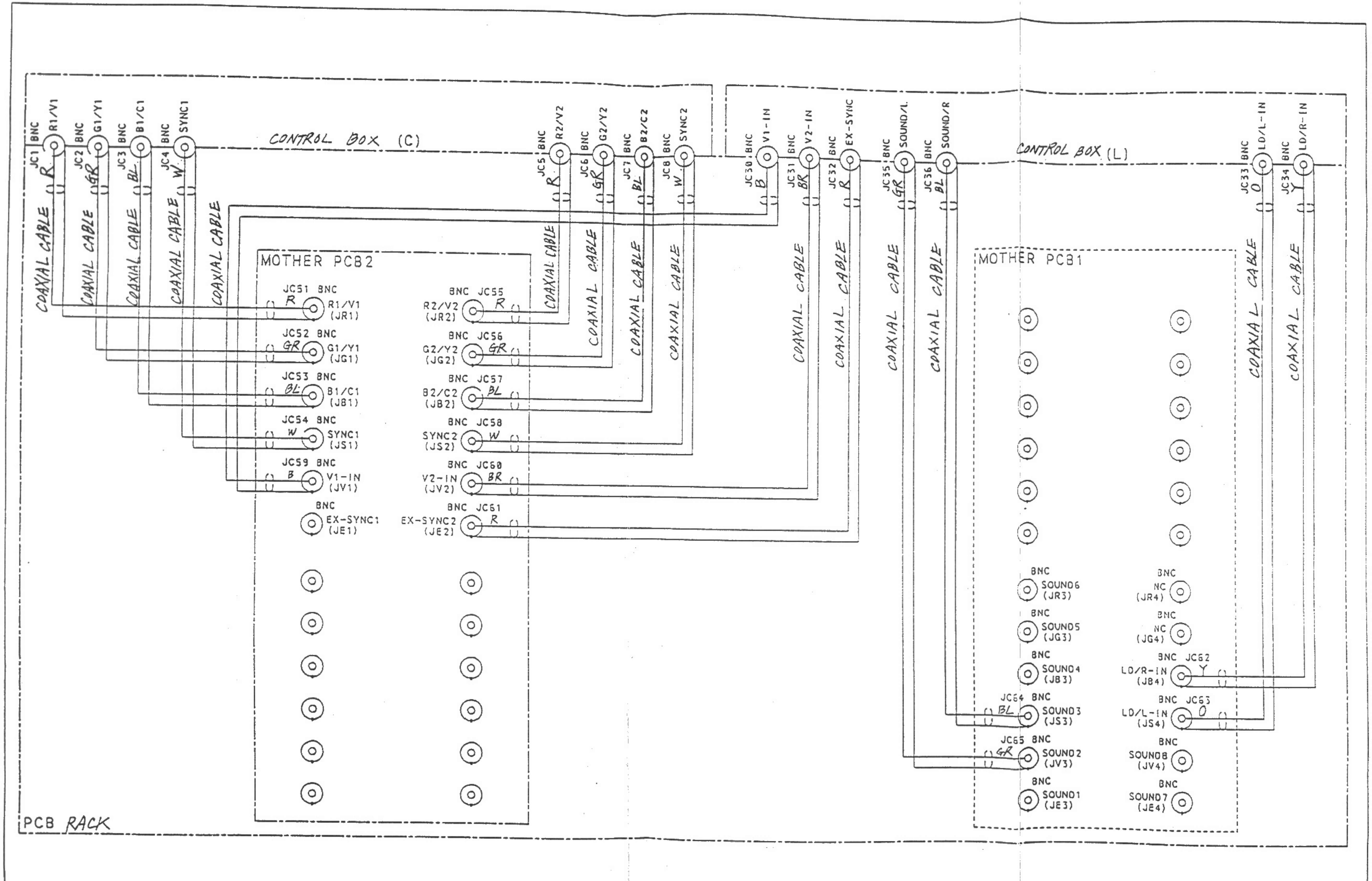
Black	- B	Brown	- BR
Red	- R	Green	- GR
Blue	- BL	White	- W
Orange	- O	Light Blue	- LB
Yellow	- Y	Yellowish Green	- YG
Purple	- P	Pink	- PI
Grey	- GY		

WHOLE CONSTRUCTION DIAGRAM



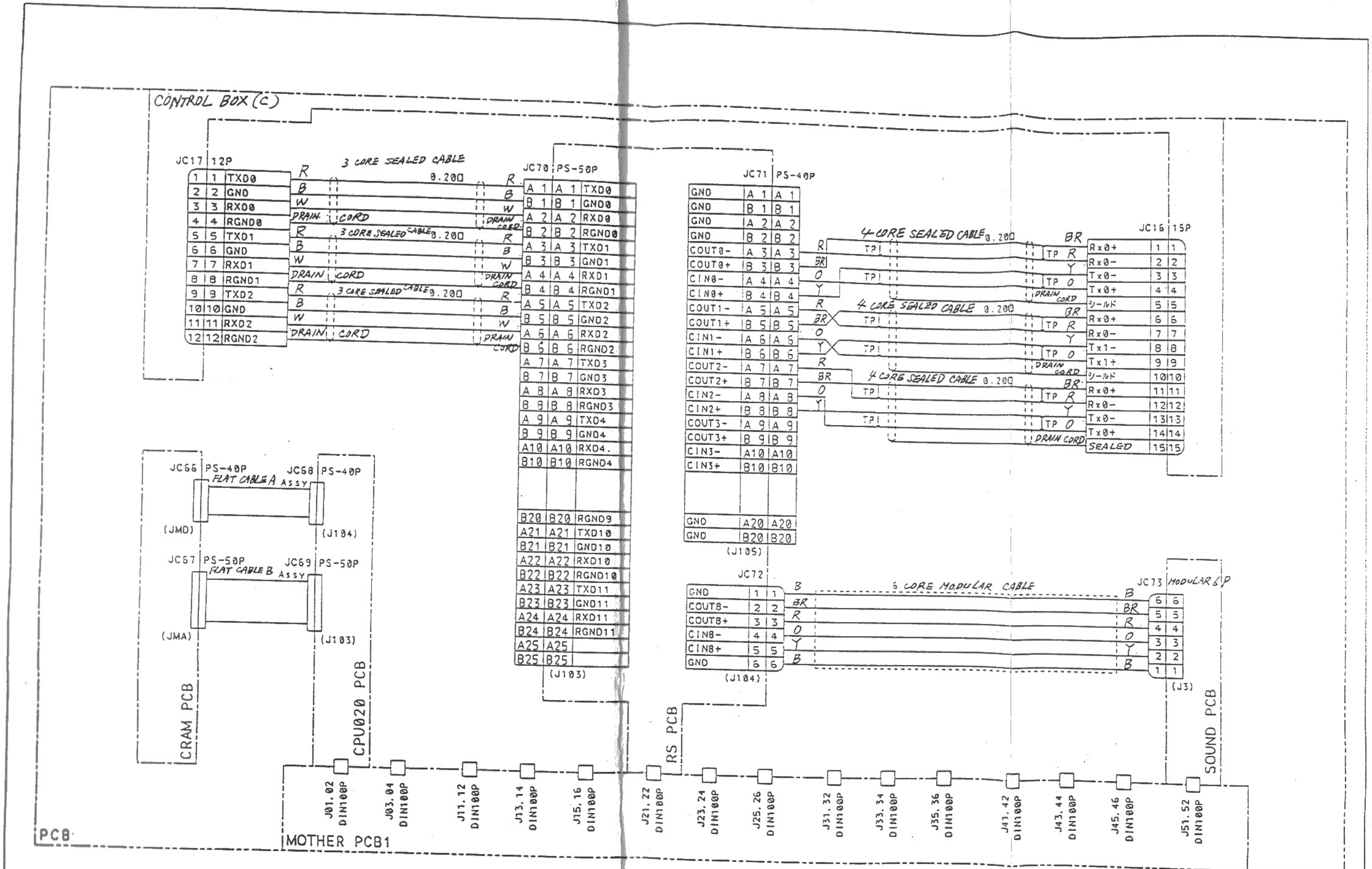
NOTE: 1. ALL LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG18.

POWER SUPPLY CONNECTION DIAGRAM



NOTE: 1. ALL COAXIAL CABLES INDICATE 3C - 2V (75 Ω).

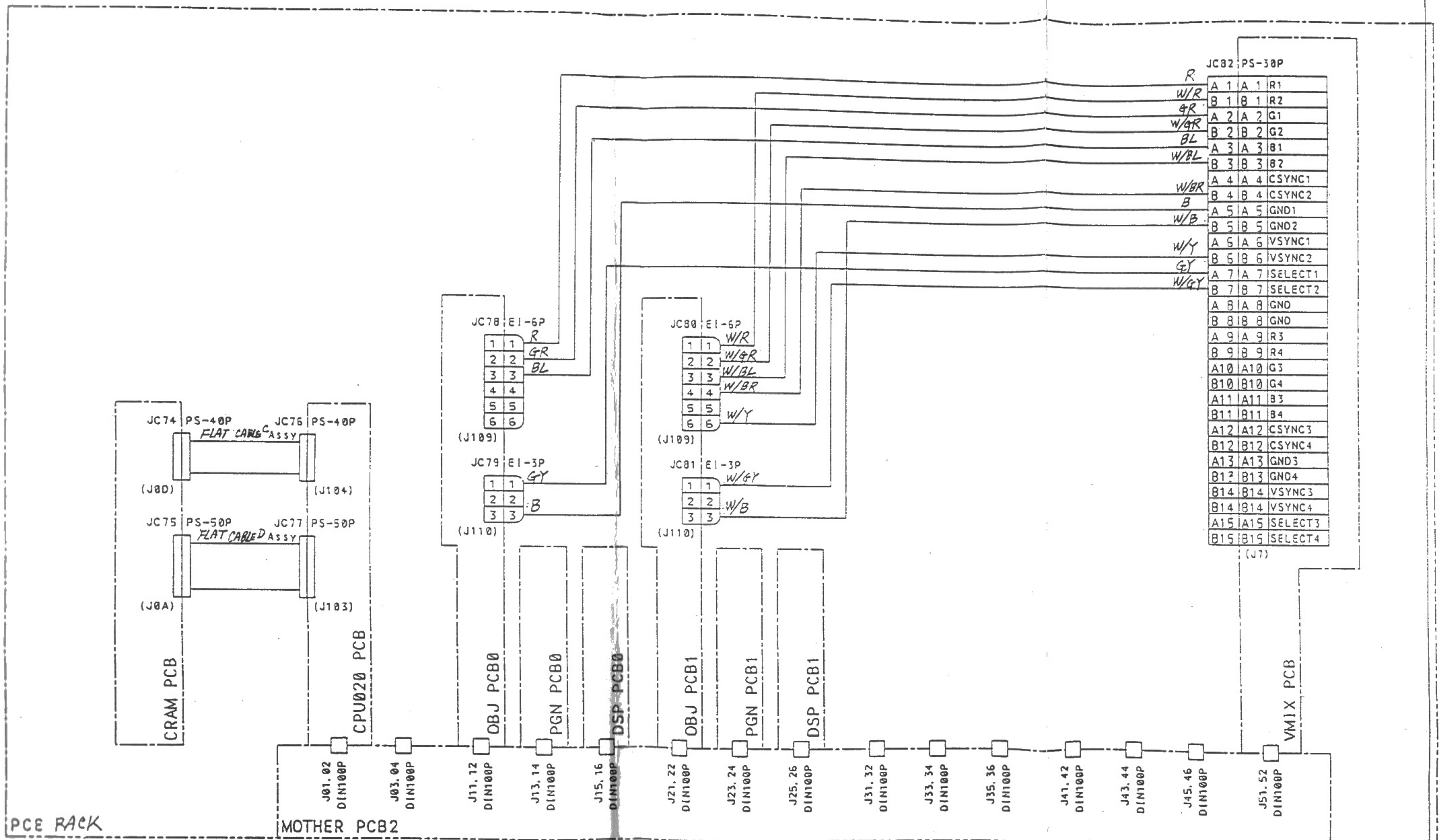
PCB RACK 1 CONNECTION DIAGRAM



NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

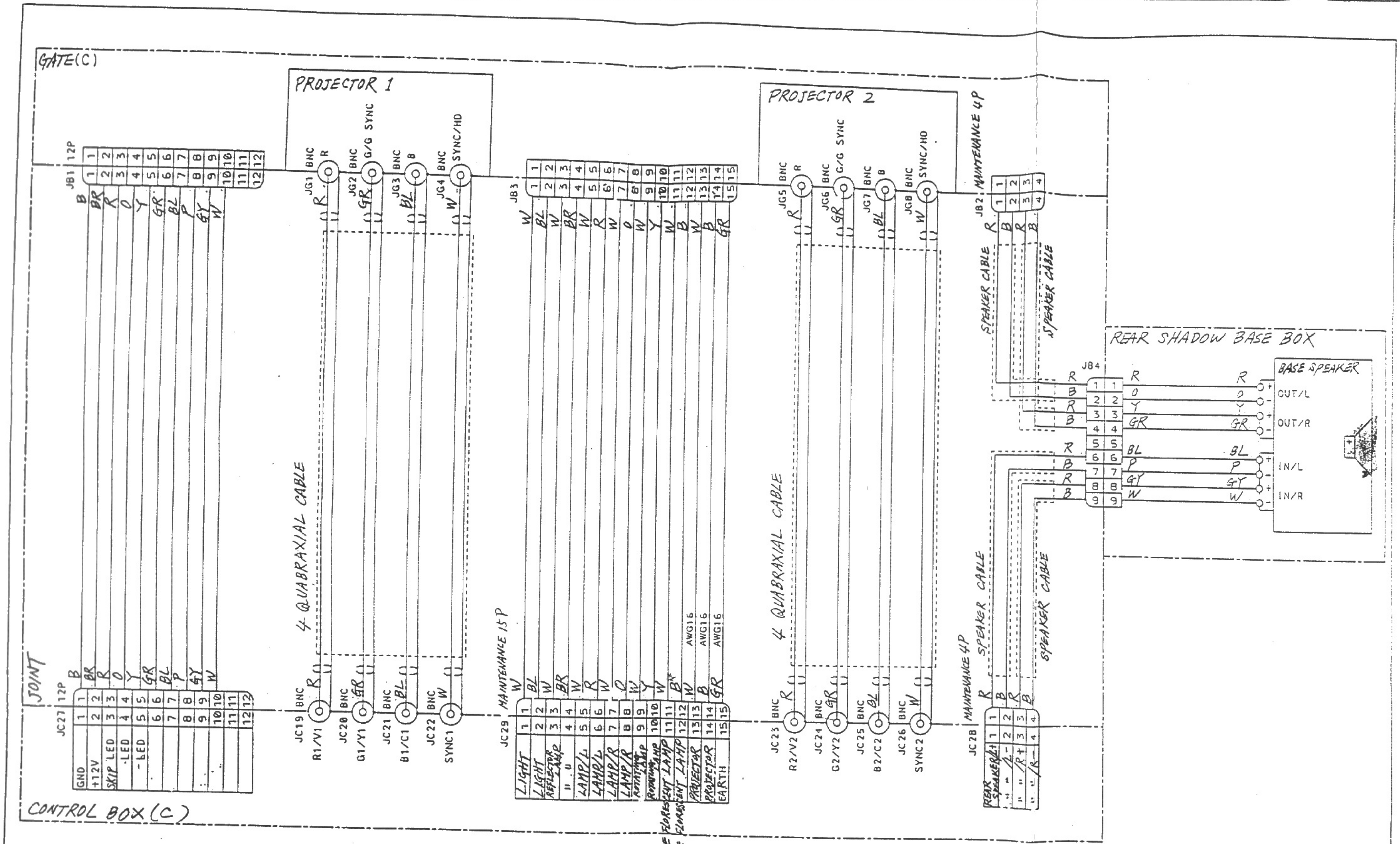
2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24.

PCB RACK 2 CONNECTION DIAGRAM



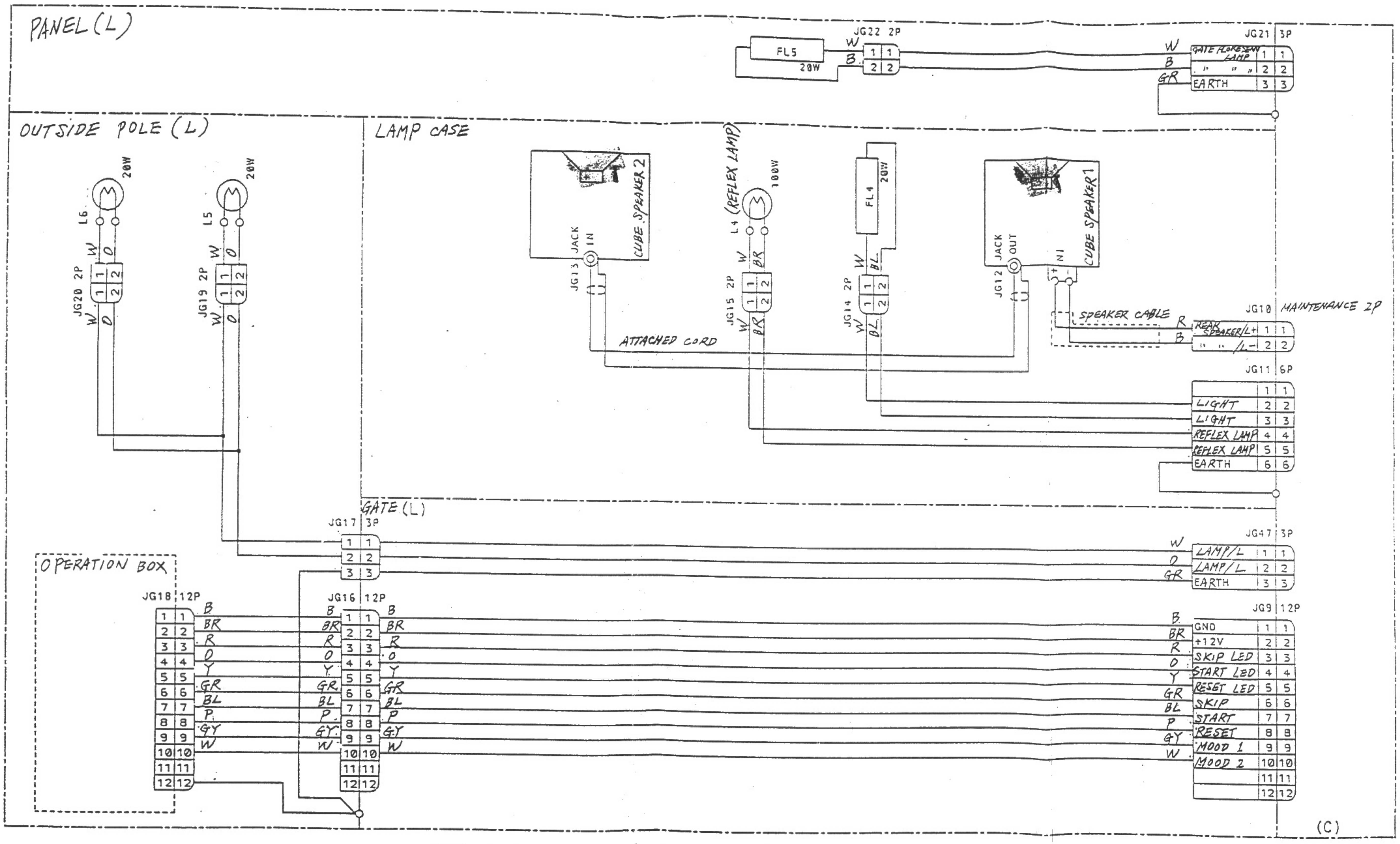
NOTE: 1. ALL LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG 24.

PCB RACK 3 CONNECTION DIAGRAM



NOTE:
1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.
2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.
3. ALL SPEAKER CABLES USE 2 CORE, 1.25 □, RED/BLACK (R/B) ONE.

JOINT CONNECTION DIAGRAM

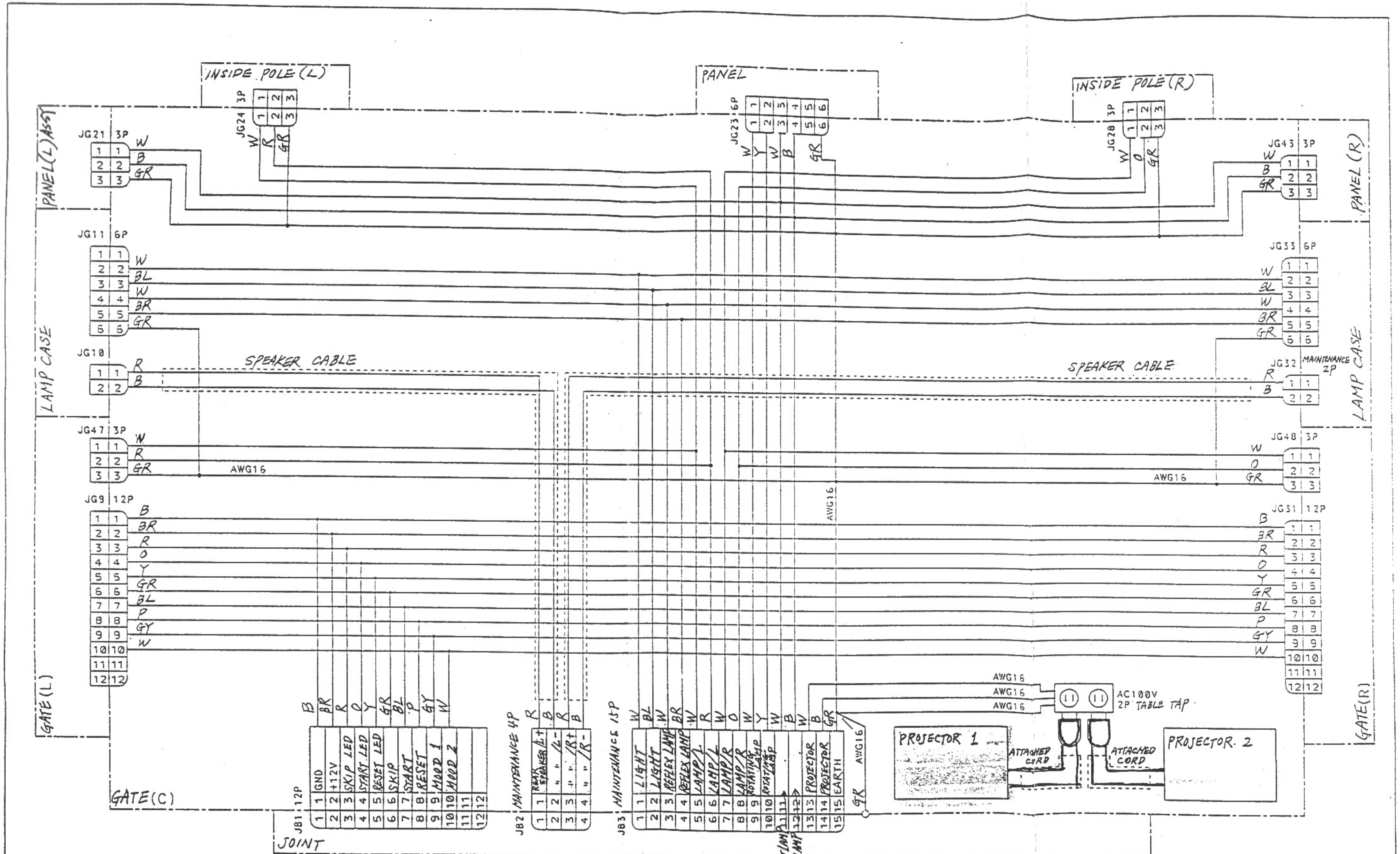


NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.

