



MS-2001 Portable Glow Cube[®] Scoreboard

Operation/Maintenance Manual

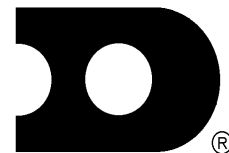
ED-11443

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**ED-11443
Product 1072
Rev. 2 – 26 January 2001**

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Section 1: Introduction

1.1 How To Use This Manual

This manual is written to assist in the operation and maintenance of the MS-2001 Glow Cube[®] scoreboard. For questions regarding the safety, installation, operation or service of this system, please refer to the telephone numbers listed on the cover page of this manual.

Important Safeguards:

1. Read and understand all instructions before using the equipment.
2. Do not drop the control console or allow it to get wet.
3. Use only three prong grounded 120 VAC outlets for the scoreboard's 120V AC power, and 230 VAC outlets for the 230V AC power.
4. Do not disassemble the control console or the electronic controls of the display. Failure to follow this safeguard will void the warranty.
5. Disconnect power to the scoreboard when it is not in use.

The box at right illustrates the Daktronics drawing numbering system. This number is located in the lower-right corner of the drawing label. Drawings are customarily referenced by their last set of digits and the letter preceding them. In the example, the drawing would be referred to as **Drawing A-69945**.

DAKTRONICS, INC. BROOKINGS, SD 57006		
PROJ: BASKETBALL		
TITLE: SEGMENTATION, 7 SEG BAR DIGIT		
DES. BY: BPETERSON	DRAWN BY: TNELSON	DATE: 8 JUL 01
APPR. BY: AVB	7087-P08A-69945	
SCALE: 1 = 4		

Figure 1: Daktronics Drawing Label

In this manual, drawings are inserted at the end of the section in which they are *first referenced*; in some manuals, drawings grouped and inserted in alphabetical order in the **Appendix**.

1.2 Glow Cube Portable Scoreboard Overview

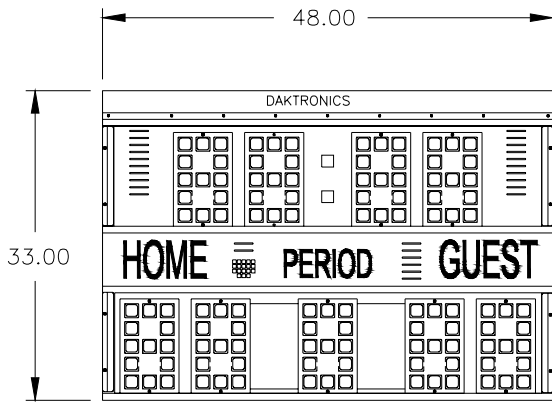
Reference Drawings:

Shop Drawing and Stand Assembly.....	Drawing A-111613
Block Diagram; MS-2001	Drawing A-111606
Captions; MS-2001	Drawing A-112096

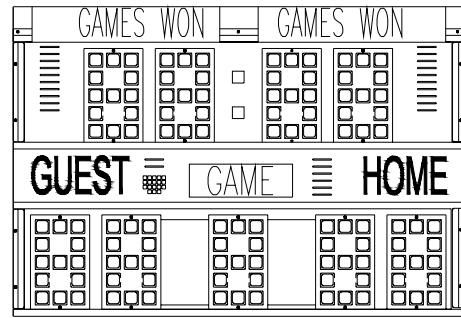
The Daktronics MS-2001 scoreboard has the following features:

- The scoreboard internal battery provides power for about 30 hours of normal operation.
- The scoreboard can also be powered from an external 12V battery, from 120V AC or from 230V AC (refer to **Drawing A-111606**).
- The internal battery recharges when 120V AC (or 230V AC) power is connected. The MS-2001 scoreboard is illustrated in **Drawing A-111613**.

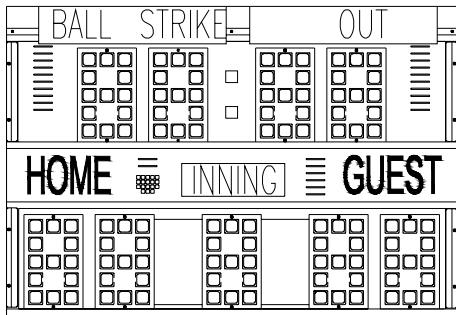
An attached wheel cart makes the scoreboard portable and raises it for easier viewing. Optional captions are available for scoring volleyball and baseball (refer to **Drawing A-112096**)



