

The Choice Of Quality

User Manual

Stationary Rod Ovens S50-S50-S-S06-SD6-SH5 MK1-HT3-HT4-HT5-SDM22-SDM45-SDM65



<u>Safety</u>

- The portable oven sold with this manual should not be used for any purpose other than that for which it was designed.
- Before operating the oven it is advised that this user manual is read and understood by all users. Accidents and potential risks can be reduced by a thorough knowledge of the ovens operations and ideal working environment.
- It is important that the manual is kept in a tidy condition for any future reference, if a manual is misplaced or damaged, a replacement can be obtained from Mitre Welding.
- Do not damage or remove the safety and rating labels from the oven

All mineral coated electrodes begin absorbing moisture once they are unpacked. Welding with moist electrodes leads to increase arc spatter, undercutting and poor slag removal. Other side effects include porosity, underbead cracking and generally low grade welds. The range of ovens provides facilities for every application where quality welds are required. NOTE: ELECTRODES MUST ALWAYS be removed from their wrappers or packets prior to heating. Failure to do so will result in an increased risk of fire and moisture not being carried off and being re-absorbed into the coating when the electrodes cool.

- In the event of danger such as fire or overheating it is important that the electrical supply be switched off at the first sight of danger
- Take great care when removing electrodes from the oven after heating, wear gloves and take care, the oven may still be very hot.
- Undergo all operations with general due care and attention

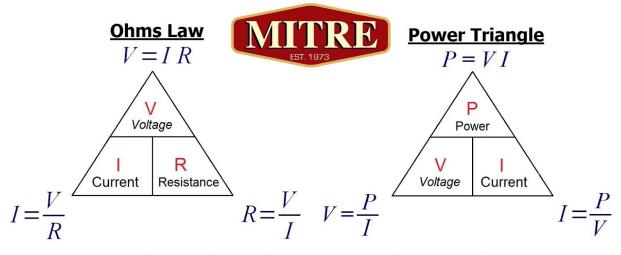






Electrical Information

To ensure that your Mitre Welding product is electrically safe, it is important to ensure that a suitably rated fuse is used in the plug when using the oven. By following simplistic electrical codes of practice such as Ohms law and the Power Triangle, determining the correct and appropriately rated fuse is used. Below is a explanation of these electrical theories:



Oven Model	Voltage (Volts)	Power Output (Watts)	Current (Amperes)	Total Resistance (Ohms)
S50/S50-S	110	750	6.82	16.13
	240	750	3.13	76.8
S06/SD6	110	1500	13.63	8.06
	240	1500	6.25	38.4
SH5-MK1	110	2250	20.45	5.37
	240	2250	9.375	25.6
HT3/HT4	110	3000	27.27	4.03
	240	3000	12.5	19.2
HT5	240	3000	12.5	19.2
	380	4500	11.8	32.2
SDM22	380	4700	12.37	30.72
SDL-45	380	9400	24.74	15.36
SDL-65	380	13500	35.53	10.7
SDL-65	380	13500	35.53	10.7



Oven	Capacity	Max Temp	Power Output	
S50 110V, 240V	50 KG (40lbs)	320° C (600F)	750Watt	
S50-S	50KG	320° C	750Watt	CNITRE
110V, 240V	(40lbs)	(600F)		PRE
S06	150KG	320° C	1500	
110V, 240V	(330 lbs)	(600F)	Watt	
SD6	150KG	320° C	1500	
110V, 240V	(330 lbs)	(600F)	Watt	



SH5-MK1	150KG	400° C	2250	
110V, 240V	(330 lbs)	(750F)	Watt	
HT3/HT4	150KG	500° C	3000	
110V, 240V	(330 lbs)	(1000F)	Watt	
	0001/0	5000 6	2000	

HT5 110V,240V, 380V	200KG (450lbs)	500° C (1000F)	3000 Watt	
SDM22 380V	225KG (500 lbs)	400°C (750F)	4700 Watt	



SDM45	450KG	400°C	9400	
380V	(1000 lbs)	(750W)	Watt	
SDM65	650KG	400°C	13500	
380V	(1500 lbs)	(750W)	Watt	



Installation

The oven is shipped in a durable cardboard box to provide protection during shipment, wherever possible try to re-use the box or dispose it in an environmentally responsible way.

