



HEAT TREATMENT PRODUCTS

Solutions for Post Weld Heat Treatment,
PreHeat and Hydrogen Bakeout



With more 35 years of experience Technotrat Group have an expertise to provide a full range of heat treatment equipment for on-site services of PWHT and Preheat Welding designed and manufactured at our facilities in São Paulo, Brazil. The extensive experience of Technotrat Group have established an excellent reputation of quality equipment and consumables which our customers are very confident with the solutions provide by us in order to meet the needs of the Oil & Gas, Power & Chemical industries and have developed new technologies focused on customers demands, as well the process engineering and all special specification required as the Pre Salt, for example.

Technotrat can also offers engineering studies about the thermal tensions involved on field services using the finite elements method. The Technotrat Group has its origin in Brazil since 1987, and in more than 35 years, has acquired extensive experience and knowledge of Post Welding Heat Treatment an Preheat Welding.

We are constantly developing, not only our technology, but also, we keep our expertise up to date and continuous self-improvement as well of our trained manpower.

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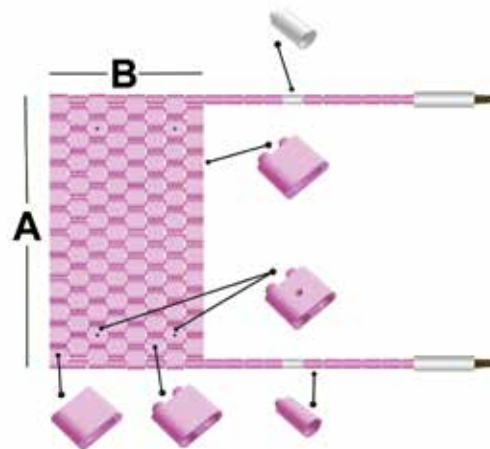
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FCP – Flexible Ceramic Heater Pad

General Description:

The FCP- Flexibles Ceramic Heater Pad are designed for preheating and stress relieving of pipes, pressure vessels etc. The elements consist of multistrand nickel-chrome resistance wires which run through small “two-hole” ceramic insulators. The insulators together with the resistance wires are very flexible and give a good heat radiation and effective heat transmission. The cold nickel tails and resistance wire are welded together. It is designed to provide a temperature up to 2000°F or more with changes in the electric alloy element under consult.



FCP Heaters: working tension 60V – Power rating 2,7kW

| Part Number | Voltage (VAC) | Power (kW) | Electrical Current (A) | Size in Inch | | Size in mm | |
|-------------|---------------|------------|------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|
| | | | | Side A width (tail to tail) | Side B Length of heater body | Side A width (tail to tail) | Side B Length of heater body |
| CP600332 | 60 | 2,7 | 45 | 3 | 26,25 | 75 | 670 |
| CP600424 | | | | 4 | 20 | 100 | 505 |
| CP600616 | | | | 6 | 13 | 155 | 335 |
| CP600812 | | | | 8 | 10 | 205 | 250 |
| CP601010 | | | | 10 | 8,25 | 250 | 210 |
| CP601208 | | | | 12 | 6,5 | 305 | 170 |
| CP601507 | | | | 15 | 5,75 | 385 | 145 |
| CP601606 | | | | 16 | 5 | 410 | 125 |
| CP602105 | | | | 21 | 4 | 540 | 105 |
| CP602404 | | | | 24 | 3,25 | 615 | 85 |
| CP603103 | | | | 31 | 2,5 | 795 | 65 |
| CP604802 | | | | 48 | 1,75 | 1.230 | 45 |

Note: The size could be have a variation in approximately +/- 5%

We also offer a wide variety of lengths and widths, and we can customized any size or voltage that you need. The standard heating element is Ni-Cr 80/20, but we can supply in other resistance alloy as Ni-Cr 60/16 e FeCrAl Alloy for high temperature application for use at temperatures up to 2550°F (1400°C).