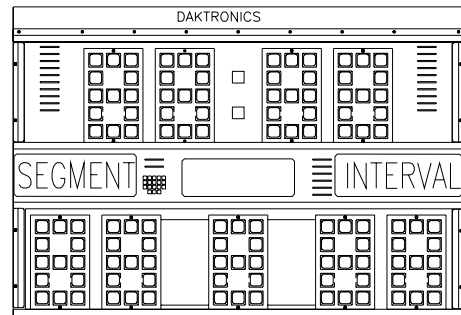
Time/Score Mode



Volleyball Mode



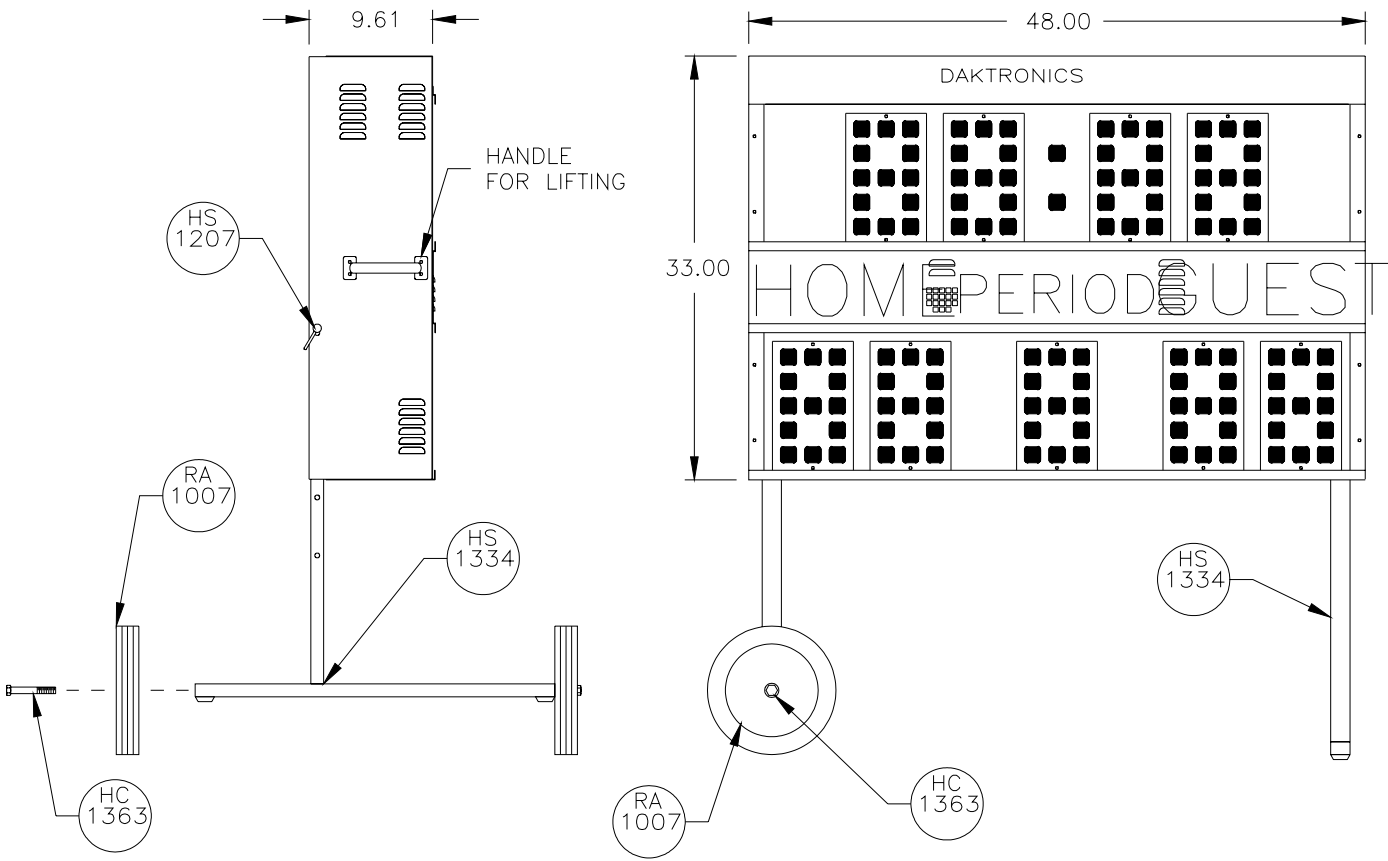
Baseball Mode



Segment Timer

01	20JAN01	REPLACED LOUVERS W/SLOTTED HOLES	JNILSE	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GLOWCUBE PORTABLE			
TITLE: CAPTION OPTIONS; MS-2001			
DES. BY: AVB		DRAWN BY: D DELEEUW	
		DATE: 08 FEB 99	
REVISION	APPR. BY:	1072-E10A-112096	
	SCALE: 1=20		



BEFORE ASSEMBLY, INSPECT THE CONTENTS OF YOUR KIT. KIT SHOULD INCLUDE:

- 2 - CART STANDS
- 2 or 4 - 10" WHEELS
- 2 - 1/2"X3-1/2" BOLTS
- 2 - 5/16" DIA PINS

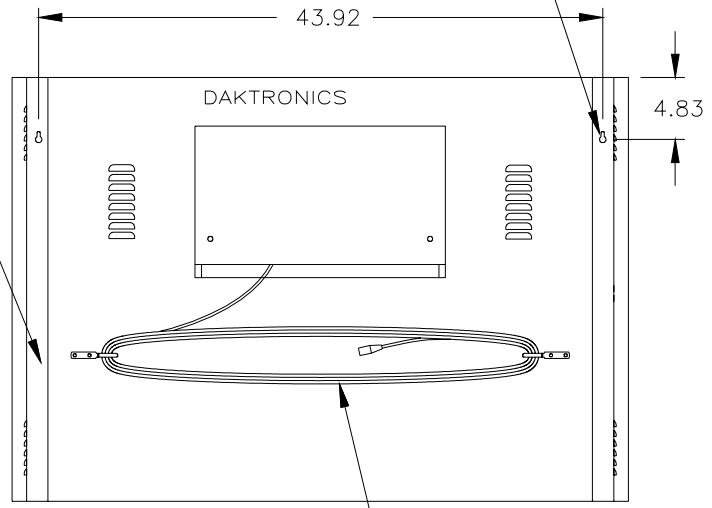
TOOLS NEEDED TO ASSEMBLE THE CART:

3/4" WRENCH

TO RAISE AND LOWER THE SCOREBOARD, PULL THE PINS IN BOTH SIDES AND SLIDE THE LEGS TO DESIRED HEIGHT.

WALL MOUNTING

KEYHOLES ACCOMMODATE 1/4" BOLTS FOR TEMPORARY WALL MOUNTING



REAR VIEW

THE CART MAY BE PROVIDED WITH TWO OR FOUR WHEELS.

- 2-WHEEL CART - 0A-1072-0024
- 4-WHEEL CART - 0A-1072-0025

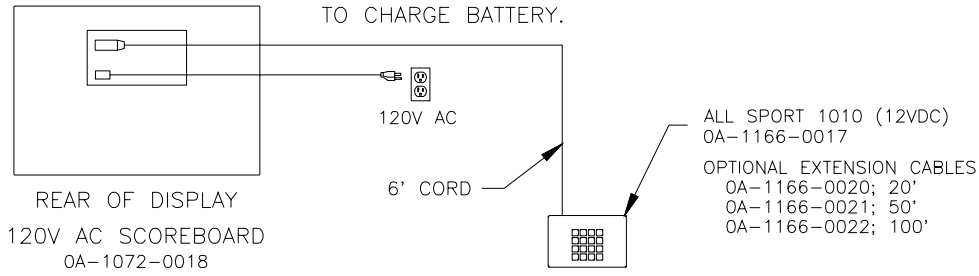
ASSEMBLY INSTRUCTIONS:

- 1) BOLT WHEELS TO THE ONE (OR BOTH) OF THE CART STANDS.
- 2) INSERT THE STANDS INTO THE GUIDES ON BOTH ENDS OF THE SCOREBOARD.
- 3) INSERT THE PIN AND WIRE CLIP THROUGH THE HOLES TO SECURE THE STAND.

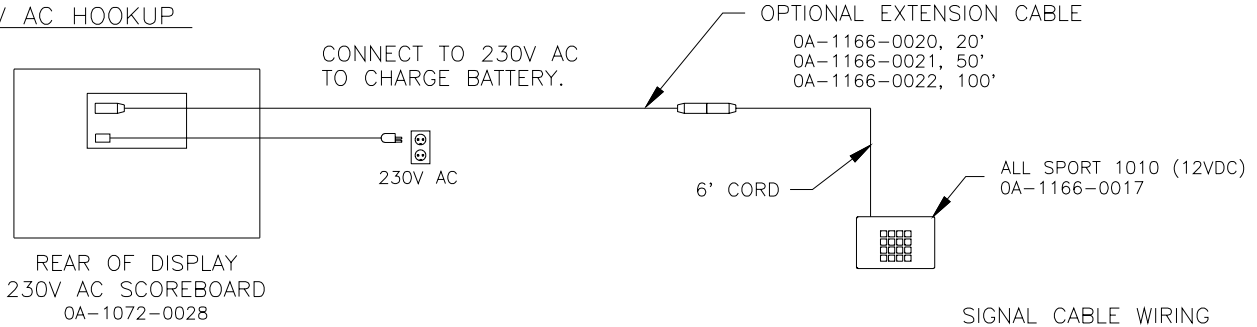
DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ: GLOW CUBE PORTABLE			
TITLE: SHOP DRAWING AND STAND ASSEMBLY, MS-2001			
DES. BY: AVB		DRAWN BY: D DELEEUW	
		DATE: 26 JAN 99	
REVISION	APPR. BY:	1072-E10A-111613	
	SCALE: 1=15		

REV.	DATE	DESCRIPTION	BY	APPR.

