# PRODUCT CATALOG

# COMPOSITE
# REPAIR SOLUTIONS

**TECHNICAL SERVICES**

**EQUIPMENT**

**ACCESSORIES**

**MATERIALS**

**Innovating Solutions for the Advancement of Composite Repair Technology**

**HEATCON COMPOSITE SYSTEMS**

## Innovating Solutions for the Advancement of Composite Repair Technology

HEATCON Composite Systems has been involved in the support of advanced composite repairs since 1981. For over 35 years, we've committed our time and product development to improving composite repair processes.

As a leading global manufacturer and supplier of aerospace composite repair equipment, we provide a full range of hot bonders, accessories, technical and training services, and materials for the repair of composite structures.

We specialize in working with Aircraft Manufacturers (OEMs), Defense Organizations, Commercial Airlines, and Maintenance Repair Organizations (MROs) by providing them with the expertise and tools to repair composite flight controls and other main aircraft parts.

**Our experience and knowledge allows us to continuously provide innovative solutions for the advancement of composite repair technology.**

**ISO 9001:2008, AS9100C, AS9120A CERTIFIED**

### MISSION
As individuals we believe that teamwork and customer satisfaction are the foundation of our past and future success. We are committed through the skills of every one of our employees to be a vibrant, innovative, and responsible world market leader. We will uphold our reputation for quality products, values, service, and engineering expertise, while pursuing with aggressive determination to be our customer's number one supplier.

### VISION
To be recognized as a superior provider of innovative technical solutions.

### VALUES
In all of our relationships we are committed to these primary values:
- Ethics                         - Quality
- Innovation                   - Professionalism
- Customer Satisfaction    - Growth & Profitability


*HEATCON and its subsidiaries are committed to safety, quality and continual improvement in all areas of the organization. We believe that teamwork and customer satisfaction are the foundation of our continued success. We are committed, through the talents and dedication of all our employees, to be a vibrant, innovative and responsible world market leader in Composite Repair Solutions and Material Processing.*

*HEATCON's goal is to remain the supplier of choice for each and every customer. We will accomplish this by continually improving the quality and safety of products and processes and by providing an exceptional customer service experience.*

*Please Recycle*

*All products, prices, services, or availability are subject to change without notice.*

# HEATCON COMPOSITE SYSTEMS®

## HOT BONDER COMPARISON GUIDE

|  | Single Zone | | | | | Dual Zone | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HCS8800 | HCS9000B | HCS9000C | HCS9000B-EV | HCS9000-FL | HCS9200B | HCS9200B-EV | HCS9200-FL | HCS9200M | HCS9200N |
| Number of Zones | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| Output Amperage per Zone (Amps) | 16 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Operating Voltage (VAC) | 90-264 | 90-264 | 90-264 | 90-264 | 90-264 | 90-264 | 90-264 | 90-264 | 90-264 | 90-264 |
| Input Frequency (Hz) | 47-63 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 | 47-63 400-440 |
| Maximum Process Temperature (°F) | 500 | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1400 (J) 2000 (K) | 1000 |
| Primary Heating System | Blanket Hot Air Radiant Lamp | Blanket Hot Air Radiant Lamp | Blanket Hot Air Radiant Lamp | Blanket Hot Air Radiant Lamp | Flightline Blanket | Blanket Hot Air Radiant Lamp | Blanket Hot Air Radiant Lamp | Flightline Blanket | Blanket Hot Air Radiant Lamp | Blanket Hot Air Radiant Lamp |
| Upper Blanket Size Limitations @ 5 Watts in$^2$ at 120V / 220V | 480 960 | 720 1440 | 720 1440 | 720 1440 | 720 1440 | 720 1440 | 720 1440 | 720 1440 | 720 1440 | 720 1440 |
| Network Functionality (Large Area Repair) (Requires Controller Console) | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| Operating Environmental Limitations Temperature °F | 0-115 | 32-122 | 32-122 | 32-122 | 32-122 | 32-122 | 32-122 | 32-122 | 14-130 | 14-130 |
| Relative Humidity % ± 5% | 0-99 | 0-93 | 0-93 | 0-93 | 0-93 | 0-93 | 0-93 | 0-93 | 0-93 | 0-93 |
| Vacuum Source | None | Shop Air | Shop Air | Shop Air / Int Pump | Shop Air | Shop Air | Shop Air / Ext Pump | Shop Air | Shop Air / Int Pump | Shop Air |
| Vacuum Lines | 1 - 10ft | 2 - 10ft | 2 - 10ft | 2 - 10ft | 2 - 10ft | 4 - 10ft | 4 - 10ft | 4 - 10ft | 4 - 10ft | 2 - 10ft |
| Vacuum Monitoring | On Screen Display | On Screen Display | On Screen Display | On Screen Display | On Screen Display | On Screen Display | On Screen Display | On Screen Display | On Screen Display | On Screen Display |
| Return Vacuum Monitoring | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| Thermocouple Type | J | J or K | J or K | J or K | J or K | J or K | J or K | J or K | J | J |
| Thermocouples per Zone | 4 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 8 |
| Temperature Accuracy | ± 1°F | ± 1°F | ± 1°F | ± 1°F | ± 1°F | ± 1°F | ± 1°F | ± 1°F | ± 1°F | ± 1°F |
| Number of Storable Cure Programs | 8 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Dwell Time | 0-480 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min | 0-2000 Min |
| Max Program Time | 0-720 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min | 0-2880 Min |
| Run Separate Programs on each Zone | N/A | N/A | N/A | N/A | N/A | Yes | Yes | Yes | Yes | Yes |
| Run Same Program on Both Zones at the same time | N/A | N/A | N/A | N/A | N/A | Yes | Yes | Yes | Yes | Yes |
| Ramp Rate | 1-99 | 1-99 | 1-99 | 1-99 | 1-99 | 1-99 | 1-99 | 1-99 | 1-99 | 1-99 |
| Modify a Program in Process | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Number of Program Steps in a Cure Program | 3 Ramps 2 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells | 9 Ramps 8 Dwells |
| Full Functionality without a Personal Computer | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

