THC-2 Torch Height Control

Instruction Manual 800200 Rev. 6



The world leader in plasma cutting technology™

THC-2 Torch Height Control

Instruction Manual P/N 800200

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Hypertherm, Inc. Hanover, NH USA

www.hypertherm.com

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EMC INTRODUCTION

Hypertherm's CE-marked equipment is built in compliance with standard EN50199. The equipment should be installed and used in accordance with the information below to achieve electromagnetic compatibility.

The limits required by EN50199 may not be adequate to completely eliminate interference when the affected equipment is in close proximity or has a high degree of sensitivity. In such cases it may be necessary to use other measures to further reduce interference.

This plasma equipment is designed for use only in an industrial environment.

INSTALLATION AND USE

The user is responsible for installing and using the plasma equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the cutting circuit, see Earthing of Workpiece. In other cases it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

ASSESSMENT OF AREA

Before installing the equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

a. Other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the cutting equipment.

b. Radio and television transmitters and receivers.

- c. Computer and other control equipment.
- d. Safety critical equipment, for example guarding of industrial equipment.
- e. Health of the people around, for

example the use of pacemakers and hearing aids.

f. Equipment used for calibration or measurement.

g. Immunity of other equipment in the environment. User shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures.

h. Time of day that cutting or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

METHODS OF REDUCING EMISSIONS

Mains Supply

Cutting equipment must be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed cutting equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the cutting mains supply so that good electrical contact is maintained between the conduit and the cutting power source enclosure

Maintenance of Cutting Equipment

The cutting equipment must be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the cutting equipment is in operation. The cutting equipment should not be modified in any way except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

Cutting Cables

The cutting cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

Equipotential Bonding

Bonding of all metallic components in the cutting installation and adjacent to it should be considered. However, metallic components bonded to the workpiece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

Earthing of Workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, for example, ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitances selected according to national regulations.

Note. The cutting circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorized by a person who is competent to assess whether the changes will increase the risk of injury, for example, by allowing parallel cutting current return paths which may damage the earth circuits of other equipment. Further guidance is given in IEC TC26 (sec)94 and IEC TC26/108A/CD Arc Welding Equipment Installation and Use.

Screening and Shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire plasma cutting installation may be considered for special applications

WARNING

Genuine Hypertherm parts are the factory-recommended replacement parts for your Hypertherm system. Any damage caused by the use of other than genuine Hypertherm parts may not be covered by the Hypertherm warranty.

WARNING

You are responsible for the safe use of the Product. Hypertherm does not and cannot make any guarantee or warranty regarding the safe use of the Product in your environment.

GENERAL

Hypertherm, Inc. warrants that its Products shall be free from defects in materials and workmanship, if Hypertherm is notified of a defect (i) with respect to the power supply within a period of two (2) years from the date of its delivery to you, with the exception of G3 Series power supplies, which shall be within a period of three (3) years from the date of delivery to you, and (ii) with respect to the torch and leads within a period of one (1) year from its date of delivery to you. This warranty shall not apply to any Product which has been incorrectly installed, modified, or otherwise damaged. Hypertherm, at its sole option, shall repair, replace, or adjust, free of charge, any defective Products covered by this warranty which shall be returned with Hypertherm's prior authorization (which shall not be unreasonably withheld), properly packed, to Hypertherm's place of business in Hanover, New Hampshire, or to an authorized Hypertherm repair facility, all costs, insurance and freight prepaid. Hypertherm shall not be liable for any repairs, replacement, or adjustments of Products covered by this warranty, except those made pursuant to this paragraph or with Hypertherm's prior written consent. The warranty above is exclusive and is in lieu of all other warranties, express, implied, statutory, or otherwise with respect to the Products or as to the results which may be obtained therefrom, and all implied warranties or conditions of quality or of merchantability or fitness for a particular purpose or against infringement. The foregoing shall constitute the sole and exclusive remedy for any breach by Hypertherm of its warranty. Distributors/OEMs may offer different or additional warranties, but Distributors/OEMs are not authorized to give any additional warranty protection to you or make any representation to you purporting to be binding upon Hypertherm.

