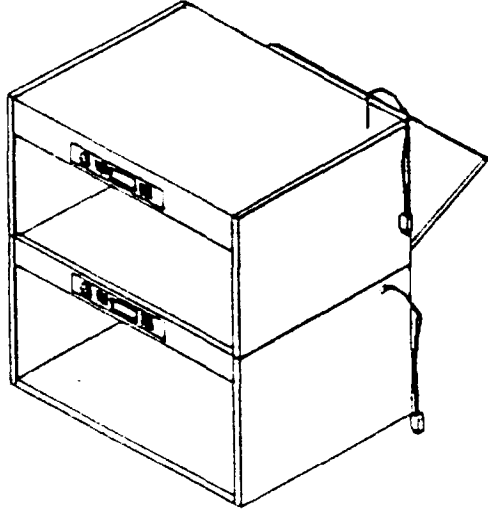


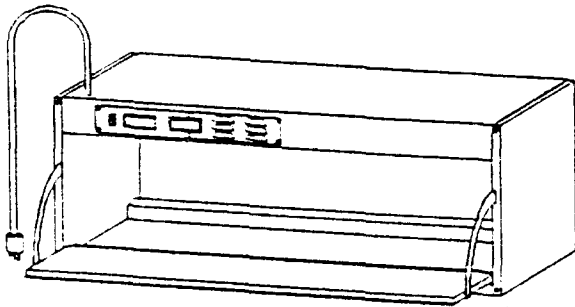
# HEATED DISPLAY CABINET

MODEL NN4A, NN4C, NN4D, NN5 AND NN5A

**MARSHALL  
OWNER'S  
MANUAL**



**MODEL: NN4A, NN4C  
(NN4D-WITH OPTIONAL DOORS)**



**MODEL: NN5, NN5A**

Supplier Name: **MARSHALL AIR SYSTEMS, INC.**  
Address: 419 Peachtree Drive South  
Charlotte, NC 28217  
Serial #: \_\_\_\_\_  
Date Received: \_\_\_\_\_  
Date Installed: \_\_\_\_\_  
Telephone #: 704-525-6230  
Customer Service #: 800-722-3474  
Fax #: 704-525-6229  
Service Referral #: 800-722-3474  
Local Service Name: \_\_\_\_\_  
Local Service #: \_\_\_\_\_

## GENERAL SPECIFICATIONS

Model #:	NN4A , NN4D	NN5
Height:	32-1/2"	16-1/4"
Width:	28"	41"
Depth:	22-1/2"	21-1/4"
Electrical:	110/120volts 7 amps each level	110/120 volts (NN5) 12 amps
International:	220/240 volts (NN4C) 220/240 volts (NN5A) 4 amps	6 amps
Weight:	150 lbs. (76 lbs. for single unit)	110 lbs.

Qty of 40  
Watt Lights: 8 (4 per level) 6  
Power Cord: 8 ft. 3 wire grounding type UL rating  
[NN4A comes with (2) power cords]  
Approvals: UL and NSF  
Options: NN4A can be installed side-by-side instead of stacked as above picture depicts. Height of non-stacked unit is 16-1/4". Each unit has a separate power cord. Optional 4" legs also available.

## MANUFACTURER'S DESCRIPTION

These Heated Display Cabinets feature Marshall's own ThermoGlo™ heating technology. Heat radiates from every square inch of the upper flat plate heating surfaces. This eliminates the need to clean intricate calrod, wire and reflector assemblies. A precision microprocessor-type digital display and digital "set point" temperature controller maintain consistent product temperature.

## **INSTALLATION**

1. Unpack unit and remove all protective paper or plastic covering from metal parts.
2. Place cabinet on stable base. Make sure cooling air inlets, next to temperature controller, are not blocked.
3. The unit should be caulked to the counter top as required by health department codes, or the optional 4" legs (item 31 on page 4) should be ordered.
4. Install 40 watt coated lights which were shipped loose.
5. Plug unit into an AC 120V receptacle. The 220V International version of unit is furnished with cord only.

## **DAILY CHECKLIST AND CLEANING GUIDE**

### **OPENING CHECKLIST**

1. Turn on the power switch. The unit is ready to use after a 30 minute preheat period.
2. The temperature controller on the unit is factory set for 450°F (232°C). With the control "ON", the actual temperature is displayed. The face plate of the control is either black or gray. The range of set points available is from 400°F (204°C) to 450°F (232°C). The set point may be verified or changed as follows:

**IF BLACK:** depress the set button to view the set point. To change set point, use Up/Down arrow to select new set point while holding set button down.

**IF GRAY:** depress the set button and RELEASE to view set point. To change set point, push "set" and, within three seconds, use Up/Down arrow to select new set point.

**CAUTION: PRESS ONLY WITH SOFT PART OF FINGER " DO NOT PUSH WITH SHARP OBJECT.**

3. In normal operation, the digital controller will display a value of approximately 480°F (248°C) high to 430°F (221°C) low.

### **CLOSING CHECKLIST**

1. Turn off the unit and allow it to cool for 20 minutes.
2. Pans and wire grates should be removed, washed in mild multi-purpose detergent, rinsed and sanitized.
3. Clean unit and base with a damp cloth or non-abrasive cleaner.