Great care should be taken with the ovens location and operating environment, please consider the following to ensure your Mitre Stationary Oven is located safely:

- Where possible place the oven on flat or level ground, avoid slanted, uneven and undulating surfaces, or any environment in which the oven could become unstable or fall over completely.
- Ensure the ovens power cable is not subject to high tension, always provide some slack
- Do not place the oven in places where it could be subject to draft or high levels of humidity.

Once the oven is placed in its optimal location adhere to the following guidelines for an efficient and safe installation:

- Check that the mains electrical supply is suitable for the oven. The voltage and power requirements are given on the rating plate located next to the mains supply cable.
- Connection to the mains electrical supply should be made via an appropriately fused plug for the oven.
- It is recommended that the earth lead is connected with provision for some `slack` so that, in the event of the cable coming under stress the earth wire is the last to be affected

The colour coding of the mains supply is as follows

<u>Wire Colour</u>	<u>Connection</u>	<u>Wire</u> Colour	<u>Connection</u>	<u>Wire Colour</u>	<u>Connection</u>
Brown	Live	Black	Live / Hot	Brown	Line Conductor 1
Blue	Neutral	White	Neutral	Black	Line Conductor 2
Green/Yellow	Earth	Green	Earth / Ground	Gгеу	Line Conductor 3
				Blue	Neutral (where fitted)
				Green/. Yellow	Earth/ Ground

Single Phase (European Circuits) Single Phase (US Circuits) Three Phase circuits



Operating Instructions

Stationary Oven S50, S06 Starting the oven:

- 1. Ensure the oven is sitting steadily
- 2. Open the door and fill with desired quantity of electrodes & close door firmly
- 3. Securely plug the oven into a suitable power source and switch on the supply
- 4. Turn the thermostat to the desired temperature indicated on the bezel, the neon light indicates that the oven has power.

Stationary Oven S50-S, SD6, SH5, HT3 Starting the oven:

- 1. Complete steps 1-3 from S50, S06 Startup instructions
- 2. Turn the oven in via the neon switch, the digital controller will flash
- 3. Press and hold 'P' button and select 'SP1'
- 4. Set the oven to the desired temperature
- 5. Press 'P'
- 6. The controller will go into its programme to heat up to the desired temperature.

Stationary Oven HT4

Changing the ovens target temperature (Normal mode conditions)

This sequence allows the user to select a custom cycle comprising of a main set point-soak time-secondary set point

- 1. Ensure the controller is switched on and not running in standby mode, (press the 'O'ride' button to activate the controller)
- 2. Press 'P' key and Pr.S1 will be displayed, use the UP and DOWN arrow keys to adjust set point 1
- 3. Press 'P' key to confirm, Pr.t.1 will be displayed, use the UP and DOWN keys to adjust the soak/dwell time (Hours/Minutes), Press 'P' key to confirm
- 4. PrS.2 will be displayed, use the UP and DOWN arrow keys to adjust set point 2- 'P' Key to confirm
- 5. At the end of the cycle the the oven will remain in the active set point (set point 2) until the oven is switched off or the delay timer programme ceases.

Changing the ovens target temperature (Delayed Mode Conditions)

When used in conjunction with normal mode, this sequence allows the user to select a specific day and time to automatically switch the oven on and complete a pre-set cycle.

Setting the clock:

- 1. Press the 'Set' button, the display will show 0.00 with ''C'' flashing to the right of the display
- 2. Press the 'Day' button until the black indicator shows the desired day (1-7)
- 3. Use the 'HRS' button to set the hours followed by the 'Mins' button to set the minutes
- 4. Press 'Set' button to confirm

Now programme the controller to a desired sequence as explained in 'normal mode conditions' section.

Setting Programme 1:

- 1. Press the 'Set' button on the delay timer and hold for 3 seconds until the display shows --/-- with '1' flashing (indicating programme 1)- the day indicator will point to 'Day 1'
- 2. Set the 'ON' time required for day one using the 'Hrs' and 'Mins' buttons to set hour and minute time accordingly.
- 3. Press the 'Set' button briefly and the display will show --/-- with 'INT' appearing on the display, this now requires an 'OFF' point to be set
- 4. In order to trip the logic input on the controller to switch to the pre-programmed cycle, set the first 'OFF' point <u>1 minute after the 'ON'' time</u>
- 5. Press the 'Set' button briefly and the display will show --/-- and the ON time for programme 2 can be set
- 6. To set programmes for different days press the 'day' button and select the desired day-the display will show --/-- ready for programme 1 setting
- 7. Programmes for day 2-7 can be set in the same way as day 1.