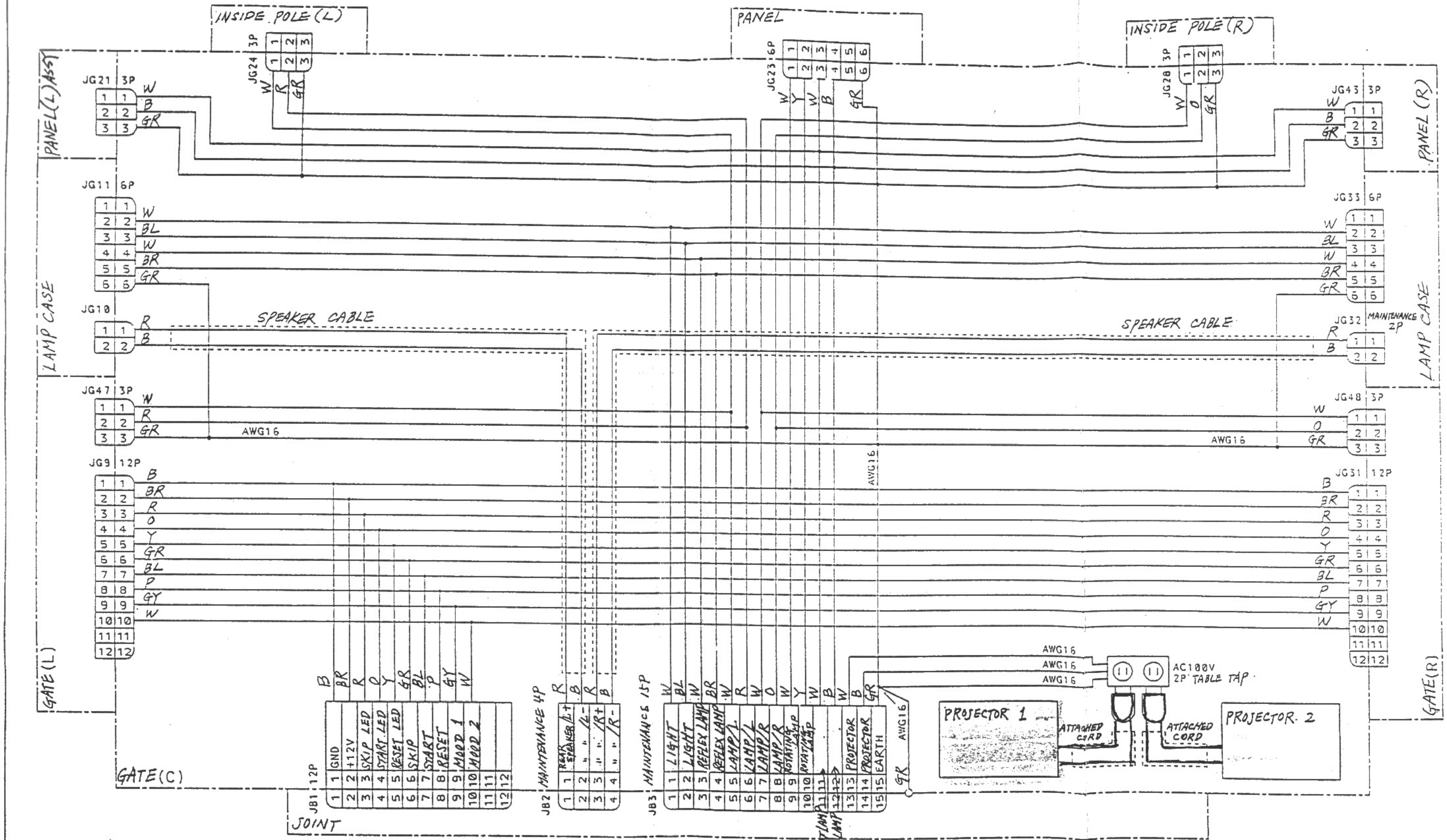
3. ALL SPEAKER CABLES USE 2 CORE, 1.25□, RED/BLACK (R/B) ONE.

GATE(L) CONNECTION DIAGRAM



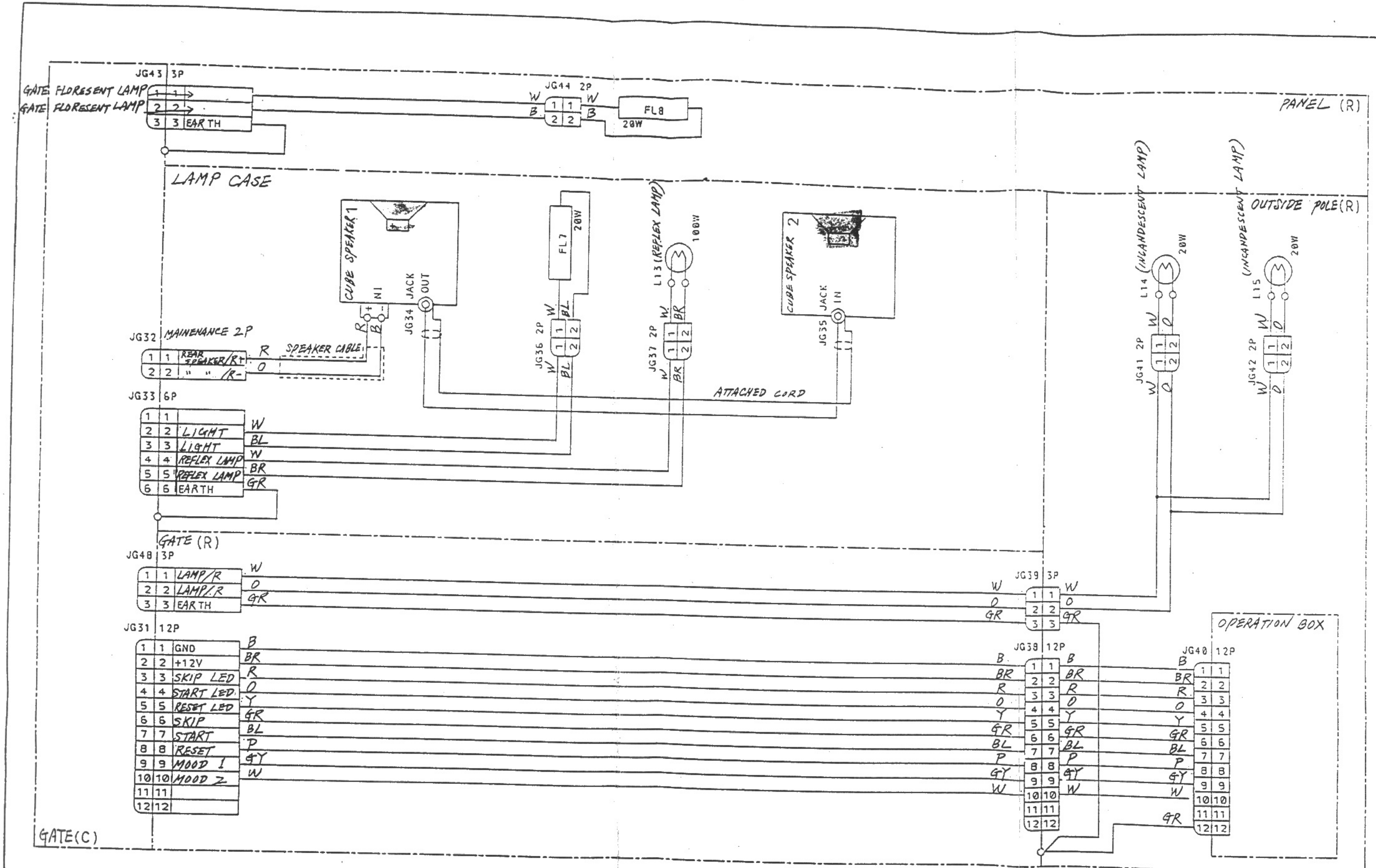
NOTE:
1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.
2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.
3. ALL SPEAKER CABLES USE 2 CORE, 1.25□, RED/BLACK (R/B) ONE.

GATE (C) CONNECTION DIAGRAM



NOTE:
1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.
2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.
3. ALL SPEAKER CABLES USE 2 CORE, 1.25□, RED/BLACK (R/B) ONE.

GATE (C) CONNECTION DIAGRAM

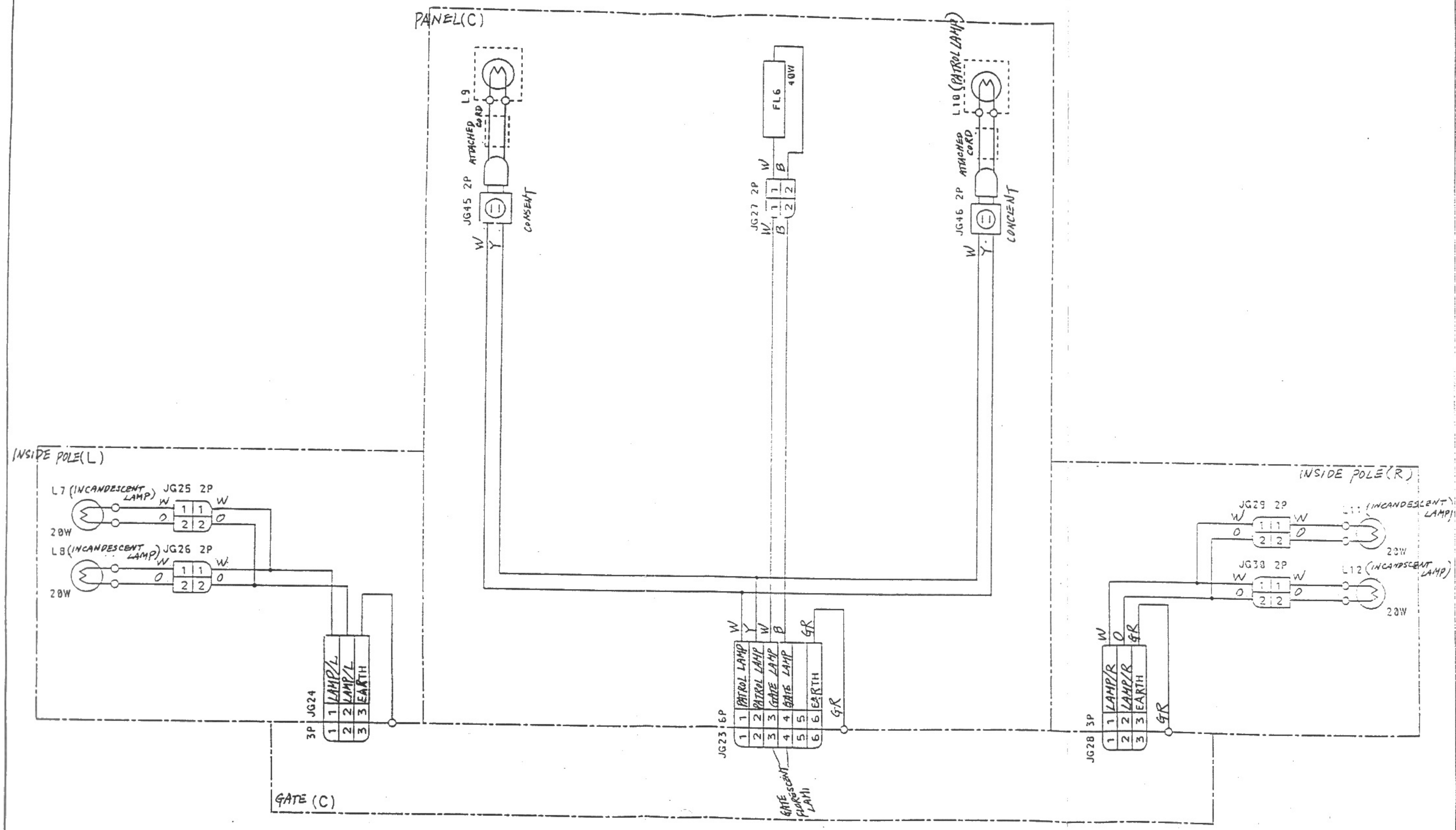


NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.

3. ALL SPEAKER CABLES USE 2 CORE, 1.25 , RED/BLACK (R/B) ONE.

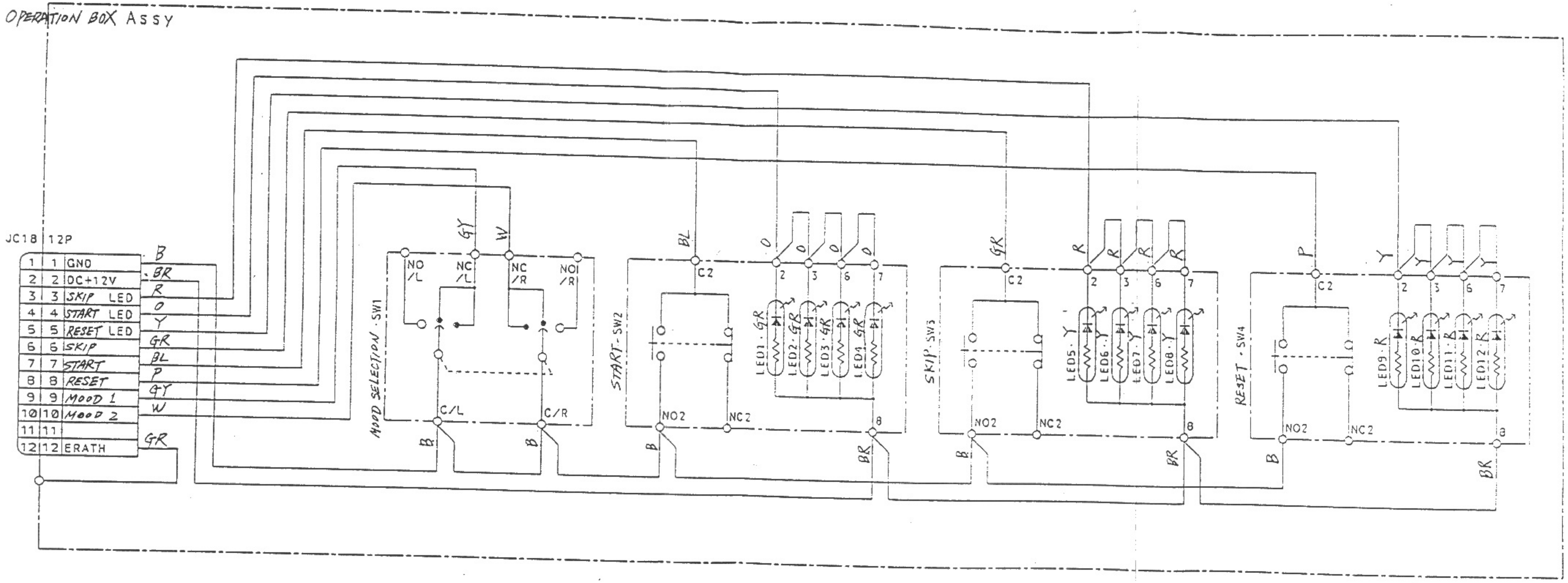
GATE (R) CONNECTION DIAGRAM



NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

2. LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG18 AT ALL.

PANEL (C) CONNECTION DIAGRAM



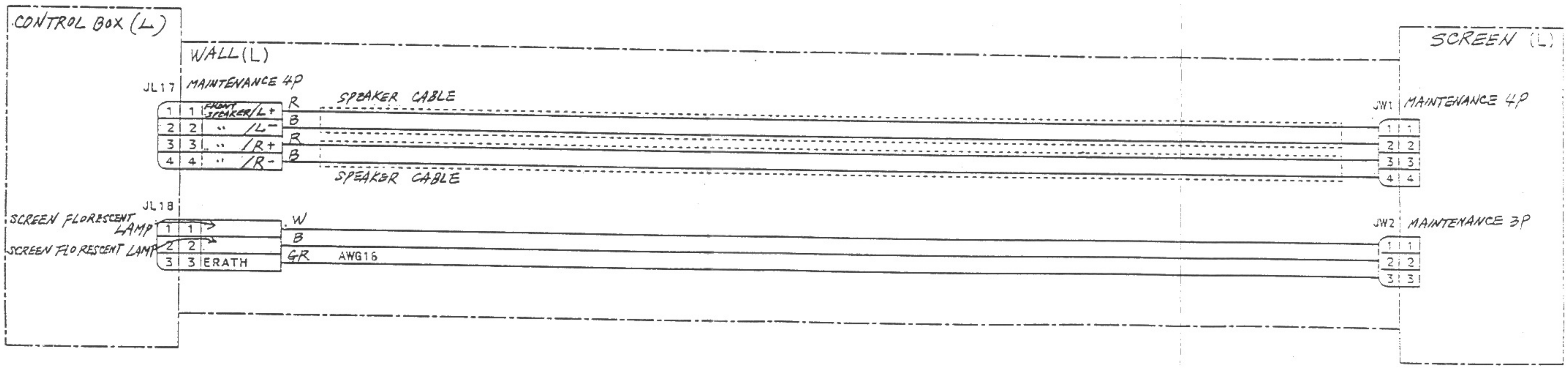
NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

2. THIN LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.

Color Abbreviation

Black	- B	Brown	- BR
Red	- R	Green	- GR
Blue	- BL	White	- W
Orange	- O	Light Blue	- LB
Yellow	- Y	Yellowish Green	- YG
Purple	- P	Pink	- PI
Grey	- GY		

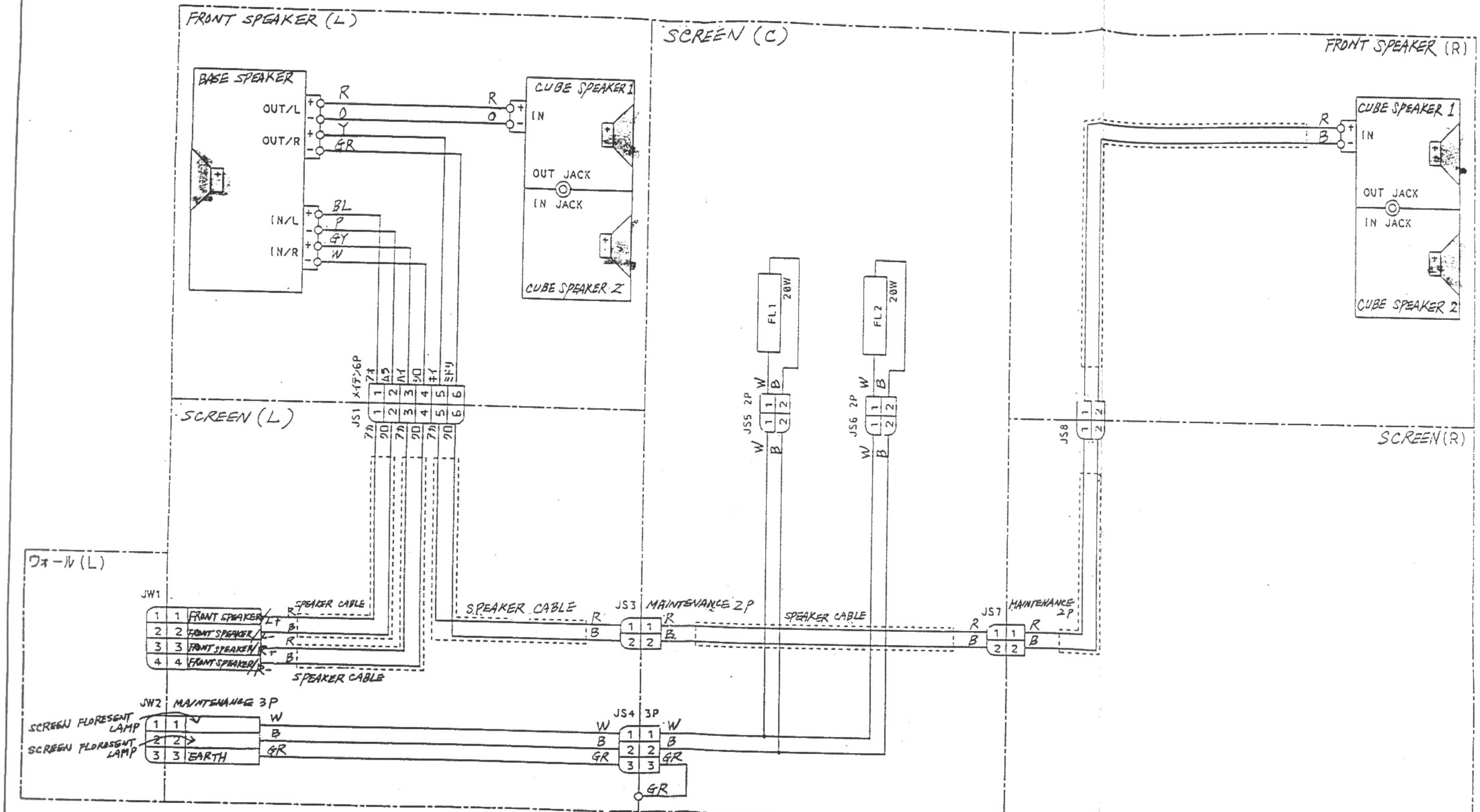
OPERATION BOX CONNECTION DIAGRAM



NOTE: 1. LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG18.

2. ALL SPEAKER CABLES USE 2 CORE, 1.25□, RED/BLACK (R/B) ONE.

WALL (L) CONNECTION DIAGRAM

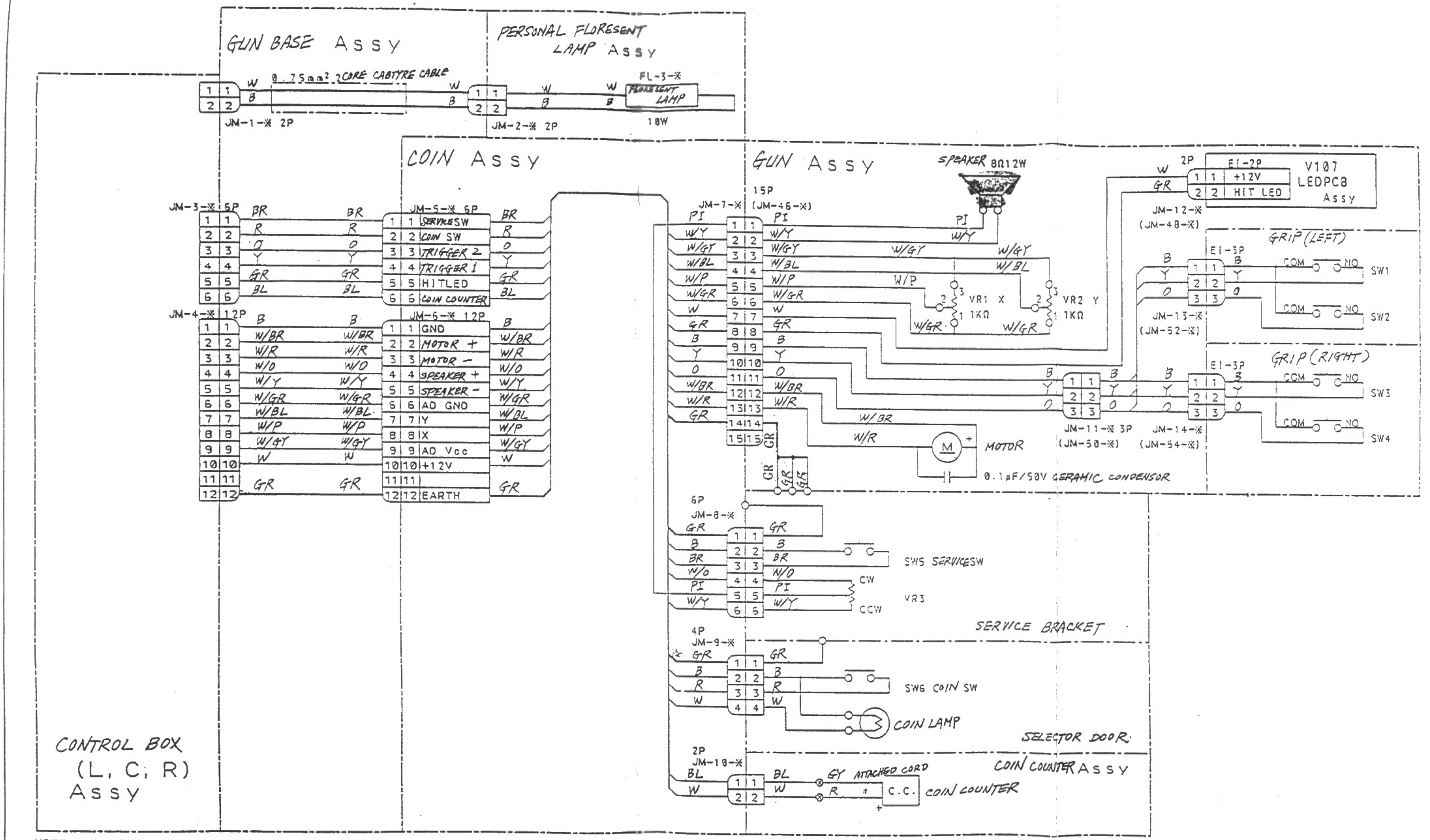


NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

2. LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG18.

3. ALL SPEAKER CABLES USE 2 CORE, 1.25□ , RED/BLACK (R/B) ONE.

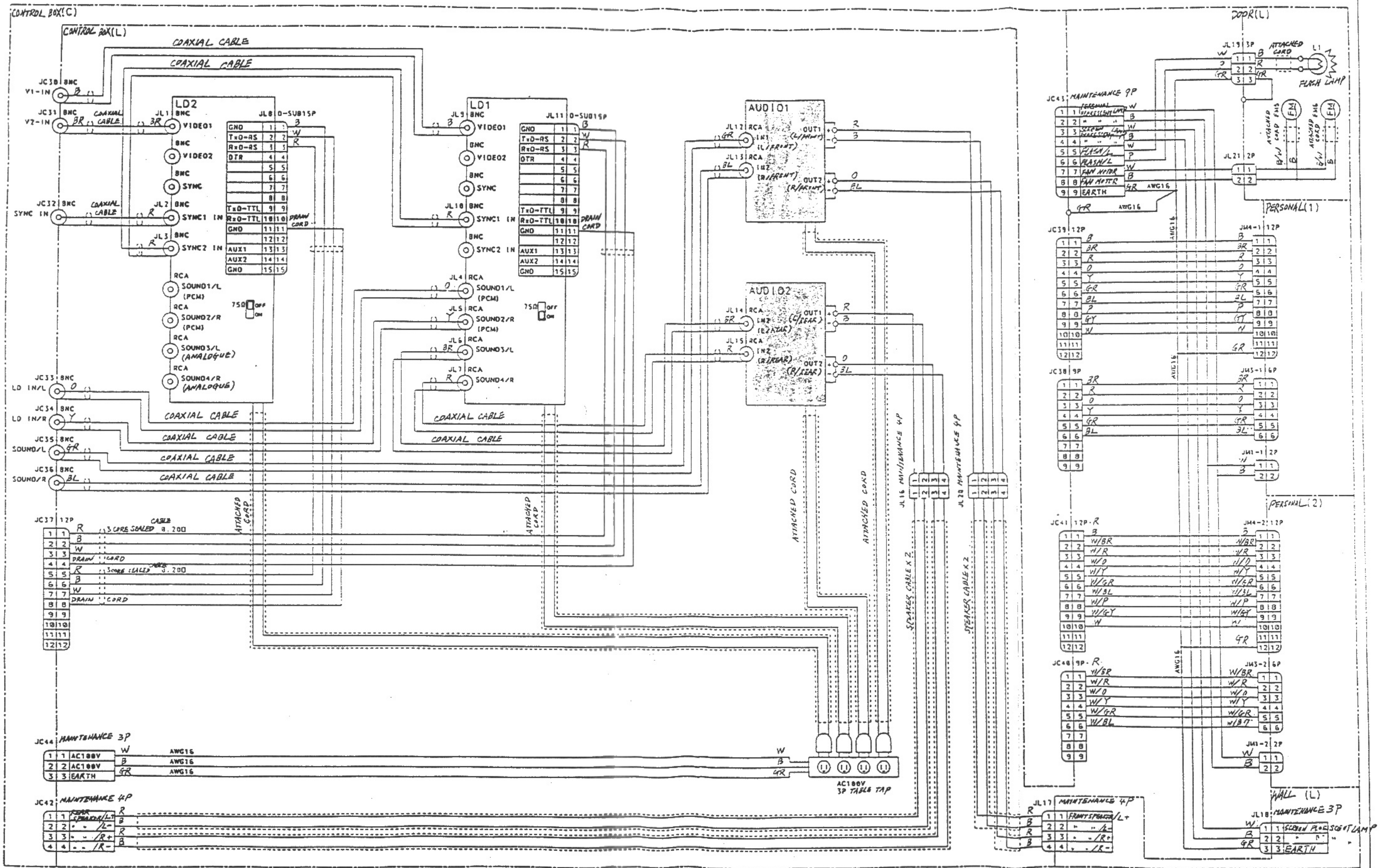
SCREEN BASE CONNECTION DIAGRAM



NOTE:

