



Innovative Heat Treatment

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PRO-SERIES: HEAT VIEW-SIX WAY CONSOLE



PRODUCT CODE: 10702

RATING:

70 Kva

STYLE:

Stainless Steel

CHANNELS:

Six (6)

PROGRAMMERS:

Heat View

OUTPUT VOLTAGE:

42.5-0-42.5V

SUPPLY VOLTAGE:

600 / 480 / 415 VOLTS

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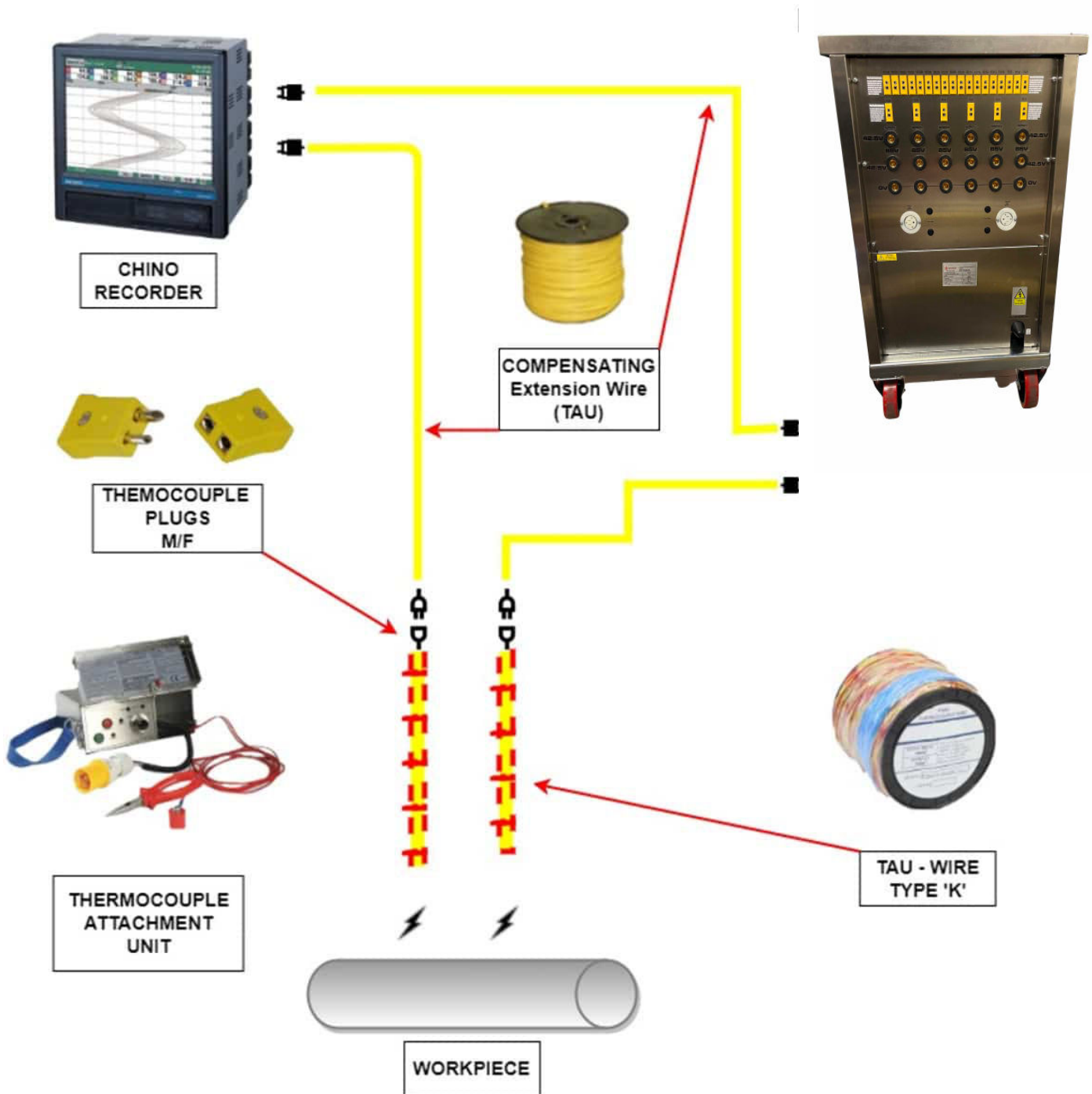
READ CAREFULLY BEFORE OPERATING