120V AC HOOKUP



230V AC HOOKUP

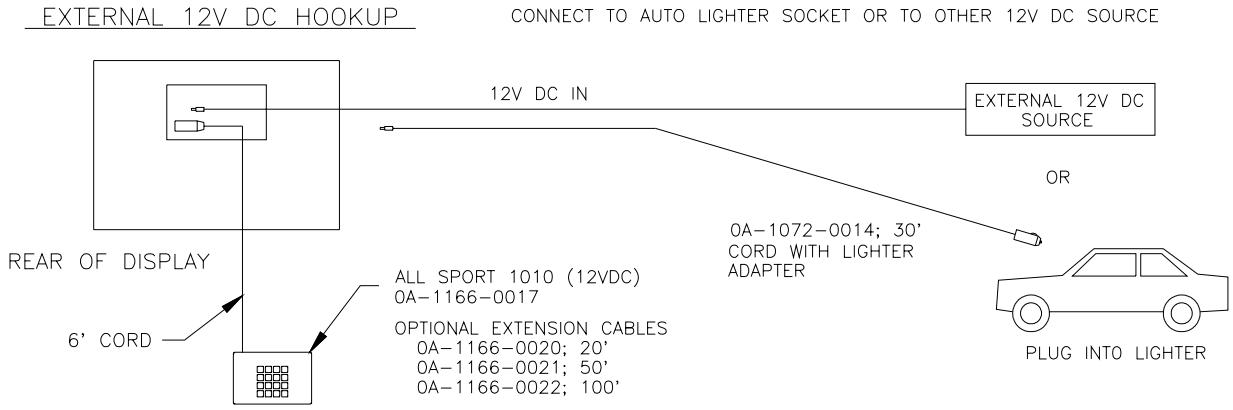


MODEL MS-2001 SCOREBOARD IS AVAILABLE EQUIPPED FOR EITHER 120V AC OR 230V AC POWER. VOLTAGE MUST BE SPECIFIED WHEN ORDERING. EITHER TYPE MAY BE USED AS 12V DC POWER AS SHOWN BELOW.

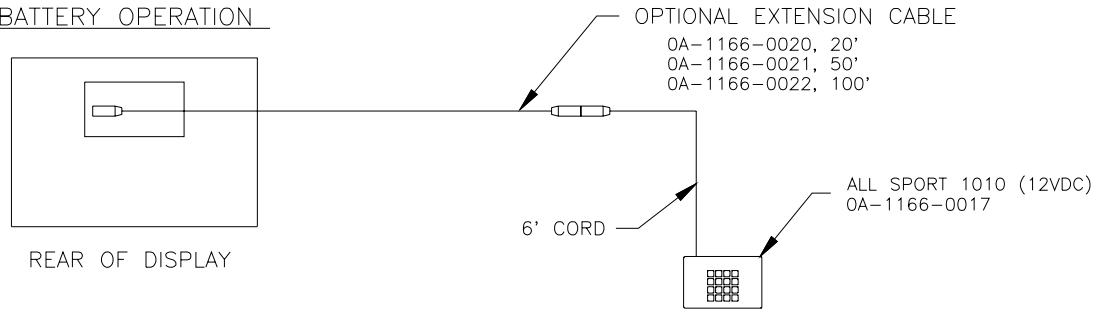
SIGNAL CABLE WIRING

PIN	COLOR	FUNCTION
1	RED	SIGNAL +
2	BLACK	SIGNAL -
3	WHITE	12V DC
4	GREEN	12V DC

EXTERNAL 12V DC HOOKUP



INTERNAL BATTERY OPERATION



DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:	GLOWCUBE PORTABLE		
TITLE:	BLOCK DIAGRAM; MS-2001		
DES. BY:	AVB	DRAWN BY:	D DELEEUEW
DATE:	26 JAN 99		
REVISION	APPR. BY:	1072-E10A-111606	
SCALE:	NONE		

1	07 JUN 99	ADDED FIGURE FOR 230V AC HOOKUP	AVB	AVB
REV.	DATE	DESCRIPTION	BY	APPR.

Section 2: Mechanical and Electrical Operation

2.1 Cart Assembly

Reference Drawings:

Shop Drawing and Stand Assembly.....	Drawing A-111613
Component Location	Drawing A-111661

The cart is provided as a kit that includes either two or four wheels. Open the cart kit and verify that the contents include the following:

- ✓ 2 – T-stands
- ✓ 2 or 4 – 10" wheels
- ✓ 2 or 4 – 1/2" x 3-1/2" bolts
- ✓ 2 – 5/16" diameter pins with clips

(A 3/4" wrench is needed to attach the wheels.)

Refer to **Drawing A-111613** in **Section 1** and the following instructions to assemble the cart:

1. Note that the vertical member of each T-stand is off center, making one side longer than the other. Insert the two T-stands into the guides in the back of the scoreboard, with the longer side toward the front.
2. Fasten the T-stand in the guide using the retainer pin. Secure the retainer pin with the clip.
3. Attach the wheels to the cart using the 1/2" bolts.

Raise the scoreboard for good viewing by removing the pins, extending the T-stands and reinstalling the pins in the appropriate holes. Extend the T-stand further if it does not have wheels; in order to equalize the heights of the two ends of the scoreboard. If both ends of the cart have wheels, any of the four available heights may be used. Lower the scoreboard for storage or transportation.

Control connections are located in the rear compartment (refer to **Drawing A-111661**). To open the rear compartment, turn the adjustable latches 1/4-turn to the left. Turn the knob to the right after it is fastened to tighten the latch. If the latch will not engage because it is too tight, turn to the left a couple of turns, turn to the right to latch, and then tighten.

The door can be closed while the cords are extending out of the compartment by running the cords out through the slot below the door.

2.2 Electrical Operation

Reference Drawings:

Block Diagram; MS-2001	Drawing A-111606
Component Location	Drawing A-111661

Console Connection

A 4-pin jack located in the rear compartment and labeled “Signal In” provides a connection to the All Sport 1010 control console. The console’s 6-foot cord can connect directly to the jack, or an extension cord can allow the console to be used farther from the scoreboard. Extension cords are available from Daktronics in 20’, 50’ or 100’ lengths, and can be connected together to make longer lengths. Excess cord length can be coiled up on the hooks on the back of the scoreboard.

Driver Switch

The driver switch, located in the rear compartment, turns the driver on and off. The switch does not affect the battery charger, which is on whenever the power cord is connected to 120 VAC (or 230 VAC if required). The driver can operate from the internal battery or from the AC power cord. When the driver is turned on, a green light on the driver can be seen from the front of the scoreboard, through a window between the period digit and the guest score. **Turn the switch off when the scoreboard is not in use.** The power from the scoreboard to the control console will also be turned off. When the switch is on, the driver and the console will slowly but continuously drain power from the battery.

External 12V Power

The scoreboard may receive power from an external battery source by connecting to the jack marked “12 VDC In” in the rear compartment. This allows the scoreboard to be powered from a car battery, for instance, using a lighter plug adapter. A 30 $\frac{1}{2}$ cord assembly for this purpose is available from Daktronics. Refer to Drawing **A-111606**.