1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI MAINTENANCE LOCK.
2. APLLY SOCKET CONTACT FOR PLUG CONNECTOR, AND PIN CONTACT FOR CAP CONNECTOR.
3. THIN LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.
4. ALL WIRES SAME COLOURED ON SAME ROUTES, SHALL BE CONNECTED.
5. MARK ※ OF CONNECTOR NUMBERS MEANS THE NUMBERS (1 - 6) OF EACH PERSONAL ASSY.
6. PERSONAL ASSY (3 & 4) HAVE NOT ANY FLORESENT LAMP.
7. CONNECTOR NUMBERS IN MARK ( ) MEANS THE NUMBERS IN V107.

PERSONAL ASSY CONNECTION DIAGRAM

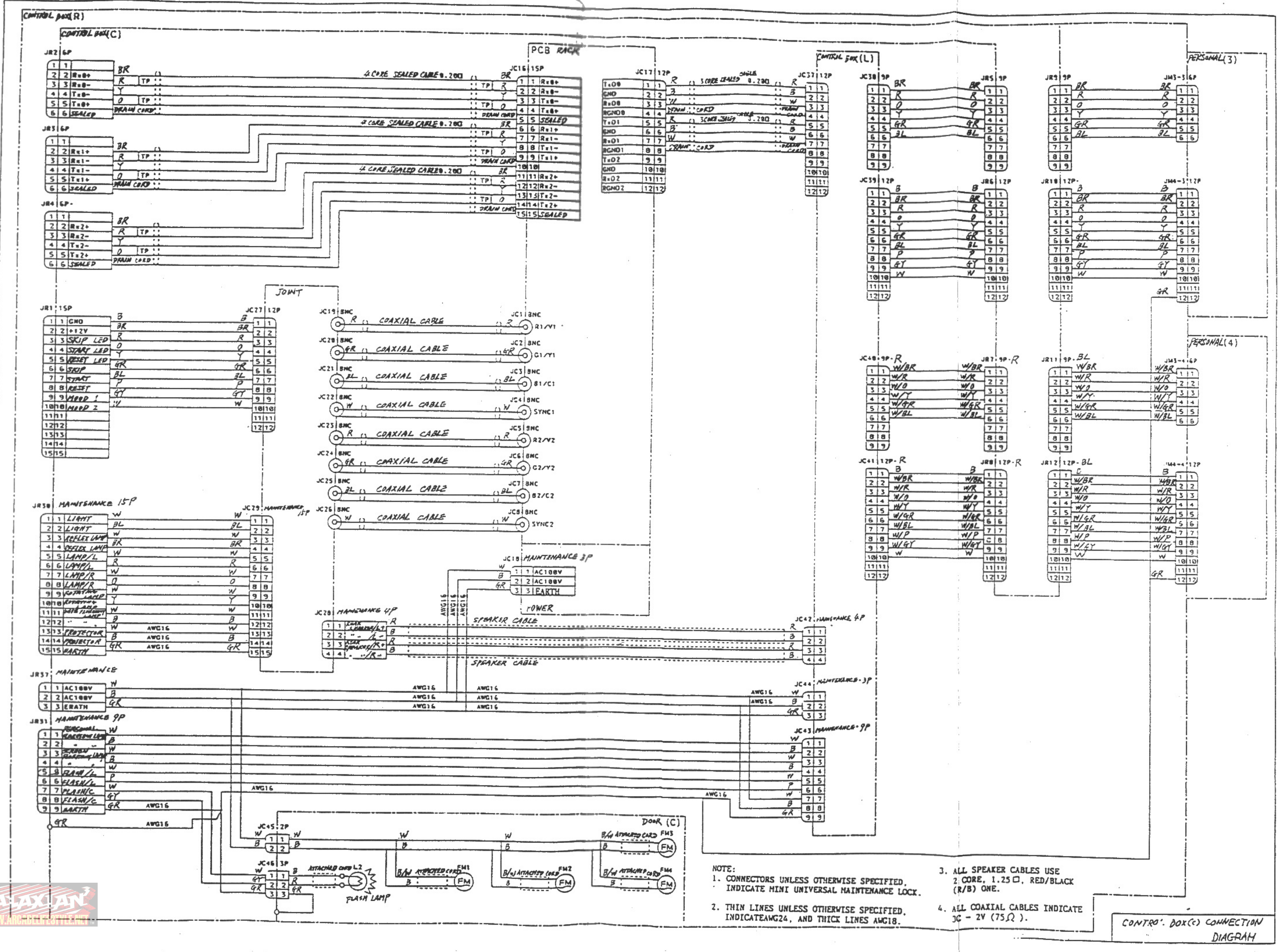


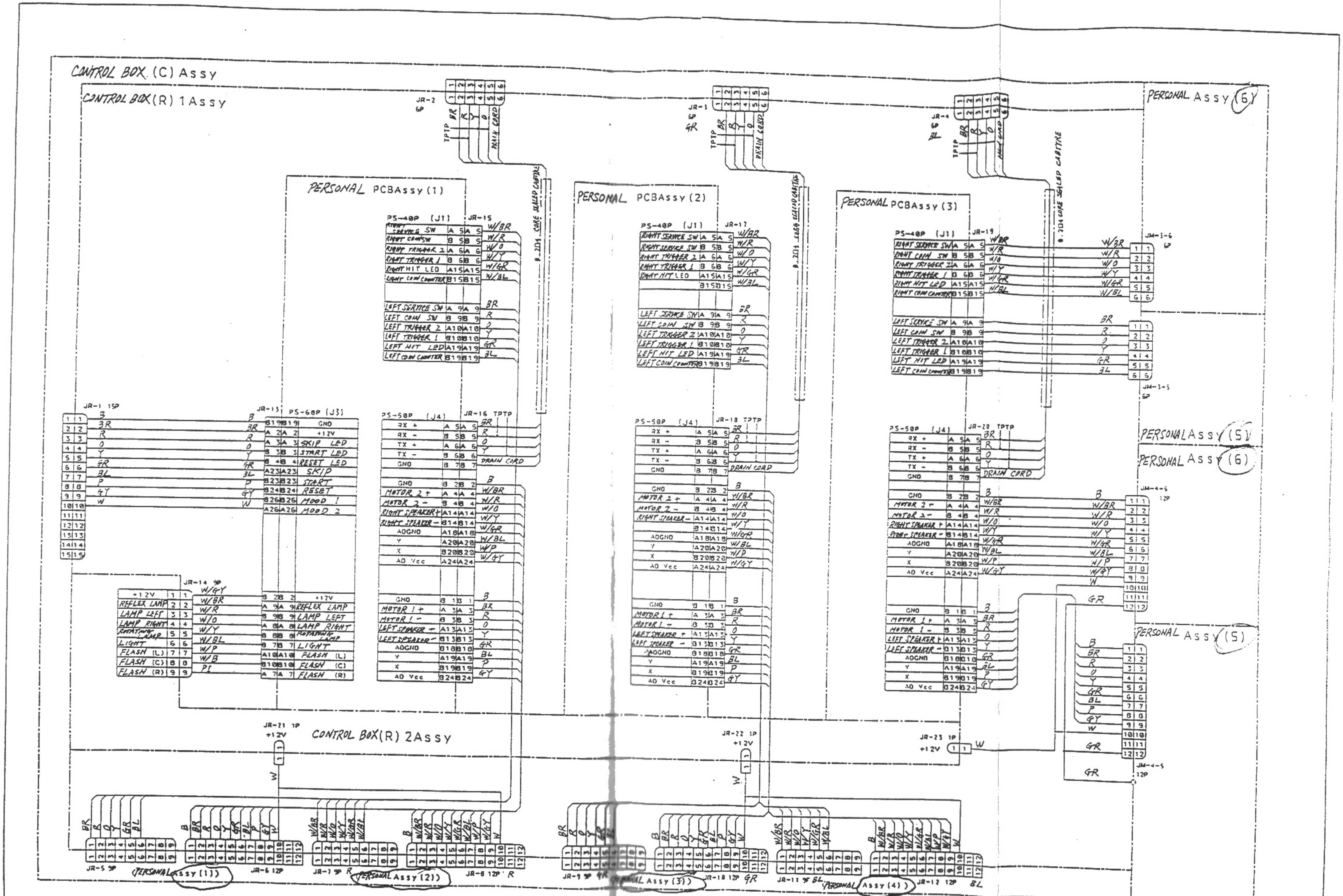
NOTE:
1. CONNECTORS UNLESS OTHERWISE SPECIFIED. INDICATE MINI UNIVERSAL MAINTENANCE LOCK.
2. THINE LINES UNLESS OTHERWISE SPECIFIED. INDICATE AWG24, AND THICK LINES AWG18.
3. ALL SPEAKER CABLES USE 2 CORE, 1.25□, RED/BLACK (R/B) ONE.
4. ALL COAXIAL CABLES INDICATE 3C - 2V(75Ω).

Color Abbreviation

Black	- B	Brown	- BR
Red	- R	Green	- GR
Blue	- BL	White	- W
Orange	- O	Light Blue	- LB
Yellow	- Y	Yellowish Green	- YG
Purple	- P	Pink	- PI
Grey	- GY		

CONTROL BOX (L) CONNECTION DIAGRAM


CONTROL BOX (R)
CONTROL BOX (C)
PCB RACK
CONTROL BOX (L)
PERSONAL (3)
PERSONAL (4)
JOINT
POWER
DOOR (C)
4 CORE SEALED CABLE 0.20□
3 CORE SEALED CABLE 0.20□
COAXIAL CABLE
SPEAKER CABLE
JR2 6P
JR3 6P
JR4 6P
JC16 15P
JC17 12P
JC37 12P
JR1 15P
JC27 12P
JR30 MAINTENANCE 15P
JC29 MAINTENANCE 15P
JC18 MAINTENANCE 3P
JC28 MAINTENANCE 4P
JC42 MAINTENANCE 4P
JR37 MAINTENANCE
JC44 MAINTENANCE 3P
JR31 MAINTENANCE 9P
JC43 MAINTENANCE 9P
JC45 2P
JC46 3P
FLASH LAMP
NOTE:
1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.
2. THIN LINES UNLESS OTHERWISE SPECIFIED, INDICATEAWG24, AND THICK LINES AWG18.
3. ALL SPEAKER CABLES USE 2 CORE, 1.25□, RED/BLACK (R/B) ONE.
4. ALL COAXIAL CABLES INDICATE 3C - 2V (75Ω).
CONTROL BOX(C) CONNECTION DIAGRAM



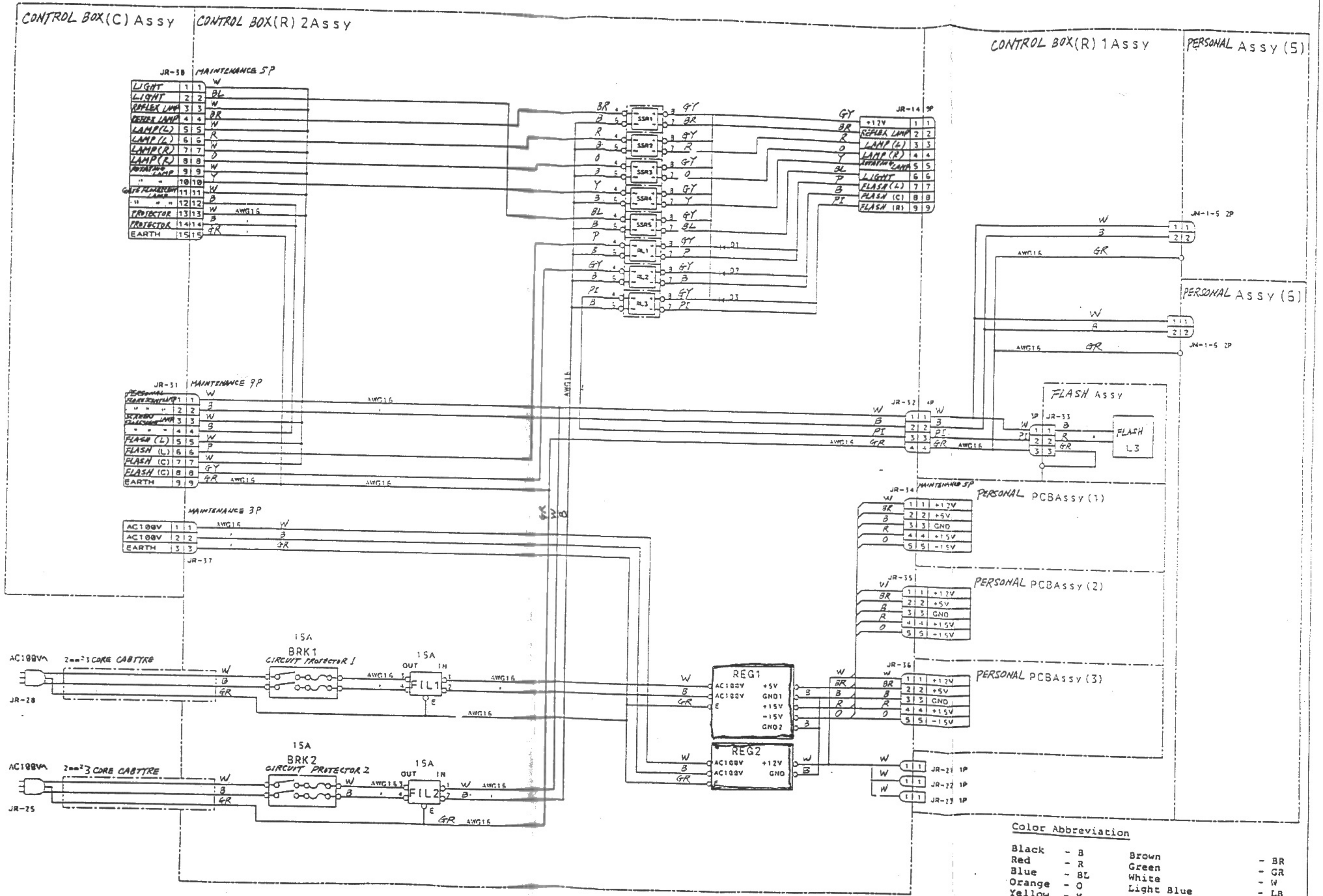
NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI MAINTENANCE LOCK.

2. APLLY SOCKET CONTACT FOR PLUG CONNECTOR, AND PIN CONTACT FOR CAP CONNECTOR.

3. THIN LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.

4. ALL WIRES SAME COLOURED ON SAME ROUTES, SHALL BE CONNECTED.

CONTROL BOX (R) CONNECTION DIAGRAM(2/1)



Color Abbreviation

Black	- B	Brown	- BR
Red	- R	Green	- GR
Blue	- BL	White	- W
Orange	- O	Light Blue	- LB
Yellow	- Y	Yellowish Green	- YG
Purple	- P	Pink	- PI
Grey	- GY		

NOTE: 1. CONNECTORS UNLESS OTHERWISE SPECIFIED, INDICATE MINI UNIVERSAL MAINTENANCE LOCK.

2. THINE LINES UNLESS OTHERWISE SPECIFIED, INDICATE AWG24, AND THICK LINES AWG18.

3. APPLY SOCKET CONTACT FOR PLUG CONNECTOR, AND PIN CONTACT FOR CAP CONNECTOR.

4. ALL WIRES SAME COLOURED ON SAME ROUTES, SHALL BE CONNECTED.

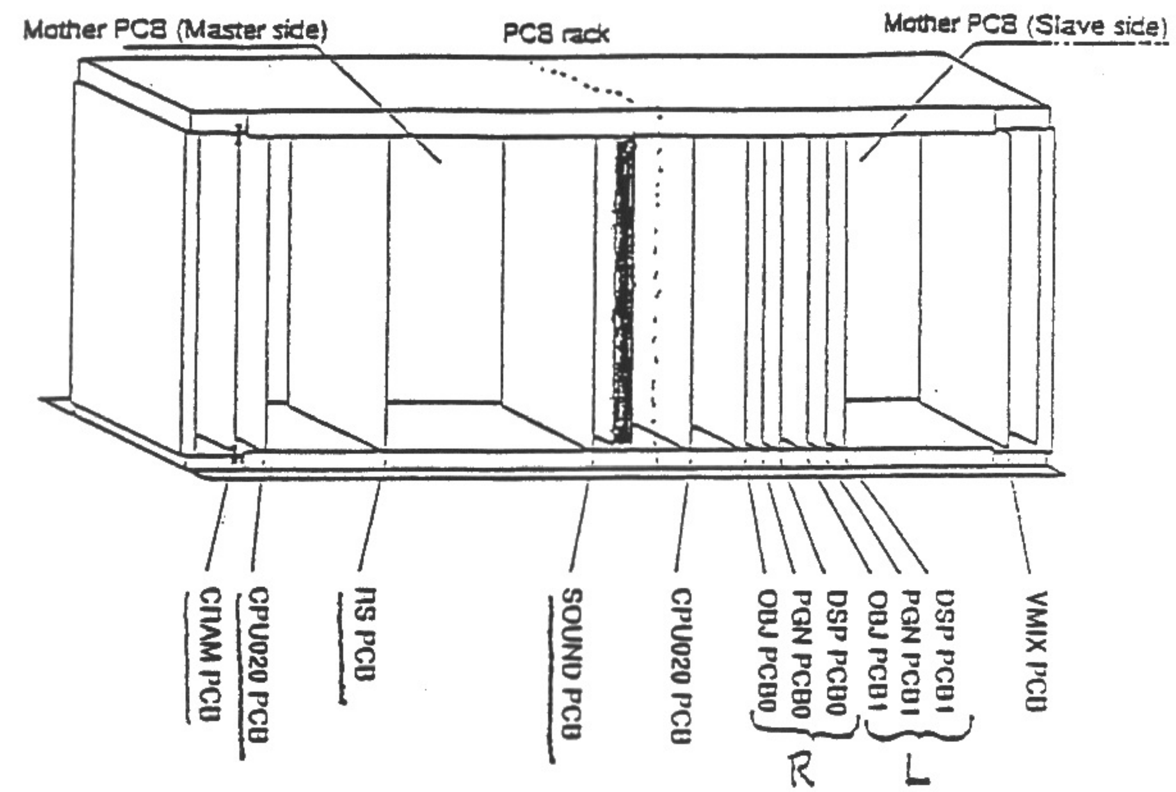
CONTROL BOX(A) CONNECTION DIAGRAM (2/2)

APPENDIX A CONTROL BOX

A-1 Control Box (C)

1. Locations and Functions of the PCBs

Locations and functions of the PCBs inside the PCB rack are as follows:



Locations of the PCBs

	Name of the PCB	Function of the PCB
Master side	CRAM-PCB	Controls each CPU 020 PCB on the master side and the slave side.
	CPU020 PCB	Controls the product thoroughly.
	RS-PCB	Communicates with the personal PCB and the laser disc player.
	SOUND-PCB	Controls the sound.
Slave side	CPU020 PCB	Controls the video.
	OBJ-PCB PGN-PCB DSP-PCB	These three PCBs create one screen of video signals.
	VMIX-PCB	Composes the video signals of the PCB and those from the laser disc player.

2. LEDs on the slave CPU PCB

- Each LED checks the operation in the numerical order (one to twelve). When it finishes checking, it lights up.
- The number 2 to 12 LEDs check the operations of the slave PCBs which correspond to four screens one by one. The number 15 LED allows you to know which PCB is checked.
- When all LEDs finish checking the operations of the PCBs, the number 1 to 8 LEDs light, and the number 9 to 16 LEDs starts lighting and going off one by one in numerical order, then in the reverse order.

LED		Checking Information	Why the LED does not light
16	Green	Lighting: Checking the PCB for the right screen.	
15	Red	Lighting: Checking the PCB for the left screen.	
14	Yellow		
13	Green		
12	Red	(S) The OBJ PCB is initialized.	(S) The OBJ PCB has an error.
11	Yellow		
10	Green	(S) The OBJ PCB link data is transferred.	(S) The OBJ PCB has an error.
9	Red	(S) The OBJ PCB palette RAM is initialized.	(S) The OBJ PCB has an error.
8	Yellow	(S) The PGN PCB is initialized.	(S) The PGN PCB has an error.
7	Green	(S) The DSP PCB is initialized.	(S) The DSP PCB has an error.
6	Red	(S) The DSP PCB RAM is tested.	(S) The DSP PCB has an error.
5	Yellow	(S) The OBJ PCB palette RAM is tested.	(S) The OBJ PCB has an error.
4	Green		
3	Red	(S) The OBJ PCB RAM is tested.	(S) The OBJ PCB has an error.
2	Yellow	(S) The OBJ PCB C138 is initialized.	(S) The OBJ PCB has an error.
1	Green	Programs are transferred.	(S) The CPU PCB, C-RAM PCB or bus cable has an error.

3. RS PCB

- Each item is flashed when the RS PCB operates normally. When it lights or goes off, the RS PCB may malfunction.

LED		RS PCB
3	Red	Flashes when data is received.
2	Yellow	Flashes when data is transferred.
1	Green	Flashes when the RS PCB is operating.

4. The Standard Settings of the Switches (DIP Switches And Jumper Switches) on Each PCB

See the descriptions of the control box in the section "Daily Maintenance" for the type of PCB and its installation position.