Once the programming is complete press the 'Set' button and hold for 3 seconds until the display returns to the correct time of day, the timer is now in its operating condition.

Suspending Programmes

Press and hold down the Set button for about 3 seconds until the first "ON" programme, day 1 is displayed. Press the Day button repeatedly until the day indicator points to the day on which you wish to suspend the ON / OFF time. Press the Set button repeatedly until the "ON" or "OFF" time of the programme you wish to suspend is displayed. Now press the O'ride button. A black "X" will appear indicating that both the "ON" and "OFF" times for this programme have been suspended until reinstatement by the user. There is no limit to the number of programme which has been suspended and cancel the black "X" by pressing the O'ride button. The ON / OFF programme will now operate on the selected day.

Reviewing The Programmes

Press and hold down the Set button for about 3 seconds until the first programme "ON" time for day 1 is displayed. Press the Day button repeatedly until the day indicator points to the day to be reviewed after which brief pressing of the Set button will display each programme or unused setting in sequence for that day. At any point the setting may be altered, if required, by using the hour & minute buttons. To review another day press the Day button until the day indicator points to the required day and use the Set button to select programmes as before.

Stationary Oven SDM22, SDL-45, SDL-65 Starting the oven:

- 1. Ensure that the voltage selector switch is set to the desired operating voltage.
- 2. Complete steps 1-3 of HQ5 startup instructions.
- 3. Turn the thermostat bezel to the desired temperature, a 'click' can be heard as the thermostat is switched



on.

4. The oven will now heat up to its target temperature set by the operator, the neon indicator will go out when the oven reaches its set target.

Altering the temperature and time set-points:

In cases where a custom programme is required, please follow the instructions below:

a) ADJUSTMENT OF THE HEATING ELEMENTS CONTROL AND SAFETY THERMOREGULATOR (°C heating element) : press and release the key L1 : the L1 led starts flashing, 1SP is displayed for one second , then the value linked to the setpoint appears; press LEFT or RIGHT to change the value ; the new value and the return to normal mode can be saved; the same happens after 10 seconds of inactivity. Press 0/1 to return to normal mode without saving any value.

b) ADJUSTMENT OF THE OVEN-ENVIRONMENT THERMOREGULATOR (°C oven- environment) at active "SET POINT" stage (*SP1 or SP2*). Cycle *SP1* (drying): pressing the "P" key (for 1 sec.max.), the SP1 adjustment is activated; act on UP and DOWN and set the required temperature (400°C max.); enter by pressing the P" key (for max. 1 sec.)

After 6 hours (the time is adjustable from MENU as per following description) you can go to: Cycle *SP2* (keeping): pressing the "P" key (for 1 sec.max.), the SP2 adjustment is activated; act on UP and DOWN set the required temperature (200°C max.); enter by pressing the "P" key (for 1 second max.) During the programming time checking is halted

c) ADJUSTMENT OF THE OVEN-ENVIRONMENT THERMOREGULATOR (°C oven- environment) at inactive "SET-POINT" stage (SP1 - SP2): The programming menu is activated pressing on "P" key for more than 2 seconds.

Through UP and DOWN keys, select 'OPER' and confirm with the 'P' key. Select by UP/DOWN and choose "SP2", enter by pressing "P", 120° (or last programming) appears, select by UP/DOWN until the required value is achieved, enter by pressing "P" key.

(The thermoregulator gets back to start, whether no change is done in 20 seconds)

Drying Time Programming (T Lasting)

The programming menu is activated pressing on "P" key for more than 2 seconds.

Through UP & DOWN keys, select "OPER" and confirm with the "P" key.

/DOWN

keys, "¹REG" appears, press "P" and time last. appears, press "P" and 6.00 (last programming stated in hours, min.) appears, select by UP/DOWN keys, until the required value is achieved, enter by pressing "P" key. (The thermo regulator gets back to start, if no change is completed within 20 seconds).