FCP Heaters: working tension 80V – Power rating 3,6 kW

| Part Number | Voltage (VAC) | Power (kW) | Electrical Current (A) | Size in Inch | | Size in mm | |
|-------------|---------------|------------|------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|
| | | | | Side A width (tail to tail) | Side B Length of heater body | Side A width (tail to tail) | Side B Length of heater body |
| CP800436 | 80 | 3,6 | 45 | 4 | 29,5 | 100 | 750 |
| CP800622 | | | | 6 | 18 | 155 | 460 |
| CP800817 | | | | 8 | 14 | 205 | 355 |
| CP801015 | | | | 10 | 12,5 | 260 | 315 |
| CP801211 | | | | 12 | 9 | 305 | 230 |
| CP801510 | | | | 15 | 8 | 385 | 210 |
| CP801708 | | | | 17 | 6,5 | 435 | 170 |
| CP802107 | | | | 12 | 5,75 | 540 | 145 |
| CP802905 | | | | 29 | 4 | 745 | 105 |
| CP803304 | | | | 33 | 3,25 | 850 | 85 |

Note: The size could be have a variation in approximately +/- 5%

We also offer a wide variety of lengths and widths, and we can customized any size or voltage that you need. The standard heating element is Ni-Cr 80/20, but we can supply in other resistance alloy as Ni-Cr 60/16 e FeCrAl Alloy for high temperature application for use at temperatures up to 2550°F (1400°C).

Flexible Insulated Preheaters

The element is identical to that used in the FCP heater, but has a high grade ceramic fibre thermal insulating mat protected by a stainless steel backing. The Flexible Insulated Preheaters is designed to provide preheating up to a temperature of 250°C.



Flexible insulated preheaters can be used either flat or laid over curved surfaces. They are equally suitable for preheating pipework, fabrications and vessels either longitudinally or circumferentially.

| Part Number | Voltage (VAC) | Power (kW) | Electrical Current (A) | Size in Inch | | Size in mm | |
|-------------|---------------|------------|------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|
| | | | | Side A width (tail to tail) | Side B Length of heater body | Side A width (tail to tail) | Side B Length of heater body |
| CPAQ600332 | 60 | 2,7 | 45 | 3 | 26,25 | 75 | 670 |
| CPAQ600424 | 60 | 2,7 | 45 | 4 | 20 | 100 | 505 |
| CPAQ800436 | 80 | 3,6 | 45 | 4 | 29,5 | 100 | 750 |

Electrical Resistance for Magnetic Pre-Heating

A feature of this heater is the holding magnets for fast adhesion to their workpiece. These can be supplied either as a separate item or built into the heater element.

As with all Flexible Insulated Preheaters is competitively priced and in addition:
 Has magnetic attachment for fast, low cost installation; Operates on low voltage for operator safety;

Is strongly constructed for on-site reliability;
 Has protection from weld spatter.



| Part Number | Voltage (VAC) | Power (kW) | Electrical Current (A) | Size in Inch | | Size in mm | | Quantity Magnets |
|-------------|---------------|------------|------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------------|
| | | | | Side A width (tail to tail) | Side B Length of heater body | Side A width (tail to tail) | Side B Length of heater body | |
| CMAG600332 | 60 | 2,7 | 45 | 3 | 32,25 | 75 | 820 | 3 |
| CMAG600424 | 60 | 2,7 | 45 | 4 | 25,75 | 100 | 655 | 3 |
| CMAG800436 | 80 | 3,6 | 45 | 4 | 37,5 | 100 | 950 | 4 |

FCP- Flexibles Ceramic Heater Pad for preheating of pipes, pressure vessels etc. The elements are supplied with Ceramic Fibre blanket enclosed in mesh. The blanket is attached to a stainless-steel plate which protects from weld splatter. The plate is provided with hooks where magnets can be fixated, which make elements easy to attach. Banding of element is also possible. The FCP- Flexibles Ceramic Heater Pad can be used on flat surfaces as well as curved. It is designed to provide preheating up to 800°F.

We also can supply other kind of electrical resistance like tunnel, wraparound and working tension and rating power, feel free to contact us at any time with free estimates.