**DO NOT IMMERSE UNIT IN WATER! DO NOT USE CAUSTIC CLEANING SOLUTIONS!**

4. Allow sufficient drying time before attempting to use.

**PREVENTIVE MAINTENANCE**

Follow the daily schedule; there are no adjustments. The only user-replacement items are the light bulbs located under the top cover. If these fail, do the following:

1. Unplug the unit.
2. Remove the bulb(s) by carefully unscrewing them from their sockets.
3. Replace the bulb(s) with a manufacturer's approved replacement part. (See parts list pages 4 & 5.)
4. Check air flow through unit by feeling for air draw at slots on each side of temperature controller.

**TROUBLE SHOOTING CHART**

Identify problem in the left column and look for probable cause and solution in right hand column. Probable causes listed in the order they are most likely to happen. This sequence should be used to isolate the problem.

<u>Problem</u>	<u>Probable Cause</u>	<u>Solution</u>
1. No Light/No Heat	Unplugged Circuit breaker is tripped	Plug in Reset breaker - call electrician if tripped twice Call
2. No Light/With Heat	Light bulbs burned out Light switch defective	Unplug unit and replace bulbs Call Marshall Customer Service
3. Temperature Controller Flashing 999	*Defective temperature controller or sensor	Call Marshall Customer Service
4. Temperature Controller Displays Less Than 400°F (204°C)	*Loose sensor or defective heating unit assembly	Call Marshall Customer Service
5. Low Product Temperature	Set point too low Excessive air draft	Reset to 450°F(232°C) Move unit or shield draft

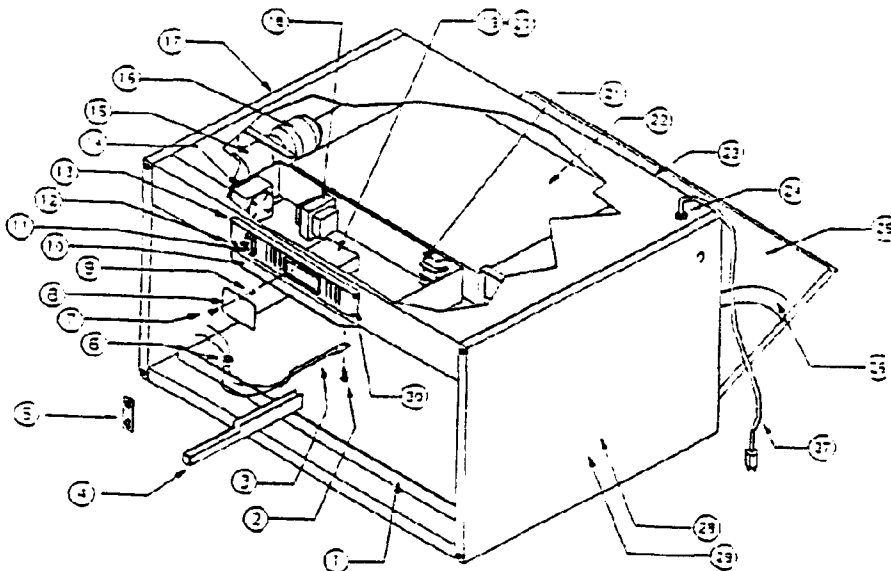
\* NOTE: When replacing sensor, a special heat sink sealant will be present when removing failed sensor. Applying new sealant is not required; however, be sure to utilize existing sealant when mounting new sensor.

ITEM	PART #	DESCRIPTION	ITEM	PART #	DESCRIPTION
1	110833	Shelf Runner (2 Required)	18	502206	Transformer 120V to 12V
2	501484	Screw #1 0 X.500"	*	501958	Transformer 240V to 120V
3	502064	Sensor, RTD Temperature	*	502168	Transformer 240V to 12V
4	111194	Sensor Guard (T'Glo 20" X 14")	19	114541	Temperature Controller RTD
5	111192	Joining Tab (4 Required)	20	* 132499	Temp Controller RTD (°C)
6	502108	Bushing 9/32" Dia.	21	500340	Terminal Strip 3 Pole
7	501684	Screw #10-24 X.750"	22	112925	T'Glo 20" X 14"-120V
8	111024	Swing Cover Plate		111866	T'Glo 20" X 14"-220V
9	502083	Nylon Washer	23	501885	Label: CAUTION HOT (not shown)
10	111196	Heat Deflector	24	502080	Strain Relief
11	501864	Switch Rocker	25	111380	Door Assembly
12	501507	Screw #10-24 X.500"	26	111387	Door Guide Assembly (right)
13	111195	Faceplate Standoff		111388	Door Guide Assembly (left not shown)
14	110042	Fan	27	111186	Cord With Plug
15	501865	Lamp Holder	28	110904	Cover-Side Panel Right (no hole)
16	502239	Bulb Tuffskin 40 Watt	29	111187	Cover-Side Panel Right (with hole)
17	110912	Cover-side Panel-Left	30	110826	Control Front Panel
			31	500263	4"Leg(1)

\* These parts are for International (220V, 240V) units only.