O Master CPU020 PCB

(Settings of the DIP switch)

DIP switch	1	2	3	4	5	6	7	8
SW1	ON	OFF	OFF	OFF				
SW3	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW4	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

(Settings of the jumper switch)

Jumper switch	1	2	3	4	5	6	7	8
Settings	4M	CEN	INT	Vcc	INT	FON	MON	MST

O Slave CPU020 PCB

(Settings of the DIP switch)

DIP switch	1	2	3	4	5	6	7	8
SW1	ON	ON	ON	OFF				
SW3	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW4	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF

(Settings of the jumper switch)

Jumper switch	1	2	3	4	5	6	7	8
Settings	1M	CEN	INT	No mark	OUT	FON	HON	SLV

O OBJ (D) PCB

(Settings of the jumper switch)

Jumper switch	1	2	3	4	5	6	7	8
Settings	2M	2M	1,2,4M	P	P	HP1	INTER LACE	1,2,4M

Jumper switch	9	10, 11	12	13	14	15	16	17
Settings	4M	1M	68020	VP2	SLAVE	SLAVE	SLAVE	SLAVE

Jumper switch	18	19	20	21,22
Settings	SLAVE	SLAVE	12DOT	10MB

O PGN PCB

(Settings of the jumper switch)

Jumper switch	1	2	3	4	5	6	7	8
Settings	NJ3	NJ2	NJ1	NJ0	FFD11	FFD10	256K fixed	256K fixed

O DSP PCB

(Settings of the DIP switch)

DIP switch	1	2	3	4
SW1	OFF	OFF	ON	ON

(Settings of the jumper switch)

Jumper switch	1	2	3	4	5	6	7	8
Settings	Vcc	Vcc	GND	Vcc	GND fixed	GND	GND	Vcc

Jumper switch	9	10	11	12	13	14	15	16
Settings	Vcc	GND	Vcc	Vcc	GND	Vcc	Vcc	GND

Jumper switch	17	18
Settings	Vcc	Vcc

O RS PCB

(Settings of the DIP switch)

DIP switch	1	2	3	4	5	6	7	8
SW1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

(Settings of the jumper switch)

Jumper switch	1	2	3
Settings	12M	DST	NC

O SOUND PCB

(Settings of the DIP switch)

DIP switch	1	2	3	4	5	6	7	8
SW1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

O VMIX PCB

(Settings of the jumper switch)

Jumper switch	1	2	3	4	5	6	7	8
Settings	COLOR1	4	3.6V/	3.6V/	3.6V/ R1	R1 G1	COLOR2 B1	4

Jumper switch	9	10	11	12	13	14	15	16
Settings	3.6V/ R2	3.6V/ G2	3.6V/ B2	R2	COLOR3	4	3.6V/ R3	3.6V/ G3

Jumper switch	17	18	19	20	21	22	23	24
Settings	3.6V/ B3	R3	COLOR4	4	3.6V/ R4	3.6V/ G4	3.6V/ B4	R4

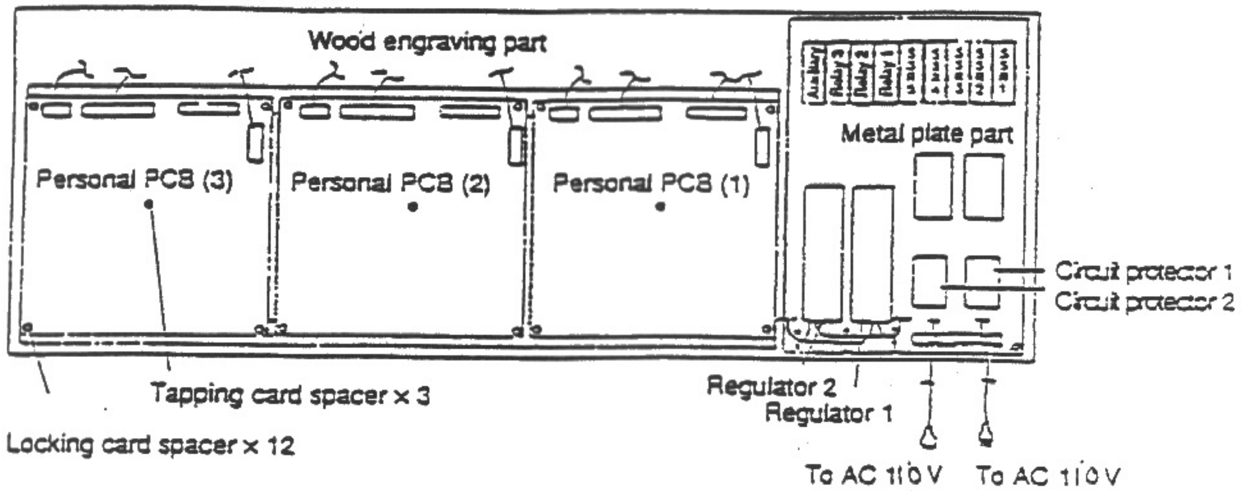
Jumper switch	25	26	27	28	29	30	31	32
Settings	G1	B1	G2	B2	G3	B3	G4	B4

Jumper switch	33,34	35,36
Settings	4	8

A-2 Control Box (R)

About the Personal PCB

The locations and functions of the PCBs inside the PCB rack are as follows:



Name of the PCB	Function of the PCB
Personal PCB (1)	Controls the personal Assys 1 and 2, the operation box and the relays.
Personal PCB (2)	Controls the personal Assys 3 and 4.
Personal PCB (3)	Controls the personal Assy 5 and 6.
All personal PCBs are the same	If the personal PCB (1) is damaged, replace it with the personal PCB (3).

1. Replacing the Personal Assy

(1) Disconnect all connectors connected to the personal PCB to be replaced.
(2) Replace the personal PCB with a new one.
(3) Check the settings of the personal PCB.
(4) Set the gun. If you do not set the gun, the product does not play a game normally.

2. PERSONAL PCB

(Settings of the DIP switch)

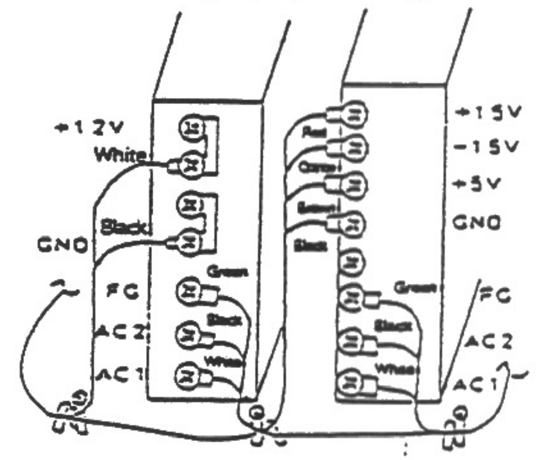
DIP switch	1	2	3	4	5	6	7	8
SW1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

(Settings of the jumper switch)

Jumper switch	—
Setting	139

A-3 About the Power Supply

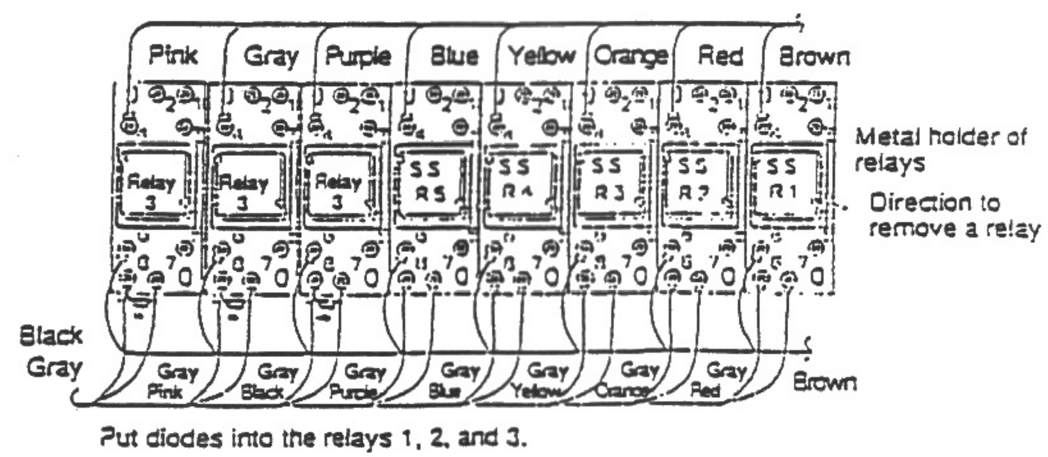
(1) The regulators are used as the power supply of the personal Assys and the personal PCBs.
(2) The regulator 1 outputs +5V and +/- 15V.
(3) The regulator 2 outputs +12V.
(4) The regulators are fixed with screws from the rear side of the metal plate.



Connections of the Regulators

A-4 Replacing the Relay

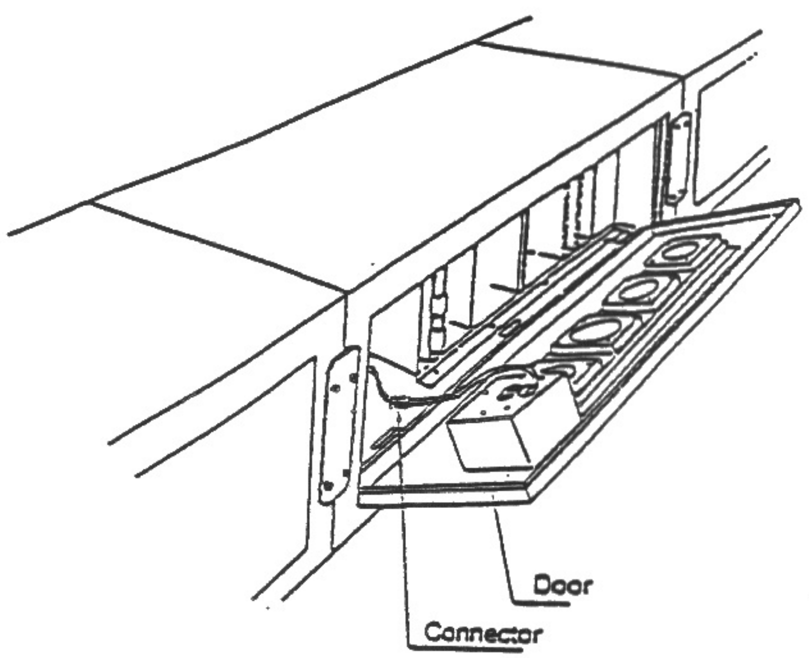
(1) Relays 1, 2 and 3 control the flash lights (L, C, and R).
(2) SSRs 1 to 5 control the reflector lamp, lamp (L), lamp (R), pilot lamp and lighting system.
(3) Each relay shares the same socket with each SSR reflectively. Be sure to replace the relay with a new relay.

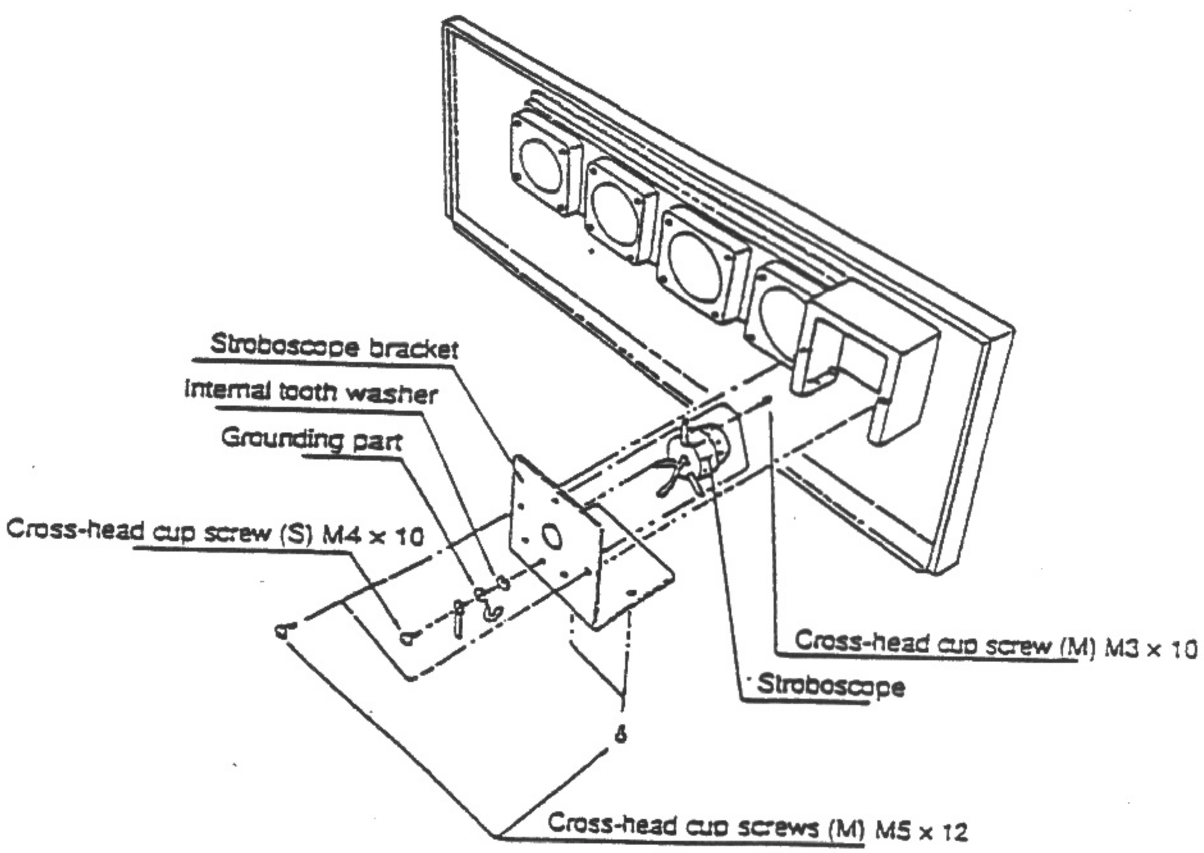


Connections of the relays and the SSRs

A-5 Replacing the Stroboscope

(1) Remove the door and the connector.
(2) Remove four cross-head cup screws (M5 × 12) and the bracket for the stroboscope.
(3) Remove one cross-head cup screw (M4 × 10), then the grounding part.
(4) Remove three cross-head cup screws (M3 × 10), then the stroboscope.
* To install the stroboscope, follow the procedure above in the reverse order.





A-6 Cleaning the Laser Disc

Note: Do not touch the surface of the laser disc with your hands.
(1) Turn off the laser disc player, then turn it on again to unlock the laser disc player. You can clean the laser disc which is put into the laser disc player.
(2) Press the OPEN/CLOSE switch on the front of the laser disc player, then take out the laser disc.
(3) Clean the surface of the laser disc with soft cloth from its inside to its outside.
(4) Check to see the surface of the laser disc, then insert it into the laser disc player.

A-7 Replacing the Laser Disc Player

Note: Do not touch the surface of the laser disc with your hands.
(1) Turn off the laser disc player, then turn it on again to unlock the laser disc player. You can clean the laser disc which is put into the laser disc player.
(2) Take out the laser disc form the laser disc player.
(3) Turn off the product.
(4) Disconnect the power cord.
(5) Disconnect all harnesses and connectors.
(6) Set the 75 ohm switch on the rear of a new laser disc player to the same position as that of the laser disc player to be replaced.
(7) Replace the laser disc player with this new one, then connect the harnesses, connectors and power cord.
(8) Turn on the product, and check to see the surface of the laser disc to insert it into the laser disc player.

A-8 Replacing the Amplifier

(1) Disconnect the power cord.
(2) Disconnect two connectors (a pair of JL12 and JL13 or a pair of JL14 and JL15) which are connected to the amplifier, then disconnect the harness for the speaker.
(3) Pull out the amplifier, and connect the harness for the speaker to a new amplifier.
(4) Place the new amplifier inside the AV rack, and connect all connectors, harness for the speaker, and power cord to it.
(5) Set each switch of the new amplifier correctly. (Refer the Installation Manual.)

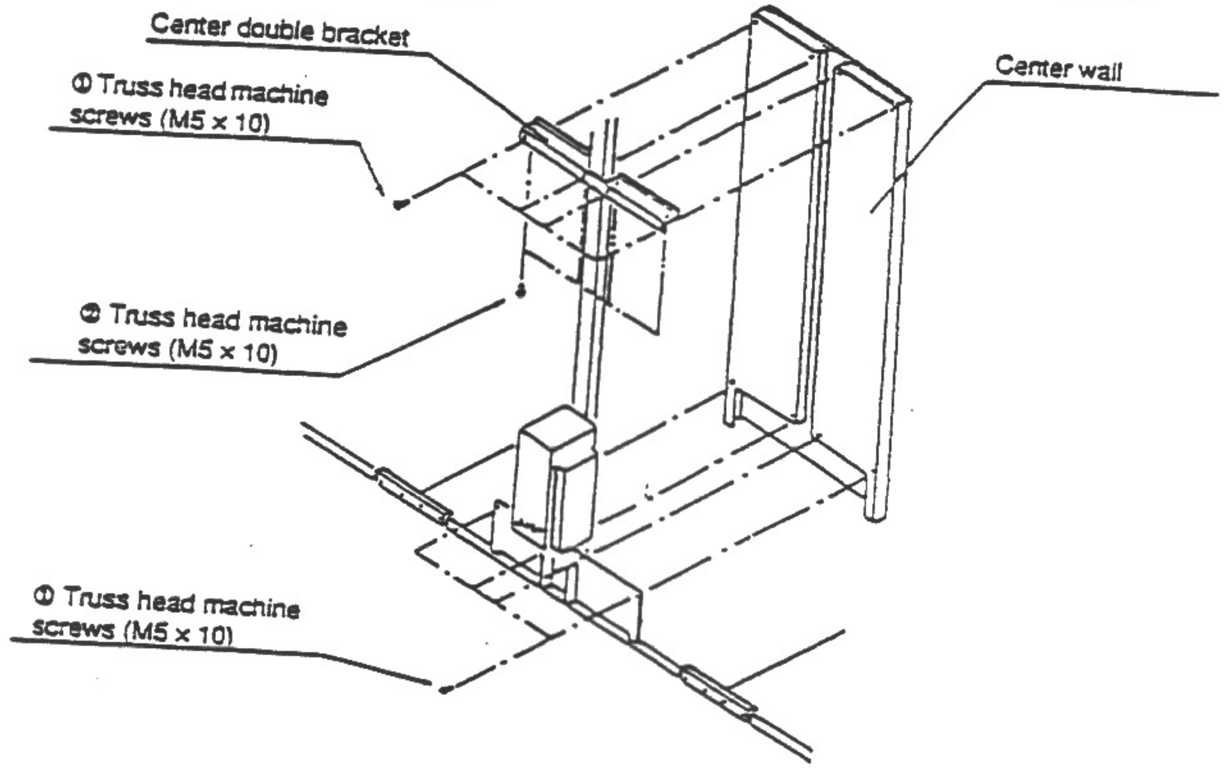
B-1 Replacing the Projector

To avoid any danger, two or more persons have to follow operate the following procedure together.

Removing the Projector

(1) Remove eight 1 truss head machine screws (M5 × 10), then the center wall.

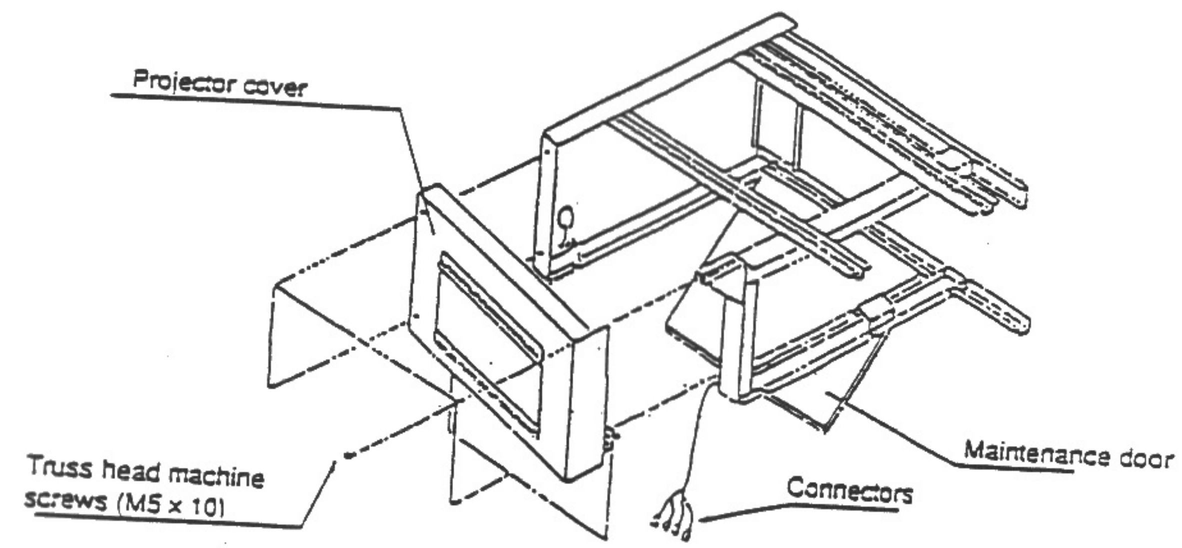
(2) Remove four 2 truss head machine screws (M5 × 10), then the center double bracket.



(3) Open the maintenance door.

(4) Disconnect the connectors.

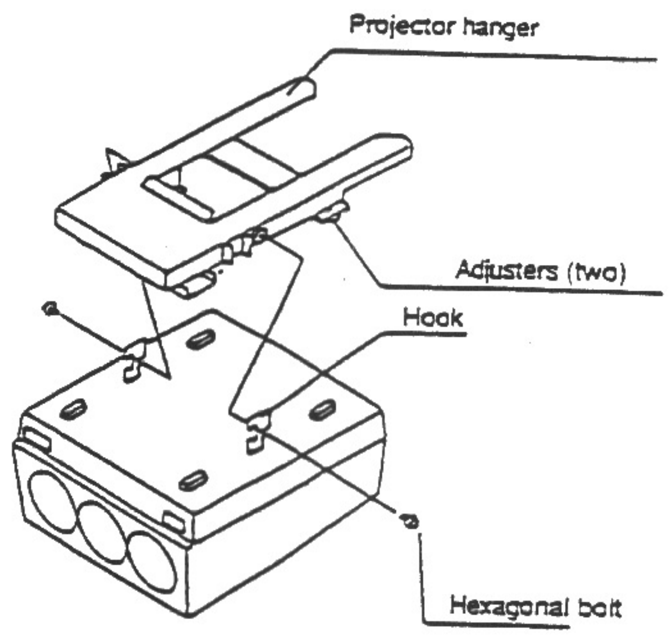
(5) Remove five truss head machine screws (M5 × 10), then the projector cover.



B-2 Removing the Projector Hanger

(1) Turn and loosen two adjusters of the projector hanger with your hands.

(2) Remove the hexagonal bolts (M14 × 20, Flat washers and spring washers are used.) located on the hook of the projector, then the projector hanger.



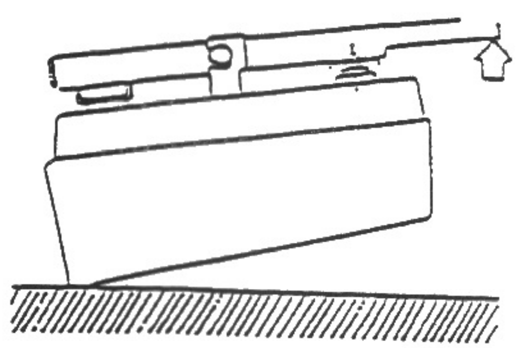
Installing the Projector Hanger

(1) Follow the procedure for removing the projector hanger in the reverse order, and pull up the hook of the projector to put the projector hanger on it. Temporarily fix them with the hexagonal bolt (M14 × 20, Flat washers and spring washers are used.).

(2) Lift up the rear edge of the projector hanger a little, then bring down the adjuster so that the hooked parts can get stable.

(3) Make a half rotations of the adjuster manually since it gets turned.

(4) Fix the hexagonal bolt (M14 × 20, Flat washers and spring washers are used.) of the hook firmly.