Technotrat 50- Heat Treatment Unit

General Description:

The Technotrat 50 is a portable heat treatment unit designed to provide preheat, post welding heat treatment with power rating of 50 kW distributed in six individually controlled, low voltage, high current outputs to electrical FCP (Flexible Ceramic Pad Heater) at High Operation Temperature of 60V rating power of 2.7 kW as well with 80V rating power of 3.6 kW, others rating power may be supplied under previous consult. The resistance heaters (FC) precisely control the work piece temperature. Depending of model of Technotrat 50 is possible to use the programmable controllers can be controlled manually by operator or by separated touchscreen HMI (also known as HMI for Human Machine Interface) or remote LAN connection as the interface allows the operator to work manually or automatically control the heating process.

The TECNOTRAT heating equipment may monitored or controlled remotely at any time using a standard web browser from either a computer or mobile device capable of communicating with the network on which the system is connected.

The records and displays all data is in degrees Fahrenheit, however, if necessary it would be possible to change to work in degrees Celsius.



| | |
|----------------------------|--|
| Power Transformer | 50 KW, fan cooled |
| Voltage, Primary | 380/415/440/480/575 VAC, 3-Phase, 50/60Hz |
| Voltage, Secondary | Connected for 85VAC; 65VAC taps also supplied |
| Protective circuite | Thermostat in each winding to de-energize primary at 293°F (145°C) |
| Number Channels | 06 |

Safety:

TECHNOTRAT 50 - Safety Is Built In:

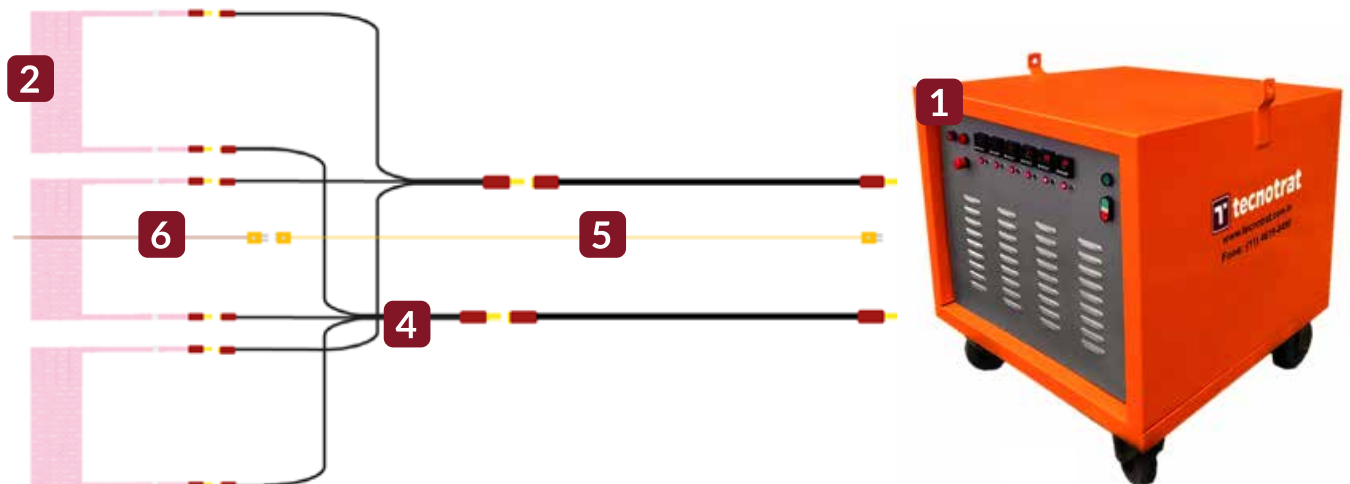
- Circuit breaker for primary power connection.
- 5-amp circuit breaker safety switch in case of overloading on control circuit.
- 3/4-amp circuit breaker protection for each secondary contactor.
- Over-temperature protection of main transformer coils (275°F/135°C temp. trip).

ELECTRICAL - OUTPUTS: Standard 150-amps/output circuit, at 65 or 85 volts.

CAUTION: Due to the power transformer rating, a maximum of 18 heaters can be fed.

ELECTRICAL - INPUTS: International power transformer 380/415/440/480/575 VAC, 50/60 Hz, 3-Phase. (Control voltage is provided by a separate 750VA control transformer with taps to match those of the main power transformer).