# HOT BONDER COMPARISON GUIDE

| | | Single Zone | | | | | Dual Zone | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | HCS8800 | HCS9000B | HCS9000C | HCS9000B-EV | HCS9000-FL | HCS9200B | HCS9200B-EV | HCS9200-FL | HCS9200M | HCS9200N |
| Full Text-based GUI, Real Language screens | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Variable Units of Measure | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar | F / C InHg kPa mBar |
| Display Type | Monochrome | Color LCD | Touch Screen | Color LCD | Color LCD | Color LCD | Color LCD | Color LCD | Color LCD | Color LCD |
| Sunlight Readable | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| User Interface | 4 Button | Keypad | Touch | Keypad | Keypad | Keypad | Keypad | Keypad | Keypad | Keypad |
| Vacuum Pressure Presented Visually | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| All TC's Status Presented Visually at Once | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| TC Test / Blanket Test Prior to Start Cure | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Data Export | USB | USB | USB | USB | USB | USB | USB | USB | USB | USB |
| Stored Cured Data | Last 6 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures | Last 12 Cures |
| Data Logging Interval | 1 Min | 1 Min | 1 Min | 1 Min | 1 Min | 1 Min | 1 Min | 1 Min | 1 Min | 1 Min |
| Print Interval | N/A | 1-99 Min | 1-99 Min | 1-99 Min | 1-99 Min | 1-99 Min | 1-99 Min | 1-99 Min | 1-99 Min | 1-99 Min |
| Password Protection | No | Optional | Optional | Optional | Optional | Optional | Optional | Optional | Optional | Optional |
| Printer | No* | 1 per Zone | No* | 1 per Zone | 1 per Zone | 1 per Zone | 1 per Zone | 1 per Zone | 1 per Zone | 1 |
| Audible Alarm | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| High Limit Relay | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Power Loss Recovery | Yes 2 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min | Yes 0-15 Min |
| Weight (lbs) | 4.1 | 15 | 13 | 29 | 25 | 28 | 38 | 37 | 42.5 | 37 |
| Dimensions (L x W x H) | 10in x 6.5in x 2.5in | 18in x 13in x 5.75in | 13in x 10.5in x 5.75in | 21.75in x 14.25in x 6.5in | 23.5in x 17 in x 7.75in | 21.75in x 17 in x 7.75in | 21.75in x 14.25in x 6.5in | 29in x 19in x 9.5in | 23.75in x 18in x 7in | 29in x 18in x 8in |
| Removable Lid | N/A | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Equipment Storage in Lid | Separate Case | Optional | Separate Case | Optional | Optional | Optional | Optional | No | No | Separate Case |
| 30 Amp Standard Circuit Breaker | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CE Compliant | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Internal GFI Protection | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

*Hot Bonder Accessory: HCS2070 Printer Station is available for the HCS8800 and HCS9000C to enable printing capabilities.