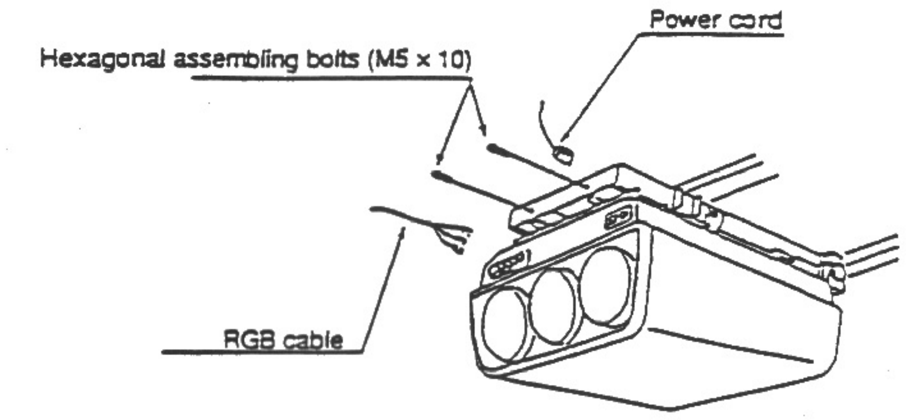


B-3 Fixing the Projector

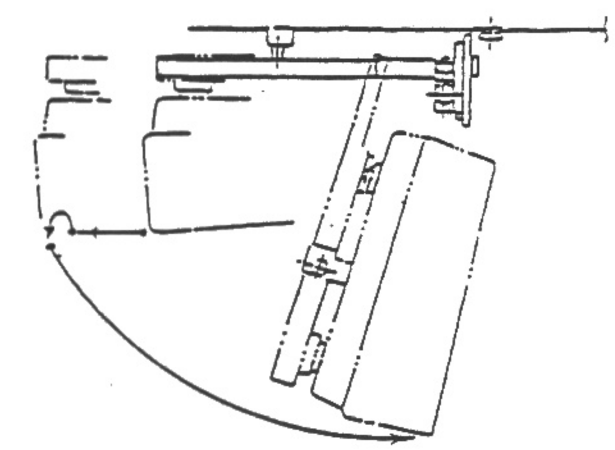
Follow the procedure for removing the projector in the reverse order. (See " Removing the Projector".)

(6) Disconnect the RGB cable and the power cord.

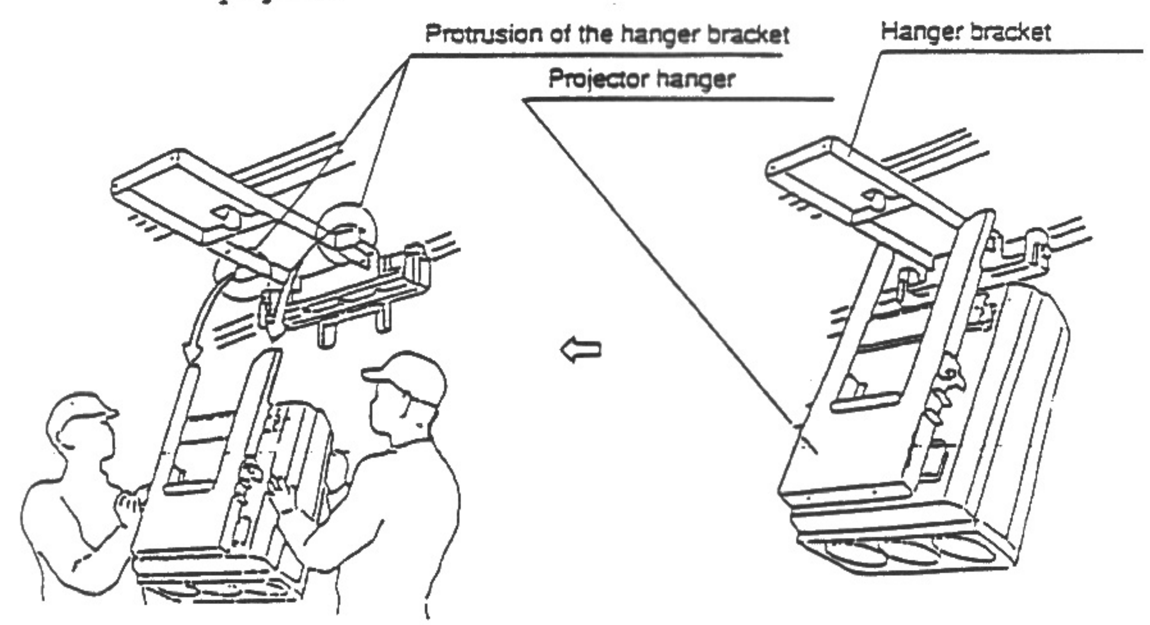
(7) Remove two hexagonal assembling bolts of the projector hanger.

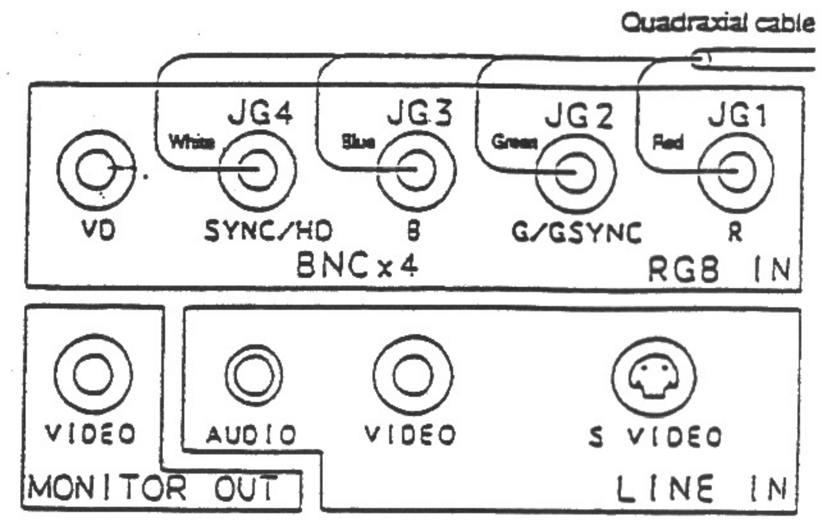


(8) Slowly slide the projector forward about 30 cm until it stops. Then lift up its front a little, and slide it forward until it stops.
Bring it down slowly so that it hangs vertically.

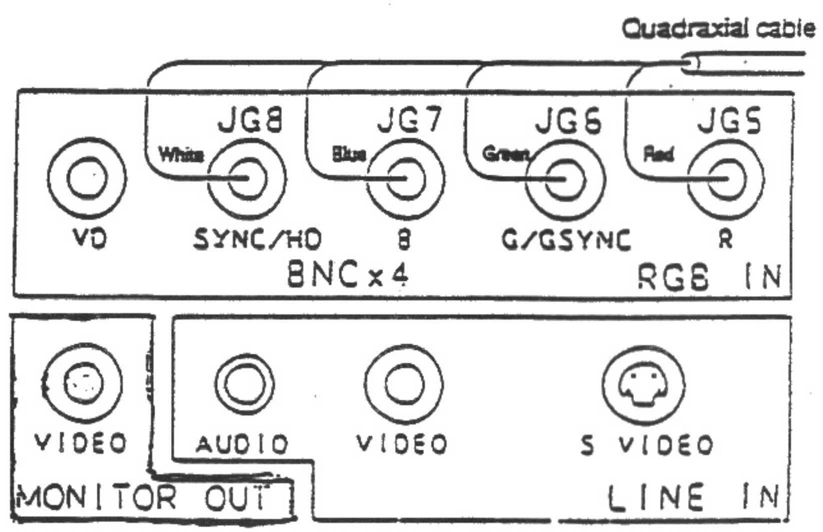


(9) This step requires two persons to operate. Hold both sides of the projector, then lift up the projector. Unhook the rear of the projector hanger from the protrusion of the hanger bracket, then remove the projector.





Projector 1



Projector 2

Connections of the Projector at the Joint

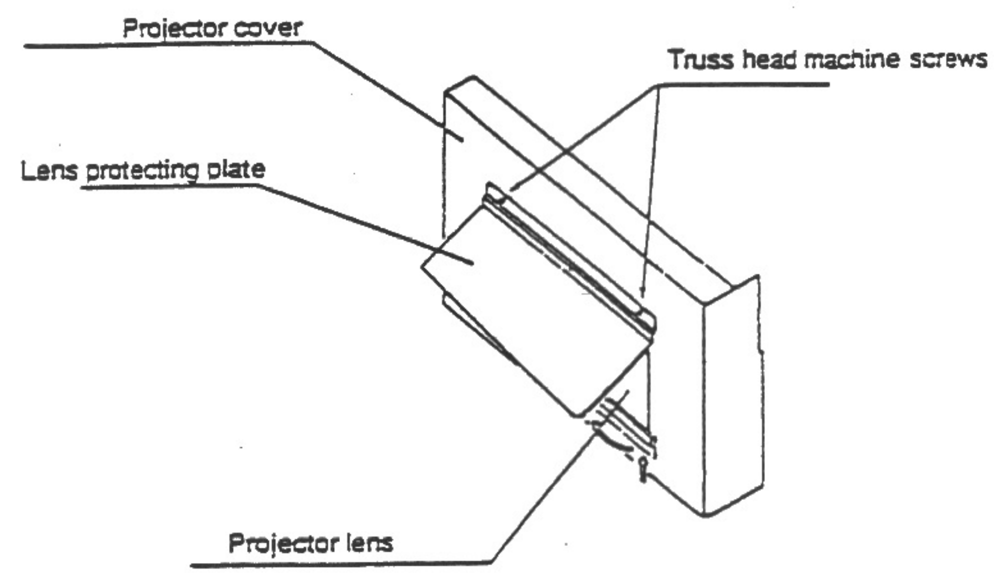
B-4 Cleaning the Lens of the Projector

(1) Loosen two truss head machine screws (M5 × 10) fixing the lens protecting plate.

(2) Remove the lens protecting plate to the direction indicated by the arrow mark, then clean the lens.

(3) Clean the lens protecting plate too.

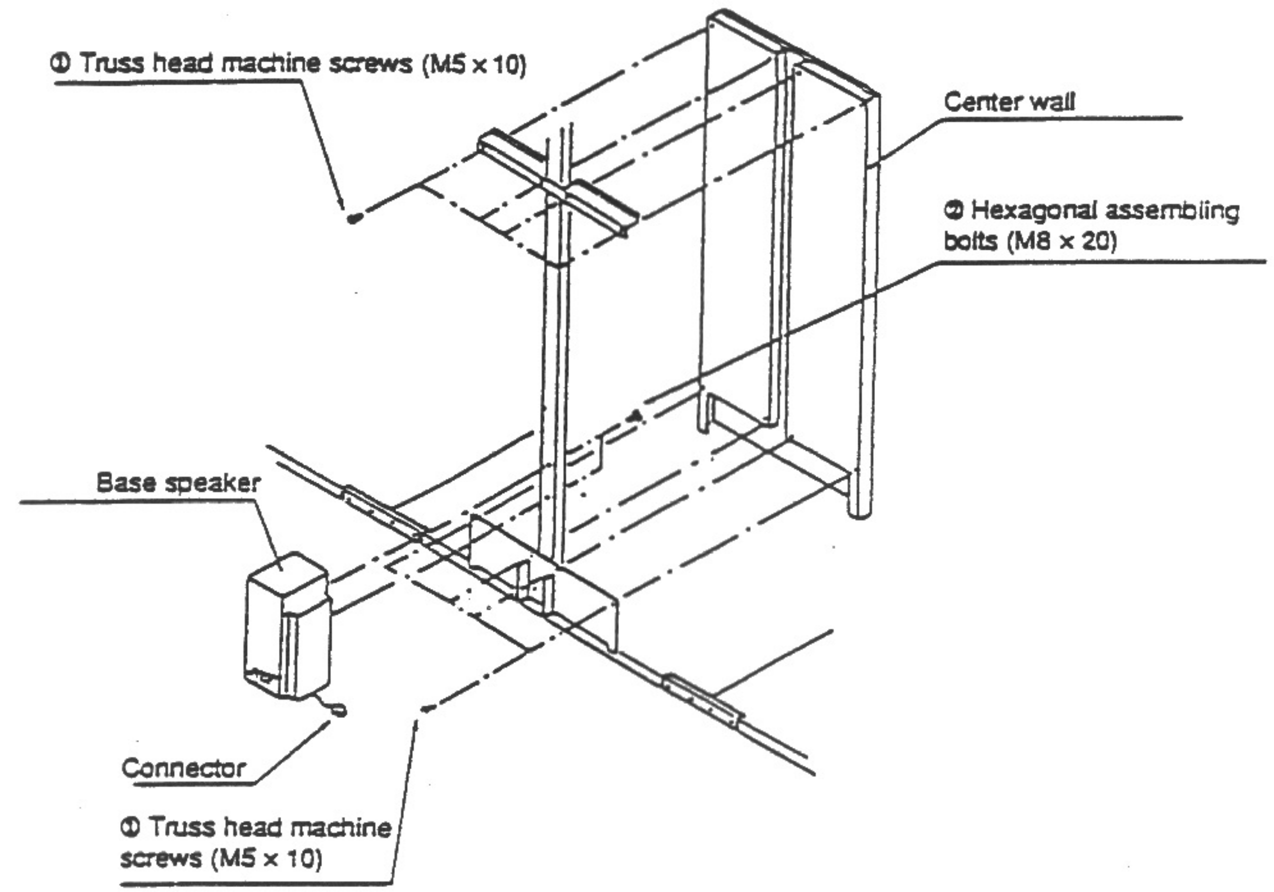
(Note) Clean the lens gently with soft cloth such as gauze because the lens can be damaged easily.
Do not use the material such as thinner and glass cleaner to clean the lens.



APPENDIX C SPEAKERS

C-1 Replacing the Base Speaker

(1) Remove eight 1 truss head machine screws (M5 × 10), then the center wall.
(2) Disconnect the connector of the base speaker.
(3) Remove two 2 hexagonal assembling bolts (M8 × 20), then the base speaker.
* To install the base speaker, follow the procedure above in the reverse order.



C-2 Replacing the Base Speaker

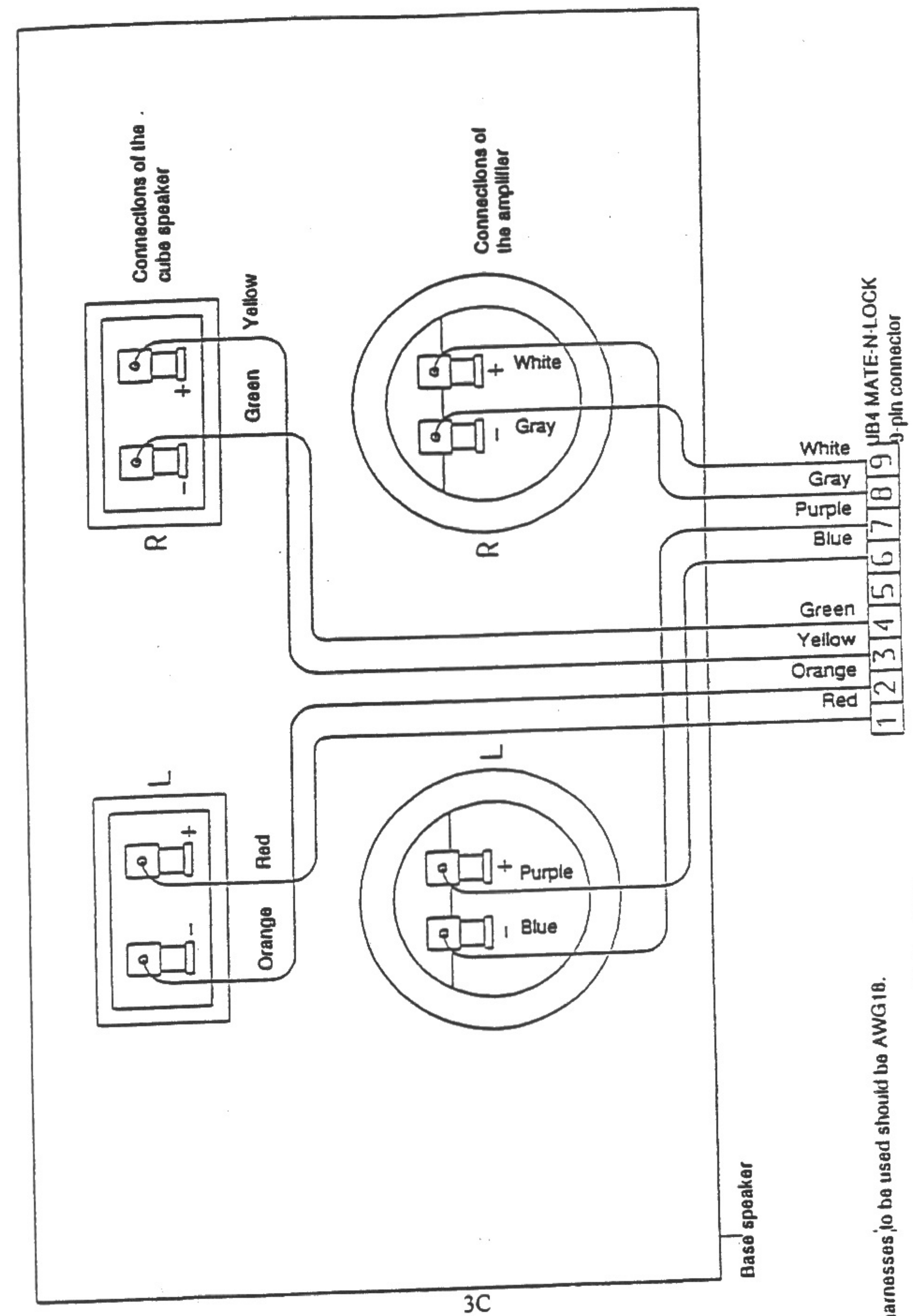
The base speaker is located on the left side.

(1) Remove two truss head machine screws (M5 x 10), then the base cover of the front panel (L).
(2) Remove four truss head machine screws (M5 x 10) fixing the front panel (L).
(3) Lift up the front panel (L), then remove it.
(4) Disconnect the connector of the cube speaker.
(5) Remove two truss head machine screws (M5 x 30) fixing the speaker base (plate of plywood), then pull it out to your side.
(6) Disconnect the connector of the speaker base.
(7) Remove two hexagonal bolts (M8 x 12) from behind the speaker base, then remove the base speaker.
(8) To install a new base speaker, follow Steps (1) to (7) above in the reverse order.

Cleaning the Screen

Clean the screen with soft and clean cloth.

Do not use thinner



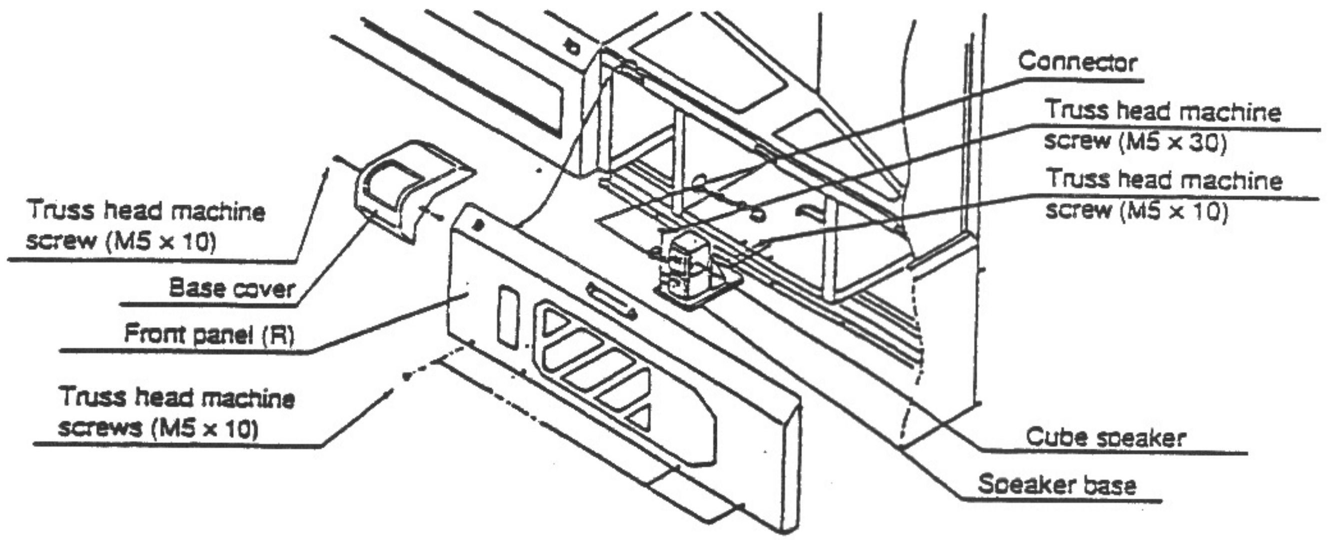
All harnesses to be used should be AWG18.

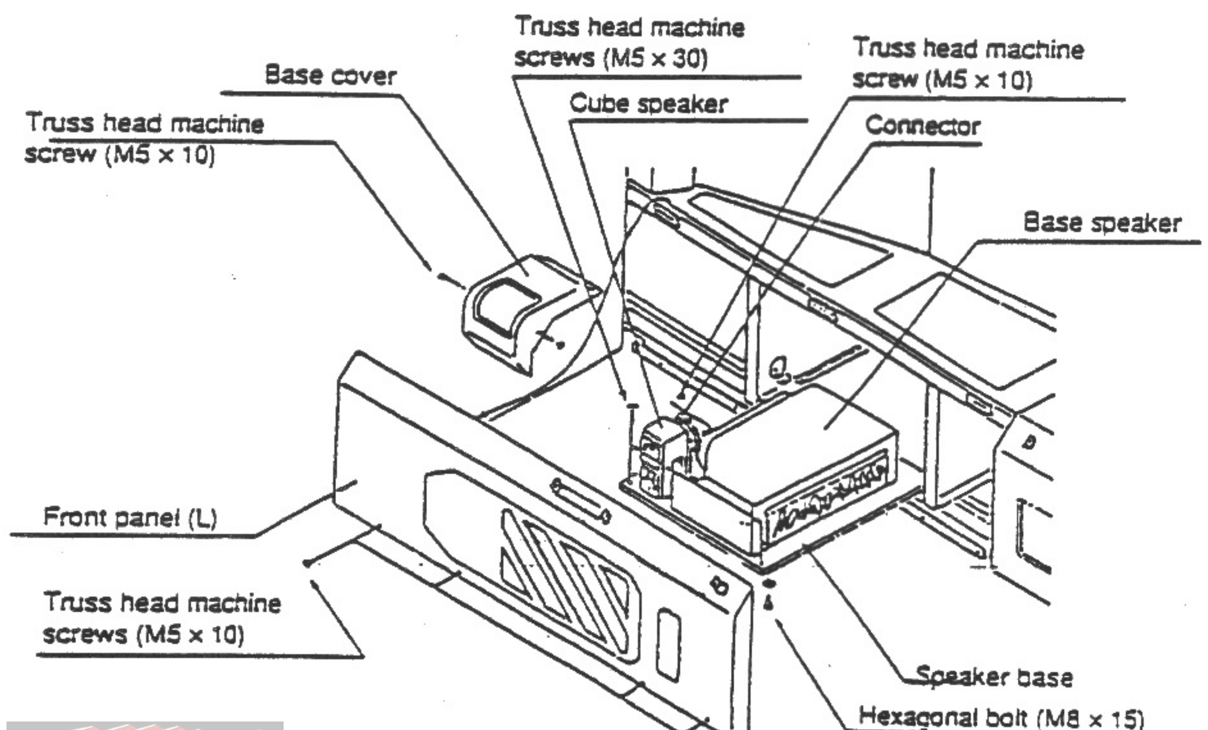
Connections of the Shadow Base Box with the Joint

C-3 Replacing the Cube Speaker

The cube speakers consists of a pair of the right speaker and the left one. Replace them at the same time.

(1) Remove two truss head screws (M5 x 10) to remove the base cover of the front panel (R) or (L).
(2) Remove four truss head screws (M5 x 10) fixing the front panel (R) or (L).
(3) Lift up the front panel (R) or (L) and remove it.
(4) Disconnect the connectors of the cube speaker.
(5) Remove two truss head machine screws (M5 x 30) fixing the speaker base (panel of plywood), and pull out the speaker base to your side.
(6) Remove four truss head machine screws (M5 x 10), then the cube speaker.
(7) Set the switch on the rear of a new cube speaker to DIRECT.
(8) To install the new cube speaker, follow Steps (1) to (6) in the reverse order.