Internal Battery

On a full charge, the internal battery provides enough power for approximately 30 hours of normal operation. The timing display uses the battery’s power at the fastest rate when the Glow Cubes are flipping. Operating time may be much longer if the data on the timing display is not being changed frequently. The operating time may be shorter if the data is changing quickly, such as when the clock is being set and all four clock digits are flipping on and off.

As the battery ages, its operating time will be reduced. Keeping the battery charged will help extend its useful life. Be sure that the battery is fully charged before storing the timing display during the off-season. Storing the display with a discharged battery can contribute to early battery failure.

The battery used in this Daktronics product is a sealed, lead-acid type 12V battery, with dimensions as shown in **Figure 2** at right.

Daktronics currently provides a Panasonic battery with its Glow Cube displays, and the Daktronics part number is BT-1014. Other batteries may be used, but there are several important considerations when replacing the original battery:

- The battery must have a 3/16" tab-type terminal (0.188" or 4.8mm).
- Physically larger or smaller batteries may provide satisfactory performance but may not fit properly in the bracket.
- It is important that the red wire be connected to the positive (+) terminal and the black wire to the negative (-) terminal.

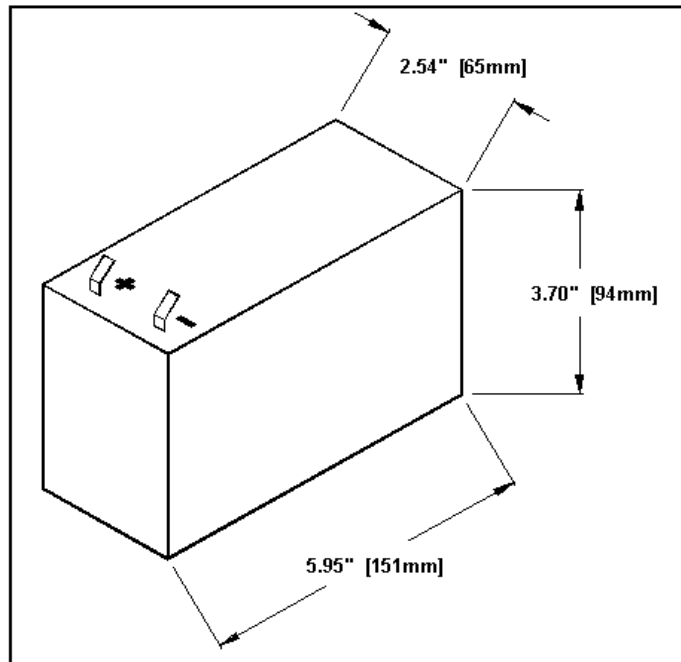


Figure 2: Approximate Battery Dimensions

Following is a partial list of battery brand names and part numbers which should work in this product:

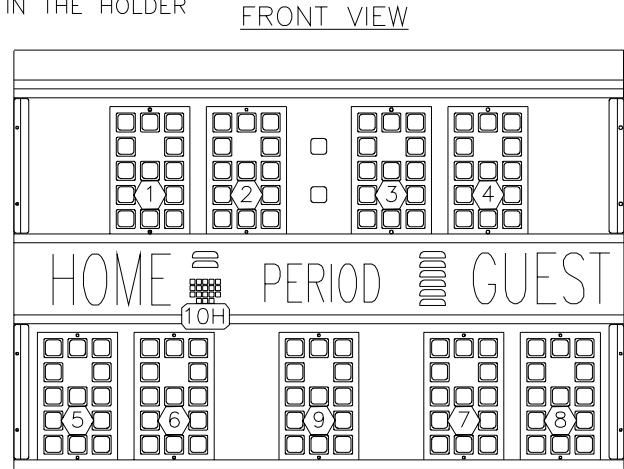
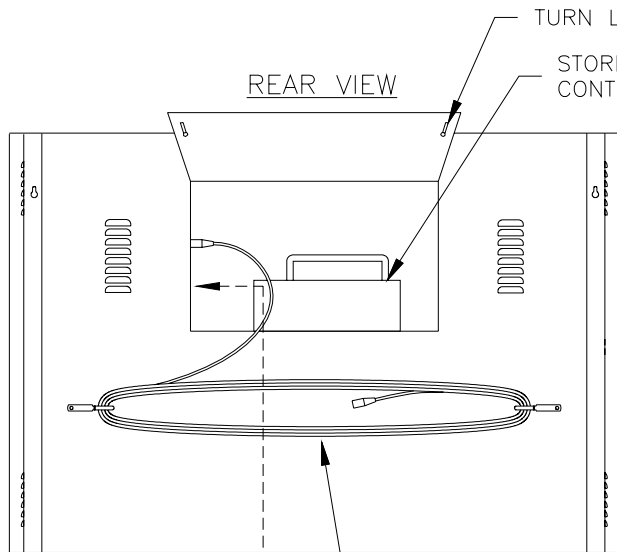
Manufacturer	Part Number	AH Rating
Panasonic	LCR 12V6.5	6.5
Panasonic	LCR 12V7.2P	7.2
Yuasa	NP7-12	7
Power-Sonic	PS-1270	7
CSB	GH1270	7
Dynasty	JC1260	6
Elpower	EP-1260	6
UBC	UB1270	7
Douglas	DG-12-7	7
Portalac	PE12V6.5	6.5
Long	WP7-12	7
Remco	RM 12-7	7
Eagle-Picher	CFM12V6.5	6.5
Eagle-Picher	HE12V7.7	7.7
Best Battery	CP 1282	8.2
CCB	CCB 12-7.2	7.2
GasTon	GT12-7	7
Powerson	MF 12-7	7
Megapower	6XM7	7
Voltex	SP1275	7.5

K Important Notice: *The battery in this product contains lead. Do not dispose of the battery in a municipal waste system at the end of its useful life. To do so may be a violation of local, state, or federal environmental regulations. Please return the battery to a battery recycling center or your battery retailer.*

Battery Charger

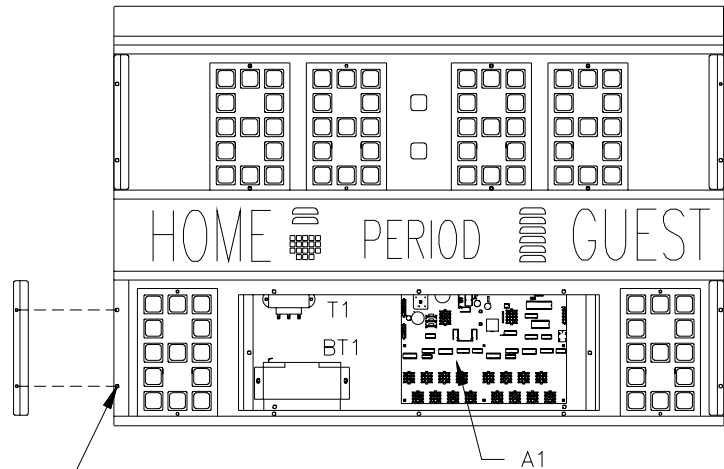
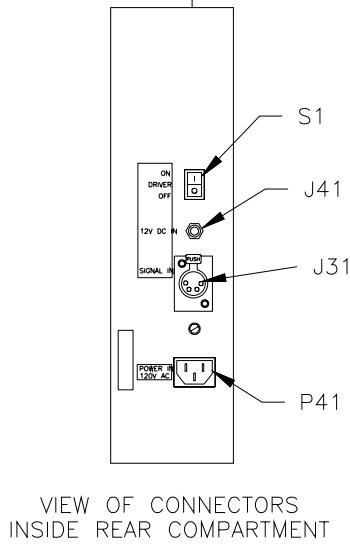
The battery charger is on whenever the AC power is connected. A red light on the driver can be seen from the front of the scoreboard through a window between the period digit and the guest score, indicating that the driver is on.