It is necessary to switch the oven off and switch it on again when you change the parameters to apply them.



Operating Recommendations

<u>Re-drying Temperatures</u>

The temperature at which basic electrodes should be re-dried depends on the level of hydrogen considered permissible in the deposited weld. Recommended re- drying temperatures to reduce hydrogen content to various limits are as follows:

Condition	Re-Drying Temperature	Typical Application
10/15ml H2/100 grams weld	150 Celsius (300F)-60 Minutes	To resist HAZ cracking on highly restrained joints & thick mild steel sections
5/10ml H2/100 grams weld	250 Celsius (480F)s-60 Minutes	For high duty applications pressure vessels structural work e.g. BS 1501. BS 4360
Below 5ml H2/100	450 Celsius (840F)-60 Minutes	Highly critical alloyed materials

Note: It has been suggested that the presence of even the smallest amount of hydrogen can adversely affect lamellar tearing. Therefore where lamellar tearing is a problem re-drying at 450c (840F) for 60 minutes is often carried out.

Prolonged Drying Periods

Some fabricators who are concerned to obtain the highest possible radiographic standards of weld metal have developed a technique whereby, the electrodes, on completion of drying, remain in the oven at full temperature until they are required for use. The technique is very effective in providing thoroughly dry electrodes but may tend to decrease the strength of the coating. It is suggested, therefore, that the maximum drying period for various re-drying temperatures should be set as follows:

Drying Temperature	<u>Maximum Period at</u> <u>Temperature</u>
150 Celsius (300F)	72 Hours
250 Celsius (480F)	12 Hours
450 Celsius (840F)	2 Hours

Recommended Re-Drying Conditions

Group	<u>Size (mm)</u>	Condition
Mild steel rutile electrodes (Fastex 5, Zodian Universal)	1.6-6.0	80 Celsius (175F)- 60 Minutes
Stainless steel electrodes (e.g: Nicrex E347-16. Nicrex E308L-16, Nicrex E316L-16)	1.6-5.0	350 Celsius (660F)- 120 Minutes
Cellulosic electrodes (e.g: Celtian)	2.5-5.0	NOT RECOMMENDED

<u>Maintenance</u>

Planning of routine maintenance is an essential part of ensuring your Mitre Welding product is kept in the best possible condition and to ensure continual, efficient operation. Always conduct maintenance when the oven is out of service. Always ensure that the power cable is in good condition, free from breakages or tearing. NOTE: Check that the oven is cool before commencing maintenance work.

STATIONARY OVEN S50-S

Element Replacement

- 1.Switch off and disconnect the oven from the electrical mains supply.
- 2.Retain all screws, nuts etc. for re-assembly.
- 3. Turn the oven upside down and remove the six screws securing the control box.
- 4.Note the connections and remove nuts, washers and wires from the element terminals.
- 5.Remove the bottom shelf & release the p'clip securing the element. Remove the element.
- 6.Check the element/s for continuity.
- 7.Replace the faulty element.
- 8.Re-assemble in the reverse order

Thermocouple Replacement

- 1. Complete steps 1-3 of B1 element replacement
- 2. Note connections for the thermocouple into the controller, and disconnect where necessary
- 3. Remove the outer back panel with the 4 screws at the rear of the oven
- 4. Remove the clip holding the thermocouple at the back of the inner chamber and remove the thermocouple
- 5. Replace the faulty thermocouple and reverse steps 4-1 to build the oven back up

Digital Controller Replacement

- 1. Complete steps 1-3 of B1 element replacement
- 2. Carefully note the connections to the rear of the controller before disconnecting
- 3. Remove the two white plastic panel clips holding the controller to the fascia
- 4. Remove the faulty controller.
- 5. Replace with new controller and reverse steps 4-1 to build the oven back up

STATIONARY OVEN SD6, SH5-MK1, HT3, HT4, HT5

Element removal

- 1.Switch off and disconnect the oven from the electrical mains supply.
- 2.Retain all screws, nuts etc. for re-assembly.
- 3.Remove the four screws securing the back panel.
- 4.Note the connections and remove the nuts, washers and wires from the element terminals.
- 5.Loosen the element retaining clips on the top and bottom shelves and slide the elements out of the oven.
- 6.Check the elements for continuity.
- 7.Replace the faulty element/s.
- 8.Re-assemble in the reverse order.

