

GEMINI ROBOT KITS

Torso Cable - Part B Assembly Instructions

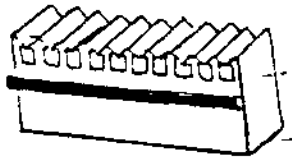
PARTS LIST

Please check the following parts list to be sure that you have all the parts before you begin assembling this kit.

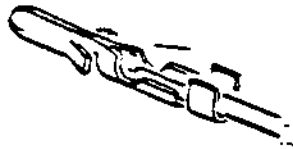
| <u>Description</u> | <u>Quantity</u> | <u>Part #</u> |
|------------------------------|-----------------|---------------|
| 10 conductor ribbon cable | 3.5 ft. | SS1022-7B |
| Yellow 18 gauge wire | 7 ft. | 7197/19-Y |
| Blue 18 gauge wire | 7 ft. | 7197/19-BL |
| Green 18 gauge wire | 7 ft. | 7197/19-G |
| Black 18 gauge wire | 7.5 ft. | 7197/19-B |
| Red 18 gauge wire | 2.5 ft. | 7197/19-R |
| Black 22 gauge wire | 1 ft. | 7195-B |
| 10 Pin small molex connector | 3 | 22-26-7103 |
| 36 pin male molex connector | 1 | 03-06-23-64 |
| Male molex pins | 30 | 02-06-2103 |
| 6 Pin molex spring connector | 2 | 09-50-3061 |
| 2 pin molex spring connector | 1 | 09-50-3021 |
| Molex spring pin | 14 | 08-50-0106 |
| Joystick connector | 1 | DE-9P |
| Fork lug | 2 | 67F746 |
| Small tie wrap | 26 | TI8S |
| Cable tie down | 5 | MB-3A |
| Small shrink tube 1/16 | 1 | 37N1166 |
| Large shrink tube 1/8 | 1 | 37N1170 |
| 3 Pole switch | 1 | 7301-J11-ZQ |
| Labels | 6 | - - - - |
| 4-40 3/8 screws | 2 | 91783A108 |
| #4 lock washer | 2 | 92146A005 |
| #4 hex nut | 2 | 91841A005 |