This and other information from HEATCON Composite Systems® provides product or system options for further investigation by users having technical expertise. Before you select or use any product or system it is important that you analyze all aspects of your technical application and review the information concerning the product in the current product catalog. The user, through their own analysis and testing, is responsible for making the final selection of the system and components and assuring that all performance, safety, and warning requirements of the application are met.

## *Single & Dual Zone Hot Bonders*

| HCS9200B | |
|---|---|
| Weight | 28lbs (12.7kg) |
| Dimensions | 21.75in x 14.25in x 6.5in<br>(55.25cm x 36.2cm x 16.5cm) |
| | |

| HCS9000B | |
|---|---|
| Weight | 15lbs (6.8kg) |
| Dimensions | 18in x 13in x 5.75in<br>(45.7cm x 33.02cm x 14.6cm) |
| | |
| Full Features and Options (Page 10) | |

Bonders provided by HEATCON Composite Systems are used to control localized heat sources for a wide variety of manufacturing and repair applications which require the curing of prepregs, resins or adhesives.

Bonders typically support 'out-of-autoclave' processing, and are especially useful for on-aircraft repair and secondary curing applications in the manufacturing environment.

### Accessories Included:

- 4 Heat Blankets**
  1-6inx6in, 1-10inx10in
  1-12inx12in, 1-15inx15in
- Power Cords
- Thermocouples
- Vacuum Hose
- Air Filter

- Extra Printer Ribbon and Printer Paper
- Data Capture Analysis Software (DCAS)
- USB Drive

**Custom heat blankets are available upon request.

### RELIABLE
### EASY TO USE
### UPGRADABLE
### NETWORK CAPABLE*
### 3 YEAR WARRANTY
*REQUIRES HCS9300NW CONTROLLER

## Hot Bonder of Choice for Major Airlines, Repair Stations and Special Purposes!

HEATCON II
Composite Repair Systems
SINCE 1981

**HEATCON COMPOSITE SYSTEMS®**

*EQUIPMENT*

## Touch Screen Single Hot Bonder

| HCS9000C (Single Zone) | |
|---|---|
| Weight | 13lbs (5.9kg) |
| Dimensions | 13in x 10.5in x 5.75in (33.02cm x 26.67cm x 14.6cm) |
| Touch Display Dimensions | 4.5in x 3.5in (11.43cm x 8.89cm) |
| Full Features and Options (Page 10) | |

The HCS9000C Hot Bonder is the next generation of Heatcon composite repair systems – built for composite and metal bond repair applications for the modern world.

Its smaller and compact which allows users to easily transport it from job to job. Although different in construction, the HCS9000C consists of the same functionality and durability as found in previous models.

The feature of the touch screen gives users the power to program and monitor cures at their fingertips. Having this convenient feature makes it easier and faster to browse through menus and upload programs.

Bonders typically support 'out-of-autoclave' processing, and are especially useful for on-aircraft repair and secondary curing applications in the manufacturing environment.

**RELIABLE**
**EASY TO USE**
**UPGRADABLE**
**NETWORK CAPABLE***
**3 YEAR WARRANTY**
*REQUIRES HCS9300NW CONTROLLER

### Accessories Included:

- 4 Heat Blankets**
  1-6inx6in, 1-10inx10in
  1-12inx12in, 1-15inx15in
- Power Cords
- Thermocouples
- Vacuum Hose
- Air Filter
- Data Capture Analysis Software (DCAS) USB Drive
- 3-Year Warranty*

*Subject to Terms and Conditions

## Built in Vacuum System

**EQUIPMENT**

# EV Series Single & Dual Zone Hot Bonders

## HCS9200B-EV

| | |
|---|---|
| Weight | 38lbs (17.4kg)<br>(Vacuum Pump located in Lid Assembly) |
| Dimensions | 21.75in x 14.25in x 6.5in<br>(55.25cm x 36.2cm x 16.5cm) |
| | |

## HCS9000B-EV

| | |
|---|---|
| Weight | 29lbs (13.2kg) |
| Dimensions | 21.75in x 14.25in x 6.5in<br>(55.25cm x 36.2cm x 16.5cm) |
| Electric Vacuum Pump | Max. Flow is 0.75 cubic ft/min (354 cm$^3$/sec) and Max. Level is 28+ in/Hg (0.967kgs/cm$^2$) |
| Full Features and Options (Page 10) | |

This line of HEATCON® Composite Repair Systems has a built-in vacuum system to allow easier mobility to the repair site and eliminates the need for a alternative air source.