**OPTIONAL:**

- N/A 119844 Side swing Doors (Pair)
- N/A 118771 Mirror Mounting Kit
- N/A 503413 Kit, Temp. Control Faceplate Deg F REF: 132574



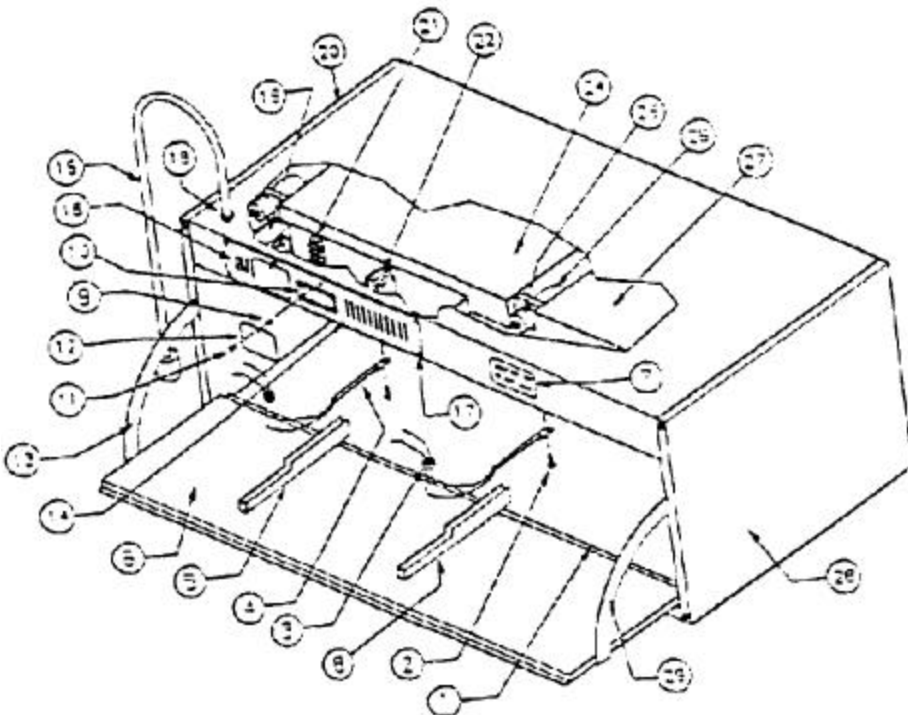
**MODEL NN4A, NN4C, NN4D, NN5 AND NN5A**

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>	<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>
1	110903	Shelf Runner (2 Required)	17	501507	Screw #10-24 X.500"
2	501484	Screw #1 0 X.500"	18	502080	Strain Relief
3	502108	Bushing 9/32" Dia.	19	110042	Fan
4	502064	Sensor, RTD Temperature	20	110904	Cover-Side Panel Right
5	111310	Sensor Guard (T'Glo 10" X 14")	21	500340	Terminal Strip 3 Pole
6	111547	Door Assembly (Includes Handle, No Guides)	22	502206	Transformer 120V to 12V
7	501885	Label: CAUTION HOT	*	501958	Transformer 240V to 120V
8	111310	Sensor Guard (TGlo 20" X 14")	*	502168	Transformer 240V to 12V
9	502083	Nylon Washer	23	N/A	Obsolete Part
10	114541	Temperature Controller RTD	24	111286	T'Glo 20" X 14"-120V
11	501684	Screw #10-24 X.750"	25	114433	T'Glo 20" X 14"-220V
12	111024	Swing Cover Plate	26	501865	Lamp Holder
13	111387	Door Guide Assembly (right shown)	27	502239	Bulb Tuffskin 40 Watt
14	110895	Control Front Panel	28	110915	T'Glo 10" X 14"-120V
15	114578	Cord with Plug	29	114434	T'Glo 10" X 14"-220V
16	501864	Switch Rocker		110912	Cover-Side Panel-Left
				111388	Door Guide Assembly (left shown)

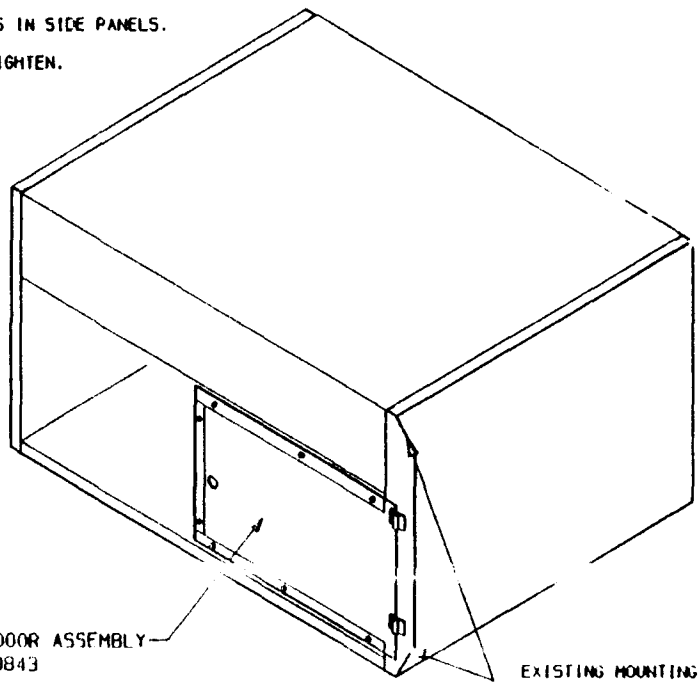
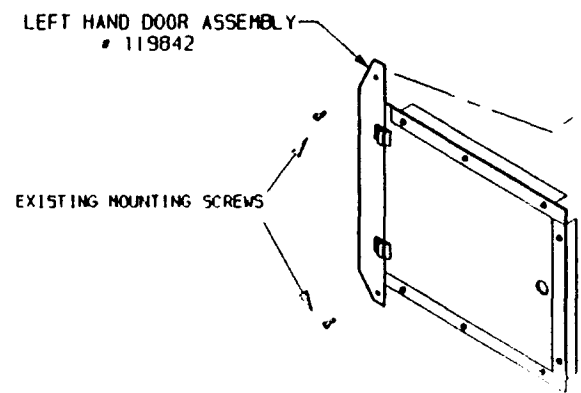
\* These parts are for International (220V, 240V) units only.