Parts Identification

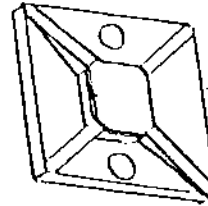
Small molex connector



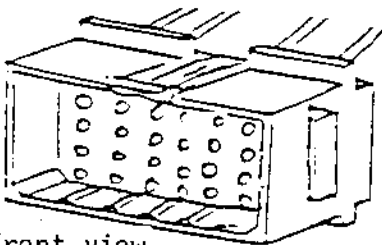
Male molex Pin



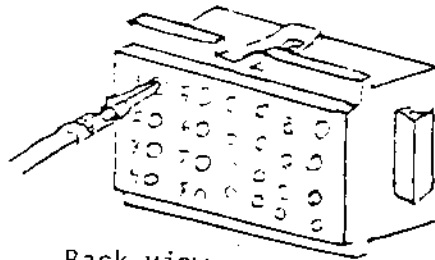
Cable Tie down



36 pin male molex connector

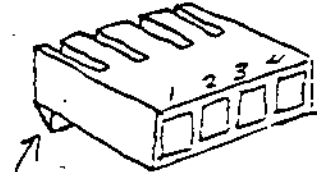


Front view



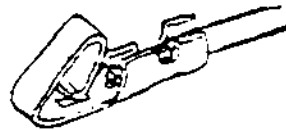
Back view

Molex spring connector

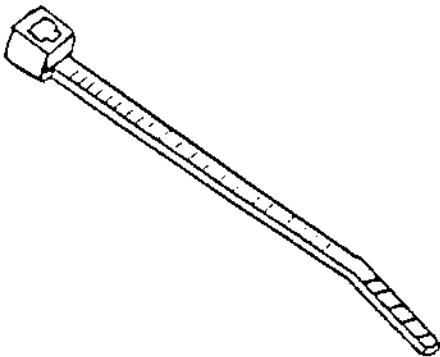


Tab

Molex spring pin



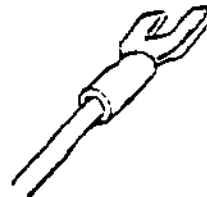
Tie wrap



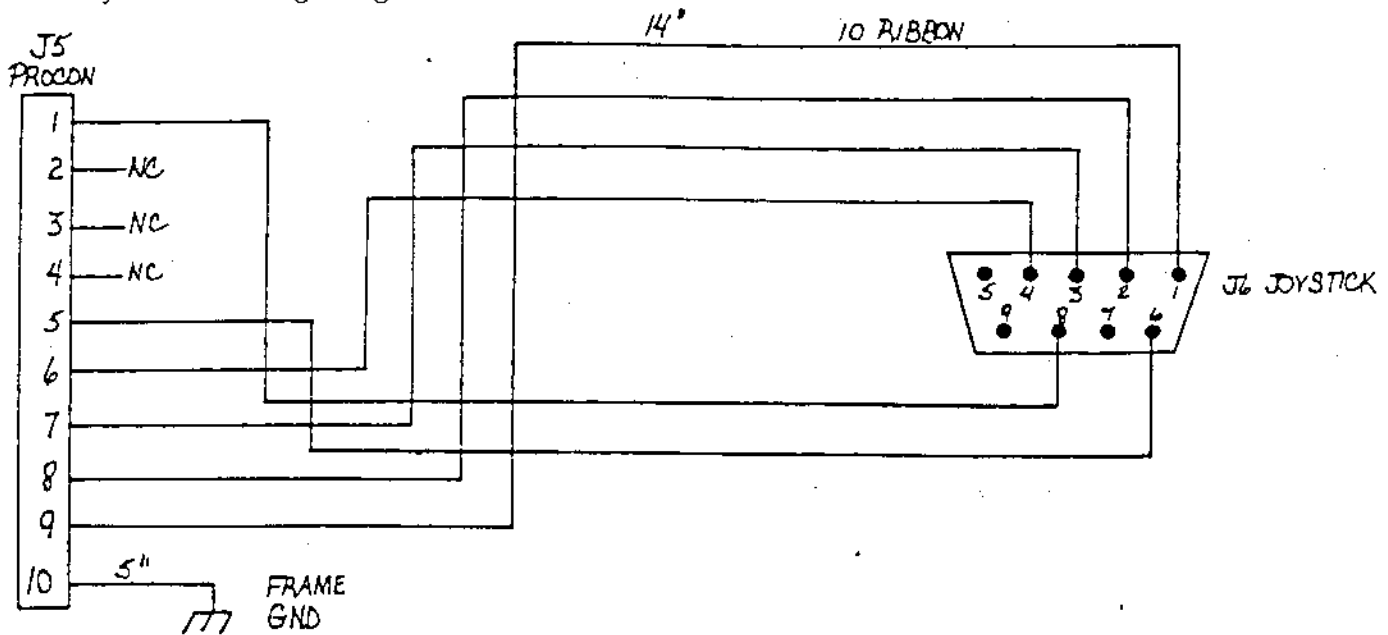
Joystick connector



Fork lug

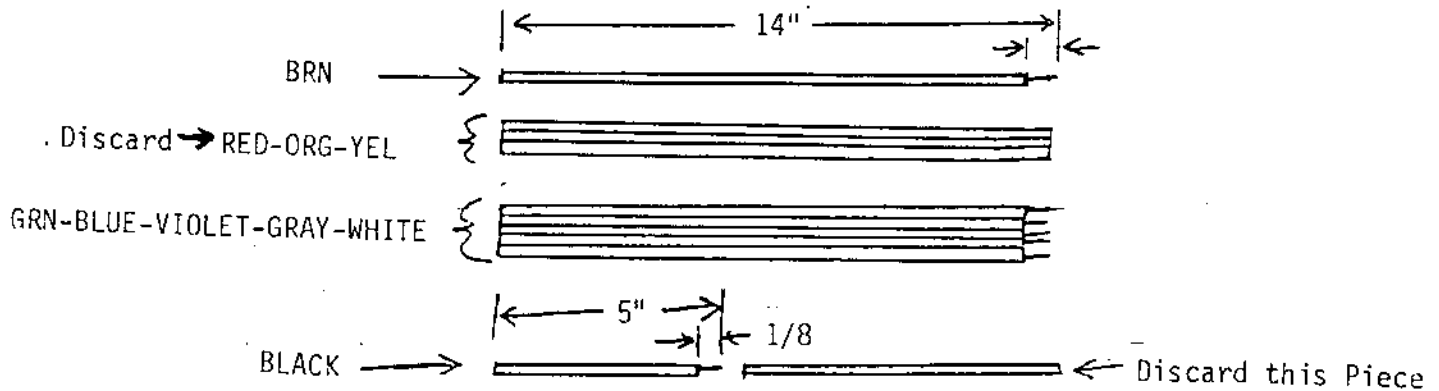


Joystick Wiring Diagram



Refer to the above wiring diagram for the following steps.

1. Cut a 14" length of the 10 conductor ribbon cable and separate wires as shown below. Take the black wire and cut to 5" length and remove insulation from one end of these wires.



2. Install a small 10 pin molex connector on these wires as follows:

| | |
|------------------------|--------------------|
| brn to pin 1 | blue to pin 6 |
| no connection on pin 2 | violet to pin 7 |
| no connection on pin 3 | gray to pin 8 |
| no connection on pin 4 | white to pin 9 |
| green to pin 5 | 5" black to pin 10 |

Label this connector J5 Procon.

3. Install a fork lug on the other end of the 5" black wire.
4. Solder the other wires to the back of the joystick connector as follows:

white to pin 1

gray to pin 2

violet to pin 3

blue to pin 4

no connection on pin 5

green to pin 6

no connection on pin 7

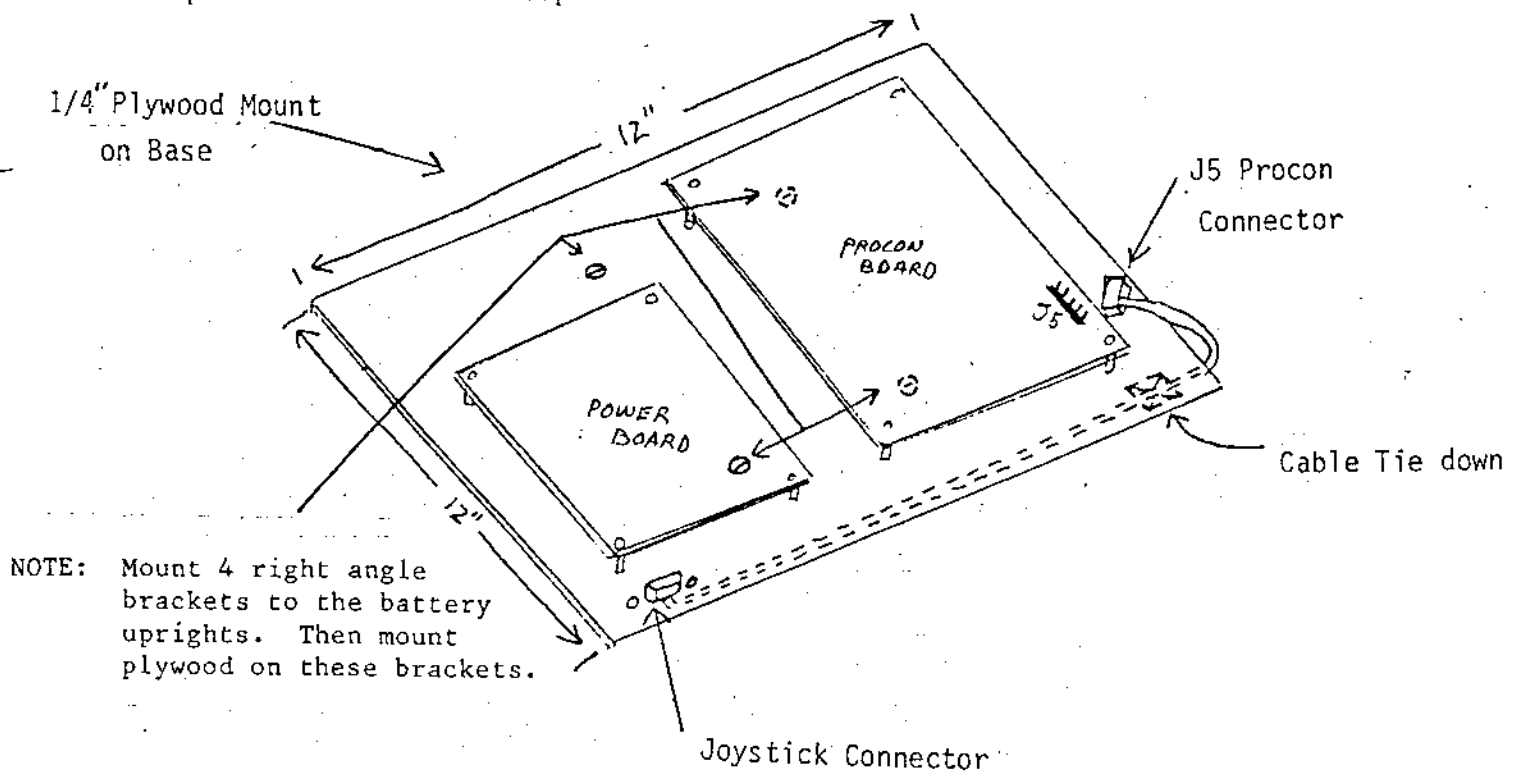
brn to pin 8

no connection on pin 9

Back view

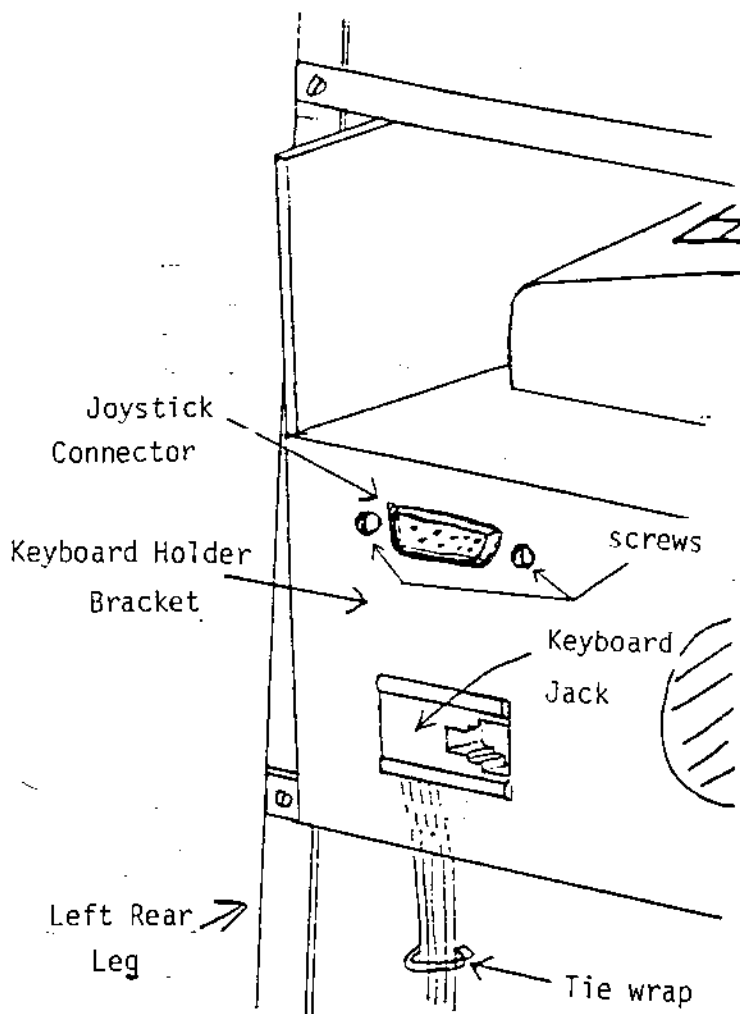


5. Lace wires together. (see how-to section)
6. If you purchased the smart mobile base (see suggested smart mobile base setup for proper mounting of boards and switches page 16), we suggest you mount this cable as shown below. If you purchased the torso kit proceed to the next step.

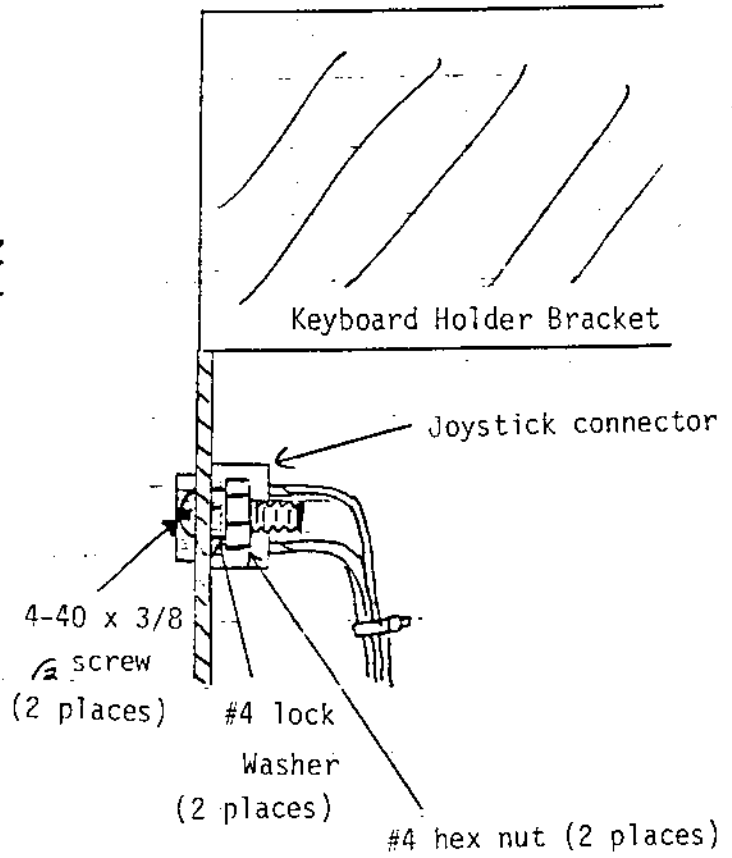


7. Install joystick connector into the keyboard bracket using the hardware shown.

Rear view



Side view



8. Secure cable to chassis as shown by using the large tie wraps.
9. Ground the fork lug on the end of the 5" black wire to any convenient screw on the torso.

Rear view

wires going to procon bd.

joystick

keyboard jack

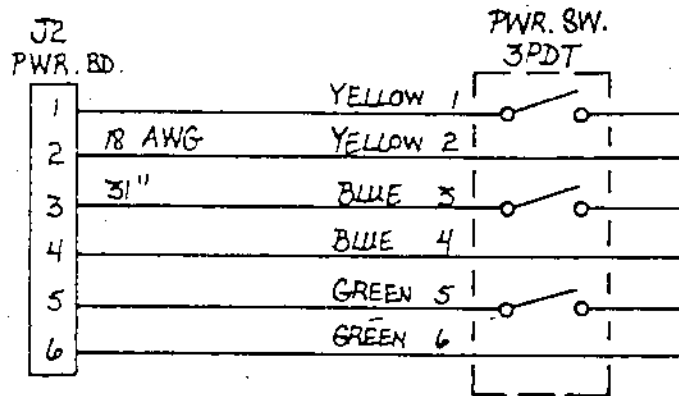
Front view

Front view

wires going to
joystick connector

Procon
Board

Power Switch Wiring Diagram



Refer to the above wiring diagram for the following steps.

1. Cut the following lengths of 18 gauge wire (thick wire supplied) as follows:

Two 31" lengths of yellow 18 gauge
Two 31" lengths of blue 18 gauge
Two 31" lengths of green 18 gauge

Remove insulation from both ends of these wires.