PATENT INDEMNITY

Except only in cases of products not manufactured by Hypertherm or manufactured by a person other than Hypertherm not in strict conformity with Hypertherm's specifications and in cases of designs, processes, formulae, or combinations not developed or purported to be developed by Hypertherm, Hypertherm will defend or settle, at its own expense, any suit or proceeding brought against you alleging that the use of the Hypertherm product, alone and not in combination with any other product not supplied by Hypertherm, infringes any patent of any third party. You shall notify Hypertherm promptly upon learning of any action or threatened action in connection with any such alleged infringement, and Hypertherm's obligation to indemnify shall be conditioned upon Hypertherm's sole control of, and the indemnified party's cooperation and assistance in, the defense of the claim.

LIMITATION OF LIABILITY

In no event shall Hypertherm be liable to any person or entity for any incidental, consequential, indirect, or punitive damages (including but not limited to lost profits) regardless of whether such liability is based on breach of contract, tort, strict liability, breach of warranties, failure of essential purpose or otherwise and even if advised of the possibility of such damages.

LIABILITY CAP

In no event shall Hypertherm's liability, whether such liability is based on breach of contract, tort, strict liability, breach of warranties, failure of essential purpose or otherwise, for any claim action suit or proceeding arising out of or relating to the use of the Products exceed in the aggregate the amount paid for the Products that gave rise to such claim.

INSURANCE

At all times you will have and maintain insurance in such quantities and types, and with coverage sufficient and appropriate to defend and to hold Hypertherm harmless in the event of any cause of action arising from the use of the Products.

NATIONAL AND LOCAL CODES

National and Local codes governing plumbing and electrical installation shall take precedent over any instructions contained in this manual. **In no event** shall Hypertherm be liable for injury to persons or property damage by reason of any code violation or poor work practices.

TRANSFER OF RIGHTS

You may transfer any remaining rights you may have hereunder only in connection with the sale of all or substantially all of your assets or capital stock to a successor in interest who agrees to be bound by all of the terms and conditions of this Warranty.

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DESCRIPTION AND SPECIFICATIONS

DESCRIPTION

The THC-2 Torch Height Control automatically controls torch height while plasma cutting. After setting the arc voltage with the thumbwheel on the front panel, the THC-2 controls the torch suspension motor by comparing this reference voltage with the voltage between the torch and the workpiece. If the torch is too high from the workpiece, the actual arc voltage will be greater than the reference voltage. The Arc Voltage Control will then activate the torch suspension motor to move the torch downward. If the torch is too close to the workpiece, the arc voltage will be less than the reference voltage. In this case, the Arc Voltage Control will activate the torch suspension motor to move the torch upward.

The THC-2 comes with a voltage divider that mounts in the MAX100, MAX100D and MAX200 power supplies, or in the PAC-500/500L Plasma Control Console. The voltage divider reduces the arc voltage by a ratio of 25:1.

Section 1 of this manual - Installation - describes mounting the THC-2 module and connecting it to the cutting machine computer and the torch lifter. Sub-sections **1a**, **1b** etc. describe hooking the THC-2 to Hypertherm products that utilize this type of torch-height control. **Section 2** is a brief operation section, and **Section 3** is a parts list. A wiring diagram follows the parts list.

SPECIFICATIONS

THC-2 Control Module - #053005*

Power Input	115 VAC, 50/60 Hz
Operating Environment	32°F (0°C) to 122°F (50°C)
Height	6 inches (152 mm)
Width	8 inches (203 mm)
Depth	17 inches (432 mm)
Weight	15 pounds (6.8 kg)
Arc Voltage Setting Range	100-250 V
Control Accuracy	+/- 2 V

* For a parts list breakdown of the THC-2 systems see Section 3 - Parts List

Section 1 INSTALLATION - To Cutting Machine and Torch Lifter

In this section:

Install the THC-2 Control Module	1-2
Mount the THC-2 Control Module	1-2
Connect the THC-2 Control Module to the Cutting Machine	
Computer Interface and Torch Lifter Motor	1-3

INSTALL THE THC-2 CONTROL MODULE

Before installing the THC-2 system, verify the following components after unpacking:

- Voltage Divider
- THC-2 Control Module
- Interconnecting cable #023264 (Cable not available for PAC-500 systems)

Mount the THC-2 Control Module

1. Mount the THC-2 Control Module in a convenient location for the operator. See Fig.1-1 for mounting dimensions. Note the length of the control cable (5 feet) that will connect from the THC-2 to the inside of the MAX100, MAX100_D, or MAX200 and make certain that the cable will reach before mounting. Customers must supply and fabricate cables for the PAC-500 systems.