Thermocouple Replacement

- 1. Switch off and disconnect the oven from the electrical mains supply.
- 2. Retain all screws, nuts etc. for re-assembly.
- 3. Turn the oven upside down and remove the six screws securing the control box.
- 4. Note connections for the thermocouple into the controller, and disconnect where necessary
- 5. Remove the outer back panel with the 4 screws at the rear of the oven
- 6. Remove the nut holding the thermocouple at the back of the inner chamber and remove the thermocouple
- 7. Replace the faulty thermocouple and reverse steps 4-1 to build the oven back up

Digital Controller Replacement

- 1. Complete steps 1-3 of thermocouple replacement
- 2. Carefully note the connections to the rear of the controller before disconnecting
- 3. Remove the two white plastic panel clips holding the controller to the fascia
- 4. Remove the faulty controller.
- 5. Replace with new controller and reverse steps 4-1 to build the oven back up

STATIONARY OVENS SDM22-SDL-45, SDL-65

Element replacement

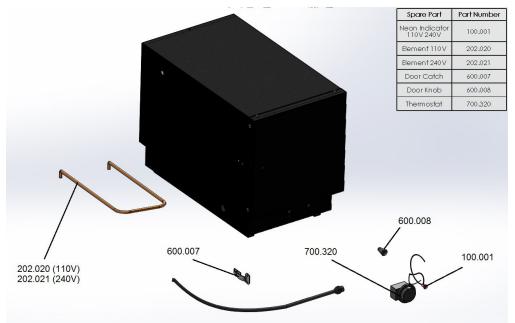
- 1. Open the oven door and remove the electrode trays.
- 2. Remove the metal hat shaped cover located on the rear of the oven.
- 3. Disconnect the faulty heating element and replace with a new one having the same properties and sizes.
- 4. Fit the new heating element.
- 5. Reassemble the bottom cover on the rear of the oven.
- 6. Place the electrode trays in the oven chamber
- 7. Switch on the oven main power switch for few minutes to eliminate any possible humidity residual on the new heating element.
- 8. Switch off the oven and let the heating elements cool.
- 9. The oven is now ready for operation.

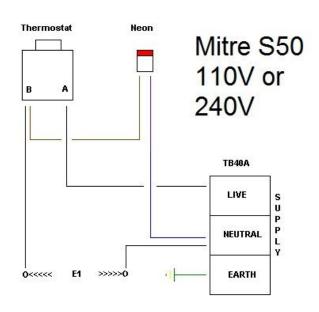
Extraordinary maintenance

Periodically check the quality and connection of electrical wires and components, and replace where necessary. In the case of any further problem, please contact your dealer or directly to CIA Ovens who are on hand to help resolve your problem.