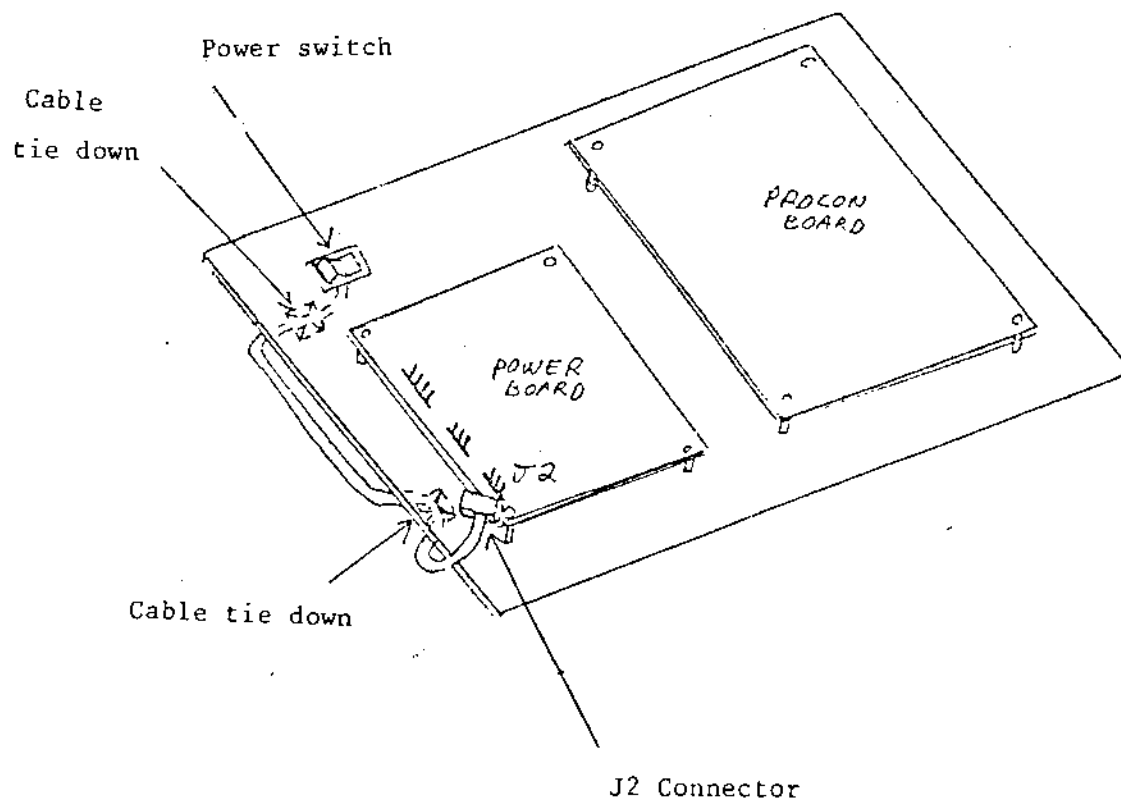
2. Install one molex spring pin on one end of each wire. Insert the spring pins into a molex 6 pin connector as follows:

| | |
|----------------------|---------------------|
| 31" yellow to hole 1 | 31" blue to hole 4 |
| 31" yellow to hole 2 | 31" green to hole 5 |
| 31" blue to hole 3 | 31" green to hole 6 |

Label this connector J2 Power.

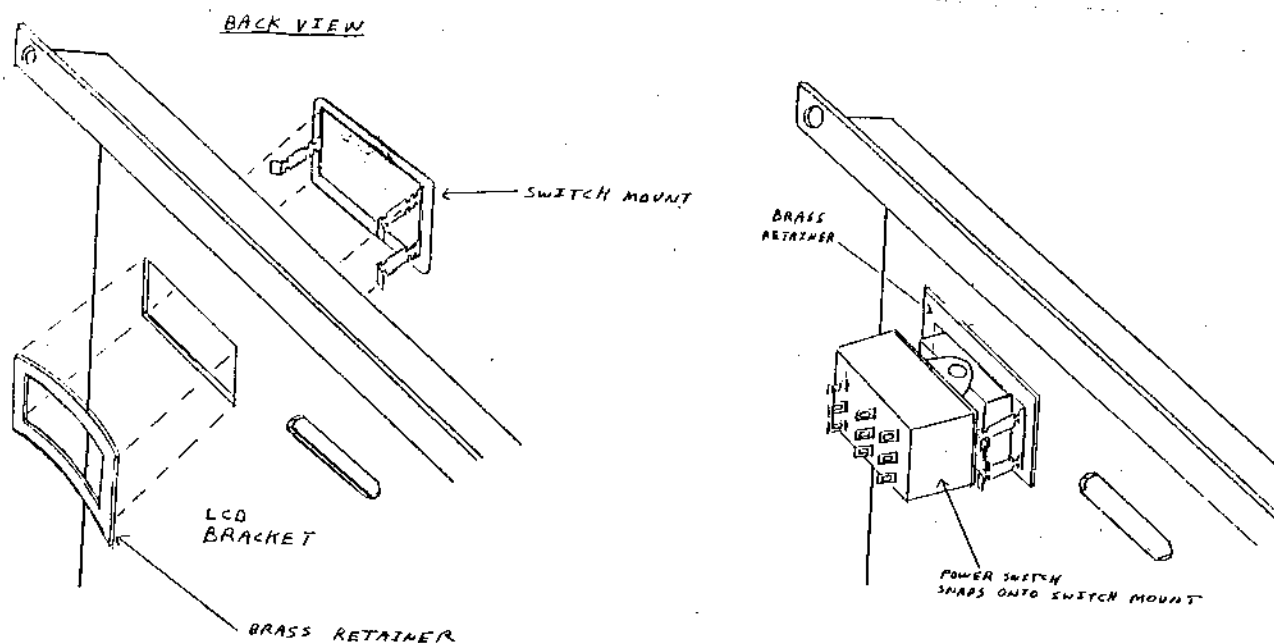
3. If you purchased the Smart Mobile Base we suggest you mount the power switch and cable as shown in the following diagram. Solder wires to the switch as described in step 5. If you purchased the Torso Kit, proceed to step 4.

Detail 8



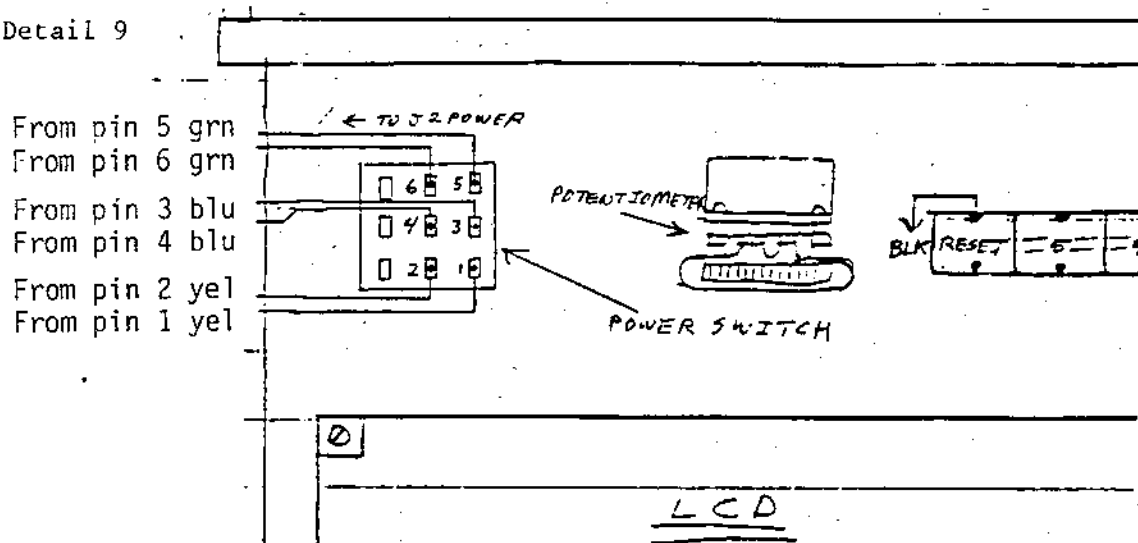
4. (Refer to Detail 7.) Install power switch as shown.