INSTALLATION - To Cutting Machine & Torch Lifter

2. To ensure proper grounding at the THC-2, run a #10 gauge copper cable from the ground stud on the rear of the THC-2 (Fig. 1-2) to a common earth ground. To correctly operate the THC-2 system, it must be grounded properly.

Connect the THC-2 Control Module to the Cutting Machine Computer Interface and Torch Lifter Motor

A cable running from the THC-2 control module to the cutting machine interface and torch lifter must be fabricated. Hypertherm recommends a 7-conductor 24-gauge shielded cable.

3. Remove the eight screws on the THC-2 Control Module and take off the top panel - Fig. 1-2.



Figure 1-2 THC-2 Control Module Front and Rear Views

INSTALLATION - To Cutting Machine & Torch Lifter

- Feed the cable through one of the strain reliefs located on the THC-2 rear panel (Fig. 1-2). See Figure 1-3 for cable connections. Consult your cutting machine schematics, or call the cutting machine manufacturer for actual connections on the cutting machine interface.
- Note: The THC-2 normally operates AC lifter motors. See Figure 1-4 and refer to THC-2 schematic for DC lifter connections.

This completes installation of THC-2 to the cutting machine interface and torch lifter. For installation of voltage divider and cable to: MAX100 or MAX100 - go to Section 1a; MAX200 - go to Section 1b; PAC-500 - go to Section 1c.



Figure 1-3 Wiring Diagram - THC-2 to Cutting Machine Interface and Lift Motor



INSTALLATION - To Cutting Machine & Torch Lifter

Figure 1-4 Typical DC Lifter Wiring

Section 1a INSTALLATION - MAX100 or MAX100D

In this section:

Mount the Voltage Divider to MAX100 or MAX100	.1a-2
Install Interconnect Cable to MAX100 or MAX100D	.1a-2

INSTALLATION - MAX100 or MAX100D

MOUNT THE VOLTAGE DIVIDER TO MAX100 OR MAX100D

Be sure to complete all steps in Section 1: Installation - To Cutting Machine & Torch Lifter - in addition to the following procedure for hooking the THC-2 to the MAX100 or MAX100D.



- 1. Remove the four screws on the rear of the voltage divider, but do not remove the cover.
- 2. Remove the left cover on the MAX100 or MAX100^D power supply.
- 3. Place the voltage divider on the upper inside of the rear wall, lining up the screw holes of the voltage divider with slots in the rear panel. (Be certain that the white wire from the voltage divider reaches the terminal strip TB1.) Secure with the four screws.
- 4. Connect the white wire on the voltage divider labeled "39" to wire labeled 39 on TB1 Fig. 1a-1.

INSTALL INTERCONNECT CABLE TO MAX100 OR MAX100D

- 1. Attach the connector end of the interconnect cable to the receptacle on the rear of the THC-2 module (RECP2).
- 2. Feed the other end of the cable through the strain relief at the lower rear of the MAX100 or MAX100^D power supply and make connections to TB1 as in Figure 1a-1.
- 3. Connect a 24-gauge wire from TB1 70 to **SIGNAL** on the voltage divider Fig. 1a-1. Note: The 24-gauge wire is not supplied by Hypertherm.
- 4. Connect a 24-gauge wire from TB1 42 to **GROUND** on the voltage divider Fig. 1a-1. Note: The 24-gauge wire is not supplied by Hypertherm.

This completes installation of the THC-2 to the MAX100 or MAX100 $_{\text{D}}$. See Section 2 for operation instructions.

INSTALLATION - MAX100 or MAX100D



Figure 1a-1 Connections to MAX100 or MAX100D

Section 1b INSTALLATION - MAX200

In this section:

Mount the Voltage Divider to MAX200	1b-2
Install Interconnect Cable to MAX200	1b-4

MOUNT THE VOLTAGE DIVIDER TO MAX200

Be sure to complete all steps in Section 1: Installation - To Cutting Machine & Torch Lifter - in addition to the following procedure for hooking the THC-2 to the MAX200.



WARNING!



The line disconnect switch for the MAX200 must be in the OFF position before proceeding with the installation of the voltage divider and interconnect cable.