**OPTIONAL:**

- N/A 120456 Side swing Doors (Pair)
  - N/A 118772 Mirror Mounting Kit
  - N/A 503413 Kit, Temp. Control Faceplate
- Deg F REF: 132574



INSTALLATION : TO INSTALL YOU NEED ONLY A PHILLIPS SCREW DRIVER.  
REMOVE THE TWO EXISTING SCREWS ON EACH SIDE OF THE HOLDING UNIT TO MOUNT THE DOORS.  
PLACE DOORS IN PLACE ALIGNING HOLES IN MOUNTING ANGLES WITH HOLES IN SIDE PANELS.  
INSTALL SCREWS THROUGH MOUNTING ANGLE AND INTO SIDE PANELS AND TIGHTEN.  
THE HINGE FRICTION CAN BE ADJUSTED BY THE PHILLIPS SCREW  
IN THE SIDE OF THE HINGE.



DOOR ASSEMBLY		
119843	RIGHT HAND DOOR ASSY	1
119842	LEFT HAND DOOR ASSY	1

MOUNTS USING EXISTING SCREWS

CLEAR LEXAN DOORS - SIDE SWING OPEN  
ADJUSTABLE HINGES TO RESTRICT DOOR SWING  
HOLDS DOORS OPEN, CLOSED, OR PARTIALLY OPEN

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C.P.	16-SEP-93	MARSHALL AIR SYSTEMS, INC.	
		DOOR ASBY, INSTALLATION INSTRUCTIONS	
REFERENCE	A /	DWG NO. 131380	REV 0
X		SCALE 1:4 DRAWING MAY BE REDUCED CODE: NN4D	

## **LIMITED WARRANTY**

MARSHALL AIR SYSTEMS, INC., ("Marshall") warrants to the first purchaser ("Purchaser") all new equipment of its manufacture to be free of defects in material and factory workmanship for a period of one year from date of shipment provided that (i) the equipment is installed in the Continental United States, Canada or Hawaii and operated according to the Owner's Manual while located at the original address of installation, (ii) the warranty registration card has been completed and returned to the factory within fifteen (15) days after installation, and (iii) a post-installation start-up has been performed by an authorized service representative (portable equipment not applicable). Marshall's obligation under this warranty is limited to the repair or replacement at its option of any defective part. Under certain circumstances, Marshall will reimburse Purchaser for limited labor costs in replacing parts during a period of not more than ninety (90) days from date of shipment, provided that Labor Reimbursement instructions are followed and items i, ii, and iii above are completed. See special provision for portable equipment. It is understood that Marshall's obligation with respect to equipment located outside the Continental United States, Canada or Hawaii is limited to replacement parts only.

Because Marshall does not and cannot control Purchaser's installation, use, and maintenance of equipment manufactured by Marshall, this warranty **DOES NOT COVER:**

1. Any equipment calibration;
2. Any component disassembled in the field;
3. Damage due to improper cleaning and/or abuse, i.e. burner rotation, grease accumulation in electrical components or plugs (hosing or "watering down" equipment will cause electrical failures not covered by warranty);
4. Blown fuses or bulbs, motor brushes, and Teflon components;
5. Any replacement parts used on the equipment which are not purchased from Marshall;
6. Accessory components not installed and/or manufactured by Marshall.

Shipping damage must be reported to the carrier and is not covered under this warranty. Marshall will not be liable for damage as a result of improper installation, misuse, abuse, alteration of original design, incorrect voltage, unauthorized service, breakage of fragile items, or any other damage caused by an act out of Marshall's control.

The effect of corrosion, fire, and normal wear on the equipment or component parts is not covered by this warranty. This warranty does not cover cooking performance, smoke capture or holding temperatures which is a function of food types, textures, temperatures, equipment line ups and other variables chosen by the Purchaser and over which Marshall has no control. This warranty does not apply to damage caused by accident or to damage caused by the negligence of Purchaser or the employees of Purchaser or to damage caused by lightning generated electrical current or any other Act of God whatsoever. This warranty does not apply to any equipment bearing a serial number which has been tampered with or altered. Marshall reserves the right to accept or reject any such claim in whole or in part. Marshall will not accept the return of any product without prior written approval from Marshall, and all such approved returns shall be made at Purchaser's sole expense.

**THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, OR PATENT OR OTHER INTELLECTUAL PROPERTY RIGHT INFRINGEMENT, AND EXCEPT FOR THE EXPRESS WARRANTY CONTAINED HEREIN, THE EQUIPMENT IS SOLD "AS IS." REMEDIES UNDER THIS WARRANTY AND UNDER ANY WARRANTY THAT MAY SURVIVE THE DISCLAIMER OF WARRANTIES ARE LIMITED EXCLUSIVELY TO THOSE REMEDIES DESCRIBED ABOVE. NO OTHER REMEDY IS AVAILABLE UNDER THIS WARRANTY OR ANY OTHER WARRANTY. NEITHER THIS WARRANTY NOR ANY OTHER WARRANTY COVERS, AND MARSHALL WILL NOT BE RESPONSIBLE FOR, ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO THE COST OF DISASSEMBLY AND SHIPMENT OF THE EQUIPMENT, PRODUCTION OR PRODUCT LOSSES, INJURY TO OTHER PROPERTY, OR LOST PROFITS RESULTING FROM THE USE OF OR INABILITY TO USE THE PRODUCTS OR FROM THE PRODUCTS BEING INCORPORATED IN OR BECOMING A COMPONENT OF ANY OTHER PRODUCT OR GOODS, OR OTHER LOSSES. WHERE, DUE TO OPERATION OF LAW, CONSEQUENTIAL AND INCIDENTAL DAMAGES CANNOT BE EXCLUDED, THEY ARE EXPRESSLY LIMITED IN AMOUNT TO THE PURCHASE PRICE OF THE EQUIPMENT.**

**FOR INTERNATIONAL INSTALLATIONS " PLEASE CONTACT YOUR LOCAL MARSHALL AIR SYSTEMS RECOGNIZED DISTRIBUTOR.**

## WARRANTY PROCEDURES

### RETURN GOODS AUTHORIZATION FOR PARTS - FACTORY DIRECT

For prompt warranty parts replacement and RGA processing, please call Marshall's Customer Service Department at 800-722-3474 or 704-525-6230 for assistance. In all cases, a Return Goods Authorization (RGA) number must be issued by Marshall Air Systems, Inc. Unauthorized returns will not be processed.

Option #1: Purchaser to return part prepaid to Factory, Marshall to repair or replace at own expense if defective, and ship part back to Purchaser prepaid.

Option #2: Marshall to furnish replacement part freight prepaid with or without requesting return of the defective part.

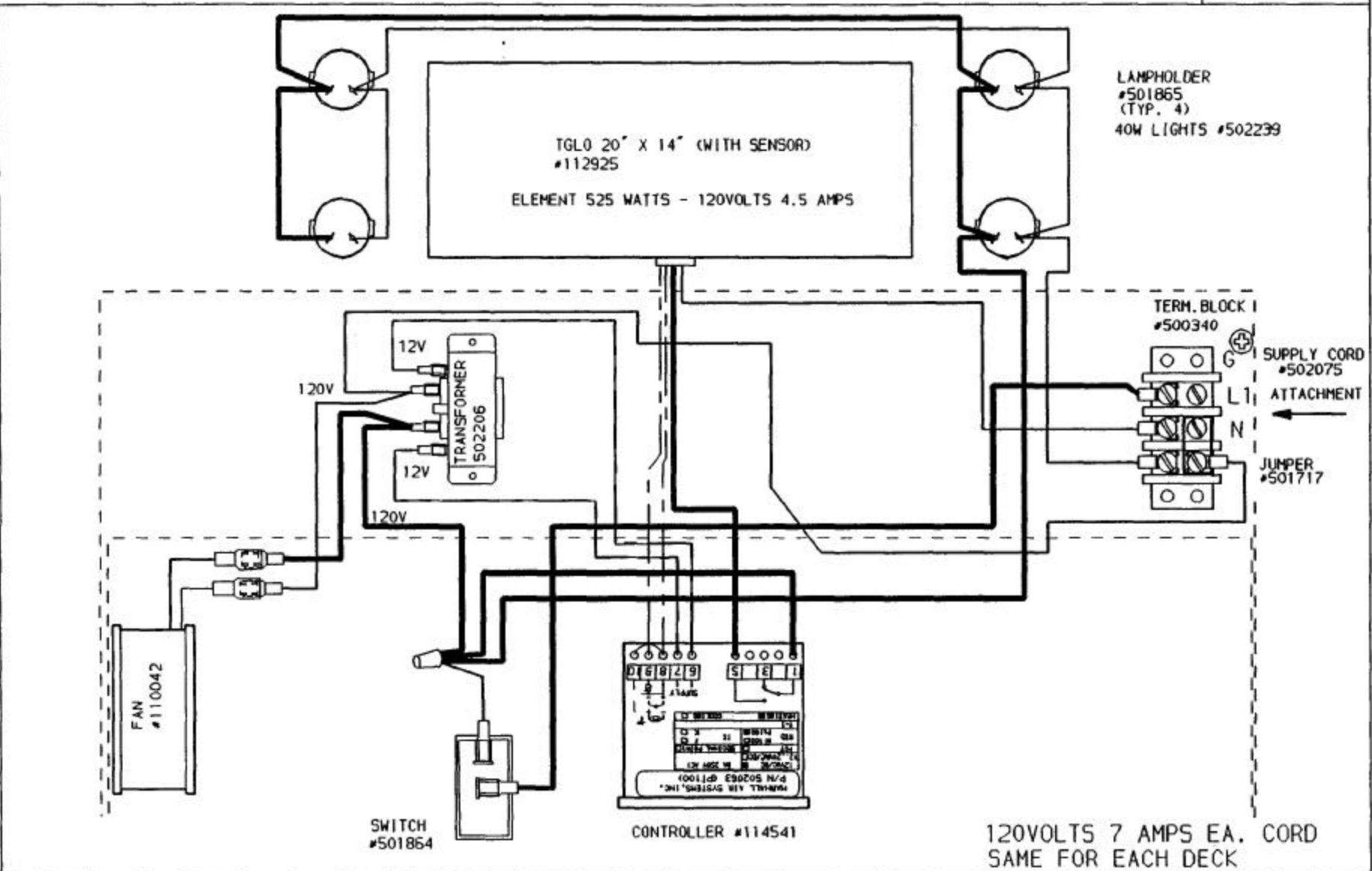
### WARRANTY LABOR REIMBURSEMENT AND/OR PARTS REPLACEMENT THROUGH RECOGNIZED SERVICE AGENCY