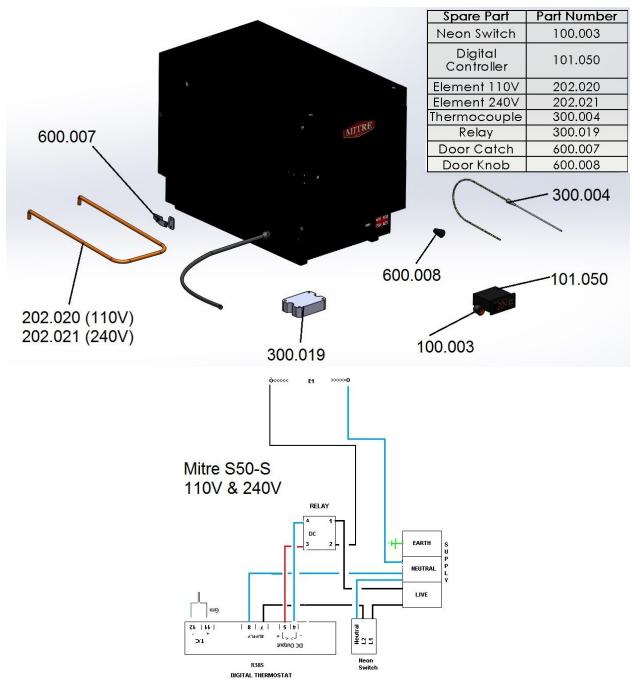






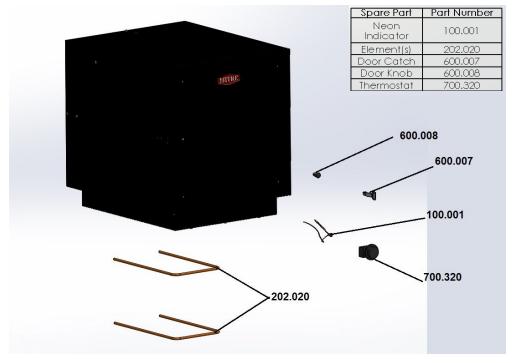


<u>Mitre S50-S</u>

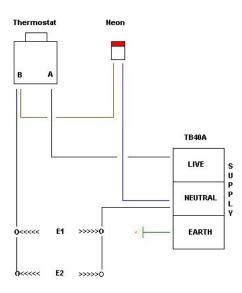




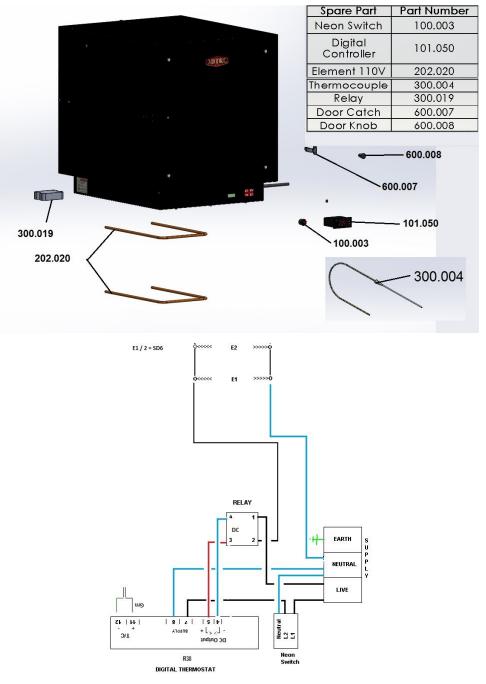
<u>Mitre S06</u>



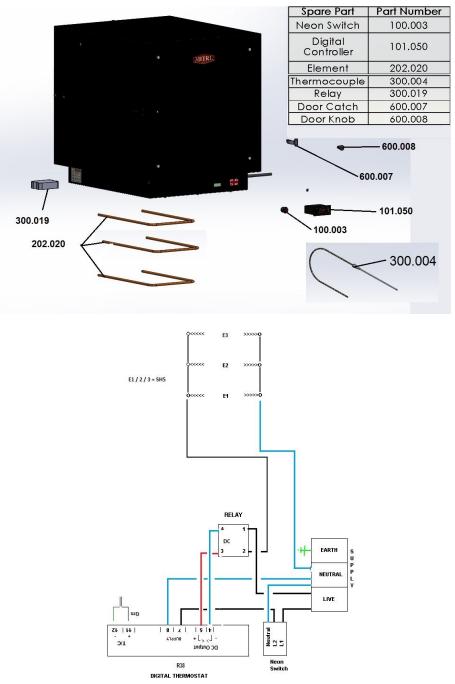
SO6 Wiring Diagram







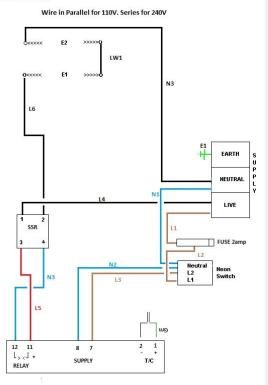
Mitre SH5-MK1



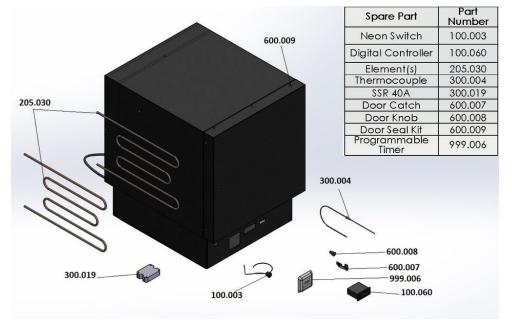
<u>Mitre HT3</u>

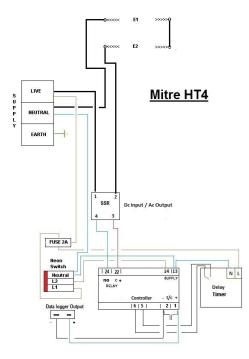


HT3 WIRING DIAGRAM



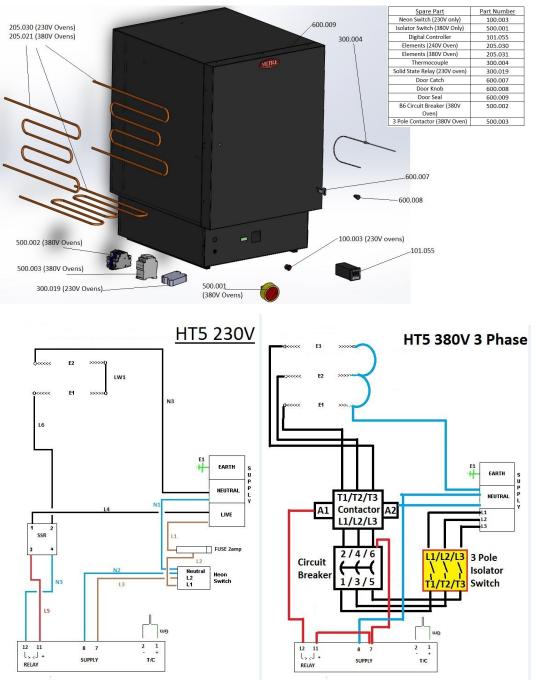
<u>Mitre HT4</u>



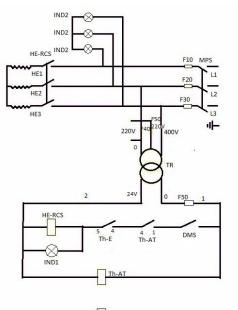


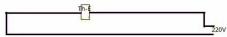






Mitre SDM22-SDM45-SDM65





MPS	Main Power Switch 3x16/3x25/3x32A
Th-E	Element Thermoregulator
Th-AT	Air temp Thermoregulator
IND1	Green "ON" signal lamp
IND2	White "CONNECTION" signal lamp
HE-RCS	Element(s) remote control switch
HE1-HE2-HE3	Heating Elements 230V 1500W x SDM22-SDM45-SDM65/
TR	220-380/24V Transformer
F10-F20-F30	Fuses 16A (SDM22)-20A (SDM45)-32A (SDM65)
F40-50	Fuse 2A
DMS	Door Micro Switch



ltem Part Number ltem Part Number Neons **High Temp Elements** Neon Indicator 110/240V 100.001 HT3-HT4, HT5 Element 1500Watt 205.030 Neon Indicator 48/85V Chrome Bezel 100.002 Thermocouple Neon switch 240V 100.003 Thermocouple Type K 300.004 **Digital