Detail 7



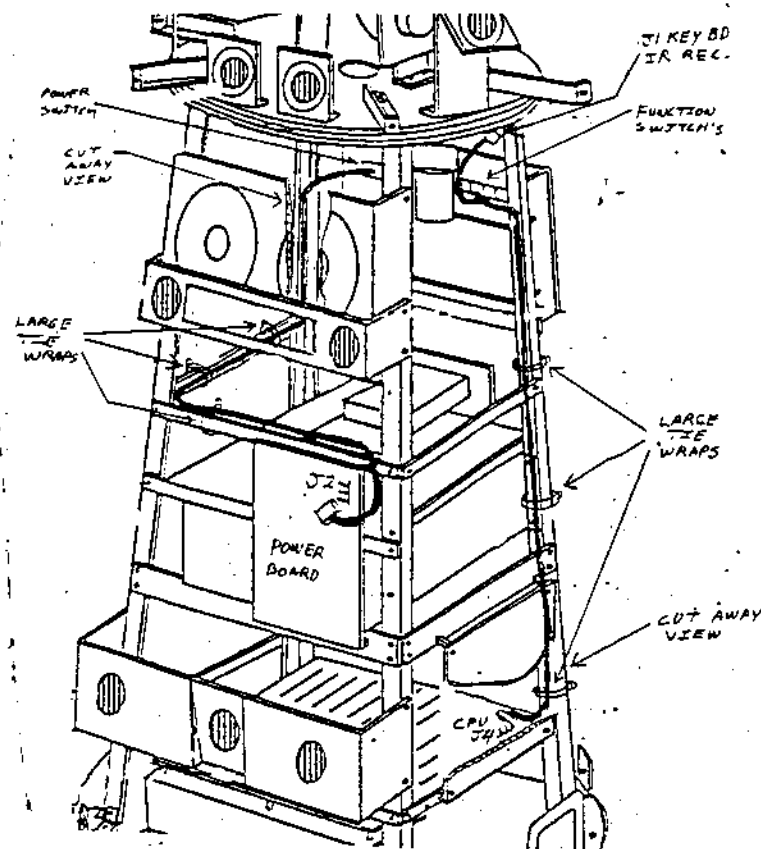
5. Solder the other ends of all 18 gauge wires to the power switch as shown below.

Detail 9

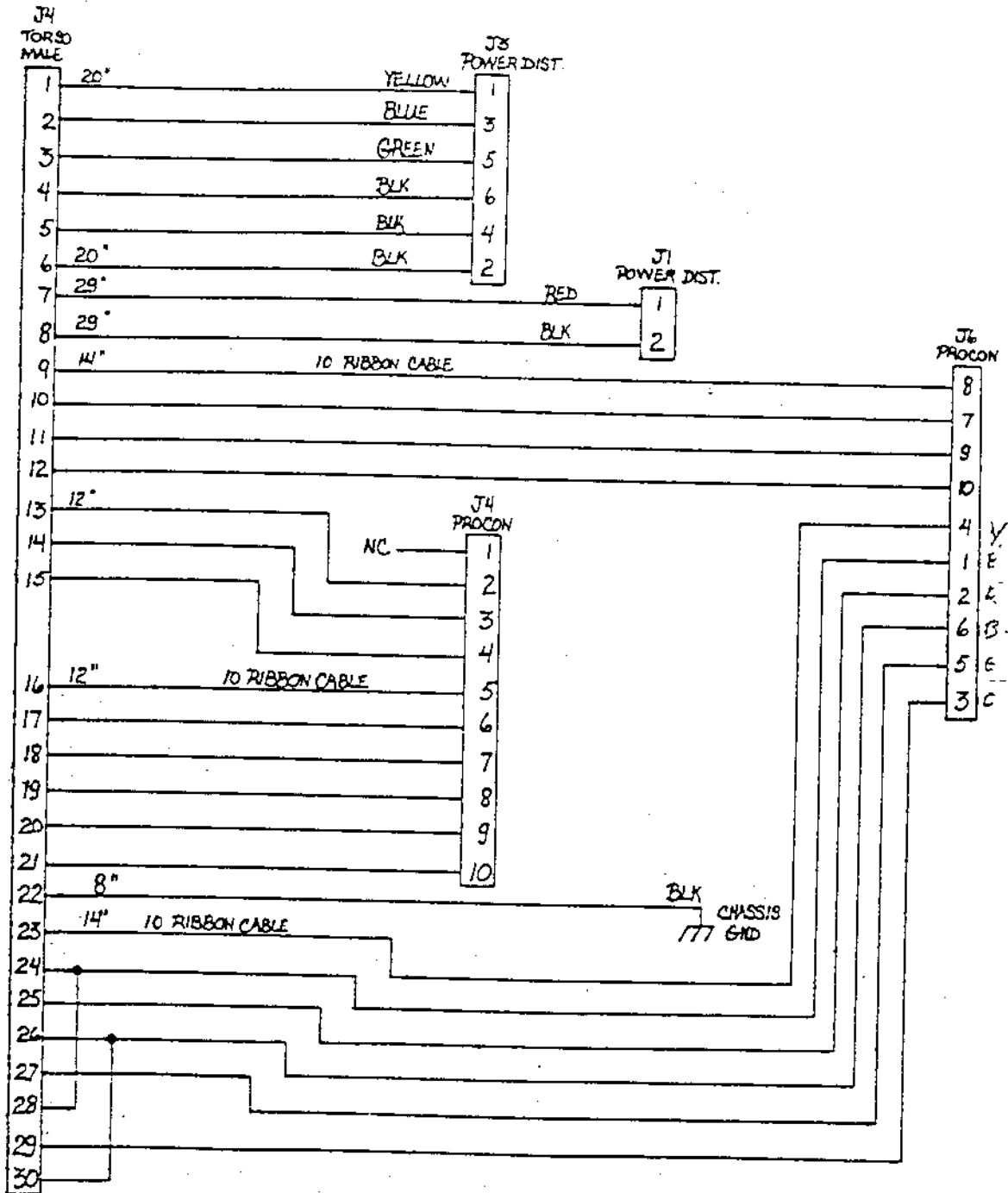


6. Lace wires together.
7. Install LCD bracket back on the robot chassis and run power and function switch wires as shown below. Secure cables by using the large tie wraps. Do not tighten tie wraps yet.