An auxiliary 120V input is provided for allowing operation of the controller and display without powering the main transformer. This allows for easy software updates or configuration.



Note: Figure is not in scale and shown the Technotrat 50 Unit assembled with only one channel

| Item | Description |
|------|--------------------------------------|
| 1 | Technotrat 50 Heating Treatment Unit |
| 2 | Heating Elements from Work Piece |
| 3 | Insulation Blanket |

| Item | Description |
|------|--------------------------------------|
| 4 | Connection Cable Set and Split Cable |
| 5 | Thermocouple Wire Extension Cable |
| 6 | Thermocouple Attached to Work Piece |

Suggested set for operation:

| Description | Quantity | Note |
|--|----------|--|
| Technotrat 50 Heat Treatment Unit | 1 | No Recorder Included |
| Triple Cable Set Heavy Duty <i>#2 Cablewrapped with Filament Tape</i> | 6 | Available in 10, 20,50 and 100 foot |
| Splitters - 3-Way <i>4' Long</i> | 12 | |
| FCP - Flexible Ceramic Heating Pad | 18 | Available in 60V x 2,7 kW and 80V x 3,6 kW |
| TAU - Thermocouple Attachment Unit | 1 | |
| Consumables: <i>Thermocouples, Insulation, Steel Band</i> | | To be decided by Customer |

The warranty and service is for Technotrat 50 unit only, cables, electrical resistance, calibration an so on is not covered by warranty due natural wear and the working use process.

Technotrat 75- Heat Treatment Unit

General Description:

The Technotrat 75 is a portable heat treatment unit designed to provide preheat, post welding heat treatment with power rating of 75 kW, fan cooled, distributed in six individually controlled, low voltage, high current outputs to electrical FCP (Flexible Ceramic Pad Heater) at High Operation Temperature of 65/85V rating power of 2.7/3,6 kW, others rating power may be supplied under previous consult. The resistance heaters (FC) precisely control the work piece temperature. Depending of model of Technotrat 75 is possible to use the programmable controllers can be controlled manually by operator or by separated touchscreen HMI (also known as HMI for Human Machine Interface) or remote LAN connection as the interface allows the operator to work manually or automatically control the heating process.

The TECNOTRAT heating equipment may monitored or controlled remotely at any time using a standard web browser from either a computer or mobile device capable of communicating with the network on which the system is connected.

The records and displays all data is in degrees Fahrenheit, however, if necessary it would be possible to change to work in degrees Celsius.



| | |
|----------------------------|--|
| Power Transformer | 75 KW, fan cooled |
| Voltage, Primary | 380/415/440/480/575 VAC, 3-Phase, 50/60Hz |
| Voltage, Secondary | Connected for 85VAC; 65VAC taps also supplied |
| Protective circuite | Thermostat in each winding to de-energize primary at 293°F (145°C) |
| Number Channels | 06 |

Safety:

TECHNOTRAT 75 - Safety Is Built In:

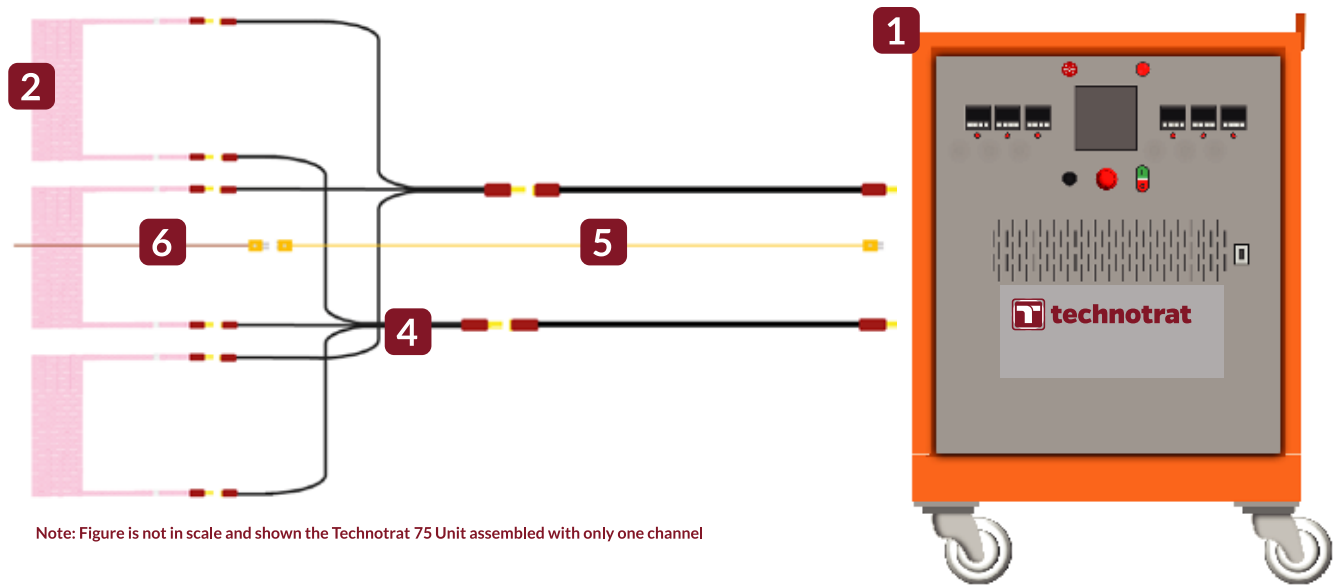
- Circuit breaker for primary power connection.
- 5-amp circuit breaker safety switch in case of overloading on control circuit.
- 3/4-amp circuit breaker protection for each secondary contactor.
- Over-temperature protection of main transformer coils (275°F/135°C temp. trip).

ELECTRICAL - OUTPUTS: Standard 150-amps/output circuit, at 65 or 85 volts.

CAUTION: Due to the power transformer rating, a maximum of 18 heaters can be fed.

ELECTRICAL - INPUTS: International power transformer 380/415/440/480/575 VAC, 50/60 Hz, 3-Phase. (Control voltage is provided by a separate 750VA control transformer with taps to match those of the main power transformer).

An auxiliary 120V input is provided for allowing operation of the controller and display without powering the main transformer. This allows for easy software updates or configuration.



Note: Figure is not in scale and shown the Technotrat 75 Unit assembled with only one channel

| Item | Description |
|------|--------------------------------------|
| 1 | Technotrat 75 Heating Treatment Unit |
| 2 | Heating Elements from Work Piece |
| 3 | Insulation Blanket |

| Item | Description |
|------|--------------------------------------|
| 4 | Connection Cable Set and Split Cable |
| 5 | Thermocouple Wire Extension Cable |
| 6 | Thermocouple Attached to Work Piece |

Suggested set for operation:

| Description | Quantity | Note |
|--|----------|--|
| Technotrat 75 Heat Treatment Unit | 1 | Recorder Included |
| Triple Cable Set Heavy Duty <i>#2 Cablewrapped with Filament Tape</i> | 6 | Available in 10, 20,50 and 100 foot |
| Splitters - 3-Way <i>4' Long</i> | 12 | |
| FCP - Flexible Ceramic Heating Pad | 18 | Available in 60V x 2,7 kW and 80V x 3,6 kW |
| TAU - Thermocouple Attachment Unit | 1 | |
| Consumables: <i>Thermocouples, Insulation, Steel Band</i> | | To be decided by Customer |

The warranty and service is for Technotrat 75 unit only, cables, electrical resistance, calibration an so on is not covered by warranty due natural wear and the working use process.

Technotrat 150- Heat Treatment Unit

General Description:

The Technotrat 150 is a portable heat treatment unit designed to provide preheat, post welding heat treatment with power rating of 150 kW, fan cooled, distributed in six individually controlled, low voltage, high current outputs to electrical FCP (Flexible Ceramic Pad Heater) at High Operation Temperature of 65/85V rating power of 2.7/3,6 kW, others rating power may be supplied under previous consult. The resistance heaters (FC) precisely control the work piece temperature. Depending of model of Technotrat 150 is possible to use the programmable controllers can be controlled manually by operator or by separated touchscreen HMI (also known as HMI for Human Machine Interface) or remote LAN connection as the interface allows the operator to work manually or automatically control the heating process.