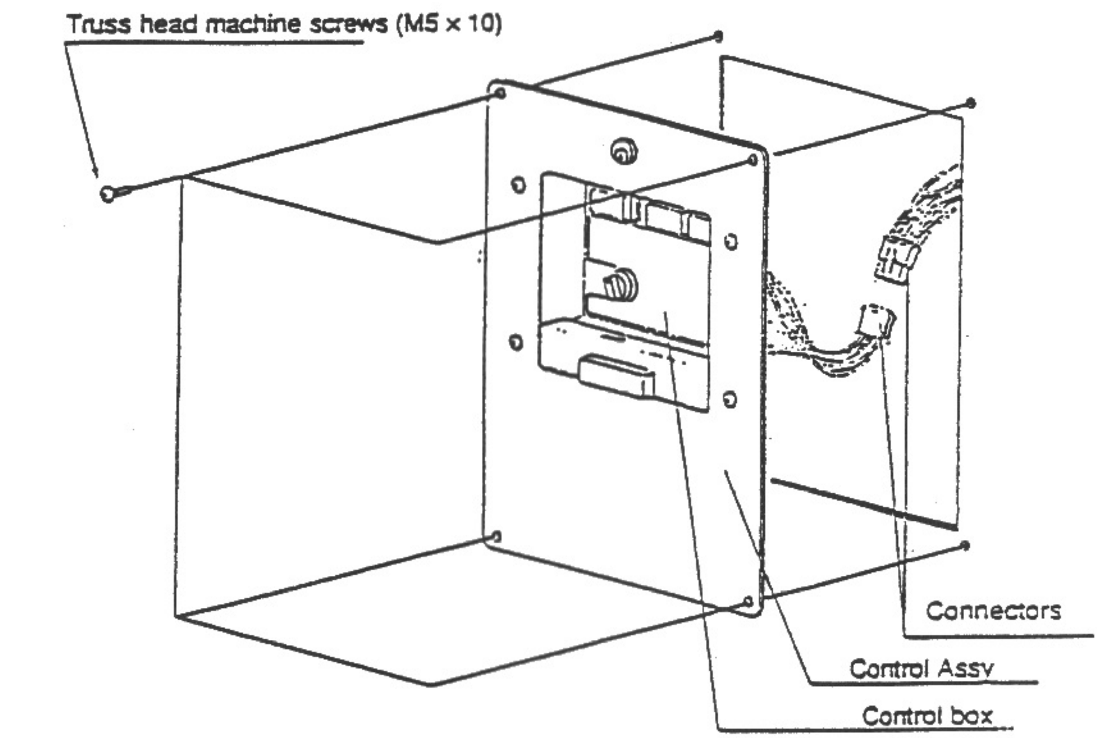


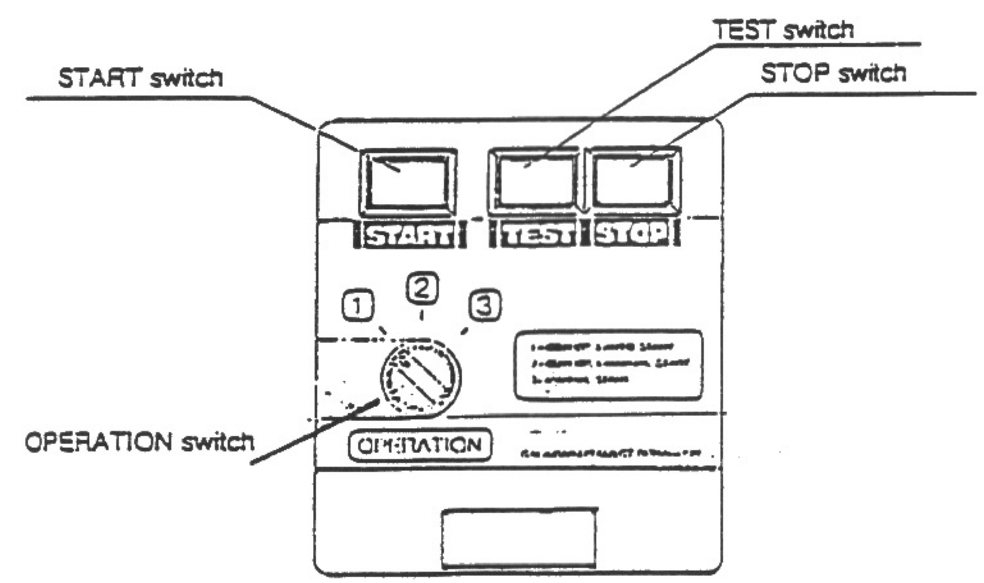
APPENDIX D SWITCHES

D-1 Replacing the Switches

1. Removing the Control Assy
Remove four truss head machine screws (M5 x 10), then the control Assy from the pillar wall (R) or (L).
Before removing the control Assy, disconnect the connector to avoid any damage on the connector when removing the control Assy.

2. Replacing the START, TEST, And STOP Switches
To replace each of the START, TEST, and TOP switches, push it out hard from the rear where the connectors are located. Each switch is soldered and fixed, so remove the soldering before removing the switch.





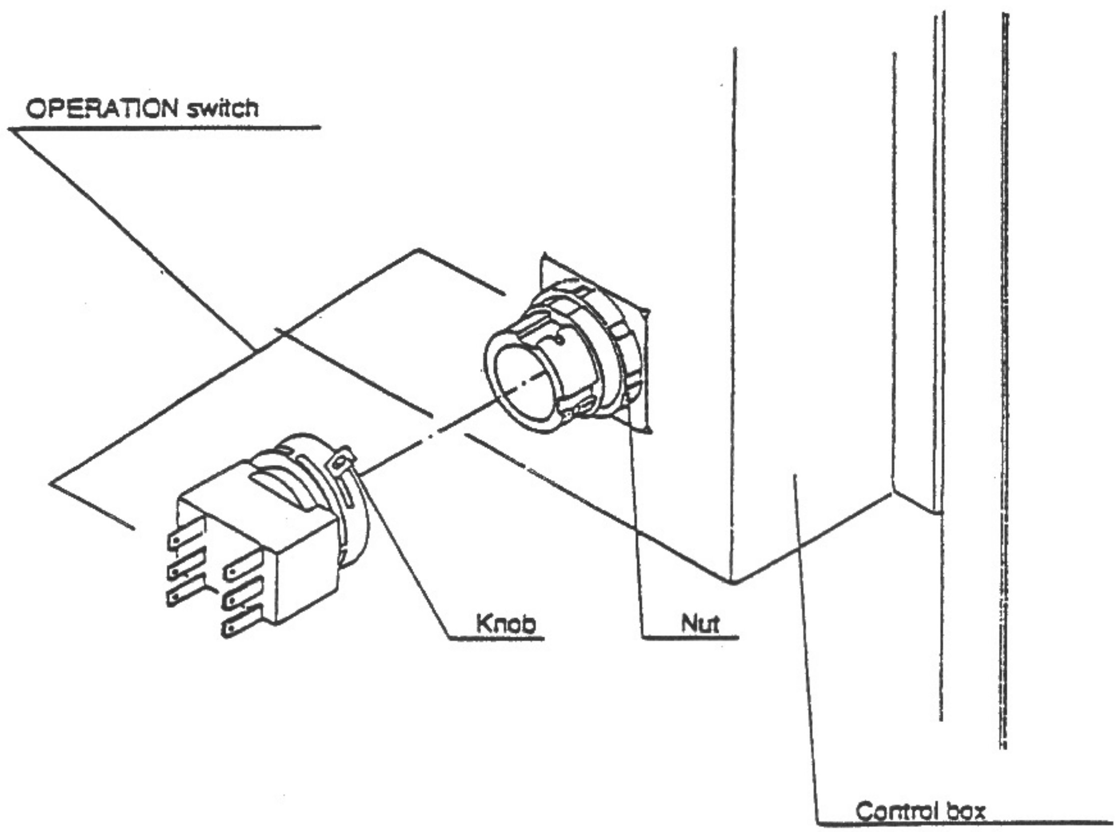
D-2 Replacing the OPERATION Switch

(1) Turn the metal knob located on the side of the connectors of the OPERATION switch anti-clockwise. You can pull out the rear half of the OPERATION switch.

(2) Turn the nut located on the control box side to pull out the front half of the OPERATION switch.

D-3 Fixing the Control Panel

Follow the procedure for removing the control panel in the reverse order.



APPENDIX E LAMPS

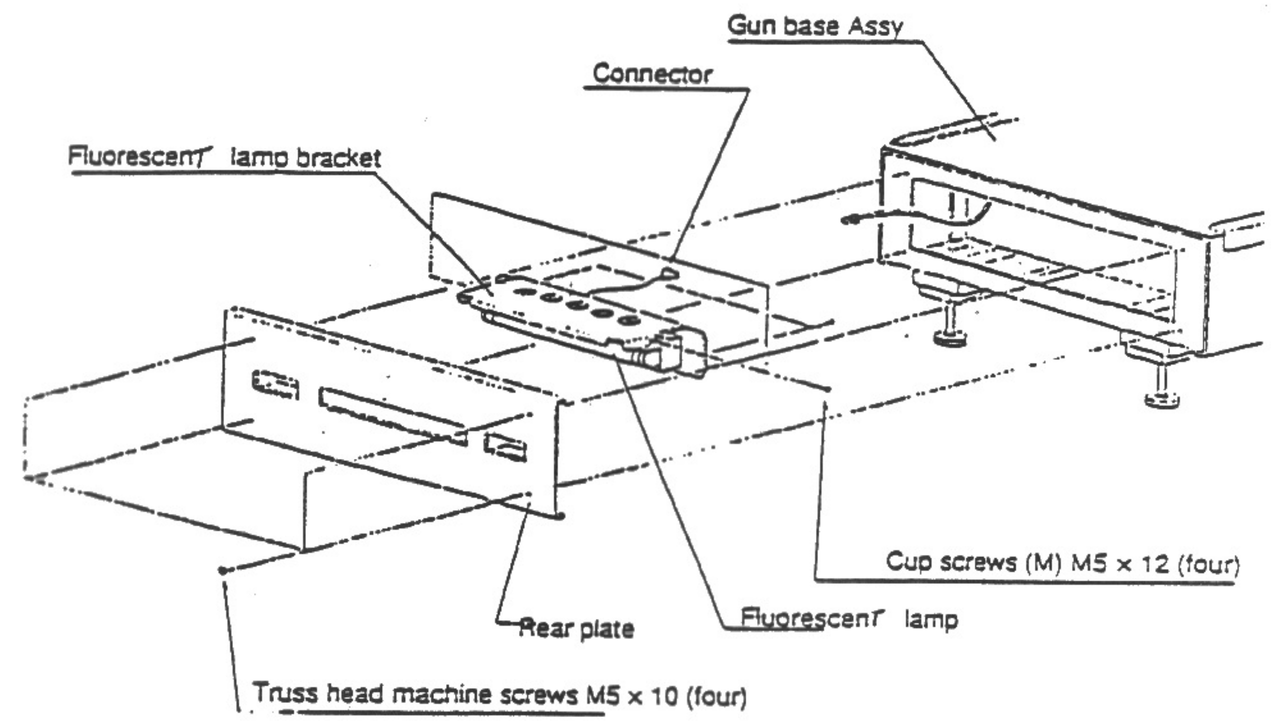
E-1 Replacing the Step Lamp

(1) Remove four truss head machine screws (M5 × 10), then the rear plate from the gun base Assy. Disconnect the connector not to give any damage to the connector.

(2) Remove four cup screws (M) (M5 × 12), then remove the fluorescent lamp bracket from the rear plate.

(3) Remove the fluorescent lamp (100V 10W).

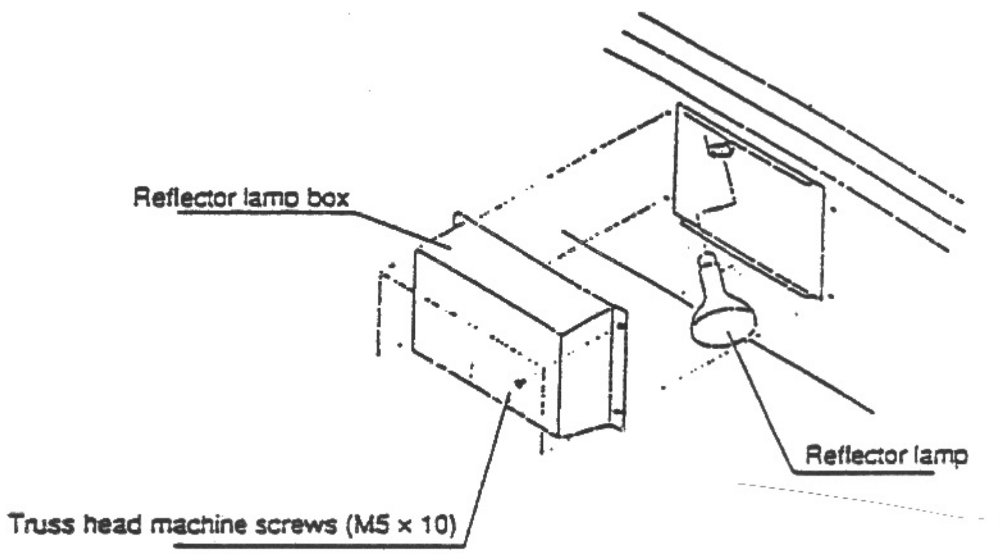
* To install a new fluorescent lamp, follow the procedure above in the reverse order.



E-2 Replacing the Reflector Lamp

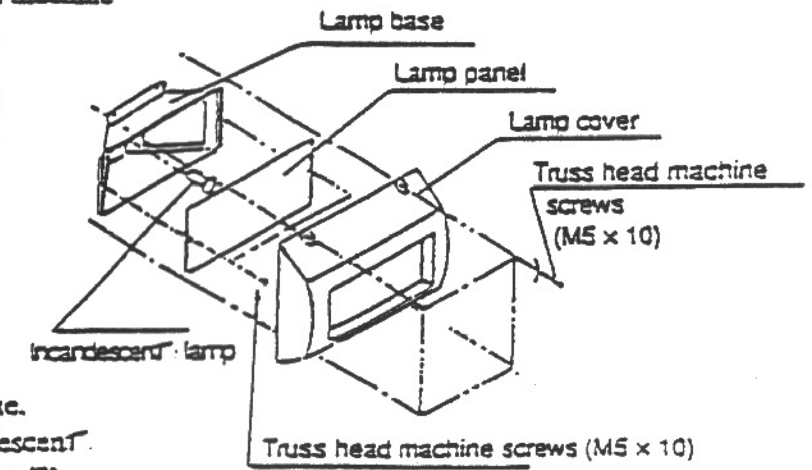
> **Note:** The temperature of the reflector lamp becomes high. Do not replace the reflector lamp especially while it is lighting or immediately after you turned it off.

(1) Remove four truss head machine screws (M5 × 10), then the reflector lamp box.
(2) Turn the reflector lamp to remove it.
(3) To install the reflector lamp, follow Steps (1) and (2) in the reverse order.



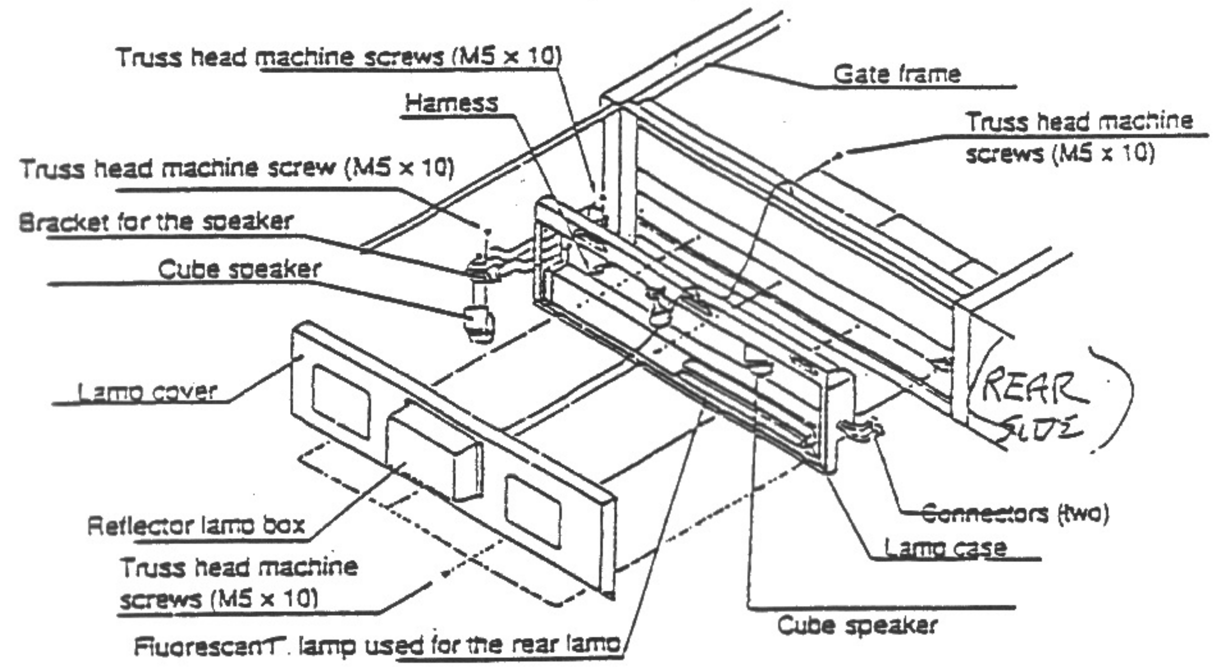
E-3 Replacing the Incandescent Lamp Used as the Gate Lamp.

(1) Remove four truss head machine screws (M5 × 10), then the lamp cover.
(2) Remove two truss head machine screws (M5 × 10), then the lamp panel.
(3) Push and turn the incandescent lamp (20W) to left to remove it, and replace it with a new one.
(4) To install a new incandescent lamp, follow Steps (1) to (3) in the reverse order.



Replacing the Fluorescent Lamp Used As the Rear Lamp

(1) Remove four truss head machine screws (M5 × 10), then lift up the lamp cover to remove it.
(2) Replace the fluorescent lamp (100 V 20W) with a new one.



E-4 Replacing the Fluorescent Lamp of the Center Signboard

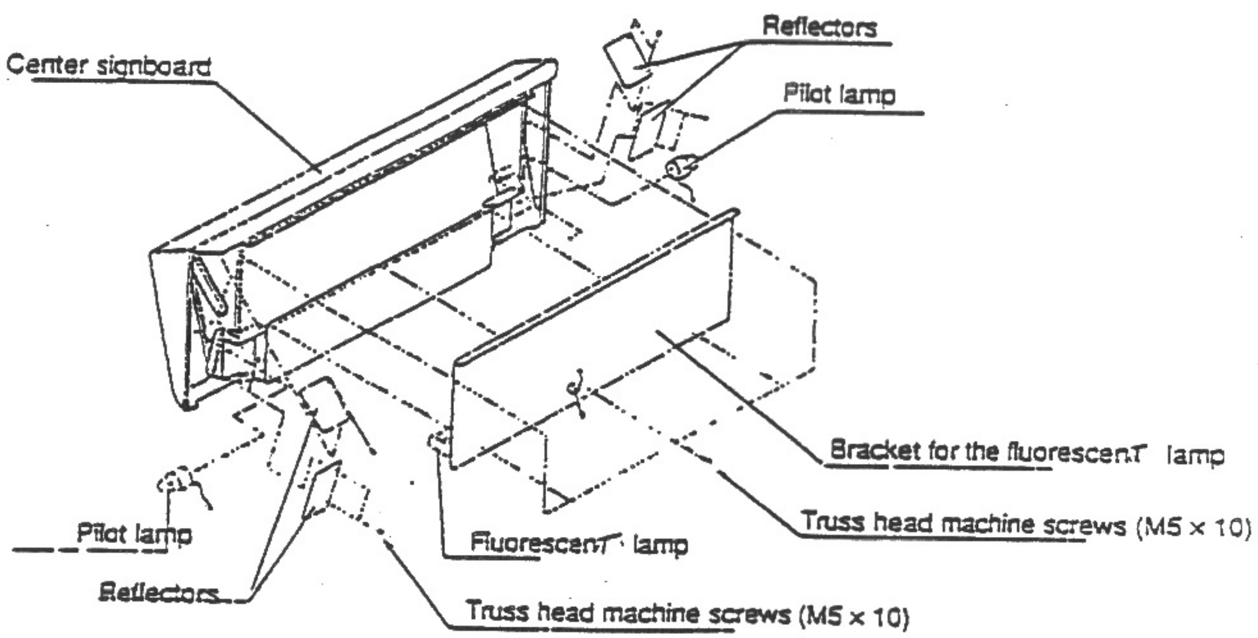
(1) Open the maintenance door.
(2) Disconnect the connector of the center signboard.
(3) Remove two truss head machine screws (M5 × 10) from the center signboard.
(4) Lift up the center signboard from the gate main body a little to unhook it, then remove it to your side.
(5) Disconnect the pilot lamp.
(6) Remove three truss head machine screws (M5 × 10), then the bracket for the fluorescent lamp.
(7) Replace the fluorescent lamp (100V 40W) with a new one.
(8) To install a new fluorescent lamp, follow Steps (1) to (6) above in the reverse order.

* To install or remove the center signboard, refer the Installation Manual.

E-5 Replacing the Pilot Lamps of the Center Signboard

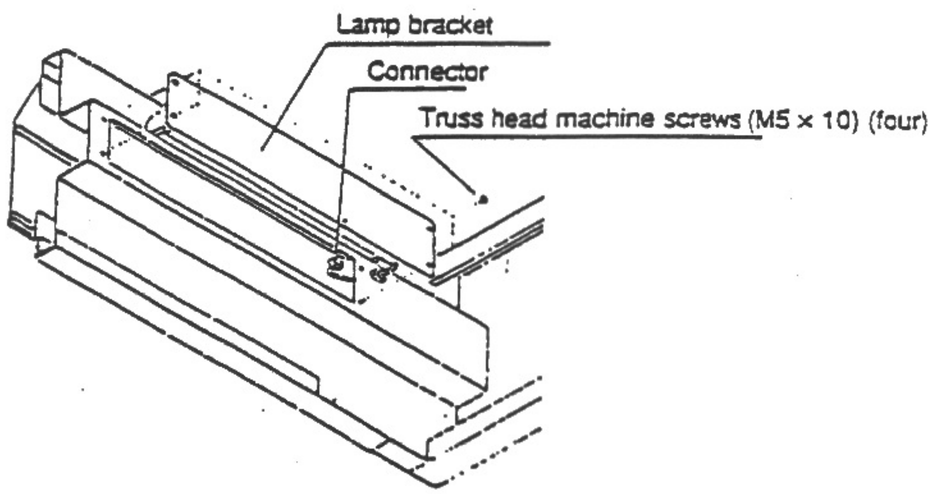
When the pilot lamp does not rotate, replace the pilot lamp. When the pilot lamp does not light, replace its light bulb (12V 6W).

(1) Follow Steps (1) to (5) of the Section E-4.
(2) Remove four truss head machine screws (M5 × 10), then four reflectors (right and left).
(3) Remove three nuts (M4: Flat washers and spring washers are used.) fixing the pilot lamp.
(4) Remove the pilot lamp, and replace it with a new one.
(5) To install a new pilot lamp, follow Steps (1) to (3) above in the reverse order.



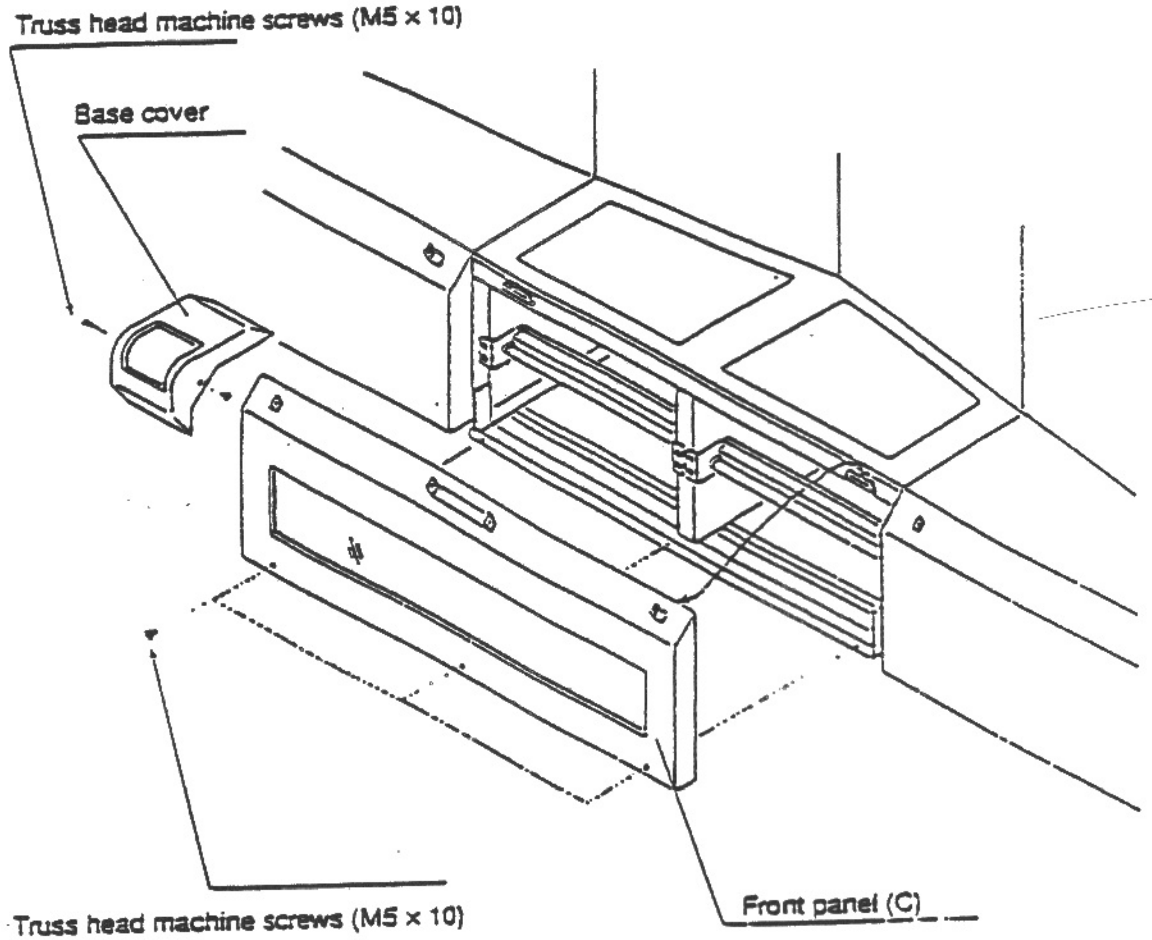
E-6 Replacing the Fluorescent Lamps for the Gate Signboard

(1) Remove four truss head machine screws (M5 × 10) on the rear side of the gate signboard.
(2) Remove the lamp bracket, then the connector.
(3) Replace the fluorescent lamp (100V 20W) with a new one.
(4) To install a new fluorescent lamp, follow Steps (1) to (2) above in the reverse order.