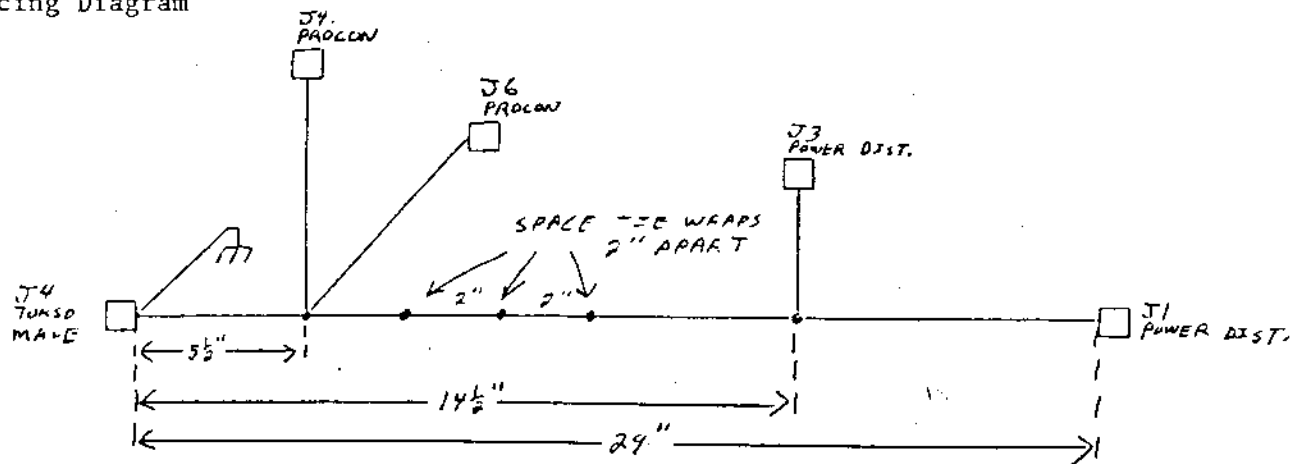
Detail 10



Torso Harness Wiring Diagram



Lacing Diagram



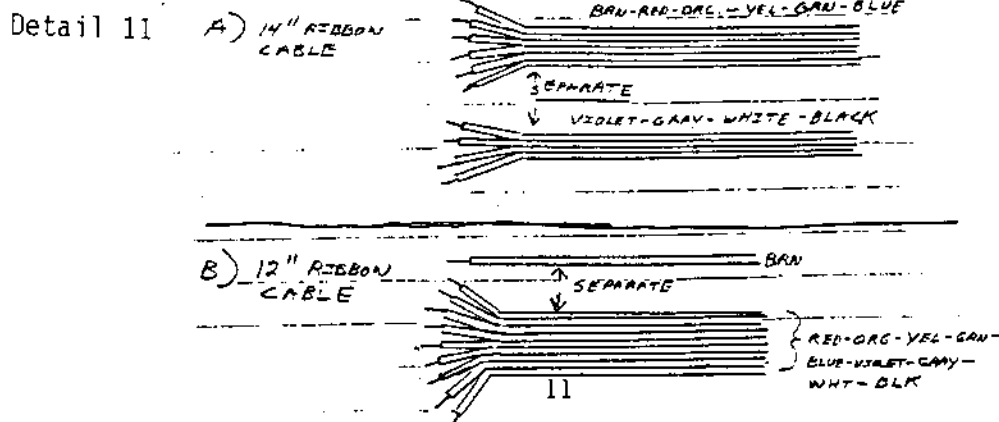
Refer to the Torso Harness Wiring Diagram for the following steps.

1. Cut the lengths of 18 gauge wires (thick wires supplied) as follows:

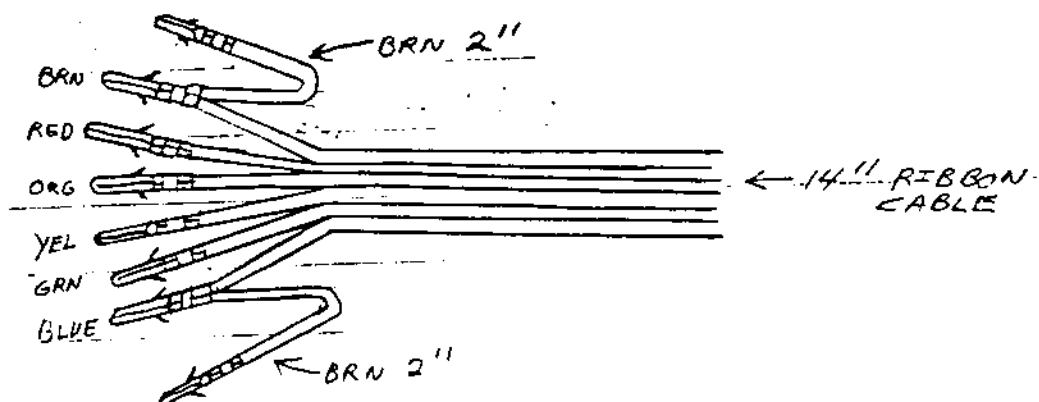
| | |
|----------------|-----------------|
| one 20" yellow | three 20" black |
| one 20" blue | one 29" red |
| one 20" green | one 29" black |

Remove insulation from both ends of these wires.

2. Install a male molex pin on one end of each of these wires. Install a molex spring pin on the other ends of these wires.
3. Cut 12" and 14" lengths of 10 conductor ribbon cable and remove insulation from one end of these wires.
4. Cut an 8" length of 22 gauge black wire (thin wire supplied) and remove insulation from both ends.
5. Separate the two lengths of ribbon cable as shown below.



6. Take the brown wire from the 12" cable and cut two 2" lengths and remove insulation from both ends of these wires. Install one male molex pin on each of these. Now take the 14" brn-red-org-yel-grn-blue group of wires and the other ends of the 2" brown jumpers and install one male molex pin as shown below.



7. Install one male molex pin on the 14" violet-gray-white-black wires and the 12" red-org-yel-grn-blue-violet-gray-white-black wires. Install one male molex pin on the 8" black wire and a fork lug on the other end.
8. Insert the male molex pins into the back of the 36 hole male molex connector as follows:

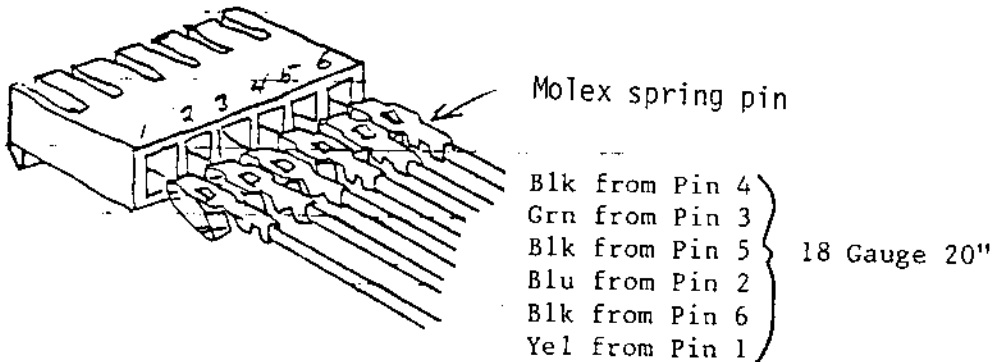
| | | |
|-------------------------------|---|---|
| 20" yellow 18 gauge to hole 1 | | |
| 20" blue 18 gauge to hole 2 | | |
| 20" green 18 gauge to hole 3 | | |
| 20" blk 18 gauge to hole 4 | | |
| 20" blk 18 gauge to hole 5 | | |
| 20" blk 18 gauge to hole 6 | | |
| 29" red 18 gauge to hole 7 | | |
| 29" blk 18 gauge to hole 8 | | |
| | 12" ribbon cable | { grn to hole 16 blue to hole 17 violet to hole 18 gray to hole 19 white to hole 20 blk to hole 21 |
| | | 8" blk 22 gauge to hole 22 |
| 14" ribbon cable | { gray to hole 9 violet to hole 10 white to hole 11 blk to hole 12 | |
| 12" ribbon cable | { red to hole 13 org to hole 14 yel to hole 15 | |
| | 14" ribbon cable | { yellow to hole 23 brn to hole 24 red to hole 25 blue to hole 26 green to hole 27 brn 2" off brn to hole 28* org to hole 29 brn 2" off blue to hole 30* |