- 1) UPON RECEIPT OF YOUR [PRO-SERIES HEAT VIEW SIX WAY CONSOLE](#) INSPECT IT FOR ANY DAMAGE THAT MIGHT HAVE OCCURRED DURING SHIPMENT. IF THERE IS [ANY DAMAGE](#), PLEASE CONTACT (403) 980-5213 or email wecare@ihttech.com.
- 2) The Mobile Pro-Series Heat View six Way Console **weights 750 lbs**
- 3) Never operate the Heat View six Way Console with the **Cover Plate removed. **SERIOUS ELECTRICAL SHOCK CAN OCCUR.****
- 4) Always use a stable 600/480/440-volt source CSA approved. The portable Pro-Series Heat View six Way Console has three-prong plug that must be always grounded.
- 5) Make sure the **Primary Input & Output Tapping's** have been placed on correct locations, **ensure connections are tight.** The contactors are rated for maximum of 200 amps. We suggest you do not exceed 200 amps.
- 6) If we should have any questions, please call Innovative Heat Treatment office – (403) 980-5213.

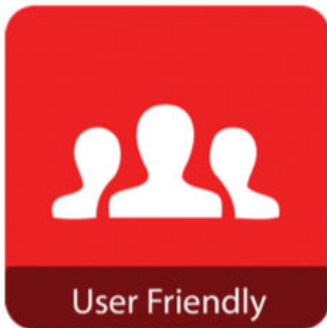
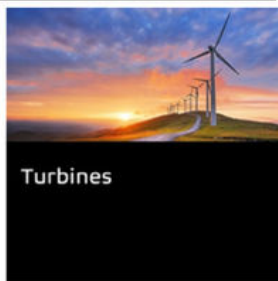
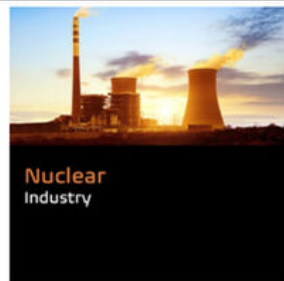
SETUP PROCEDURE:

- 1) Make sure that all primary power connections to the Power Source are properly and tightly connected. Make sure that the unit is grounded and that the supply is connected to the correct Input taps.
- 2) Connect the cable sets to the Input Twist locks (Male) on the back of the unit and the output panel mounts (female) on the front of the unit. Ensure that the corresponding thermocouples are plugged into proper TC jacks on front of the unit.
- 3) When attaching the thermocouples to the workpiece or reattaching a broken thermocouple, it is very important to temporarily. Disconnect the Male TC plug from the TC jack on the front of the unit. The electrical spark from TAU may travel through the TC wire and cause damage to the Portable Pro-Series Heat View six Way Console Module.

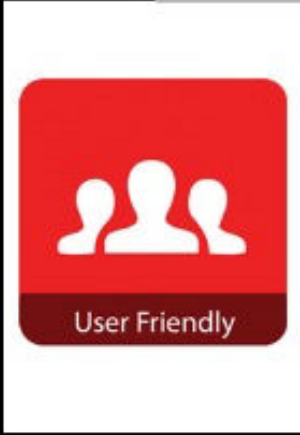
EQUIPMENT LAYOUT



INDUSTRIES



FEATURES



WARRANTY



WARRANTY AND SERVICES:

FIRST YEAR

- 100 PERCENT PARTS & 100 PERCENT LABOR IS COVERED BY INNOVATIVE HEAT TREATMENT INC.

SECOND YEAR

- 50 % OF PARTS & 100 PERCENT LABOR IS COVERED BY INNOVATIVE HEAT TREATMENT INC.

THIRD YEAR

- 50 % OF PARTS & 100 PERCENT LABOR IS COVERED BY INNOVATIVE HEAT TREATMENT INC.

SPECIFICATIONS

This unit features a 70 kVA, 3-phase, forced air cooled, double wound Class 'H' insulated, dry type, power transformer suitable for use in ambient temperatures not exceeding 40 Deg. C. and having a tapped mesh (delta) primary winding suitable for connection to a 50/60 Hz supply.

The secondary winding is 'Y' (star) connected, with the neutral point grounded (earthed), to provide a safe phase to neutral voltage for heating power.

Over-temperature protection of the transformer is by means of three sealed miniature (normally closed) thermostats, embedded in the windings of the transformer.

The main isolation switch is a 160 A triple pole molded case circuit breaker with magnetic and shunt trips for transformer thermal protection.

The unit is also fitted with remote sockets for controlling the channels with an external programmer selected by Auto/Manual selector switches on the front.