- 1. Remove top panel and both left and right side panels of the MAX200.
- 2. Remove voltage divider template from the last page of this manual and punch out the four mounting holes. Check dimensions as provided on template.
- 3. Place template approximately as shown in Figure 1b-1.
- 4. Mark the hole locations with a pencil and remove template.
- 5. Protect the base of the MAX200 (especially the transformer) with a cloth, and drill the four holes using a #29 drill bit.
- 6. Unscrew the 4 screws from the voltage divider.
- 7. Mount the voltage divider as shown in Figure 1b-2 with the white wire facing down. Screw the voltage divider in place from the center wall right rear side (see Figure 1b-1).
- 8. Carefully remove protective cloth and blow out any metal shavings inside of MAX200 power supply with shop or compressed air.

INSTALLATION - MAX200



Figure 1b-1 Voltage Divider Template Location - MAX200 Center Wall Right Rear



Figure 1b-2 Voltage Divider Mounting Location - MAX200 Center Wall Left Rear

THC-2 Torch Height Control

INSTALL INTERCONNECT CABLE TO MAX200

- 1. Connect the interface cable to RECP2 on the THC-2 module.
- 2. Loosen the adjustable strain relief on the rear of the MAX200 power supply Fig. 1b-3.
- 3. Thread the other end of the interface cable through this strain relief and make connections to TB4, TB3 (Fig. 1b-3) and voltage divider as shown in the Figure 1b-4 wiring diagram. Note: Push wires labeled 42 and 70 through the center wall feed-thru to get to voltage divider.
- 4. Connect the white wire from the voltage divider to location #45 on R4 which is located on the left rear wall of the MAX200 power supply Fig. 1b-4.

This completes installation of the THC-2 to the MAX200. See **Section 2** for operation instructions.







Figure 1b-4 Wiring Diagram - THC-2 to MAX200

Section 1c INSTALLATION - PAC-500

In this section:

Mount the Voltage Divider to PAC-500	1c-2
Install Interconnect Cable to PAC-500	1c-3

MOUNT THE VOLTAGE DIVIDER TO PAC-500

Be sure to complete all steps in Section 1: Installation - To Cutting Machine & Torch Lifter - in addition to the following procedure for hooking the THC-2 to the PAC-500.



- 1. Open the left door of the PAC-500 plasma control console (plumbing compartment) and place the voltage divider on the floor of the console Fig. 1c-1.
- 2. Attach the white wire from the voltage divider to terminal 34 located on the cathode block Fig. 1c-1.



Figure 1c-1 PAC-500 Plasma Control Console Plumbing Compartment

INSTALL THE INTERCONNECT CABLE TO PAC-500

- 1. The cable from the THC-2 to the PAC-500 console must be fabricated. Hypertherm recommends using 3-pair 22-gauge shielded cable. The cable will run between the plasma control console and the THC-2 module. Be certain to supply a cable that will reach between these two components.
- Strip the outer shielding away on both ends of the cable and tag individual wire ends 1 through 6. Tag both ends so that wire "1" on one end is the same wire that is marked "1" on the other end, etc.
- 3. Crimp #6 terminals on all wires on one end of the cable. On the other end of the cable, crimp #6 terminals on wires 4 and 6 and strip and tin the remaining wires.
- 4. Feed the cable end with all terminals attached through one of the strain reliefs of the plasma control console Fig. 1c-2.





INSTALLATION - PAC-500

5. Make the following connections to 1TB located on the console door of the PAC-500, or on the inside of the PAC-500L - Fig. 1c-3:

Cable wire labeled 1	to	1TB terminal labeled 3
Cable wire labeled 2	to	1TB terminal labeled 2
Cable wire labeled 3	to	1TB terminal labeled 26
Cable wire labeled 4	to	1TB terminal labeled 27



Figure 1c-3 PAC-500/500L Plasma Control Consoles - 1TB Location

6. Run cable wires 5 and 6 through the feed hole in center wall of plasma control console (Fig. 1c-4) and attach wire 5 to voltage divider terminal labeled **SIGNAL** and cable 6 to voltage divider terminal labeled **GROUND**.





INSTALLATION - PAC-500

- 7. Pass the remaining end of the interconnect cable through the strain relief on the rear of the THC-2 module.
- 8. Facing the rear of the THC-2 module with the cover removed, look down inside the module and observe where one of the wires from the THC-2 receptacle RECP2 connects to the rear-panel fuse (1FU) Fig. 1c-5. Cut this wire and solder interconnect cable wire labeled "1" to the end of the wire that goes to the fuse.