The TECNOTRAT heating equipment may monitored or controlled remotely at any time using a standard web browser from either a computer or mobile device capable of communicating with the network on which the system is connected.

The records and displays all data is in degrees Fahrenheit, however, if necessary it would be possible to change to work in degrees Celsius.



| | |
|---------------------|--|
| Power Transformer | 150 KW, fan cooled |
| Voltage, Primary | 380/415/440/480/575 VAC, 3-Phase, 50/60Hz |
| Voltage, Secondary | Connected for 85VAC; 65VAC taps also supplied |
| Protective circuite | Thermostat in each winding to de-energize primary at 293°F (145°C) |
| Number Channels | 12 |

Safety:

TECHNOTRAT 150 - Safety Is Built In:

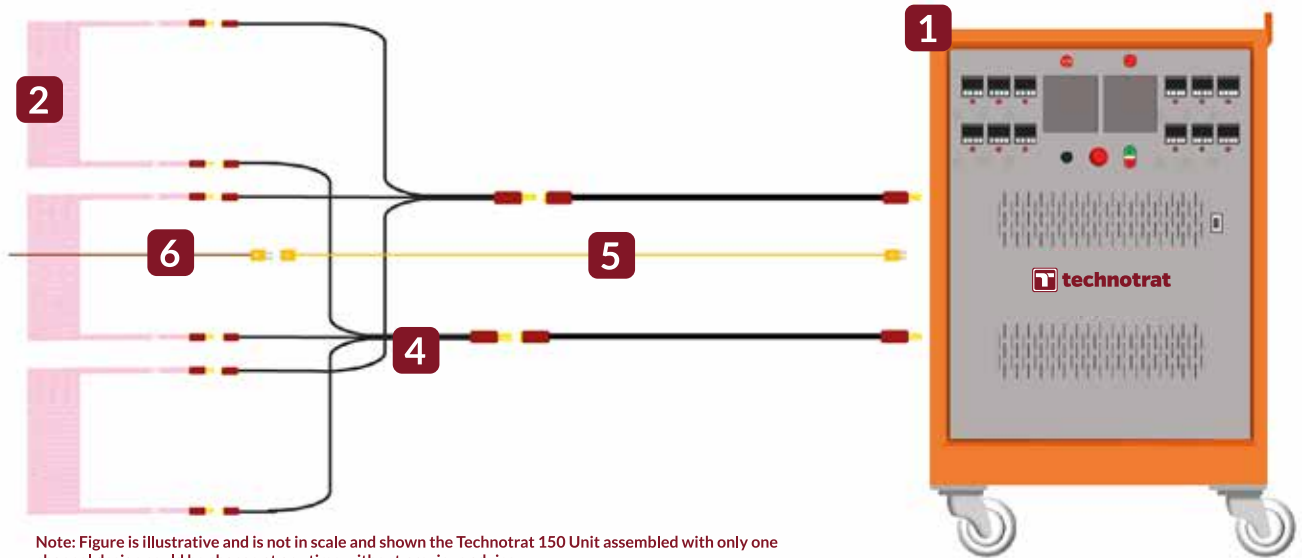
- Circuit breaker for primary power connection.
- 5-amp circuit breaker safety switch in case of overloading on control circuit.
- 3/4-amp circuit breaker protection for each secondary contactor.
- Over-temperature protection of main transformer coils (275°F/135°C temp. trip).

ELECTRICAL - OUTPUTS: Standard 150-amps/output circuit, at 65 or 85 volts.

CAUTION: Due to the power transformer rating, a maximum of 18 heaters can be fed.

ELECTRICAL - INPUTS: International power transformer 380/415/440/480/575 VAC, 50/60 Hz, 3-Phase. (Control voltage is provided by a separate 750VA control transformer with taps to match those of the main power transformer).

An auxiliary 120V input is provided for allowing operation of the controller and display without powering the main transformer. This allows for easy software updates or configuration.