Rating	:	70 kVA
Frequency	:	50/60 Hz
Primary Volts	:	415/480/600V 3-Phase (as selected on tapping board)
Primary Amps	:	415V Primary : 97A 480V Primary : 84A 600V Primary : 67A (Factory setting)
Secondary Open Circuit Voltage:		42.5V – 0V – 42.5V <i>For use with 40V and 80V heating elements</i>

Secondary Current : 274A Per Phase

Duty Cycle Rating : 100%

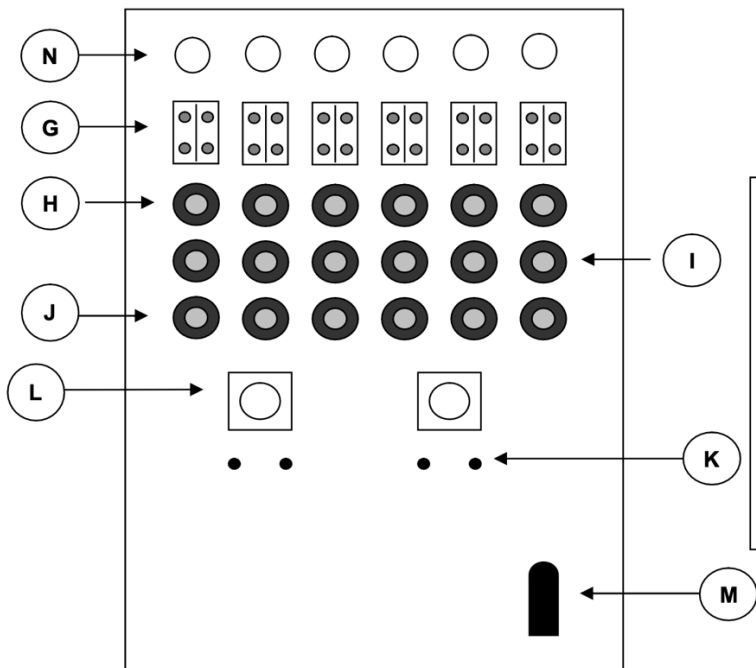
Two 110V, 10A Auxiliary Outlets are fitted as standard to the unit.

INTRODUCTION AND FUNCTIONS

INTRODUCTION

The parameters appertaining to post weld heat treatment are clearly defined in the appropriate USA, British and European Standards. Postweld heat treatment to these codes may be affected by electrical resistance methods and the following represents the fundamental requirements for effective heat treatment.

- The system must be fully capable of reaching and correctly recording the specific temperatures.
- Heating conditions must allow for various component thicknesses such that uniform temperatures result. Special provision often has to be made to control temperature gradients away from a heated zone in order to minimize additional stress.
- The operation has to be recorded and controlled within the limits of specification.



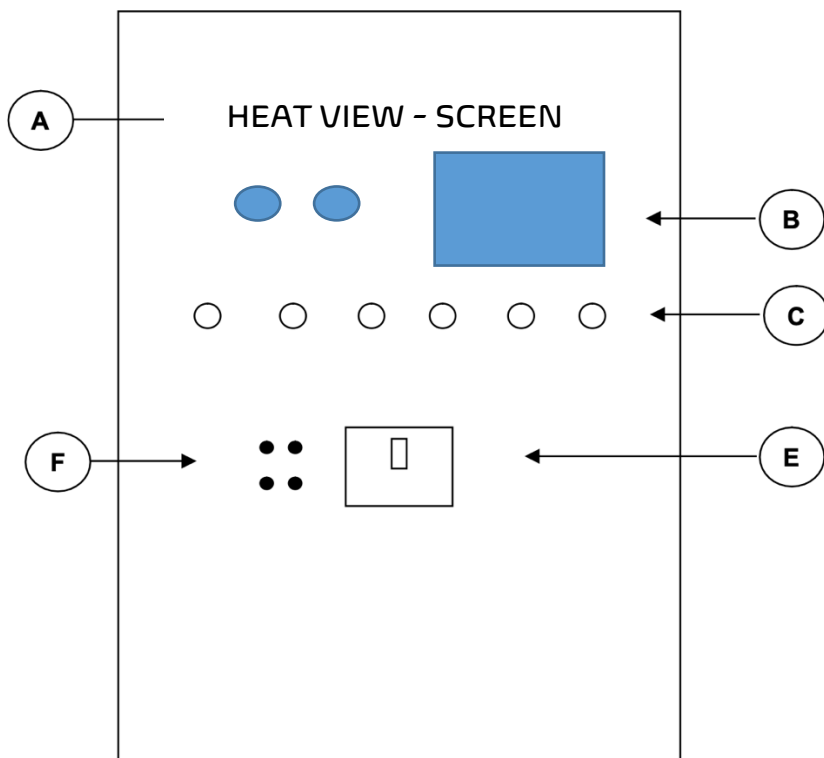
REAR VIEW



- (G) Thermocouple sockets
- (H) 42.5V output camloks
- (I) 42.5V output camloks
- (J) 0V return camloks
- (K) 10A auxillary fuses
- (L) 110V auxillary sockets
- (M) Input cable cutout
- (N) Remote Sockets