* refer to above diagram

9. Insert the molex spring pins on the 20" 18 gauge wires into the molex 6 pin spring connector as follows:

yel from pin 1 to hole 1
blk from pin 6 to hole 2
blue from pin 2 to hole 3
blk from pin 5 to hole 4
grn from pin 3 to hole 5
blk from pin 4 to hole 6

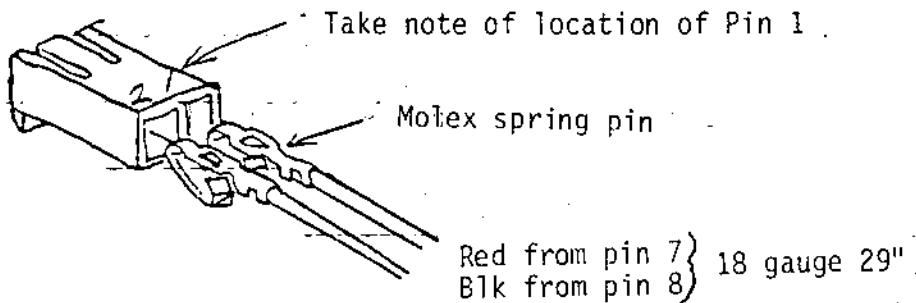
Label this connector J3 Power.



10. Insert the molex spring pins on the 29" 18 gauge wires into the molex 2 pin spring connector as follows:

red from pin 7 to hole 1
blk from pin 8 to hole 2

Label this connector J1 Power.



11. Install a small 10 pin molex connector onto the 14" ribbon cable as follows:

| | | |
|---------------------------|-----------------------------|---------------------------|
| small 10 pin connector | BRN to pin 1 from pin 24 | 36 hole male connector |
| | RED to pin 2 from pin 25 | |
| | ORG to pin 3 from pin 29 | |
| | YEL to pin 4 from pin 23 | |
| | GRN to pin 5 from pin 27 | |
| | BLU to pin 6 from pin 26 | |
| | VIOLET to pin 7 from pin 10 | |
| | GRY to pin 8 from pin 9 | |
| | WHT to pin 9 from pin 11 | |
| | BLK to pin 10 from pin 12 | |

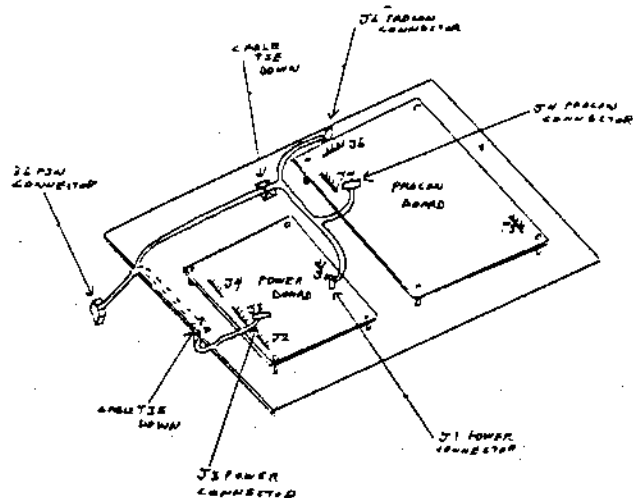
Label this connector J6 Procon.

12. Install a small 10 pin molex connector onto the 12" ribbon cable as follows:

| | | |
|---------------------------|-----------------------------|---------------------------|
| small 10 pin connector | no connection to pin 1 | 36 hole male connector |
| | RED to pin 2 from pin 13 | |
| | ORG to pin 3 from pin 14 | |
| | YEL to pin 4 from pin 15 | |
| | GRN to pin 5 from pin 16 | |
| | BLU to pin 6 from pin 17 | |
| | VIOLET to pin 7 from pin 18 | |
| | GRY to pin 8 from pin 19 | |
| | WHT to pin 9 from pin 20 | |
| | BLK to pin 10 from pin 21 | |

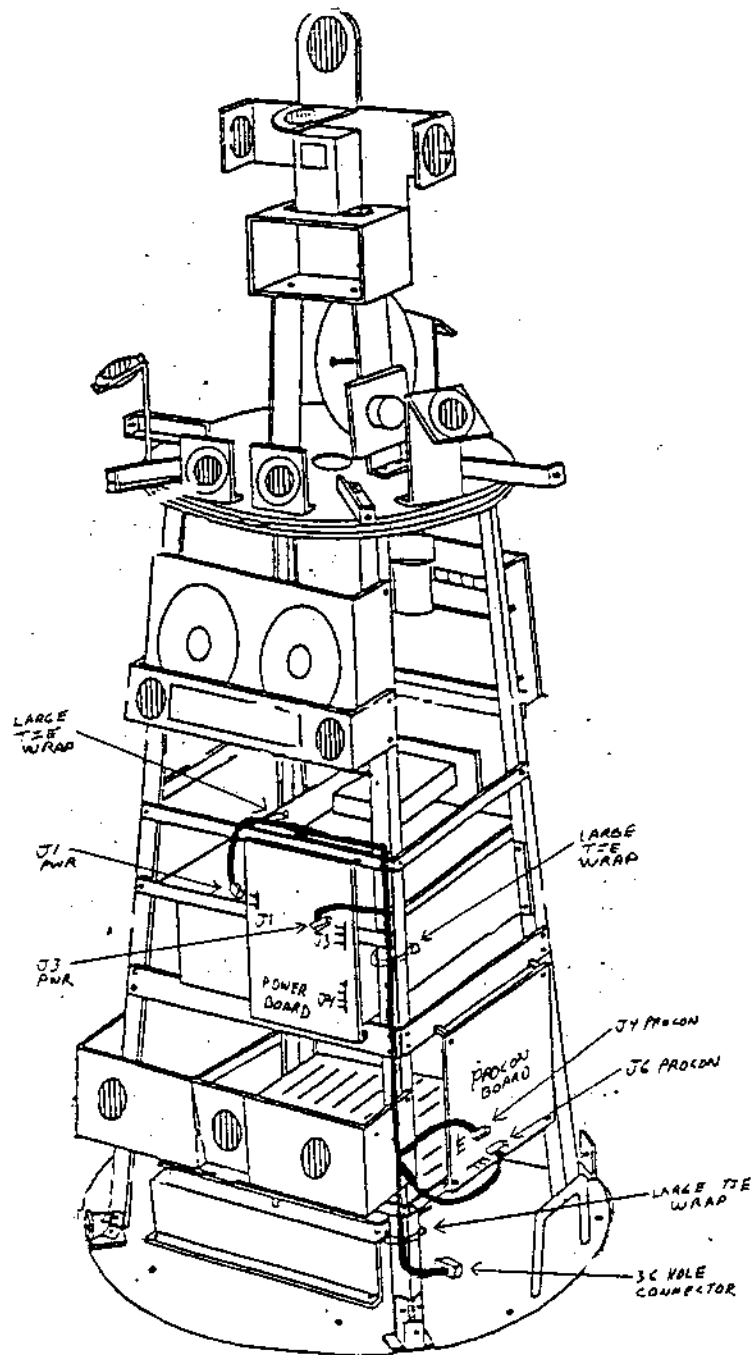
Label this connector J4 Procon.