To be reimbursed for warranty labor costs, authorization must be given by Marshall Air Systems, Inc. Unauthorized work will not be reimbursed. Work must be performed by a Marshall Air Systems Recognized Service Agency within the service time allowance guidelines and must be submitted along with failed parts (if applicable) to Marshall Air Systems (freight prepaid) within 30 days of the work being performed. Travel is covered, but must not exceed 50 miles or 1 hour, whichever is greater. Call Marshall's Service Department at 800-722-3474 or 704-525-6230 with any questions. Service is to be performed by recognized service agencies during normal working hours. Owner to pay for all other charges including excessive travel or overtime charges. **DIAGNOSTIC LABOR CHARGES ARE INCLUDED IN SERVICE TIME ALLOWANCE GUIDELINES.** All portable equipment (under 90 pounds) shall be delivered by Purchaser, at his/her expense, to the nearest authorized service agency for in-shop repair or at Purchaser's discretion he/she will pay all travel time and mileage expenses for portable equipment.

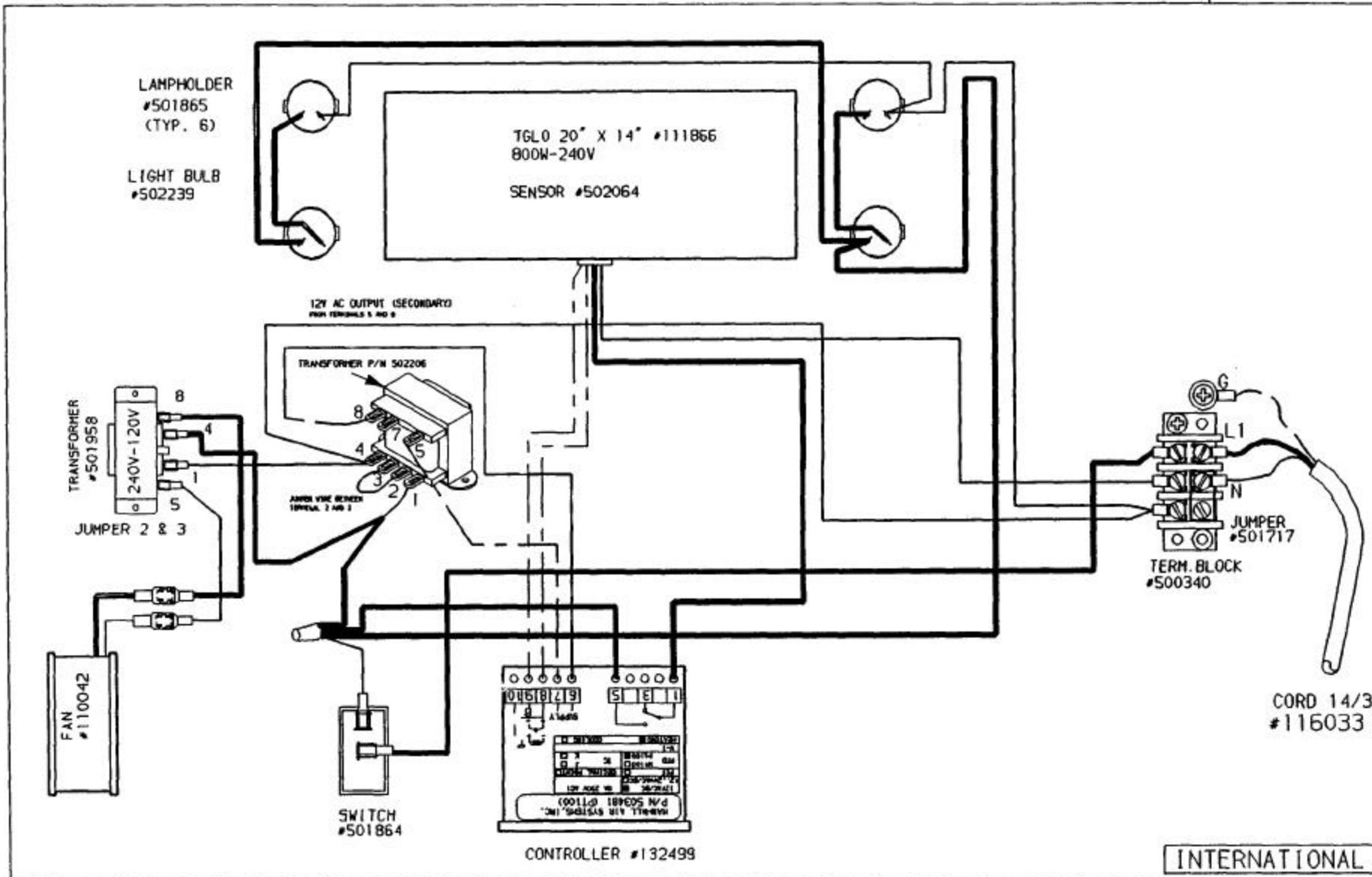
### NON-WARRANTY RETURNS:

All items returned for customer convenience are subject to a 20% restocking fee. In the event of an error by Marshall Air Systems, Inc., a Returned Goods Authorization will be issued for full credit.