Bonders provided by HEATCON Composite Systems® are used to control localized heat sources for a wide variety of manufacturing and repair applications which require the curing of prepregs, resins or adhesives.

Bonders typically support 'out-of-autoclave' processing, and are especially useful for on-aircraft repair and secondary curing applications in the manufacturing environment.

### Accessories Included:

- 4 Heat Blankets**
  1-6inx6in, 1-10inx10in
  1-12inx12in, 1-15inx15in
- Power Cords
- Thermocouples
- Vacuum Hose
- Air Filter

- Extra Printer Ribbon and Printer Paper
- Data Capture Analysis Software (DCAS)
- USB Drive

**Custom heat blankets are available upon request.

**Built in Vacuum System**

HEATCON II Systems

**RELIABLE**
**EASY TO USE**
**UPGRADABLE**
**NETWORK CAPABLE***
**3 YEAR WARRANTY**
*REQUIRES HCS9300NW CONTROLLER

**HEATCON COMPOSITE SYSTEMS®**

**EQUIPMENT**

## *Flightline Single & Dual Zone Hot Bonders*

### HCS9200FL

| Weight | 37lbs (16.9kg) |
|---|---|
| Dimensions | 29in x 19in x 9.5in (73.66cm x 48.26cm x 24.13cm) |
| | |

### HCS9000FL

| Weight | 25lbs (11kg) |
|---|---|
| Dimensions | 23.5in x 17in x 7.75in (59.69cm x 43.18cm x 19.68cm) |
| | |

### Distinctive Specifications:

| |
|---|
| These Units are Purged and Pressurized for Use in Hazardous Environments. |
| Dynamic Alarm/Control Integration with Indicators for Pressure Status, Purge Cycle Initiation and System Ready |
| Arc Suppressing Power Connectors are Specifically Designed for Hazardous Environments |
| A Ground Fault Interrupter (GFI) is installed to Maximize Equipment Safety. |
| An Independent High Limit Controller Disables Power in the Event of Over-Temperature Conditions. |
| Full Features and Options (Page 10) |

## DESIGNED SPECIFICALLY FOR HAZARDOUS AND FLIGHTLINE ENVIRONMENTS!

### Accessories Included:
- Power Cords
- Thermocouples
- Vacuum Hose
- Air Filter
- Extra Printer Ribbon and Printer Paper
- Data Capture Analysis Software (DCAS)
- USB Drive

**Specific accessories are described by quotation**

The Flightline Composite Repair Systems include the same basic features, operation and capabilities as the HCS9000 and HCS9200 systems, but are further designed to meet the requirements of Class I, Division II, hazardous environment operation per the U.S. National Electric Code (NEC), as promulgated by the National Fire Protection Association (NFPA).

The primary application is composite and metal bond repairs on fueled aircraft and in other Class I, Division II environments.

Heat blankets* for the flightline systems include a supervisory grid for over-temperature safety and a ground plane for sensing faulty circuits.

*Flightline hot bonder systems require special heat blankets for vapor volatile environments. Heat blankets must be ordered separately. Please ask your Heatcon Sales Engineer for more information regarding Supervisory Heat Blankets.*

**HEATCON II** Systems

# Extreme Environment Dual Zone Hot Bonder

## HCS9200M

| | |
|---|---|
| Weight | 42.5 lbs. (19.28kg) |
| Dimensions | 23.75in x 18in x 7in (60.33cm x 45.72cm x 17.78cm) |
| Internal Electric Vacuum Pump (12 Volt DC) | |
| (2) Low Temperature Operation (Heated) Pneumatic Vacuum Pumps | |
| Internal GFI Protection | |
| | |