When the battery is fully charged, the red light will turn off. The charger will not overcharge the battery, and may be left on continuously when the scoreboard is not in use. It will take six to seven hours to fully charge the battery.



COIL THE SIGNAL CORD ON THE HOOKS ON THE BACK.

⑤ DRIVER PLUG CONNECTED TO DIGIT



TO GAIN ACCESS TO THE DIGITS AND INTERNAL COMPONENTS, REMOVE THE SIDE RETAINERS AND SLIDE OUT THE CLEAR FACE PANEL.

SHOWN WITH DIGITS REMOVED AND COVER REMOVED FROM DRIVER ENCLOSURE.

DESIG	DESCRIPTION	DAKTRONICS PART #
A1	DRIVER	OP-1066-0067
BT1	BATTERY, 12V	BT-1014
J41	12V DC IN JACK	J-1034
J31	4-PIN MIC JACK	J-1124
P41	POWER INLET	J-1115
S1	ROCKER SWITCH	S-1125
T1	TRANSFORMER	T-1042
1-9	GLOW CUBE DIGIT	OP-1066-0065
	12V HORN	0A-1072-0023

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ: GLOW CUBE PORTABLES
 TITLE: COMPONENT LOCATION; MS-2001
 DES. BY: AVB DRAWN BY: D DELEEUW DATE: 27 JAN 99

REVISION	APPR. BY:	1072-E10A-111661
	SCALE: 1=15	

01	01 JUL 99	SHOWED REAR CONSOLE HOLDER.	AVB	AVB
REV.	DATE	DESCRIPTION	BY	APPR.

Section 3: Maintenance and Troubleshooting



IMPORTANT NOTES:

1. Disconnect power before any repair or maintenance work is done on the display!
2. Any access to internal display electronics must be made by qualified service personnel.
3. Disconnect power when the display is not in use.

3.1 Glow Cube Driver and Digit Operation

Reference Drawings:

Glow Cube Driver.....	Drawing A-111659
Segment/ Pin Connections.....	Drawing A-111776

The task of switching Glow Cubes on and off is performed by the Glow Cube driver (refer to **Drawing A-111659**). Each driver has 21 connectors providing power and signal inputs/outputs to digits and indicators. The function of each of these connectors is as follows.

Connector No.	Function
1 - 16	Output to digits and indicators
17	Control signal
18	Relay Connection
19	Address Connection
20	Battery Connection
21	Power

Output connectors 1 through 16 each have 9 pins. Refer to **Drawing A-111776** for an explanation of configuration of the connections to the digits.

3.2 Component Access

Reference Drawing: Component Location; MS-2001 **Drawing A-111661**

The driver, battery, and transformer are located in an enclosure located behind the lower row of digits. Refer to **Drawing A-111661** in **Section 2** for component locations. To gain access to these components follow this procedure:

1. Remove the face retainer from one end of the lower face panel by removing the two screws securing it.
2. Gently slide the face panel out.
3. Remove the three digits that are in front of the enclosure by removing the two screws securing the top and bottom of each digit and the unplug the cable from the back of the digit.

4. Remove the two screws securing the enclosure cover.
5. Remove the cover from the enclosure.
6. Reverse the procedure to reassemble.

Battery Replacement

It may become necessary to replace the battery. To gain access to the battery, following the procedure for component access.

To remove the battery:

1. Remove the two nuts securing the cover holding the battery into the enclosure, and remove the cover.
2. Carefully pull (wiggle them gently while pulling) the two connectors from the battery terminals.
3. Reassemble by reversing this procedure. When installing a battery, be sure to connect the red wire to the positive terminal on the battery, and the black to the negative terminal.

Important Notice: The battery contains lead. At the end of its useful life, do not dispose of the battery in the municipal waste system. To do so may be a violation of local, state, or federal law. Please return the battery to a battery recycling center or your battery retailer.

Driver Replacement

Gain access to the driver by following the component access steps above. To remove the driver:

1. Disconnect all of the wire connectors plugged into the driver.
2. Remove the wing nuts securing the driver to the enclosure.
3. Remove the driver from the mounting studs.
4. The replacement procedure is the reverse of removal.

3.3 Cleaning the Face Panel

To clean the face panel inside and out, use a wet cloth followed by a dry cloth. An anti-static polycarbonate cleaner is highly recommended and will yield the best long-term results. How often the face will require cleaning will depend upon the site conditions. The Glow Cube pixels do not require the face to be cleaned for any reason except for visual impairment.

3.4 Cleaning the Glow Cube Pixels

Clean the cubes only when necessary, and with care. A damp cloth, a soft brush or a feather duster will work the best. Do not use cleaning solvents or sprays. Avoid applying pressure to the cube face. Work in upward strokes only when cubes are yellow side up. Downward strokes are used when all the cubes are black side up. Do not brush in a horizontal direction.

3.5 Power and Signal Wiring

Reference Drawings:

Schematic; MS-2001	Drawing A-102523
Schematic; MS-2001, 230V Pwr/Sig	Drawing A-116203

Drawing A-102523 is the power and signal wiring diagram for 120V displays, **Drawing A-116203** if the power and signal wiring diagram for 230V displays.

3.6 Glow Cube Pixel Diagnostics

- 1. Cube Rubbing:** The cubes that are adjacent to each other may be too close together, causing both cubes to function incorrectly. This may be due to a cube that has not been soldered in place fully on one side. Heat the pins of the cube and press the cube into place.
- 2. Spinning Cube:** Visually inspect the cube for broken bumper pegs. Replace if necessary.
- 3. Bouncing Cube:** Visually inspect the cube for missing rubber bumpers. Replace if necessary.
- 4. Cubes Sticking:** Some cubes may tend to “stick” after long periods of disuse. Loosen the cube by rotating it manually, then operating the digits normally. If it continues to stick, replace the rubber bumper. Replace the rubber bumpers on these cubes.
- 5. Random Cube Movement:** If the display is working, but cube movement appears to be random, check the driver.
- 6. Individual Cube Is Not Working:** If the Glow Cube pixel is not flipping or flips intermittently, measure the pixel DC resistance. Test the cube using an ohmmeter, placing the ohmmeter leads to the upper right and lower left cube contact points on the back of the digit card. The resistance should be 10 ohms. **Note:** In some cubes, the short will only appear when the cubes are in motion. A reading of eight to zero ohms indicates a shorted cube.

If the DC resistance is less than the correct range, or is infinite, the pixel has failed. If the DC resistance is correct, gently turn the pixel rotor and feel for any internal binding. If there is none, heat all four solder connections between the pixel and the circuit board. This will eliminate any cold solder joints. *It is important that the DC resistance be measured before removing the pixel from the circuit board to prevent good pixels from being removed.*

If the pixel flips only part way, it may have some type of internal binding. If internal binding is detected with manual rotation, the pixel should be removed.