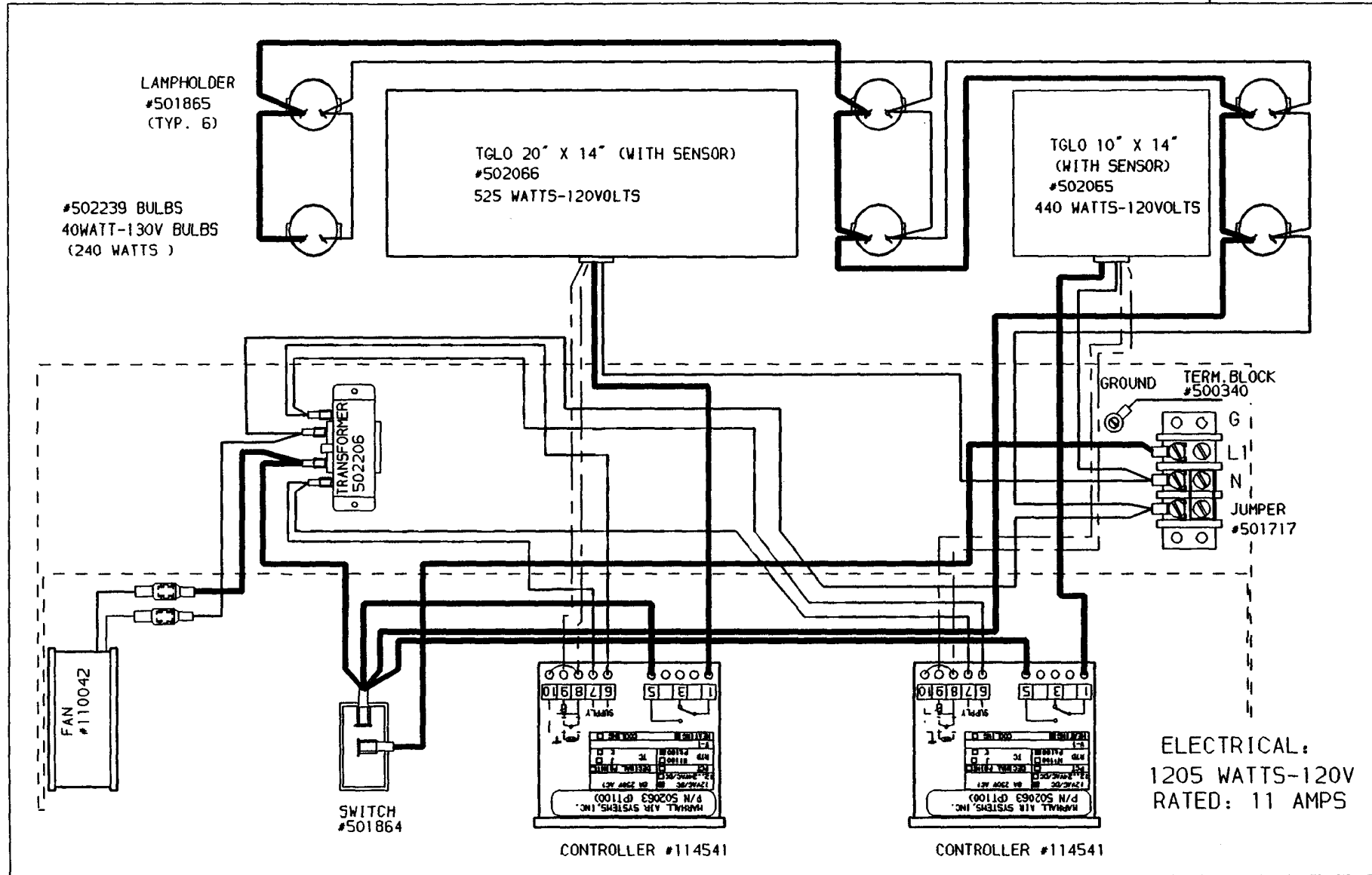
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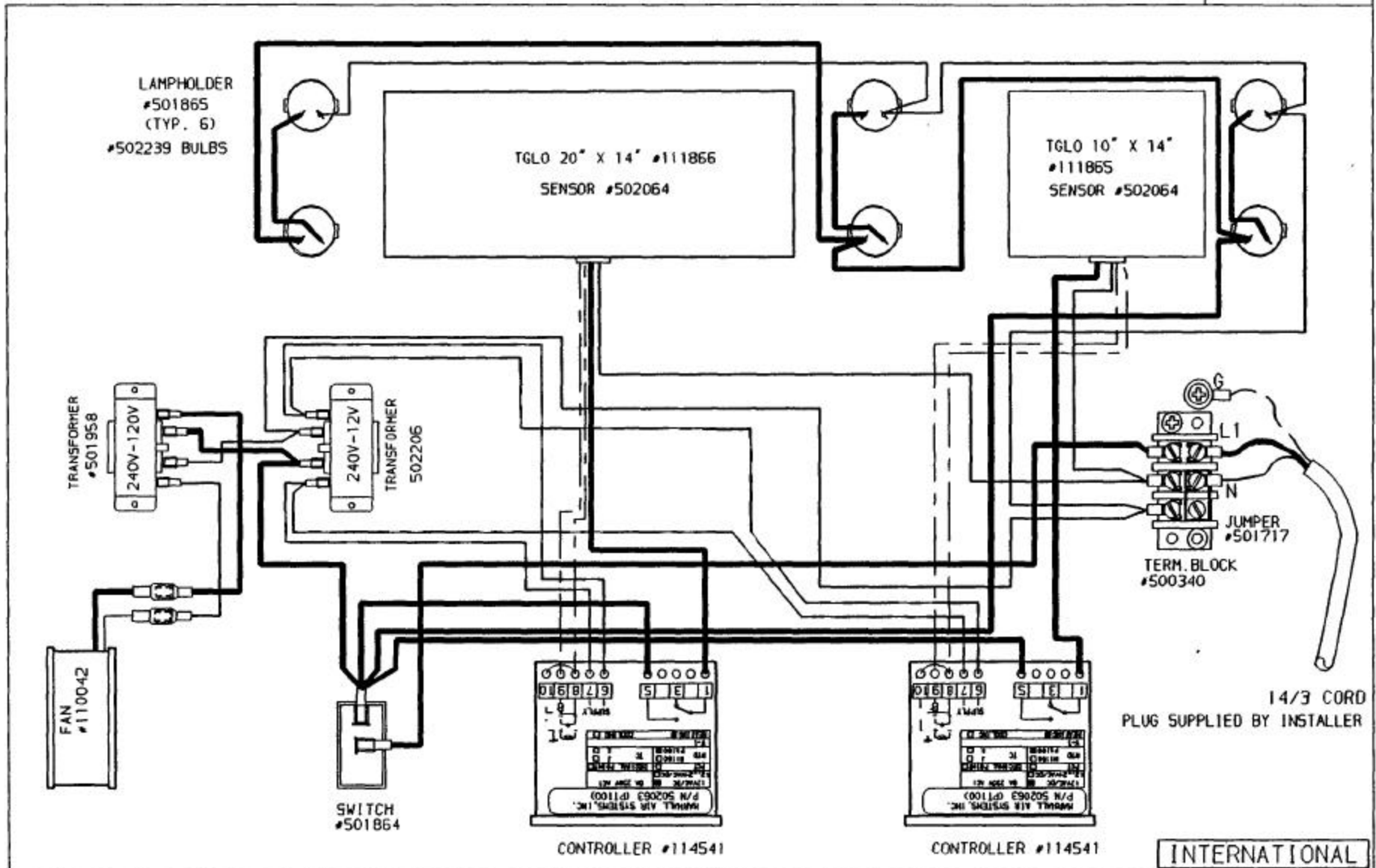
REV	DATE	DESCRIPTION	JR	24-NOV-89	MARSHALL AIR SYSTEMS, INC.			
1	20-NOV-91	REMOVE RELAY FROM CIRCUIT #502052			SCHEMATIC, 120V 7A			
2	11-MAR-92	GIVE CONTROLLER A SET-UP PART NO.						
3	06-JUL-92	NEW CONTROLLER FRONT SET-UP			REFERENCE	A /	DWG NO. 111016	REV 6
4	25-JAN-96	CH. WATTAGE FOR 40W BULBS						
5	01-JUN-1999	CHG. TGL0 NUMBER TO 112925 (PW)			SCALE IMAGE MAY BE REDUCED CODE, 1:1 NTS			
6	9-OCT-1999	502206 WAS 502248 (CP)						