INTRODUCTION AND FUNCTIONS

FRONT VIEW



- (A) HEAT VIEW – CONNECTION JACKS
- (B) HEAT VIEW - SCREEN
- (C) Selector Switches
- (E) 125 A circuit breaker
- (F) 5A control fuses

PRECOMMISSIONING CHECKS & INSTALLATION

PRE COMMISSIONING CHECKS

You should ensure that an electrically competent person carries out the pre-commissioning checks.

Check:-

- **IMPORTANT!** That the primary transformer tapings are set to the correct voltage for the supply you are using. Unless the customer specifies otherwise the 70kVA power source is dispatched with the transformer primary tapping links set for an incoming supply of 415V.
- General condition of the transformer.
- With panels removed check all connections are tight as vibration during shipment may cause some slackening which could result in overheating and failure during normal service.
- The tapping board and transformer windings are dry.
- Measure insulation resistance of primary winding to ground by means of a 500V insulation tester (megger). Minimum insulation resistance to ground at 20°C ambient should be not less than 10 Mega Ohms.

INSTALLATION AND COMMISSIONING

You should ensure that an electrically competent person carries out installation and commissioning of the Power Source.



WARNING

To prevent contact with hazardous voltages inside the Power Source Unit, which may result in electrical shock or burns, never carry out any work inside the Power Source Unit until the unit has been isolated from the incoming supply.

- This Power Source is designed for general usage. However, as use on construction sites exposes electrical equipment, to damage from falling objects and the general movement of steelwork on the site, it is preferable to place the Power Source in a protected position. Also protect the equipment from adverse weather conditions and, in tropical situations, from the direct effects of the sun, as overheating could result under normal loading conditions.
- Connect a 415V, 480V, 600V 3-Phase and earth primary power supply to the supply input terminals which are accessed by removing the back panel from the power source and are located inside the unit on the left hand side of the base of the power source. Current rating of the supply conductors shall not be less than the rated primary current for the connected supply voltage (see Specifications on page 3) and of sufficient size to limit the voltage drop to a value permissible for the satisfactory performance of the Power Source.
- Check incoming power supply for correct voltage between phases and, if necessary, adjust primary tapings on the Power Source transformer to suit.
- Earthing (grounding) of the Power Source should be carried out to the requirements of the IEE Electrical Wiring Regulations (UK), the USA National Electrical Code, or other suitably equivalent National standard.

GENERAL OPERATION OF COMPONENTS

- Upon completion of the foregoing test procedures, switch off the Power Source Unit by switching off the 160A circuit breaker.

GENERAL OPERATION OF COMPONENTS

OVERVIEW

Each control channel has its own temperature controller, which requires a thermocouple transducer for automatically controlling the workpiece temperature within close limits. Paired thermocouple sockets are provided on each channel to receive a mV signal from the thermocouple in the hot control zone on the workpiece and, if necessary, to allow a parallel connection to a temperature recorder.

The thermocouple extension cables from the workpiece to the programmer are plugged into the thermocouple input sockets and if necessary linked out to a temperature recorder. The recorder may be powered from the 110V auxiliary supply sockets located on the rear panel of the Power Source Unit.

The output power for the heaters is by connection via feed and return cables to the 42.5V output and the 0V output twistlock sockets (for use with 40V heating elements) or one 42.5V output and the paired 42.5V twistlock sockets (for use with 80V heating elements).