13. Lace wires together according to the lacing diagram on page 11.
14. If you purchased the Smart Mobile Base we suggest you mount this cable as shown below. If you purchased the Torso Kit, proceed to the next step.



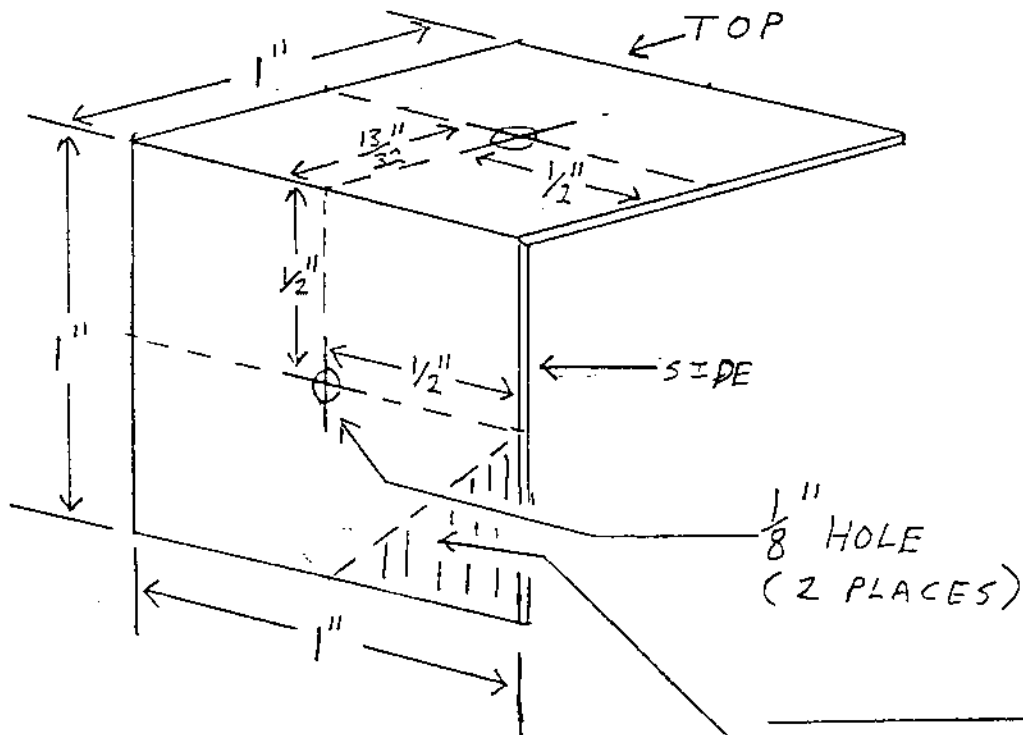
15. Ground the fork lug on the end of the 8" black wire to any convenient screw on the torso. Secure torso harness on chassis by using the large tie wraps. Tighten all loose tie wraps. Refer to the part identification illustrations. Position connectors near where they plug into their respective boards. Tighten tie wraps down while carefully shifting and bending the cables to their places. Run all cables behind the metal pieces. Double check your work.

FRONT VIEW



Suggested Smart Mobile Base Setup

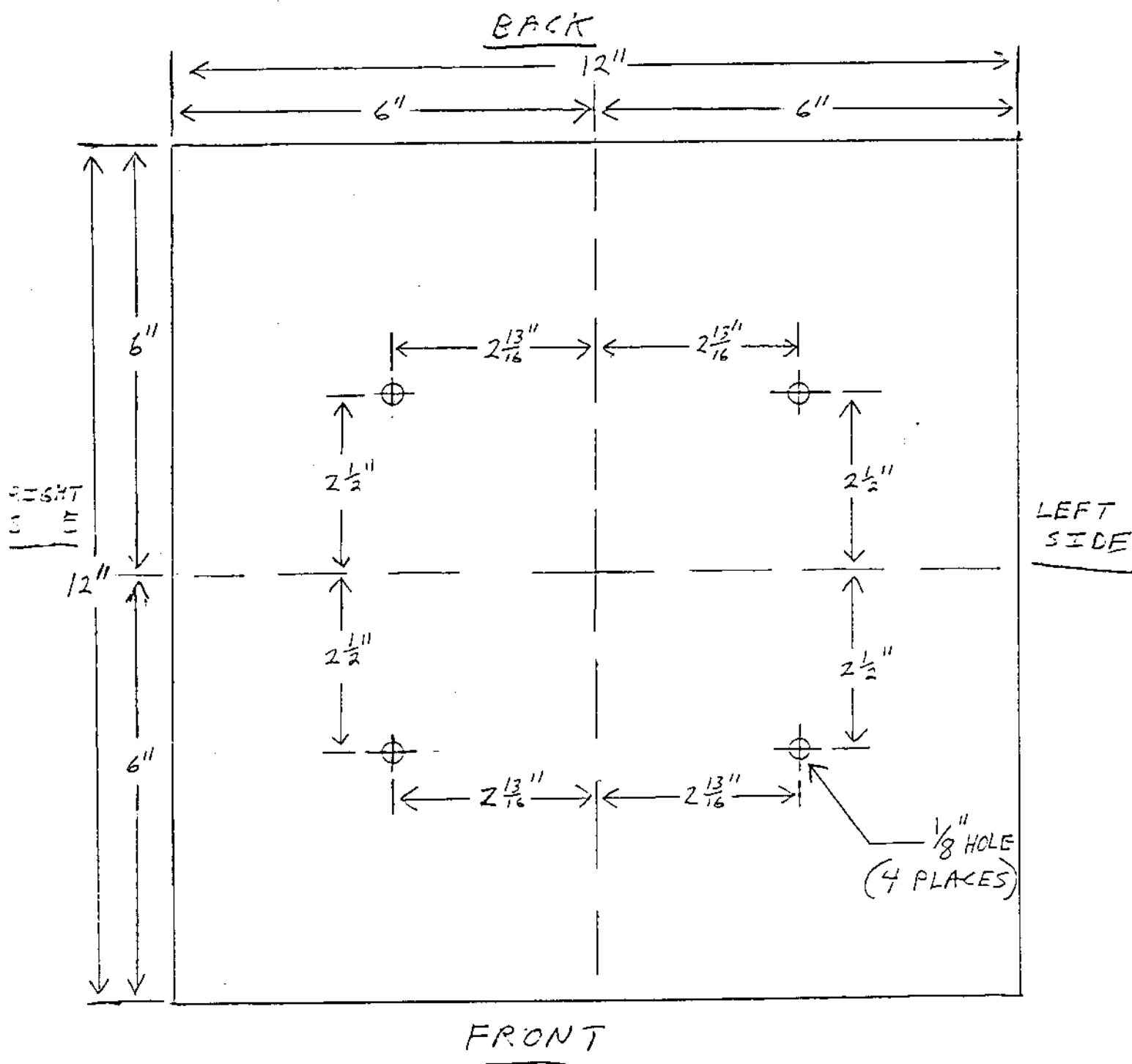
Drill 4 angles as shown



CUT CORNER OFF
ONE ANGLE. PLACE
THIS ANGLE ON BATTERY
STRUT NEAREST BATTERY
TERMINALS.

Use 1/8" or 1/4" plywood

Mounting holes for angles



Mounting holes for boards and switches