REV	DATE	DESCRIPTION	JR	26-JUL-91	MARSHALL AIR SYSTEMS, INC.		
1	22-JAN-92	REMOVE MERCURY RELAY FROM PRODUCT.			SCHEMATIC, NN4C 220/240V 50Hz 4A		
2	14-JUL-92	NEW CONTROL, REVISE WIRING, ADD INFO. TGL0., & CORD.					
3	01-AUG-97	NEW CONTROL #132499 (BL)					
4	04-AUG-97	CH. SWITCH WIRING (PW)					
5	19-OCT-1989	502206 WAS 502168 (CP)					
			REFERENCE	A /	DWG NO. 113197	REV 5	
			"X"	SCALE NTS	DRAWING MAY BE REDUCED CODE; NN4C		



REV	DATE	DESCRIPTION	JR	26-APR-90	MARSHALL AIR SYSTEMS, INC.			
1	20-NOV-91	REMOVE RELAY FROM CIRCUIT #502052			SCHEMATIC, NN5 (120V-11AMPS)			
2	11-MAR-92	GIVE CONTROLLER A SET-UP PART NUMBER.						
3	15-JUL-92	NEW CONTROLLERS AND CH. WIRING INFO.			REFERENCE	A /	DWG NO. 111020	REV 5
4	25-JAN-96	CH. BULBS TO 40W						
5	19-OCT-1999	502206 WAS 502054 [CP]			SCALE NTS DRAWING MAY BE REDUCED CODE: NNS			



REV	DATE	DESCRIPTION	JR	12-SEP-90	MARSHALL AIR SYSTEMS, INC.
1	15-JUL-92	NEW CONTROLLER ADDED, WIRING REVISED			SCHEMATIC, NNSA (220V/240V-50HZ, 6AMPS)
2	17-MAR-97	ADDED NOTE PLUG SUPPLIED BY INSTALLER (CP)			
3	19-OCT-1999	502206 WAS 502168 (CP)			
			REFERENCE	A /	DWG NO. 111864 REV 3
				SCALE NTS	DRAWING MAY BE REDUCED CODE: NNSA