- Ensure that suitable HRC fuses or excess-current circuit breaker at your supply distribution point properly protects your service conductor and the Power Source.
- Once the pre-commissioning checks have been satisfactorily completed, the supply and earth conductors have been connected and the panels have been replaced the incoming supply can be energised. The Power Source unit can then be energised by switching the 160A circuit breaker (isolator) to the ON position.
- Connect a wire link between the positive and negative pins in six thermocouple plugs and insert one into each thermocouple socket. This is completely safe, as the thermocouple sockets are not connected to an electrical supply. Shorting out the thermocouple sockets will cause the temperature controllers to receive a signal equivalent to the ambient air temperature.
- Set the temperature controller so that the control temperature is set to a temperature above the ambient air temperature (for example 100°C).
- For each output, use an a.c. voltage test meter to measure the voltage between each 42.5V output twistlock socket and 0V twistlock socket. Readings of approximately 42.5V volts should be obtained. Next, for each output channel in turn, connect the voltage test meter between the 42.5V output twistlock socket and 42.5V twistlock socket. Readings of approximately 85V should be obtained.

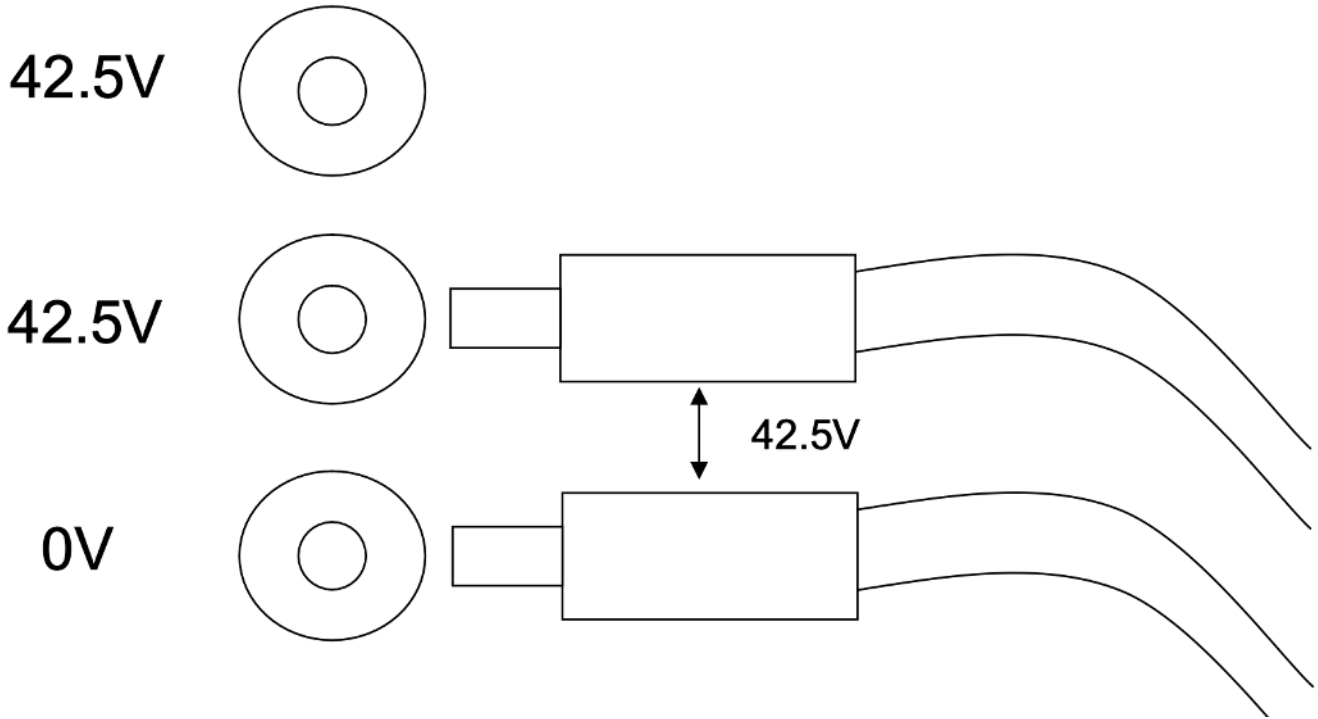


WARNING

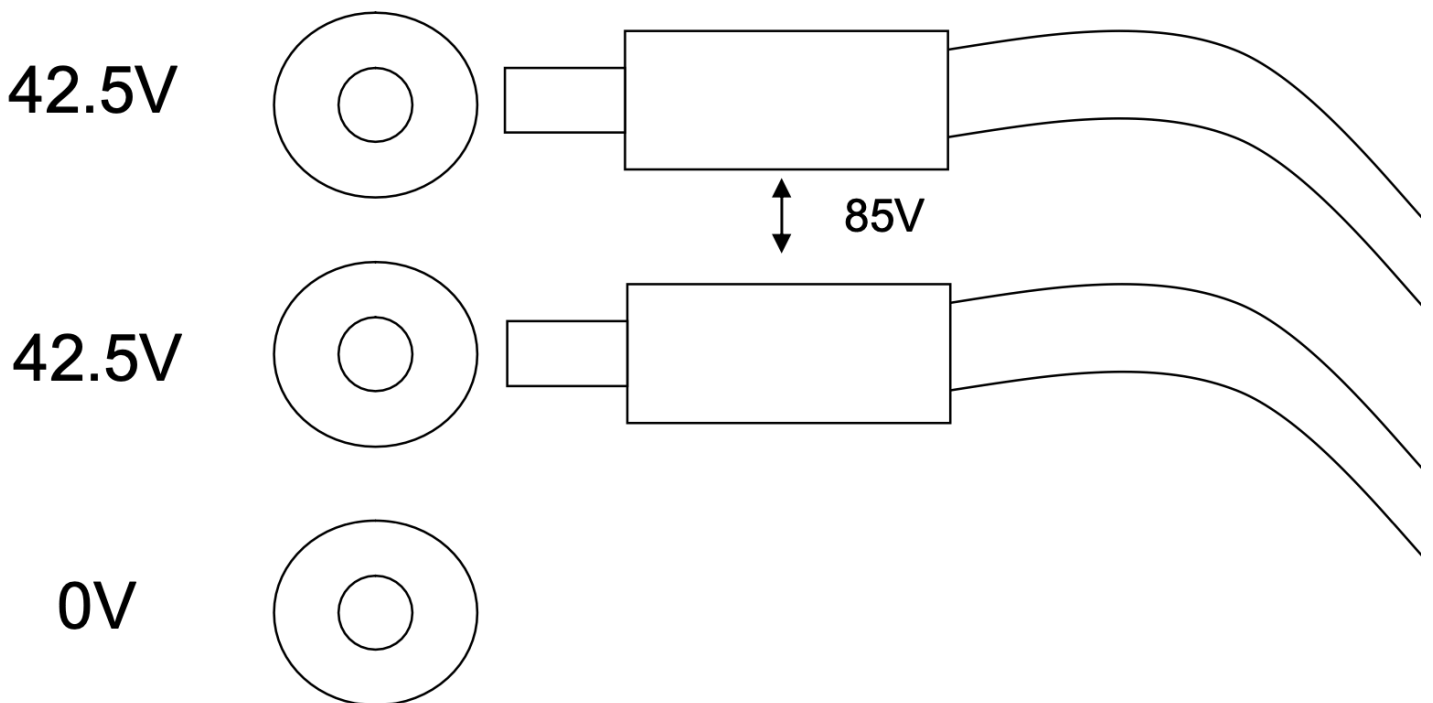