## HCS9200N

| | |
|---|---|
| Weight: | 37lbs (16.78kg) (Accessory Set - 70lbs (31.75kg)) |
| Dimensions: | 29in x 18in x 8in (73.66cm x 45.72cm x 20.32cm)(Accessory Set - 25in x 19in x 9.5in (63.5cm x 48.26cm x 24.13cm)) |
| 8 Thermocouples per Zone | |
| Single Printer for both Zones | |
| No Return Vacuum Monitoring | |
| **Accessory Set Cables Rated at 20 Amps** | |
| Full Features and Options (Page 10) | |

## Accessories Included:
- Heat Blankets
- Power Cords
- Thermocouples
- Vacuum Hose
- Air Filter
- Extra Printer Ribbon and Printer Paper
- Data Capture Analysis Software (DCAS)
- USB Drive

**HCS9200N**
- Data Download Cable
- Vacuum Gauge

**Specific accessories are described by quotation**

The primary system application is composite and metal bond repairs under adverse environmental conditions.The HCS9200M and HCS9200N have been certified to extreme environments as defined by MIL-STD-810E. HCS9200N series have been further certified to meet MIL-STD-461E EMI shielding requirements.

The HCS9200M series hot bonder also features an internal electric vacuum pump and two low temperature (heated) pneumatic vacuum pumps, capable of operating in temperatures from 14°F to 140°F.

## DESIGNED SPECIFICALLY FOR EXTREME ENVIRONMENTS!

**EQUIPMENT**

# Features and Options

## Standard Features

| Standard Features |
|---|
| Operate by easy to follow menus on High-Resolution, Software Dimmable, and Sunlight readable LCD Screen (5.25in x 6.75in) (13.33cm x 17.14cm) |
| Easy change of any cure parameter while program is running |
| In progress graphic and numeric displays are easy to interpret |
| Store 30 programs, enter or revise from key pad |
| Temperature control by TC 1 or 2, hottest/ coolest (automatically locates) or average of all thermocouples, mode selected by operator |
| 10 thermocouple inputs per zone, per aerospace manufacturers recommendations |
| Temperature adjustments made in increments of 1°F or C. |
| Exceptional integration of alarm and control systems: |
|    1. Scans all thermocouples for alarm and control |
|    2. High/low temperature deviation alarms for both ramp and dwell |
|    3. Select low vacuum alarm level |
|    4. Alarm system advises specific problem |
|    5. Any alarm causes hold condition, not shut down |
|    6. Alarm hold is automatically released when problem is corrected |
|    7. Easy to silence audible alarm |
|    8. Adjustable loudness |
| Precise PID control, plus Auto-Tune for unusual situations |
| Automatic management of thermocouple break or malfunction |
| Intelligent, automatic restart function after power loss |
| Dot matrix printer offers the following: |
|    1. Standard paper tape and ribbon |
|    2. Time, date, and full program/cure description |

## Standard Features

| Standard Features |
|---|
|    3. Record of Tag Number, P/N, Employee ID |
|    4. Graph of actual cure showing time and temperature |
|    5. Setpoint, actual temperatures and vacuum are printed at selected intervals |
|    6. Print - Temperature Summary or all Thermocouples |
|    7. Record of alarm conditions and alarm clear |
|    8. Prints any program changes or adjustments made during cure |
| Quiet internal vacuum system runs off plant air |
| Vacuum system capable of up to 28 in/Hg |
| Monitor vacuum by separate line from repair |
| External filter/trap cleans plant air |
| Adjustable vacuum level, readable before starting cure |
| Shock mounted components |
| Operates on 90-264 VAC (47-63 Hz) |
| 30 amps per zone allows bigger blankets and more heat |
| Both zones on HCS9200B can be independently powered/operated |
| HCS9200B "Slave" function runs two zones or blankets as one |
| Temperature display in Celsius or Fahrenheit, user selectable |
| Vacuum display in Millibars, in/Hg, or kPa, user selectable |
| Multiple blanket per zone capability |
| All aluminum, scratch resistant, anodized faceplate |
| Ergonomic design, convenient hookup of all accessories |
| Removable lid, lightweight, portable and rugged |
| Circuit breakers are on front panel, no fuses to replace |
| Handles on three sides for convenient handling |