Figure 1c-5 Top Rear View of THC-2

- 9. Find the line filter (1F) on the inside of the THC-2 module Fig. 1c-6. Solder interconnect cable wire labeled "2" to terminal that has THC-2 wire labeled 102 connected to it.
- 10. Find the timer relay device (1TD) in the THC-2 Fig. 1c-6. Attach interconnect cable wire labeled "3" to timer relay terminal that has THC-2 wire labeled 108 connected to it.
- 11. Find the power supply (1PS) in the THC-2 Fig. 1c-6. Attach interconnect cable wire labeled "4" to power supply terminal that has THC-2 wire labeled 107 connected to it.
- 12. Find the 390Ω 1/8 W resistor (R1) that THC-2 wire labeled 118 connects to Fig. 1c-6. Solder interconnect cable wire labeled "5" to the wire end of that resistor.
- 13. Find the big terminal strip (1TB) in the THC-2 module Fig. 1c-6. Attach interconnect cable wire labeled "6" to terminal 119 (ground).

This completes installation of the THC-2 to the PAC-500. See **Section 2** for operation instructions.



Figure 1c-6 Inside View of THC-2

Section 2 OPERATION

In this section:

Description of Controls and Indicators	2-2
Operating Instructions	2-3
Notes on Operation	2-3

OPERATION

DESCRIPTION OF CONTROLS AND INDICATORS

- **VOLTAGE** thumbwheel Sets the plasma arc voltage for the AVC (Automatic Voltage Control).
- **POWER ON/OFF** switch Turns power to the THC-2 on or off.
- AVC START/STOP switch Activates or deactivates the Automatic Voltage Control.
- **MACHINE DELAY** knob Sets the delay time for the motion of the cutting machine after arc transfer.
- **UP/DOWN** LEDs Indicates when the THC-2 gives the cutting machine a signal to move up or down.
- **POWER ON** LED Indicates that the POWER switch to the THC-2 is on.
- AVC ON LED Indicates that the AVC START switch is on.



Figure 2-1 THC-2 Front Panel

OPERATING INSTRUCTIONS

- 1. Turn **POWER** to the THC-2 **ON**.
- 2. Turn the **AVC** switch to **START**.
- 3. Find the Arc Voltage setting for the type of metal and thickness of metal you are cutting in the *Operating Data* or *Cut / Gouging Chart* section of your instruction manual. Adjust the **VOLTAGE** thumbwheel to the recommended arc voltage setting.
- 4. Find the Pierce Time or Approx. Motion Delay Time for the type of metal and thickness of metal you are cutting in the *Operating Data* or *Cut / Gouging Chart* section of your instruction manual. Adjust the **MACHINE DELAY** knob to the recommended setting for Pierce Time or Approx. Motion Delay Time. (The range of machine delay is from **.1 sec** to **2 sec.**)
- 5. Find the Torch-to-Work Distance for the type and thickness of metal you are cutting in the *Operating Data* or *Cut / Gouging Chart* section of your instruction manual. Adjust the torch height to the proper torch-to-work distance before starting cut.

The THC-2 is now ready for operation and will be activated after the plasma START command is given.

Notes on Operation

- Placing the AVC switch to STOP during the cut will halt AVC control.
- In order to increase the torch height, adjust the voltage on the thumbwheel to a higher value. In order to decrease the torch height, adjust the voltage on the thumbwheel to a lower value.
 - Each 5 volt change on the thumbwheel is approximately equal to a .050 inch change in torch-to-work distance.

Section 3 PARTS LIST

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PARTS LIST

THC-2 TORCH HEIGHT CONTROL SYSTEMS

Torch Height Control System for MAX100, MAX100D, MAX200

Part <u>Number</u>	Description	<u>Qty.</u>
052002	THC-2 Torch Height Control MAX100/200	
023264*	Cable:MAX100/THC2 5'	1
041007**	Volt Divider THC1/THC-2	1
053005***	Control Module, THC-2	1
800200	IM20:THC-2 Torch Height Control	1

Torch Height Control System for PAC-500

Description	
THC-2 Torch Height Control PAC-500	
Volt Divider THC1/THC-2	1
Control Module, THC-2	1
IM20:THC-2 Torch Height Control	1
	Description THC-2 Torch Height Control PAC-500 Volt Divider THC1/THC-2 Control Module, THC-2 IM20:THC-2 Torch Height Control

* See page 3-3 for detail

- ** See page 3-8 for picture
- *** See pages 3-4 through 3-7 for detailed parts breakdown.