Caution should be used whilst taking the measurements, as 85V a.c. will be present between output sockets on each Channel.

GENERAL OPERATION OF COMPONENTS

OUTPUT CONNECTIONS FOR USE WITH 40V HEATING ELEMENTS



OUTPUT CONNECTIONS FOR USE WITH 80V HEATING ELEMENTS



GENERAL OPERATION OF COMPONENTS

CONTACTORS

The contactors supplied are adequately rated for the current taken at all permissible loads. They have double breaking main contacts with silver alloy contact tips, which are weld resistant, hard wearing and have excellent conductivity. The contactors are compact in size and are fully serviceable, with a range of spares available.

TEMPERATURE CONTROLLERS

When in Programmer mode, the temperature controller program is entered by means of the of the three facia buttons. The Temperature controller will, via the contactors, control the heating elements and maintain the temperature of the workpiece thermocouple at the temperature, which has been set. Full instructions for the temperature controller are included in this manual.

THERMOCOUPLES

It is of the utmost importance that the polarity of the thermocouple and the compensating cable (thermocouple extension) is connected correctly, as incorrect polarity may result in over heating of the workpiece during the heat treatment.

The two pin polarised plugs and sockets are identified positive/negative with the large pin negative. Always use the special connectors for thermocouple circuits and no other types.