Controllers Solid State Relay** Solid State Relay (90-240V - 3-32Vdc) 101.050 S50-S, SD6, SH5 Digital Controller 40Amp 300.019 101.055 HT3, HT5 Digital Controller **Door Parts** HT4 Digital Controller 101.060 Door Catch 600.007 **Stationary Oven Elements** Door Knob (M6 Black Moulded Knob) 600.008 202.020 110V, 750Watt, 940mmx 6.5ø element Door Seal Kit (Glass fibre tape + rivets) 600.009 240V 750W, 940mmx6.5ø element 202.021 **Thermostats Quiver Elements** Thermostat Kit (120c) 700.120 Thermostat Kit (200c) 110-240V Dual voltage element (P04)) 203.001 700.200 24V-150Watt 6.35ø element 203.002 Thermostat Kit (320c) 700.320 203.003 Capacitors 80V-200Watt 6.35ø element 110V-150Watt 6.35ø element 203.004 Capacitor (48/85V versions only) 999.000 240V-150Watt 6.35ø element 203.008 **Data Logger Kits** 48/85V-300Watt Element Q8-Q15 999.001 203.005 Data Logger 203.006 **Thermal Cut Out's** 110V-300Watt Element Q8-Q15 240V-300Watt Element Q8-Q15 203.007 Thermal Cut out (24-48/85V Quiver only) 999.002 Dual voltage quiver element 110/240V 150W 203.009 **Thermometers** 85V-275Watt 100x100 Square Element 204.060 0-250 Deg Thermometer 999.003 110V-275Watt 100x100 Square Element 204.061 32-500 Deg Thermometer 999.004 240V-275Watt 100x100 Square Element 204.062 **Voltage Selectors**