- 7. Entire Display Is “Dead”:** If the display appears to be “dead,” check the power and/or signal to the display. To check if the display has power, turn display power off. Re-power the display and watch for all cubes flipping from yellow to black. This indicates that power is reaching the display. Check the signal wires and connections. Locate and repair any breaks in the signal wire.

3.7 Glow Cube Pixel Replacement

1. Remove the digit from the display as described in **Section 3.3**.
2. Locate the four pins of the cube to be removed on the back of the digit.
3. With the board standing vertically (as it would be in the display) use a soldering iron on one pin at a time.
4. As the solder melts, use a solder extractor to clear all four pin holes as much as possible.
5. If cube does not come loose, clamp gently onto one corner of the cube box with needle-nose pliers. Reapply heat to the individual pins and gently pull each pin from the hole it is seated in. Use caution, *do not* pull too quickly as this will pull leads loose from the digit.
6. It may be necessary to repeat this procedure until all pins are free from the solder.
7. Once the cube is free of the digit, check the holes to be sure they are completely clear of solder.
8. Align the new Glow Cube with the notched part of the cube toward the bottom of the board. Gently push the new cube in place, making sure it is flush with the other cubes around it.
9. Solder the four pins.
10. Reinstall the digit and test the display.

3.8 Replacement Parts List

Refer to the table below for replacement parts for the Glow Cube portable scoreboard.

Parts Description	Daktronics Part #
Glow Cube Driver	OP-1066-0067
Glow Cube Digit	OP-1066-0065
Glow Cube, #150 Yellow	0A-1066-0001
Battery, 12V, 6.5 AH	BT-1014
Transformer	T-1042
Cable, Signal, 20 ft.	0A-1166-0020
Cable, Signal, 50 ft.	0A-1166-0021
Cable, Signal, 100 ft.	0A-1166-0022
Power Cord, 30 ft., 12V lighter	0A-1072-0014
Wheel, 10x1.75	RA-1007
Wheel Bolt, 1/2-13 x 3/4	HC-1363
Pin, 5/16 x 2, w/clip	HC-1207
Console, All Sport 1010	0A-1166-0017
Insert, MS-2001 Clock/Score	LL-2367
Insert, MS-2001 Baseball	LL-2366
Insert, Volleyball	LL-2368

3.9 Unit Exchange/Replacement Procedure

Daktronics unique exchange program offers our clients the quickest, most economical way of receiving product repairs. If a component fails, Daktronics will send the customer a replacement. The customer, in turn, sends the failed component to Daktronics. This not only saves money, but also decreases the time that the display is inoperable. Daktronics offers repair and return on a timely basis. In urgent situations, every attempt is made to ship by the fastest transit method available.

1. **Packaging for Return:** Package and pad the item well to prevent damage during shipment. Electronic components, such as printed circuit boards, should either be installed in an enclosure or placed in an anti-static bag before boxing.

Please enclose your name and address along with a list of all the symptoms. Please be as specific as possible.

2. **Driver Packaging Instructions:** Drivers should be placed in a static-free enclosure for return shipping. An anti-static convoluted foam packing is available from Daktronics (part number PK-1135). The shipping box (Daktronics part number PK-1006) should be used along with the foam.
3. **Where to Send:** Contact your local representative prior to shipment to acquire a Return Material Authorization Number (RMA#). This will speed up the repair of your unit.

When returning defective items under the exchange program, please use the UPS Blue Return Tags found in the package containing the exchange unit sent from Daktronics. This will speed up the transaction and help avoid confusion when the part is returned to Daktronics. **≅ The defective item must be returned within 15 days of receiving a replacement part.** Using the UPS Blue Return Tag immediately will eliminate the possibility of late charges being assessed against your account.

Mail: Customer Service
Daktronics, Inc.
PO Box 5128
331 32nd Avenue
Brookings, SD 57006

Phone: Daktronics Help Desk: 1 (877) 605-1115 (toll free)
or 1 (605) 697-4036

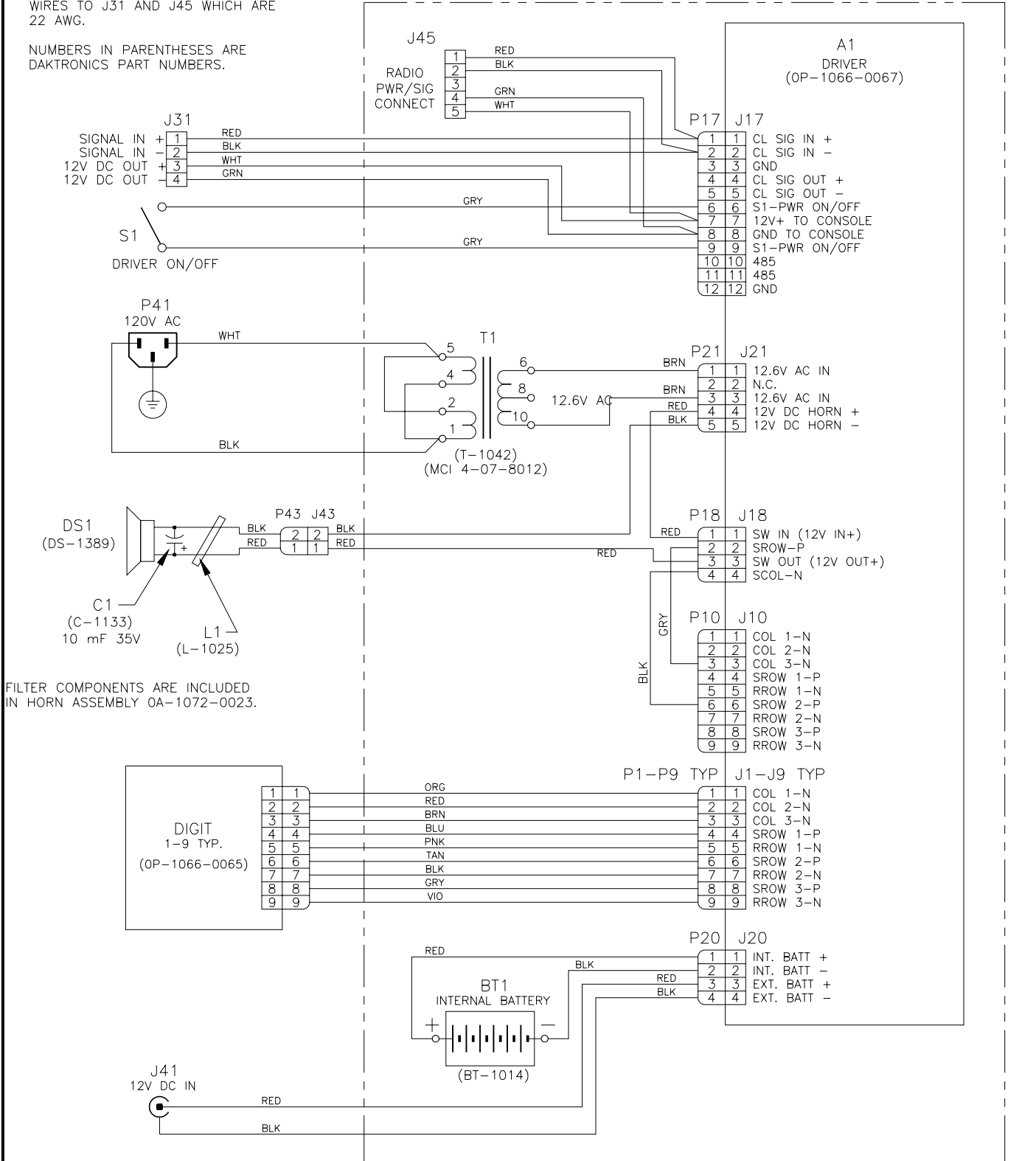
Fax: 1 (605) 697-4444

e-mail: helpdesk@daktronics.com

NOTE:
ALL WIRES ARE 18 AWG EXCEPT
WIRES TO J31 AND J45 WHICH ARE
22 AWG.