Note: Figure is illustrative and is not in scale and shown the Technotrat 150 Unit assembled with only one channel, design could be change at any time without previous advice

| Item | Description |
|------|---------------------------------------|
| 1 | Technotrat 150 Heating Treatment Unit |
| 2 | Heating Elements from Work Piece |
| 3 | Insulation Blanket |

| Item | Description |
|------|--------------------------------------|
| 4 | Connection Cable Set and Split Cable |
| 5 | Thermocouple Wire Extension Cable |
| 6 | Thermocouple Attached to Work Piece |

Suggested set for operation:

| Description | Quantity | Note |
|--|----------|--|
| Technotrat 150 Heat Treatment Unit | 1 | Two Recorder Included |
| Triple Cable Set Heavy Duty <i>#2 Cablewrapped with Filament Tape</i> | 12 | Available in 10, 20,50 and 100 foot |
| Splitters - 3-Way <i>4' Long</i> | 24 | |
| FCP - Flexible Ceramic Heating Pad | 36 | Available in 60V x 2,7 kW and 80V x 3,6 kW |
| TAU - Thermocouple Attachment Unit | 1 | |
| Consumables: <i>Thermocouples, Insulation, Steel Band</i> | | To be decided by Customer |

The warranty and service is for Technotrat 150 unit only, cables, electrical resistance, calibration an so on is not covered by warranty due natural wear and the working use process.

Triple Set Cables

The triple cable set consists of two lengths of heat and oil resistant and flame retardant (HOFR), double insulated copper cable complete with two 300 amp female camlock connectors on one end and two 300 amp male camlock connectors on the other end. Running alongside the copper cable is a length of compensating cable which has a thermocouple plug on one end and a thermocouple socket on the opposite end.



- Length: 10, 20, 50 and 100 Foot
- Colour: Black, Orange, Red (available)

Splitter Set Cables

The splitters cables set consists of two, three, four or five lengths of heat and oil resistant and flame retardant (HOFR), double insulated copper cable complete with female camlock connectors and male camlock connectors on the other end.

60A female camlock connector
300A male camlock connector



- Length: 4 Foot
- Colour: Black, Orange, Red (available)
- 2 way, 3 way, 4 way and 5 way splitter cable set

300A Twistlock Brass Connector Socket (Female Camlock) Complete Set

Complete set of the 300A Twistlock Brass Female Connector, including Sleeve and Pin. Used for Triple Cables Sets .



- Dimensions Assembled: 86 H x 28 W x 28 D mm
- Total Weight: 126.6kg
- Materials: Epoxy Resin (Sleeve), Brass (Body) and ABS (Pin)
- Colour: Red Sleeve, Bass Body, White Pin

60A Twistlock Brass Connector Socket (Female Camlock) Complete Set

Complete set of the 60A Twistlock Brass Female Connector, including Sleeve and Pin. Used for Splitters cables .



- Dimensions Assembled: 79 H x 17 W x 17 D mm
- Total Weight: 53.2g
- Materials: Epoxy Resin (Sleeve), Brass (Body) and ABS (Pin)
- Colour: Red Sleeve, Bass Body, White Pin

60A Twistlock Brass Connector Plug (Male Camlock) Complete Set

Complete set of the 60A Twistlock Brass Connector, including Sleeve and Pin. Used for Flexible Ceramic Pad Heaters.



- Dimensions Assembled: 87 H x 17 W x 17 D mm
- Total Weight: 30.2g
- Materials: Epoxy Resin (Sleeve), Brass (Body) and ABS (Pin)
- Colour: Red Sleeve, Brass Body, White Pin

300A Twistlock Brass Connector Plug (Male Camlock) Complete Set

Complete set of the 300A Twistlock Brass Male Connector, including Sleeve and Pin. Used for Triple and Splitter Cables Sets.



- Dimensions Assembled: 99 H x 28 W x 28 D mm
- Total Weight: 148.6kg
- Materials: Epoxy Resin (Sleeve), Brass (Body) and ABS (Pin)
- Colour: Red Sleeve, Brass Body, White Pin

Who we work with



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