Voltage Selector Switch

999.005

Internal dimensions Model Power Capacity Shipping Weight <u>(kW)</u> <u>S50</u> 0.75 50KG (110 lbs) 250x250x480mm (9.84"x9.84"x18.90") 19KG (40 lbs) 0.75 50KG (110lbs) 250x250x480mm (9.84"x9.84"x18.90") 19KG (40 lbs) S50-S <u>S06/SD6</u> 1.5 150KG (330 lbs) 470x470x480mm (18.5"x18.5"x18.90") 40KG (86 lbs) 2.25 470x470x480mm (18.5"x18.5"x18.90") 40KG (86 lbs) SH5-MK1 150KG (330 lbs) HT3 3 150KG (330 lbs) 470x470x480mm (18.5"x18.5"x18.90") 65KG (152 lbs) 3 HT4 150KG (330 lbs) 470x470x480mm (18.5"x18.5"x18.90") 65KG (152 lbs) 3 465x480x580mm (18.5"x18.5"x22.83") <u>HT5</u> 200KG (450lbs) 75KG (165lbs) 4.7 225KG (500 lbs) 740x530x470mm (29.13"x20.87"x18.5") 155KG (342 lbs) SDM22 9.4 **SDM45** 450KG (1000 lbs) 740x530x890mm (29.13"x20.87"x35") 217KG (478 lbs) 13.5 650KG (1500 lbs) 740x530x1330mm (29.13"x20.87"x52.36") 276KG (608 lbs) **SDM65**

Useful Information

<u>Warranty</u>

General conditions

Mitre guarantees the product mentioned in this manual for a period of 12 (twelve) months from the date of delivery. The warranty is valid for the above mentioned period and only for the parts that will have defect of design or defective material. Mitre Welding will give you further instructions for repairing or replacing the complained parts, free of charge. Any transport expenses will be covered by the customer.

Limitations

Mitre Welding Products Ltd is not and will not be responsible for:

- Improper use of the oven
- A use against the national and/or International regulations in force (where applicable)
- Improper or wrong connection
- Improper or insufficient care and maintenance
- Unauthorized modifications and/or services
- Use of non-original spare parts or non-specific components
- Partial or total Inobservance of the instructions

Declaration of Conformity/Incorporation

The electrical equipment which accompanies this declaration is in conformity with EU Directive(s)

2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive

MITRE WELDING PRODUCTS LTD

Unit 5, Station Road Furness Vale, High Peak, SK23 7QA, United Kingdom

STATIONARY DRYING OVENS

Models S50, S50-S, S06, SD6, SH5-MK1, HT3, HT4, HT5, SDM22, SDM45, SDM65

The Technical Construction File is maintained at: MITRE WELDING PRODUCTS LTD.

Only for Declaration of Incorporation

This electrical equipment covered by this Declaration must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the applicable Directive(s) This statement is only necessary where the product is to be incorporated into a machine or system.

The following harmonized standards have been used.

LVD

EN 60204-1:2006 - EN 60204-1:2006/A1:2009 EN 60529:1991 - EN 60529:1991/A1:2000 EN 60529:1991/AC:1993 EN 50525-1:2011 - EN 50525-2-11:2011 EN 50525-2-12:2011 - EN 50525-2-21:2011 EN 50525-2-71:2011 emission and immunity EN 61000-6-2:2005 - EN 61000-6-2:2005/AC:2005 EN 61000-6-3:2007 - EN 61000-6-3:2007/A1:2011 EN 61000-6-4:2007 - EN 61000-6-4:2007/A1:2011

EMC

The electrical equipment is CE-marked