NUMBERS IN PARENTHESES ARE
DAKTRONICS PART NUMBERS.

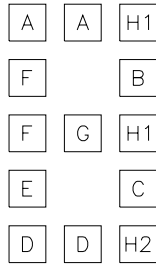
DRIVER ENCLOSURE



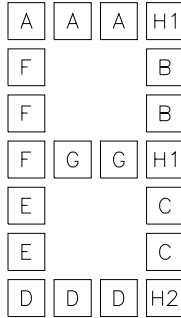
FILTER COMPONENTS ARE INCLUDED
IN HORN ASSEMBLY OA-1072-0023.

DAKTRONICS, INC. BROOKINGS, SD 57006				
02	17 JAN 02	REPLACED WIRE NUTS FROM HORN HARNESS W/ P43 AND ADDED J43.	NMB	
01	08 MAR 01	ADDED THE PWR/SIG FOR RADIO	MWM	MWM
REV.	DATE	DESCRIPTION	BY	APPR.
PROJ:		DAKTRONICS, INC. BROOKINGS, SD 57006		
TITLE:		SCHEMATIC, MS-2001 POWER & SIGNAL		
DES. BY:		DRAWN BY: A VANBEMMEL		DATE: 01 FEB 99
REVISION	APPR. BY:	1072-R03A-102523		
SCALE:		NONE		

THINK OF THE 8 SEGMENTS OF A DIGIT AS BEING REPRESENTED AS A 3X3 MATRIX, WITH EACH SEGMENT OF A DIGIT BEING ONE POINT IN THE MATRIX.

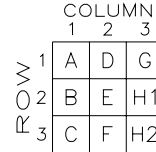


3X5 DIGIT



4X7 DIGIT

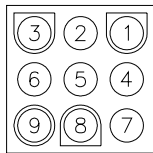
EACH SEGMENT IS REPRESENTED BY ONE ROW AND ONE COLUMN



EACH 9-PIN JACK ON THE DRIVER CONTROLS THE ROWS AND COLUMNS FOR ONE DIGIT. THE PIN NUMBERS ARE ASSIGNED TO THE FUNCTIONS AS FOLLOWS:

TO DETERMINE WHICH PINS OPERATE EACH SEGMENT, CHECK THIS TABLE:

9-PIN JACK



PIN NO.	MATRIX FUNCTION	DIGIT FUNCTION
1	COL. 1	COMMON SEG. A,B,C
2	COL 2	COMMON SEG. D,E,F
3	COL 3	COMMON SEG. G,H1,H2
4	SET ROW 1	SET SEG. A,D,G
5	RESET ROW 1	RESET SEG. A,D,G
6	SET ROW 2	SET SEG. B,E,H1
7	RESET ROW 2	RESET SEG. B,E,H1
8	SET ROW 3	SET SEG. C,F,H2
9	RESET ROW 3	RESET SEG. C,F,H2

SEGMENT	PIN NOS.
A SET	1, 4
A RESET	1, 5
B SET	1, 6
B RESET	1, 7
C SET	1, 8
C RESET	1, 9
D SET	2, 4
D RESET	2, 5
E SET	2, 6
E RESET	2, 7
F SET	2, 8
F RESET	2, 9
G SET	3, 4
G RESET	3, 5
H SET	3, 6
H RESET	3, 7

"SET" TURNS THE GLOW CUBES TO THE YELLOW SIDE.
"RESET" TURNS THE GLOW CUBES TO THE BLACK SIDE.

TO SET THE HORN ADDRESS ON THE DRIVER, THE FIRST PIN LISTED CONNECTS TO PIN 2 ON J18. THE SECOND PIN CONNECTS TO PIN 4 ON J18.

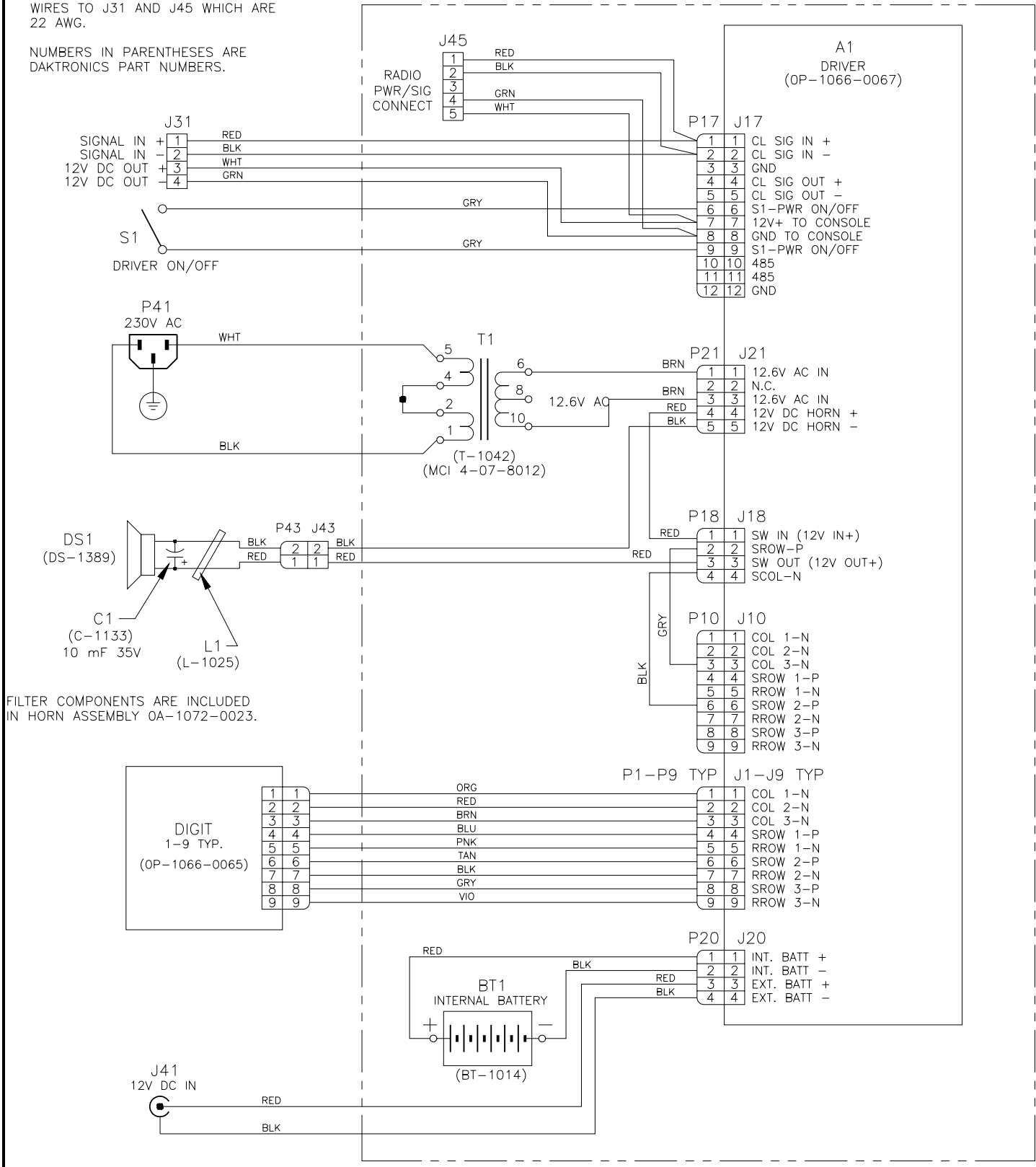
1	12 NOV 99	CORRECTED SEGMENT DESIGNATION IN THE ROW DATA IN TABLE.	AVB	
REV.	DATE	DESCRIPTION	BY	APPR.