THC-2 INTERCONNECT CABLE - #023264



<u>ltem</u>	Part <u>Number</u>	Description	<u>Qty.</u>
	023264	Cable: MAX100 THC-2 5'	
1	008186	Skt:24-20 AWG Type III	9
2	008191	Plug Shell:CPC 17-16 Std Sex	1
3	008192	Caclp:CPC Size 17	1
4	047027	Cable, 22-6 TW Pr, OA Shielded	5 ft
5	074027	Term, 22-16 #6 Lck Fork Insul	8

Terminal#	Wire Function	Color Code	Socket#
1	120VAC neutral	Black	2
2	120VAC hot	White	1
33	Plasma Start	White	3
34	Plasma Start	Brown	4
35	Machine Motion	Orange	14
36	Machine Motion	White	12
42	Arc Voltage +	White	8
70	Arc Voltage -	Red	7

Figure 3-1 THC-2 Control Cable - MAX100/100D/200

PARTS LIST



THC-2 CONTROL MODULE - #053005

	Part			
<u>ltem</u>	<u>Number</u>	Description	Designator	<u>Qty.</u>
	001037	Cov:THC-2 Rear Acs		1
	029019	Card Cage SA:THC2 PC		1
1	001034	Pnl:THC-2 Fr		1
2	001035	Pnl:THC-2 Rear		1
3	001057	Pnl:THC-2 Top		1
4	001058	PnI:THC-2 Bot		1
5	008068	Fuseholder:Pnl Mt 1P 1/4 X 1-1/4		1
6	008069	Fuse:3/8A 250V 1/4 X 1-1/4 Slo	1FU	1
	029024	Harn:THC-2 053005		1
7	008070	Strainrlf:1/2NPT X .312375		2
8	005044	Tgl Sw:SPDT Maint ON	1,2 TGS	2
9	005052	Thmbwhl Sw:Rear Mtg	S1	1
10	008193	Rcpt Shell:CPC 17-16	RECP2	1
11	008176	Pin: 24-20 AWG Type III		8
12	009306	Plt Lt:Red LED T-1 3	1,2,3,4 LT	4
13	008164	Knob: .735 Dia. 1/4 Sft Blck		1
14	009442	Pot:50K-Ohm 10% 1W 1T Cerm	1 POT	1
15	041008	PC BD Assy Digital/Analog THC2	2PC	1

PARTS LIST



Figure 3-3 THC-2 Interior

THC-2 CONTROL MODULE - #053005 (cont.)

	Part		_	_
<u>ltem</u>	<u>Number</u>	Description	<u>Designator</u>	<u>Qty.</u>
1	009040	Filter:3A 3WT AC Elek	1F	1
2	014003	Xfmr:15VA 115V In/Out ISIn	1T	1
	029019	Card Cage SA:THC2 PCB		1
**	041737	Relay PCB Assembly		1
3	003040	Rly:120VAC TD IceCube	1TD	1
4	003097	Rly:250VAC Sol State I/O Conv	SSR1,2	2
5*	009034	Diode:12V 210ma 10W 10% Zener	Z1	1
6*	009484	Res:390-Ohm 1/4W 5% CBN CMPSN	R1	1
	029024	Harn:THC2 053005		1
7	008073	Terminal Board: 16-Term	1TB	1
8	008070	Strainrlf:1/2NPT X .312375		2
9	005044	Tgl Sw:SPDT Maint ON	1,2 TGS	2
10	005052	Thmbwhl Sw:Rear Mtg	S1	1
11	008193	Rcpt Shell:CPC 17-16	RECP2	1
12	008176	Pin: 24-20 AWG Type III		8
13	009442	Pot:50K-Ohm 10% 1W 1T Cerm	1 POT	1
14	041011	Power Source, THC-1/THC-2	1PS	1

* Approximate location pointed to. ** This PCB assembly and it's associated parts can not be used in units produced before 5/2001.

PARTS LIST







THC-2 SCHEMATIC 013-2-093



Voltage Divider Mounting Template for MAX200