## Options:

- Software security lock with password access
- Menu systems in 4 languages (English, French, Mandarin Chinese, or Japanese)
- Software modifications for special applications
- Customized silicone rubber heat blankets
- Accessory kits and tool packages
- Type "K" Thermocouples
- Special Hot Bonder/cure process training
- Accessory storage in removable lid
- User defined PID values
- 0.1 degree ramp rate
- Accessory case (HCS1011-005)

## *Configure your Hot Bonder Package*

### STEP 1: Select Composite Repair Unit

| Model | Yes/No |
|---|---|
| HCS9000B / HCS9200B | |
| HCS9000B-EV / HCS9200B-EV | |
| HCS9000FL / HCS9200FL | |

### STEP 2: Select Options

| Item | Yes/No |
|---|---|
| Accessory Storage Lid | |
| Accessory Storage Case HCS1011-05 | |
| Type K Thermocouple Operation (p 43) | |
| Special Vacuum Fitting Options | |
| Special Software Option | |
| Security Password Protection | |

### STEP 3: Select Voltage for Repair Unit

| 120V |
|---|
| 240V |

### STEP 4: Select Input Power Cable

| Item | Voltage | Yes/No |
|---|---|---|
| HCS9000-70-145 (US) | 120V | |
| HCS9000-70-140 (US, Asia) | 100V/220V | |
| HCS9000-70-150 (Europe) | 100V/220V | |
| HCS9000-70-160 (China) | 250V | |

### STEP 5: Select Output Power Cable

| Item | Voltage | Yes/No |
|---|---|---|
| HCS9000-71-220 | 125V/30A | |
| HCS9000-72-220 | 250V/30A | |
| HCS9000-71-145 | 125V/30A | |
| HCS9000-72-180 | 250V/30A | |
| Other (specify) | | |

### STEP 6: Thermocouple Type

| Item | Yes/No |
|---|---|
| Standard (Type J Disposable) | |
| Type J | |
| Type K (must select Type K Operation in Step 2) | |

### STEP 7: Select Heat Blankets

| Item | Voltage | Yes/No |
|---|---|---|
| Standard | 120 / 240V | |
| Stretchable | 120 / 240V | |
| Flightline (for use ONLY with flightline bonders) | 120 / 240V | |

To properly configure your Hot Bonder, please follow the steps outlined here. This will help ensure you obtain the correct product to meet your specific requirements. Consult your "Authorized Documentation", such as the SRM, for specific details and application procedures.

**HEATCON COMPOSITE SYSTEMS**®

## *Network Controller*

### Specifications

| | |
|---|---|
| Weight | 15lbs (6.8kg) |
| Dimensions | 18in x 13in x 5.75in (45.7cm x 33.02cm x 14.6cm) |
| Network Ports | 13 |
| Power | 90-264VAC (47-63Hz) |
| Alarm | Dynamic / Control Integration |
| Screen | High-Resolution, Software Dimmable, and Sunlight readable LCD Screen (5.25in x 6.75in) |
| Up to 25 Networkable Zones Available | |
| Up to 16 Zones Running a Common Program | |
| Power Failure and Connection Loss Auto Recovery | |
| USB Interface for Data Export to USB Storage Device | |

The HCS9300NW Series Network Controller is used to coordinate the operation of multiple HCS9000/9200 Hot Bonders to accomplish large area cures or thermally complex repair situations where multiple zones are required. The Network Controller centralizes the operator interface, data collection and cure record export functions, and bonder synchronization tasks into one unit, allowing easier management of complex composite repair scenarios.

*HCS9300Z Network Node Hot Bonder requires a HCS9300NW Network Controller to operate.

The HCS9300Z Network Node Hot Bonder has the basic components of a hot bonder without a user interface. The unit uses a high technology combination of hardware and software to accomplish large or complex composite repair and parts fabrication. The Network Node serves as an alternative to using a standard hot bonder, saving size and weight, with maximum portability. All operation is controlled through the HCS9300NW Network Controller.