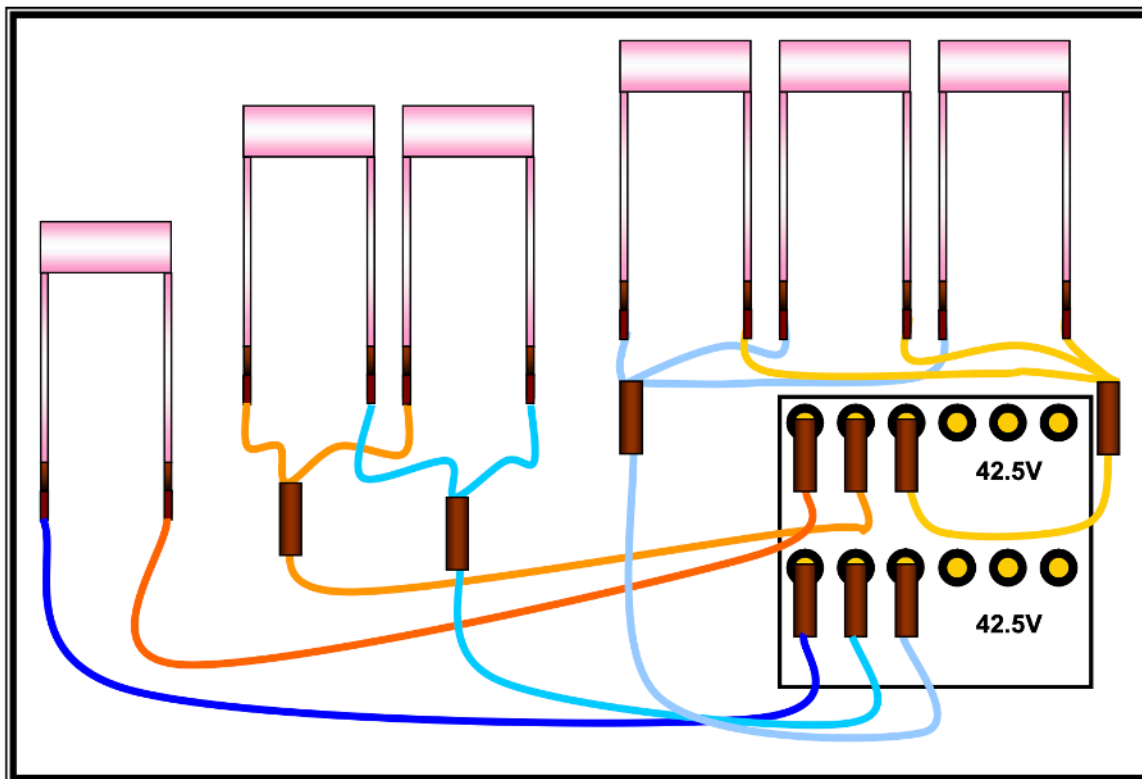
Type 'K', thermocouple wire, as normally supplied by Stork, is of twisted pair pattern with one wire coloured yellow (+) and one wire coloured red (-).

Caution: To avoid serious damage to electronic temperature controlling and recording instruments, thermocouples must be disconnected from the unit whilst using a capacitance discharge unit (thermocouple attachment unit –TAU) to affix the thermocouple wire to the workpiece.

GENERAL OPERATING INSTRUCTIONS

CONTROL ZONES

When using a 70kVA, 6-way (6-channel or 6-output) Power Source for either preheating or post weld heat treatment, the Ceramic Pad Heaters are connected in groups of one, two, or three or per control channel (output). If there is more than one heater in a heater control group, the heaters in the control group are connected together in parallel across one of the output channels of the 70kVA power source. (see example diagram below)



- As shown in the above diagram 80V heating elements are connected, using splitters where necessary, into groups of one, two, or three heaters. The heater groups are then connected to the power source across the 42.5V and 42.5V output sockets on each channel.
- The control thermocouple for each group of heaters is connected to a compensating lead which is in turn connected to a thermocouple input socket on the power source, temperature controller or programmer unit. Ensuring that the channel corresponds to the output supply channel associated with that control thermocouple. i.e. thermocouple connected to channel one thermocouple input with channel one output supply camlocks.
- If a temperature recorder is being used to record the preheat then a thermocouple compensating cable link will be connected from the second of each pair of thermocouple socket inputs on the power source, temperature controller or programmer unit to the corresponding thermocouple input socket on the temperature recorder. i.e. thermocouple input channel number one on power source, temperature controller or programmer unit to thermocouple input channel number one on the temperature chart recorder.
- Connect a 110V supply, from a 110V auxiliary output on the power source, to any recorders or separate temperature controller or programmer units being used

GENERAL OPERATING INSTRUCTIONS

- Connect the power source 3 phase and earth supply plug to an appropriate 3 phase and earth supply output socket.



WARNING

Do not remove the 3 phase plug or attempt to make a hard wire connection to a 3 phase connection box, fuse board or generator etc. unless you have been trained, qualified and authorised to do.