E-7 Replacing the Fluorescent Lamps of the Screen Signboard

(1) Remove six truss head machine screws (M5 x 10), then three base covers on the front panel (C).
(2) Remove three truss head machine screws (M5 x 10) fixing the front panel (C).
(3) Lift up the front panel (C), then remove it.
(4) Replace the fluorescent lamps (100V 20W) with new ones.
(5) To install the front panel, follow Steps (1) to (3) above in the reverse order.



APPENDIX F PERSONAL ASSEMBLY

F-1 Replacing the Gun Assy

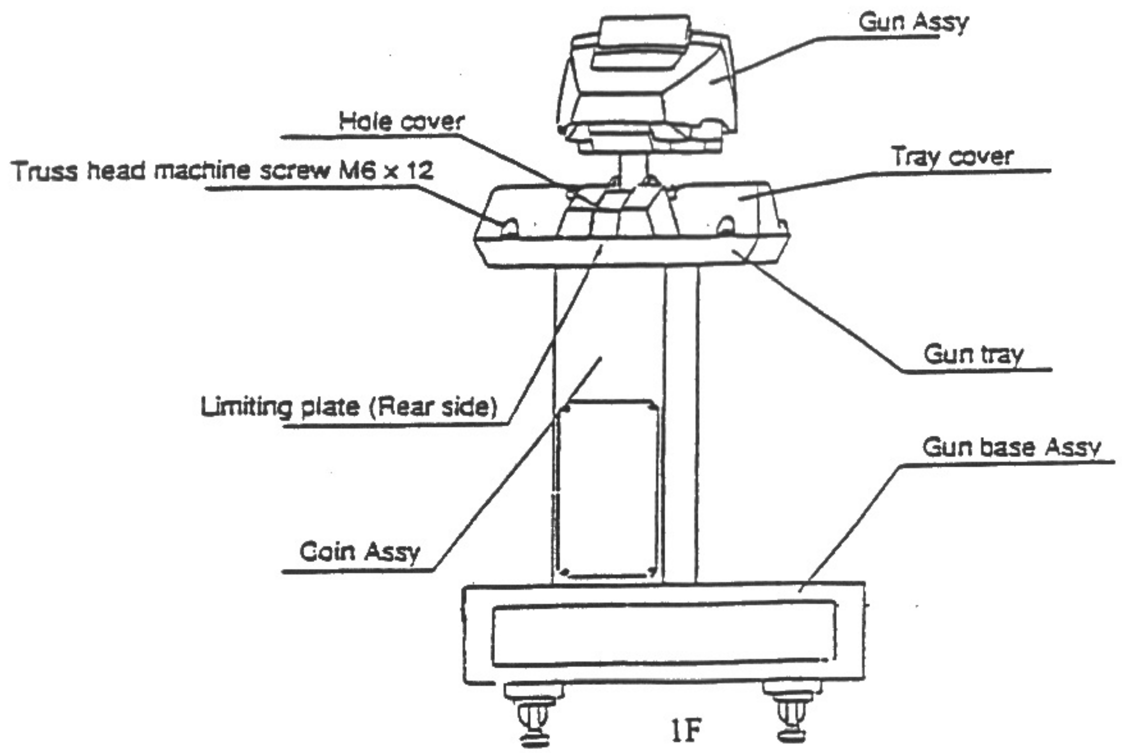
The same parts are used for all six sets of gun Assys. All gun Assys are installed according to the number sticker pasted on its controller.
To replace the gun Assy, do not replace its controller, or paste the number sticker corresponding to the gun Assy to be replaced.

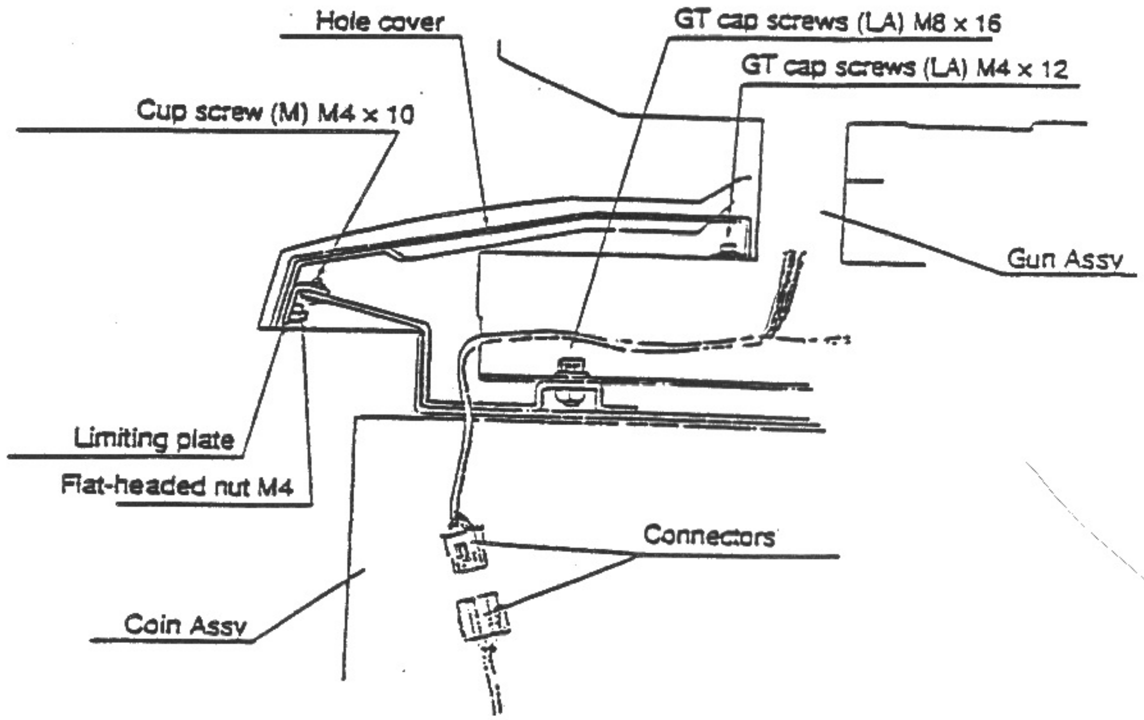
1. Removing the Gun Assy

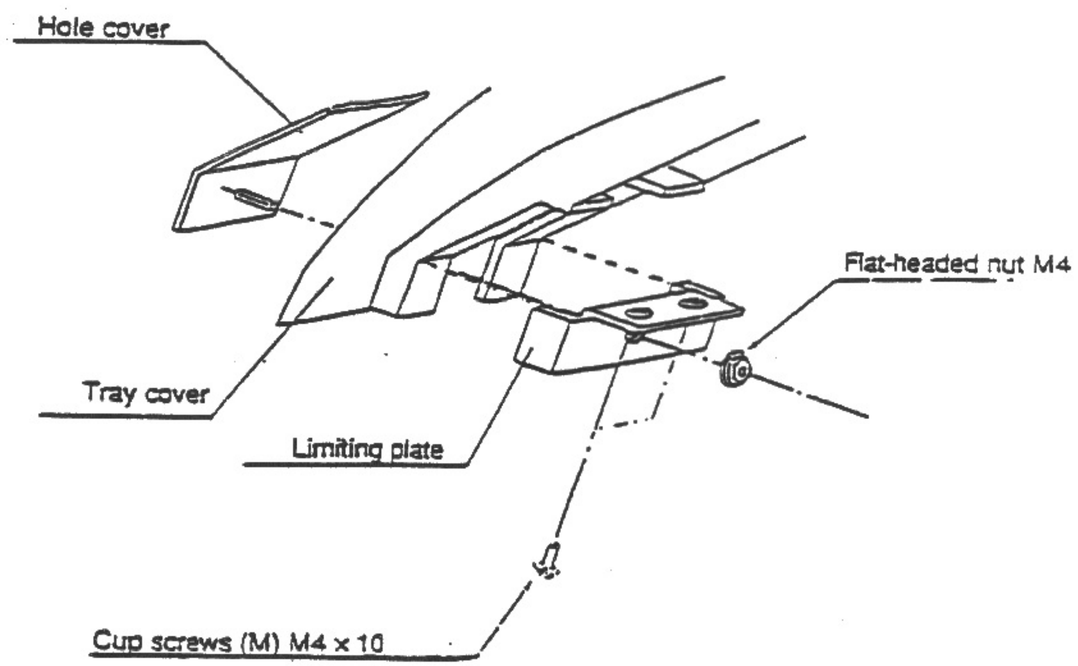
(1) Remove the flat-headed nut (M4) and two cup screws (M) (M4 x 10) to remove the limiting plate which is fixed on the tray cover and the hole cover.
(2) Remove four truss head machine screws (M6 x 12), then the tray cover.
(3) Remove two GT cap screws (LA) (M4 x 12), then the hole cover.
(4) Disconnect the connectors connected to the coin Assy.
(5) Remove four GT cap screws (LA) (M8 x 16), then the gun Assy.

2. Installing the Gun Assy

(1) Install the gun Assy with four GT cap screws (LA) (M8 x 16).
(2) Connect the connectors to the coin Assy.
(3) Fix the hole cover with two GT cap screws (LA) (M4 x 12).
(4) Fix the tray cover between the hole cover and the limiting plate with the flat-headed nut (M4).
(5) Fix the tray cover on the gun tray with four truss head machine screws (M) (M6 x 12).
(6) Fix the limiting plate on the gun tray with two cup screws (M4 x 10).

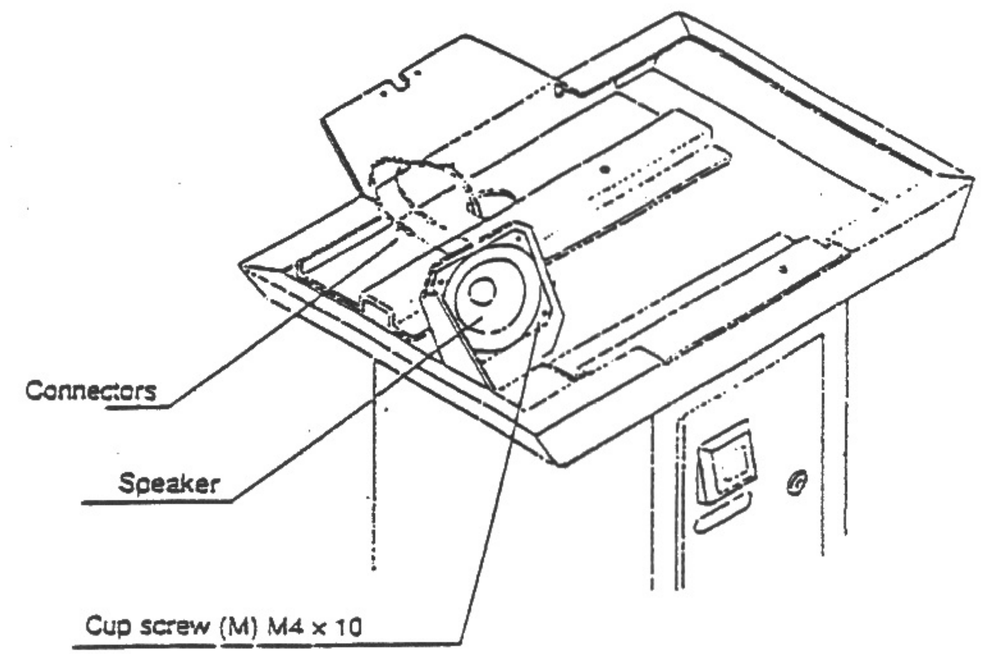






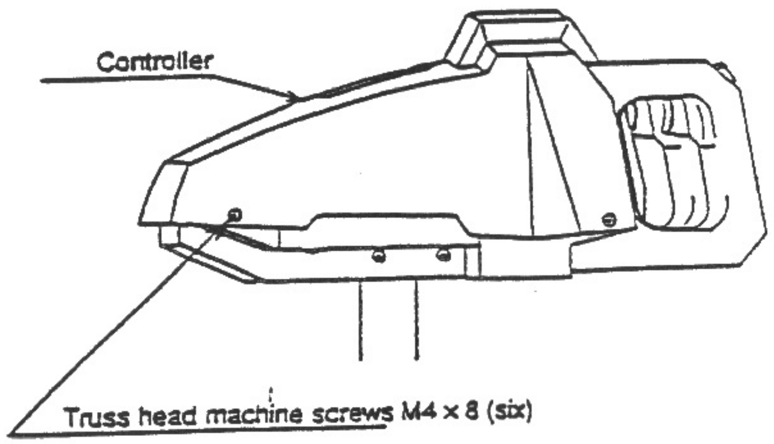
F-2 Replacing the Speaker for the Gun
(1) Remove the tray cover. (See "F-1 Replacing the Gun Assy".)
(2) Disconnect the connectors from the speaker.
(3) Remove four cup screws (M) (M4 x 10), then the speaker.

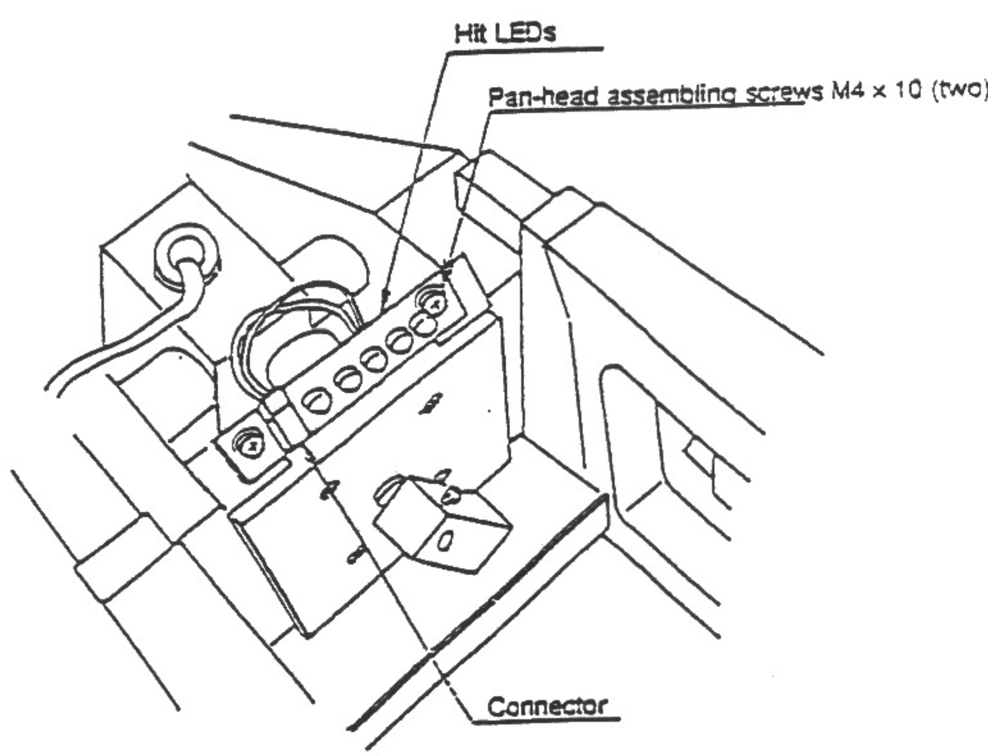
* To install a new speaker, follow the procedure above in the reverse order.
(The wires of the positive connector are pink, and those of the negative connector are white and yellow.)



F-3. Replacing the Hit LEDs Indicating the Player Is Shot

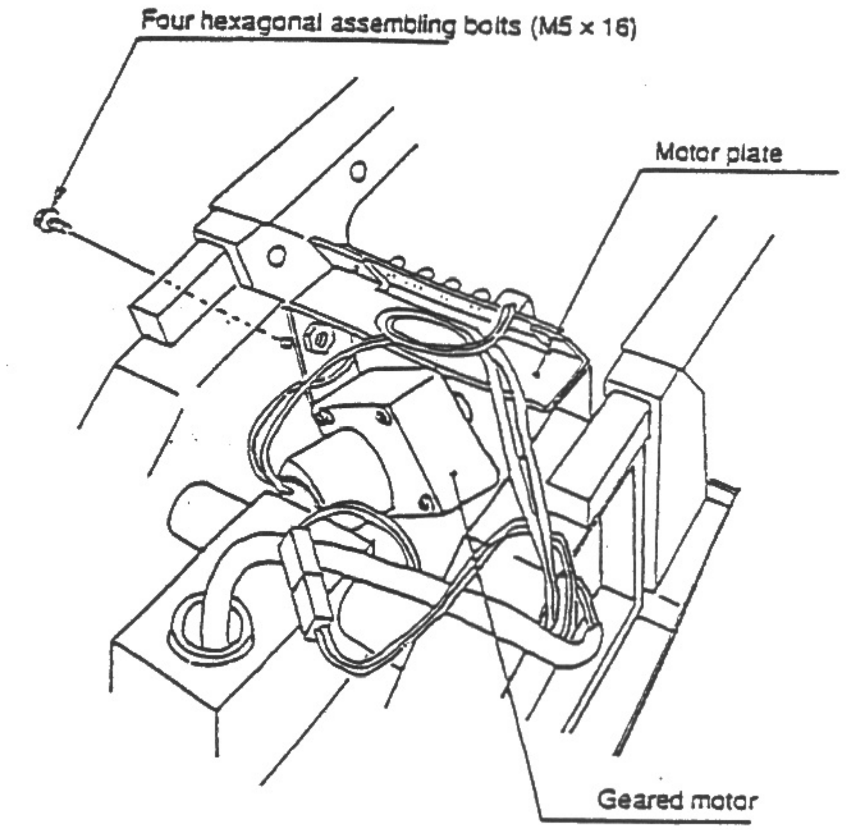
(1) Remove six truss head machine screws (M4 x 8), then the controller.
(2) Disconnect the connector of the Hit LEDs.
(3) Remove two pan-head assembling screws (M4 x 10), then the Hit LEDs.
* To install a new Hit LEDs, follow the procedure above in the reverse order.

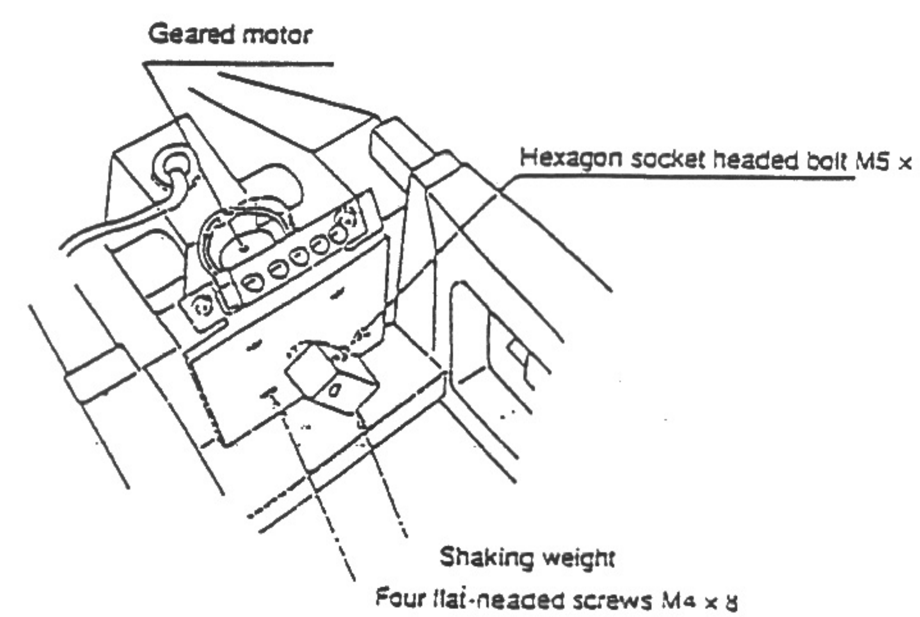




F-4 Replacing the Geared Motor

(1) Remove the controller. (See "F-3 Replacing the Hit LEDs Indicating the Player Is Shot".)
(2) Remove soldering between the geared motor and the wires.
(3) Remove four hexagonal assembling bolts (M5 x 16), then the motor plate.
(4) Remove one hexagon socket headed bolt (M5 x 10), then the shaking weight.
(5) Remove four flat-headed screws, then the geared motor.
* To install a new geared motor, follow the procedure above in the reverse order.



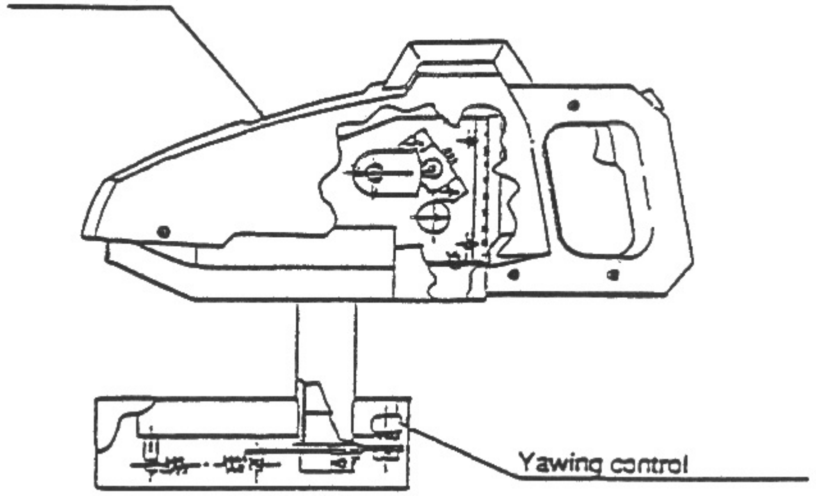


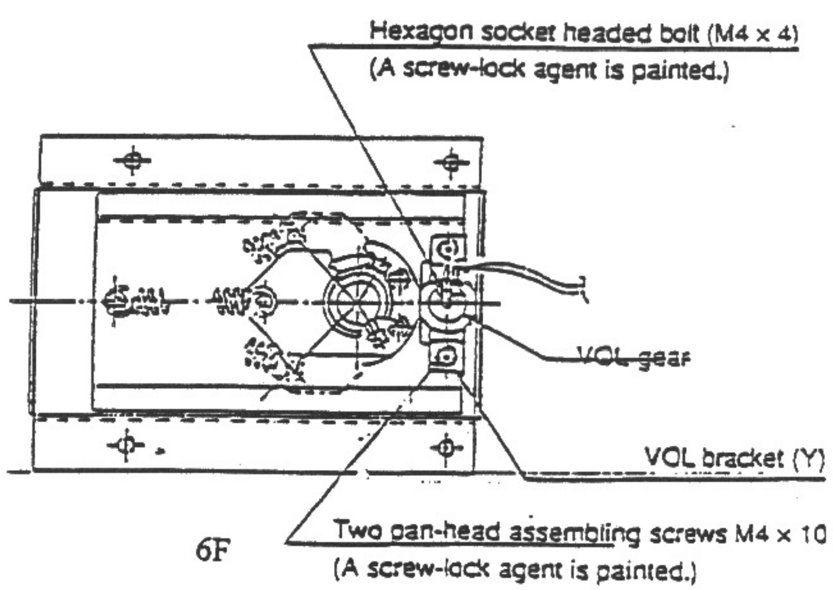
F-5 Replacing the Yawing Control

(1) Remove the gun Assy. (See "F-1 Replacing the Gun Assy".)
(2) Remove two pan-headed assembling bolts (M4 × 10), then the VOL bracket (Y).
(3) Remove the hexagon socket headed bolt (M4 × 4), then the VOL gear from the control.