Image not to scale
Hot Bonders sold separately

## CONTROL MULTIPLE HOT BONDERS FROM A SINGLE LOCATION!

### Accessories Included:

- Power Cords
- Network Cables
- Extra Printer Ribbon and Printer Paper
- Data Capture Analysis Software (DCAS)
- USB Drive
- Removable Storage Lid

**Specific accessories are described by quotation**

# Multizone Composite Repair System

## Specifications

| | |
|---|---|
| Weight | 200lbs (91kg) |
| Dimensions | 56in x 23in x 26in (1423mm x 584mm x 660mm) |
| Expansion Ports | 04 |
| Input Power | 380-415VAC (50-60Hz), 3 phase |
| Output Power | 220-240VAC (50-60Hz), 1 phase |
| Alarm | Dynamic / Control Integration |
| Screen | High-Resolution, Software Dimmable, and Sunlight readable LCD Screen (5.25in x 6.75in) |
| AMPS Maximum | 30 AMP per zone |
| Thermocouple | 10 per zone, 6 zones available |
| Up to 6 Independent Zones Available | |
| Up to 4 Groups of Zones Running a Common Program | |
| Power Failure and Connection Loss Auto Recovery | |
| USB Interface for Data Export to USB Storage Device | |

Multizone Back Panel
Features a 6-zone System

The HCS9306R is a six zone composite repair system used to accomplish large area cures or thermally complex repair situations where multiple zones are required. The multizone composite repair system brings together six independent hot bonders into a convenient mobile rack, allowing easier management of complex composite repair scenarios. The multizone system is intended for use in shop repair and manufacturing applications.

## ZONE OPERATION BASED ON PROVEN HEATCON HOT BONDER TECHNOLOGY!

### Product Features:
- Integral ground fault protection with resettable circuit breakers
- 4 auxiliary network ports for connecting additional hot bonder systems
- Built in electric vacuum pump
- Standard thermocouple jacks, power, and vacuum connectors
- Built in printer
- Alternate zone and power configurations upon request

### Accessories Included:
- Power Cords
- Network Cables
- Extra Printer Ribbon and Printer Paper
- Data Capture Analysis Software (DCAS)
- USB Drive

SPECIFIC ACCESSORIES ARE DESCRIBED BY QUOTATION

**EQUIPMENT**

## Micro Bonder

Bonders provided by HEATCON Composite Systems are used to control localized heat sources for a wide variety of manufacturing and repair applications which require the curing of prepregs, resins or adhesives.

The HCS8800 Micro Bonder is especially well-suited for use in repair environments which require portability and light weight.

Bonders typically support 'out-of-autoclave' processing, and are especially useful for on-aircraft repair and secondary curing applications in the manufacturing environment.

**LCD Graphic Display**
**Audible Alarm**
**Type J Thermocouples**
**4 Key Operator Interface**
**USB Data Connection**
**Integrated Circuit Breaker and Power Switch**
**Vacuum Monitoring Capability**
**Printer Station Compatible**

**ONLY 4.1 lbs (1.9 kg)**

## Lightweight, Portable and Easy to Operate...

| SPECIFICATIONS | |
|---|---|
| **Weight** | 4.1 lbs (1.9kg) |
| **Dimensions** | 10 in. x 6.5 in. x 2.5 in. (25.4cm x 16.51cm x 6.35cm) |
| **Operating Voltage:** | 120 or 240V, single phase |
| **Current (Amps) Maximum Load:** | 16 Amps |
| **Operating Environmental Limitations:** | Temperature: 0 - 115° F (-18° - 46.1° C) |
| | Relative Humidity: 0 - 99% |
| **Cure Temperature Range:** | 0 - 500° F (-18° - 260° C) |
| **Internal Control System Resolution:** | 0.5° F (0.28° C) |
| **Display Resolution:** | 1.0° F (0.55° C) |
| **Program Resolution:** | 1.0° F (0.55° C) |
| **Temperature Accuracy:** | +/- 1° F (0.55° C) |
| **Control Methods:** | Hottest TC Coolest TC TC Average |

| SPECIFICATIONS | |
|---|---|
| **Vacuum Monitoring Capability:** | 0 - 30 Hg |
| **Temperature Feedback:** | 4 Type J Thermocouples |
| **Operation Interface:** | 4 Push Buttons with Menu Selected/Real Language Screens on a Dark and Sunlight Readable 2.8 in. (7.11cm) Liquid Crystal Display (LCD) |
| **Power Failure/Recovery:** | Power Recovery within 2 minutes of power loss results in continued program operation |
| **Alarm Volume:** | 77 dB (Adjustable) |
| **Programs Stored to Memory:** | 8 Separate programs – either downloaded via USB, or operator-entered |
| **Cure Data Download:** | USB Uploadable to HEATCON Composite Systems® DCAS Software |

**Ideal for Training Environments!**

**HEATCON COMPOSITE SYSTEMS®**

# Printer Station

The HCS2070 Printer Station is a lightweight, portable printer designed for use with HCS8800 and HCS9000C products.