DAKTRONICS, INC. BROOKINGS, SD 57006			
PROJ:			
TITLE:	SEGMENT/PIN CONNECTIONS, GLOW CUBE DIGIT W/ 9-PIN		
DES. BY:	DRAWN BY: A VANBEMMEL	DATE:	29 JAN 99
REVISION	APPR. BY:	1066-E01A-111776	
	SCALE: NONE		

NOTE:
ALL WIRES ARE 18 AWG EXCEPT
WIRES TO J31 AND J45 WHICH ARE
22 AWG.

NUMBERS IN PARENTHESES ARE
DAKTRONICS PART NUMBERS.

DRIVER ENCLOSURE



FILTER COMPONENTS ARE INCLUDED
IN HORN ASSEMBLY OA-1072-0023.

DAKTRONICS, INC. BROOKINGS, SD 57006

REV.	DATE	DESCRIPTION	BY	APPR.
02	17 JAN 02	REPLACED WIRE NUTS FROM HORN HARNESS W/ P43 AND ADDED J43.	NMB	
01	19 MAR 01	ADDED PWR/SIG HARNESS FOR RADIO	MWM	

PROJ:	SCHEMATIC, MS-2001, 230V POWER & SIGNAL		
DES. BY:	DRAWN BY:	DATE: 20 MAY 99	
REVISION	APPR. BY:	1072-R03A-116203	
	SCALE:	NONE	

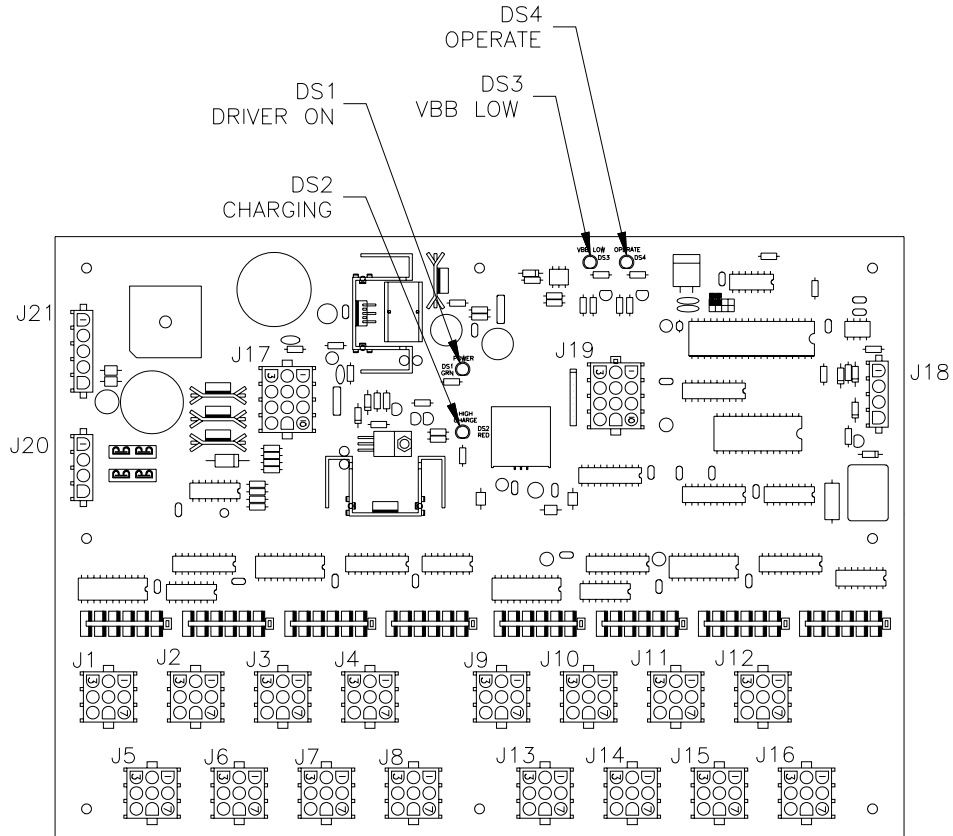
J21	
FUNCTION	PIN
12.6VAC +	1
N/C	2
12.6VAC -	3
+12HORN +	4
GNDHORN -	5

J20	
FUNCTION	PIN
INT BATT +	1
INT BATT -	2
EXT BATT +	3
EXT BATT -	4

J17	
FUNCTION	PIN
CL SIG +	1
CL SIG -	2
GND	3
CL OUT +	4
CL OUT -	5
POWER SW +	6
+12CONS +	7
GNDCONS -	8
POWER SW -	9
485 SIG +	10
485 SIG -	11
GND	12

J19	
FUNCTION	PIN
GND	1
SW0-N	2
SW1-N	3
GND	4
SW2-N	5
SW3-N	6
GND	7
SW4-N	8
SW5-N	9
GND	10
SW6-N	11
SW7-N	12

J18	
FUNCTION	PIN
SWITCH IN	1
SW ROW-P	2
SWITCH OUT	3
SW COL-N	4



J1 THROUGH J16

DIGIT FUNCTION	PIN
COMMON SEG. A,B,C	1
COMMON SEG. D,E,F	2
COMMON SEG. G,H	3
SET SEG. A,D,G	4
RESET SEG. A,D,G	5
SET SEG. B,E,H	6
RESET SEG. B,E,H	7
SET SEG. C,F,H	8
RESET SEG. C,F,H	9

DAKTRONICS, INC. BROOKINGS, SD 57006

PROJ:

TITLE: GLOW CUBE DRIVER; 16 COLUMN

DES. BY: AVB

DRAWN BY: D DELEEUW

DATE: 27 JAN 99

REVISION

APPR. BY:

SCALE: 1=3

1066-R04A-111659

REV.	DATE	DESCRIPTION	BY	APPR.
1	27 DEC 00	CORRECTED SEGMENT DESIGNATIONS IN TABLE FOR J1 THROUGH J16, PINS 4-9	AVB	