* To install a new control, follow the procedure above in the reverse order.

(Notes) ① When you fix the hexagon socket headed bolt or the pan-head assembling screws, paint a screw-locking agent.
② Set the VOL gear so that the hexagon socket headed bolt (M4 × 4) can be on the side of the volume connector when the gun is horizontally placed.
③ After you replace the control, set the gun.





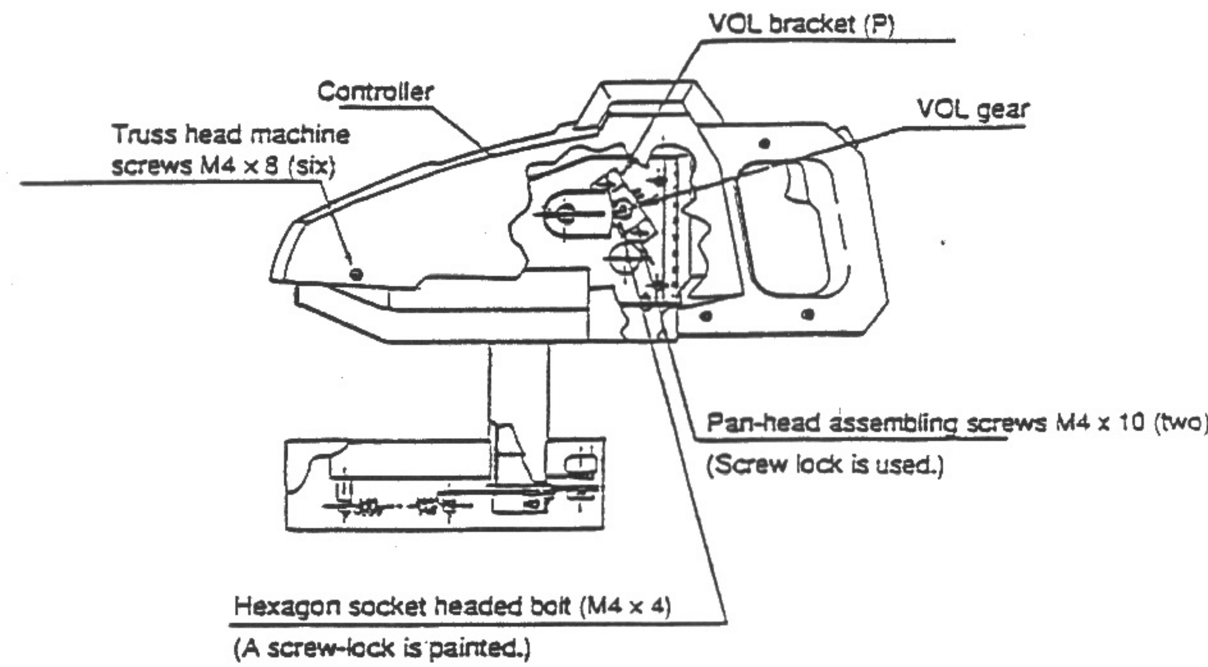
6F

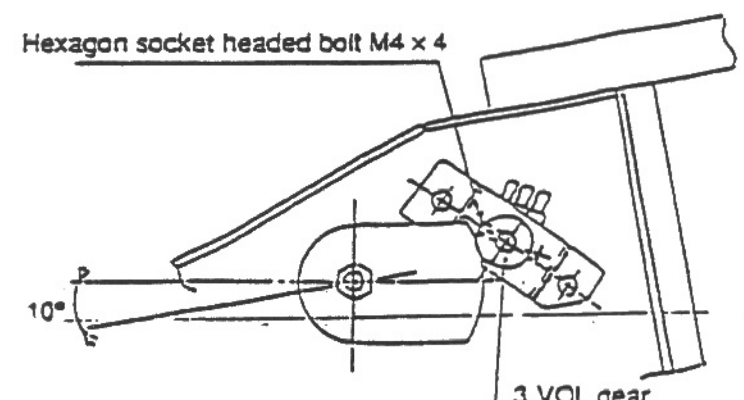
F-6 Replacing the Pitching Control

(1) Remove six truss head machine screws (M4 x 8), then the controller.
(2) Remove two pan-head assembling screws (M4 x 10), then the VOL bracket (P).
(3) Remove one hexagon socket headed bolt (M4 x 4), then the VOL gear from the control.

* To install a new pitching control, follow the procedure above in the reverse order.

(Notes) ① When you fix the hexagon socket headed bolt or the pan-head assembling screws, paint a screw-locking agent.
② Set the VOL gear so that the hexagon socket headed bolt (M4 x 4) can be located as illustrated when you tilt the gun forwards and the gun stops.
③ After you replace the volume, set the gun.





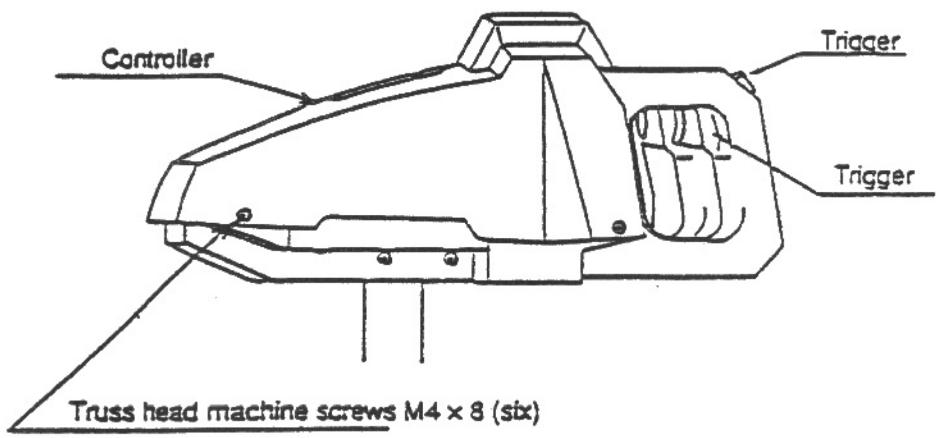
7F

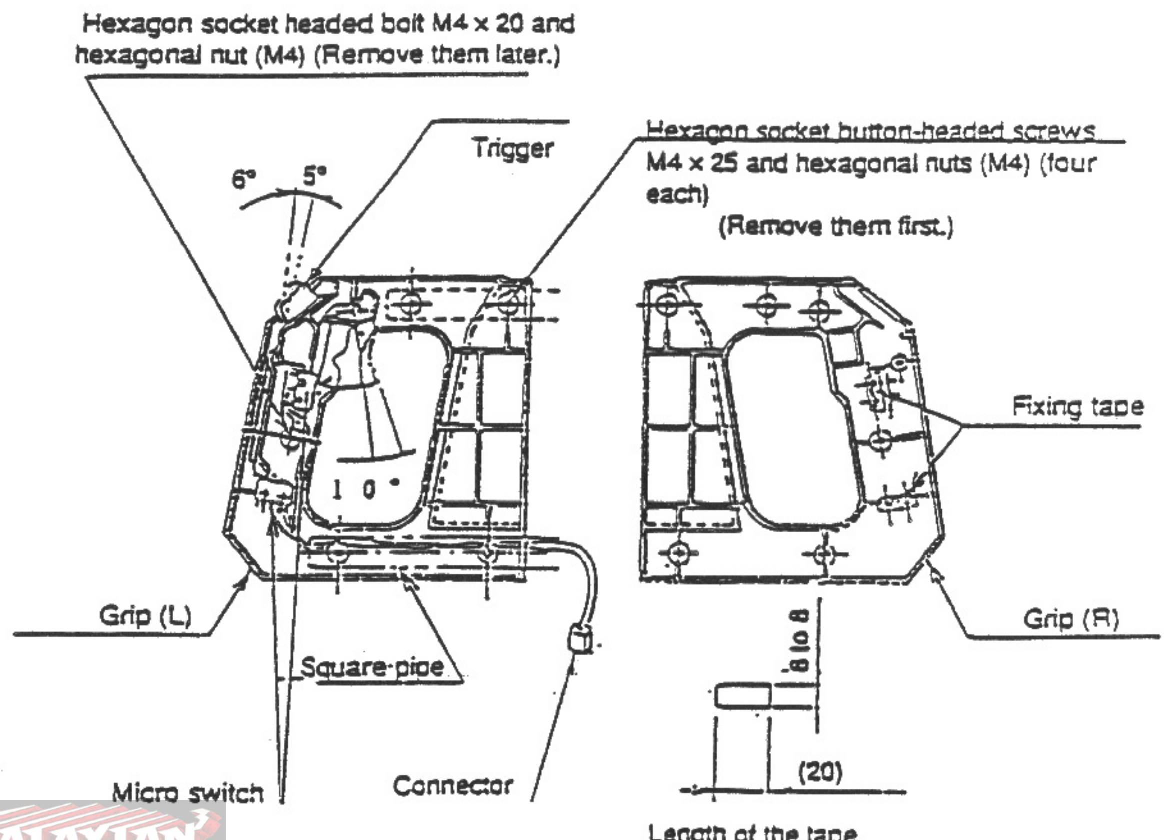
F-7 Replacing the Trigger Micro Switch

The same parts are used for micro switches of both the left hand and the right hand. The following procedure requires the skilled technique. Carefully follow the procedure.

1: Removing the Trigger Micro Switch

(1) Remove six truss head machine screws (M4 × 8), then the controller.
(2) Disconnect the connector from the trigger.
(3) Remove four hexagon socket button-headed screws and one hexagonal nut (M4) fixing the square pipe and the grip. Then avoid the wires which is passed through the square pipe, and remove the grip from the pipe.
(4) Turn the grip (L) downwards, and remove one hexagon socket headed bolt (M4 × 20) and one hexagonal nut (M4). Remove the grip (R) slowly so that the trigger and micro switch cannot be separated.
(3) Remove the micro switch from the grip (L).





F-8 Fixing the Trigger Micro Switch

When the tape fixing the micro switch is peeled off or curled, replace it with a new one or follow the procedure for removing the tape in the reverse order to fix it completely.

(1) Cover the micro switch with the grip (R) on which the tape is pasted after installing the micro switch. Then, temporarily fix them with one hexagon socket headed bolt (M4 × 20) and one hexagonal nut (M4).
(2) Pass the connector of the micro switch through the square pipe, then connect it to the connector of the gun.
(3) Fix the grip on the square pipe with four hexagon socket button-headed bolts (M4 × 25) and the hexagonal nuts (M4).
(4) Fix the controller with six truss head machine screws (M4 × 8).
(5) Check to see if the micro switch operates.

OVERSEA POWER UNIT (A)
INSTRUCTION MANUAL

[SPECIFICATIONS]

Rated input voltage	:	100-120 V/200-240 V
Maximum input current	:	20 A/10 A
Rated input frequency	:	50/60 Hz(common for 100 V and 200 V input voltages)
Rated output voltage	:	100 V
Rated output frequency	:	50/60 Hz
Maximum output capacity	:	2 kVA
Outer dimensions	:	320(W) × 320(D) × 280(H) mm
Total weight	:	36 kg

[PRECAUTIONS]

1. When moving or transporting the unit, do not give a big shock to it. Do not move it in the disassembled state.
2. This unit is intended for indoor use. Do not install it outdoors.
3. Do not install the unit in an unstable place or on a vibrative floor.
4. Do not install the unit in a place exposed to direct sunshine, high humidity, or dust. Also, in order to avoid a temperature increase of the unit, do not install it near a heating apparatus.
5. Do not install the unit near an emergency exit or fire-fighting apparatus.
6. In order to avoid a temperature increase of the unit, do not block its radiation port. Do not place other devices within 20 cm from the unit.
7. The maximum load capacity of this unit is 2 kVA. Do not connect any devices which exceed this limit.
8. This unit has been adjusted to the field power specifications. To make it doubly sure, check for a power input voltage.

[INSTALLATION]

1. Moving the power unit
   When moving the power unit, hold the front and rear handles. The handles are collapsible; press a ▽ mark to pop it out.(Refer to Fig. 1)
2. Opening the chassis
   Remove the 12 screws on the sides and top of the unit. The upper chassis can be detached.

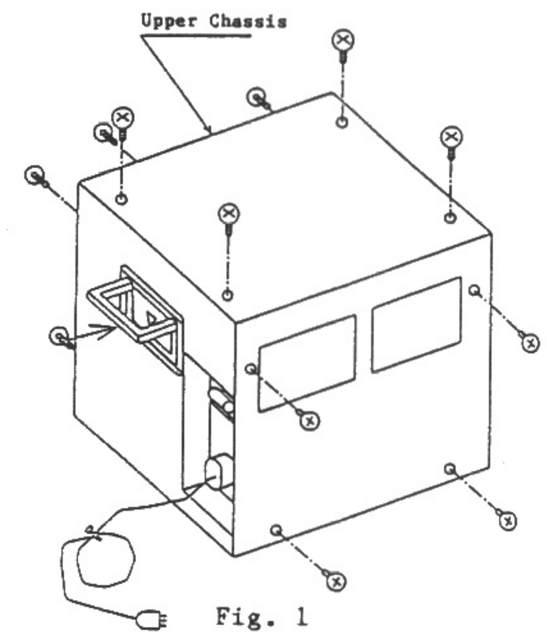


Fig. 1

3. Component parts
   For the component parts, refer to Fig. 2.
4. Changing the grounding on the output side
   The grounding conductor(green) of the power unit's secondary harness has been attached to the lower frame upon shipment, together with that of the primary harness 1. When not connecting the secondary grounding, disconnect only the secondary grounding conductor(leave the primary grounding conductor attached as it is) and fix it with an accessory tie lap.(Refer to Fig. 2)

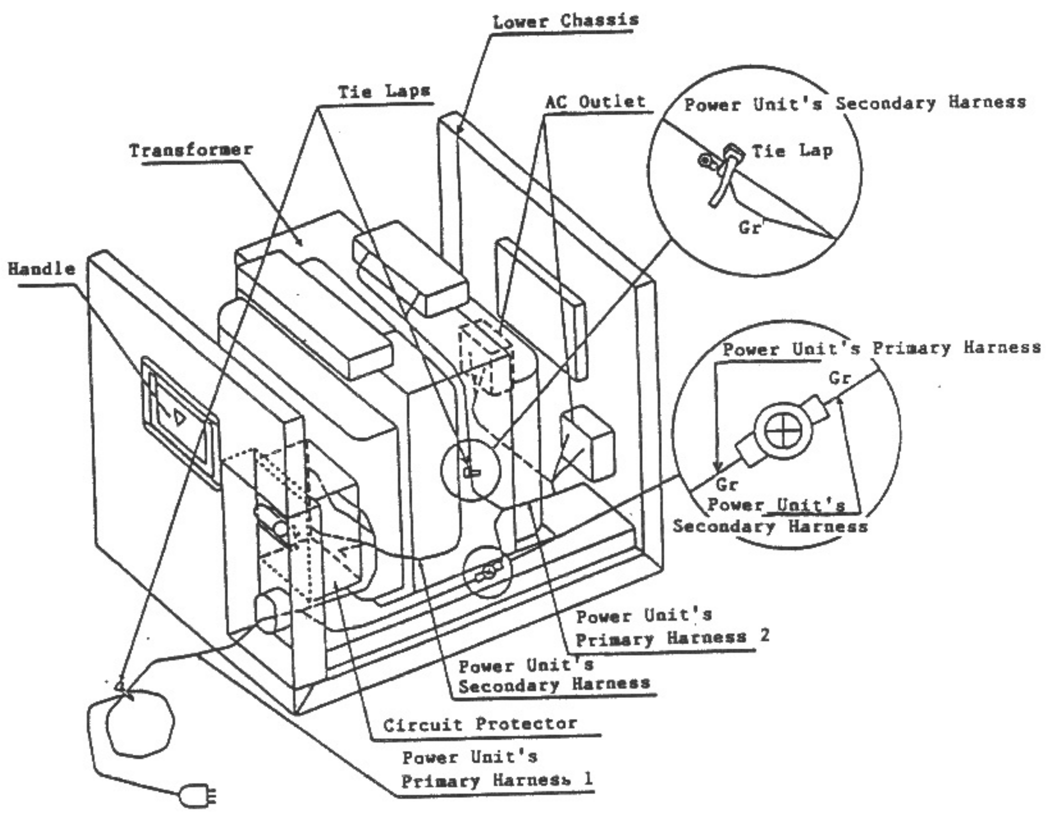


Fig. 2

5. Replacing the circuit protector
   The circuit protector has been adjusted to the field voltage upon shipment from the factory; a 20 A type has been attached for a 100-120 V district, and a 10 A type for a 200-240 V district. When replacing the circuit protector, remove the fasten receptacle connected to its rear and remove 4 setscrews.(Refer to Fig. 3) When putting back the wirings, wire as shown in Fig. 3. Insert the fasten receptacle firmly deep into a terminal.
   The model numbers and manufacturer of the circuit protects are as follows:

10 A type	BAB2210311	MATSUSHITA ELECTRIC WORKS
20 A type	BAB2220311	Ditto

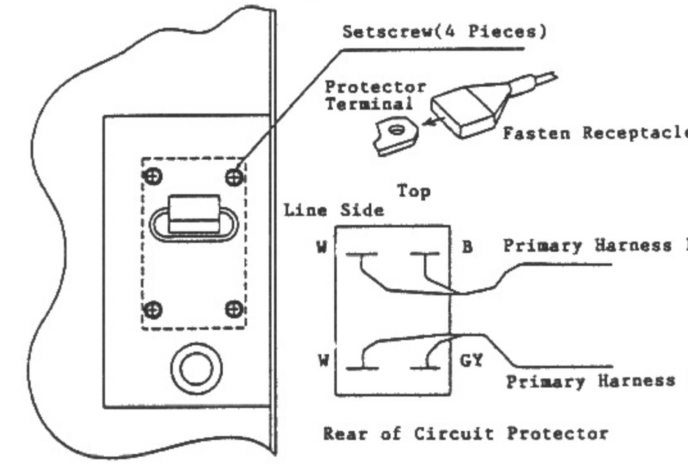


Fig. 3

6. Replacing the power plug
   When replacing the primary-side power plug in accordance with the field specifications, cut a cable at a position indicated by a broken line in Fig. 4 and replace the plug. The following shows the color of each cable wire and their respective connections.(Refer to Fig. 4)

   White → Power unit's cold side
   Black → Power unit's hot side
   Green → Frame grounding

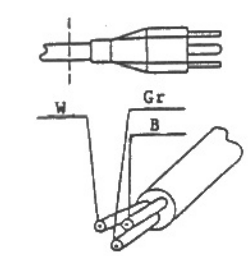


Fig. 4

7. Setting the input voltage
   The input voltage has been set in accordance with the field voltage upon shipment from the factory. When you change the setting, use the primary-side tap of the transformer. Disconnect a green wire from the power unit's primary harness 2 with a screwdriver and connect it to your desired tap to change the voltage.(Refer to Fig. 5) When the voltage is changed, however, check the circuit protector for its capacity.(Refer to "5. Replacing the circuit protector")

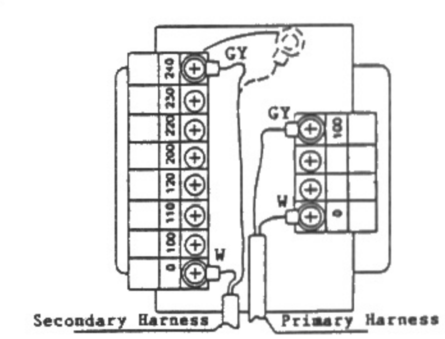
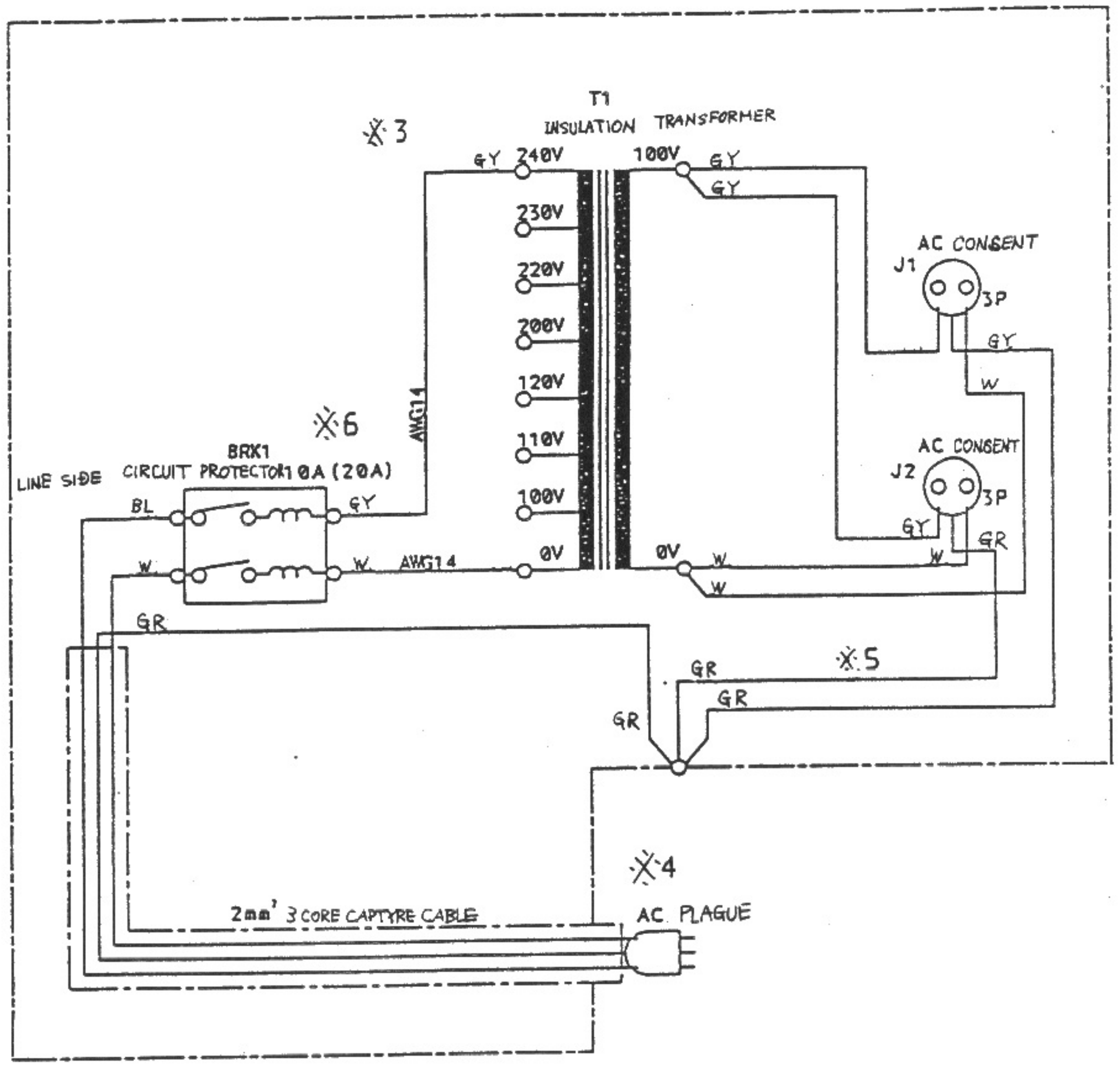


Fig. 5 Top of Transformer

DIAGRAM



※1.LINE OTHERWISE SPECIFIED INDICATES AWG16.

2.ALL WIRES SAME COLORED ON SAME ROUTES SHALL BE CONNECTED.

3.WIRING OF PRIMARY SIDE SHALL BE CHANGED ON THE SPOT DEPENDS ON THE INSTALLATION AREA.

4.AC PLAGUE SHALL BE REPLACED ON THE SPOT DEPENDS ON THE INSTALLATION AREA.

5.EARTH OF THE SECONDARY CONSENT SHALL BE REMOVED ON THE SPOT DEPENDS ON THE INSTALLATION AREA.

6.20A CIRCUIT PROTECTOR FOR 100-200V AREA
10A CIRCUIT PROTECTOR FOR 200-240V AREA