- Energise the Power Source Unit using the 160A circuit breaker.
- Switch all controllers ON.
- Set all controllers to programmer control mode.
- Switch those required to control only mode
- Enter programs in temperature controllers
- The temperature controllers will energise the contactors as necessary to apply sufficient heating power to each zone of heaters to achieve and maintain the set temperature.

MAINTENANCE

MAINTENANCE



WARNING

To prevent contact with hazardous voltages inside the Power Source Unit, which may result in electrical shock or burns, never carry out any work inside the Power Source Unit until the unit has been isolated from the incoming supply.

- All electrical apparatus in constant use, particularly that subject to cyclic loading, must receive regular maintenance inspection in order to maintain trouble-free operation.
- The frequency of inspection will depend upon the operating conditions and the length of time that the equipment is in use. Under average conditions, inspections should be made every month to ensure the components are operating correctly, contacts are in good condition, camlok sockets are free from the effects of over-heating or arcing, due to improper locking of the plugs and that there is no visible sign of a fault developing.
- Inadequate attention to the connectors fitted to the heating units can only result in service difficulties during the heat treatment work. Contacts should be renewed before they become excessively worn and springs replaced.

FAULT FINDING

FAULT FINDING

Fault finding should always be systematic commencing with the most likely faults first, such as a blown fuse. A visual inspection should always be made to ascertain that no obvious disconnections, broken components or over-heated connections are visible. Always ascertain the reason for the fault and check that a similar fault is not developing on other units.

Some possible fault symptoms and remedies are detailed below. You should also refer to the schematic layout.

160A Circuit Breaker (MCCB) will not close.

Causes

Action

Transient surge on closing switch

Repeat

Overheated transformer causing thermal trip to operate

Allow to cool and check loading

Short circuit on secondary between two outlets or outlet and earth

Remove short circuit

One or more thermostats are open circuit

Allow transformer to cool, or if cool, replace thermostats

Trip capacitor (CA) faulty

Replace

MCCB shunt trip unit faulty

Replace

Other problems could be experienced due to the following:-

- Failure of the main supply. Check that the correct voltage is available from each outlet. Check for loose or broken connections.
- Faulty temperature controller. Before condemning a controller it is wise to check the associated circuits as follows:-
 - Thermocouple not type 'K' or wrong compensating cable being used.
 - Thermocouple not properly applied to the workpiece.
 - Check all thermocouple connections, continuity and polarity.
 - Check calibration of the controller.

ORDER REPLACEMENT PARTS

ORDERING REPLACEMENT PARTS AND SPARES

When ordering any spare parts it is recommended that you refer to:-

- a) Type of unit described herein.
- b) Stork Works Order reference number –
- c) Date supplied –
- d) Your original order reference –
- e) Your organisation full name –
- f) Unit Serial number –



Innovative
Heat Treatment

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Innovative Heat Treatment. "The Heat is On"

Customized Heat Treatment Equipment

Power Consoles & Consumables

Thermal Insulation Solutions

Recording Equipment



ORDER REPLACEMENT PARTS

REPLACEMENT PARTS LIST

Item	Description	Quantity	Unit
504-026	25mm ² SY Cable 4 Core Screened (5mtr Lengths)	5.000	Metre
508-001	300Amp P/M Female Camlok	18.000	Each
510-014	8uF 450V Stud Mounted Capacitor (Shunt Trip)	1.000	Each
516-022	15A Supply Socket 125Vac - US HTM - Hubbell HBL5279C	2.000	Each
516-100	3 Pin P/M Male	6.000	Each
516-125	T/C Socket P/M Type 'K'	12.000	Each
522-051	Tmax 160A(125A@40°C) MCCB	1.000	Each
522-052	415Vac Shunt Trip for Tmax MCCB's	1.000	Each
526-074/SA	Assembled SU190-1011 Heavy Duty Shd DP 110V Contactor	6.000	Each
528-019	115v Single Phase Fan 200mm Dia.	1.000	Each
530-001	P/M Fuse Holder 1-1/4"	4.000	Each
530-053	5A glass Fuse 1-1/4" x 1/4"	4.000	Each
530-054	10A Glass Fuse 1-1/4" x 1/4"	4.000	Each
536-010	6" Castor Fixed (Nylon Wheel)	2.000	Each
536-011	6" Castor Swivel (Nylon Wheel)	2.000	Each
536-130	Push / Pull Knob	1.000	Each
538-017	Neon 110V Red	6.000	Each
546-007	10A DPDT Rocker Switch	6.000	Each
554-063	50kVA 380/415/480V.42/32/0/32/42	1.000	Each
558-032	35mm sq Terminals 115A	4.000	Each