The printer uses a non-thermal, impact print & ink process for a more permanent record than thermal paper can provide. One printer can also be used to print cure records for several bonders.

## SPECIFICATIONS

| | |
|---|---|
| Weight | 2.5 lbs (1.133kg) |
| Dimensions | 11.28in x 4.72in x 4.97in (28.65cm x 11.98cm x 12.62cm) |
| Power | 90 - 264 VAC, 47-63 Hz, 1 phase,1 Amp Max |

## FEATURES

| |
|---|
| Connects via USB |
| Non-Thermal Dot matrix printer |
| Standard paper tape and ribbon |
| Time, date, and full program/cure description |
| Record of Tag Number, P/N, Employee ID |
| Graph of actual cure showing time and temperature |
| Setpoint, actual temperatures and vacuum are printed at selected intervals |
| Print - Temperature Summary or all Thermocouples |
| Record of alarm conditions and alarm clear |
| Prints any program changes or adjustments made during cure |
| Post cure printing only |

### Accessories Included:

- Power Cable
- Printer Paper
- Carrying Case
- Printer Ribbon
- USB Cable

HCS2070-01
Typical Setup
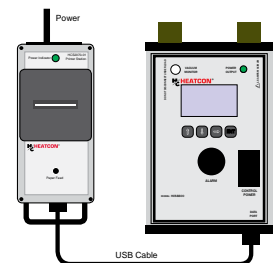
# Paper and Ink

| B-Model Paper and Ink | | | |
|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Details** |
| Printer Paper | | HCS2045-03 | Printer paper roll used for hard copy text and graphic printouts of repair information. |
| Printer Ribbon | | HCS2045-04 | Continuous loop ink ribbon used for printouts of repair information. Use with HCS2045-03 Printer paper roll. |

**EQUIPMENT**

## Calibration Services

Our calibration program is in accordance with ISO10012-1 and MIL-STD-45662A. All instruments used for calibration are certified and have traceability back to N.I.S.T.  We provide calibration services for all HEATCON composite repair systems. Contact us at service@heatcon.com.

## Equipment Support Program

| HCS8800 | HCS9000B / EV / FL | HCS9200B / EV / FL |
|---|---|---|
| Part Number | Part Number | Part Number |
| HCS8800-ESP1 | HCS9000-ESP1 | HCS9200-ESP1 |

**A 3-year optional package that includes:**

- Annual Calibrations
- Software Updates
- In-Depth Inspections
- Functional Testing

- Paper / Ribbon Replacement

**Note: Term effective from date of shipment on new equipment. Standard software revisions only. No options included.**

## Equipment Leasing / Renting

### Leasing Program

The HCS 9000B and 9200B bonders are available for purchase through extended 24-month leasing payments.  Terms and conditions apply and will be provided upon request.
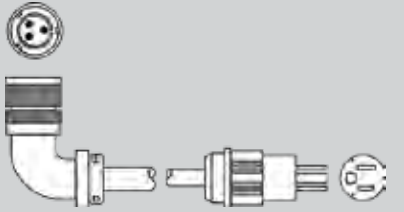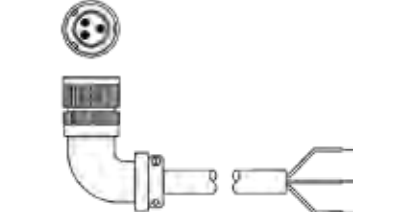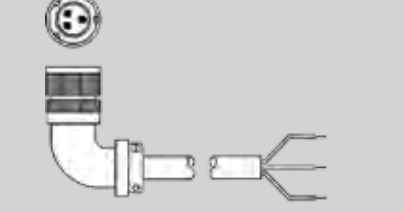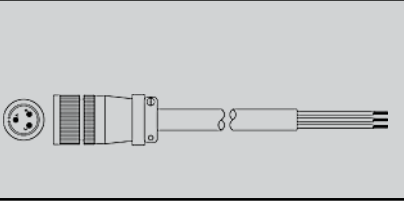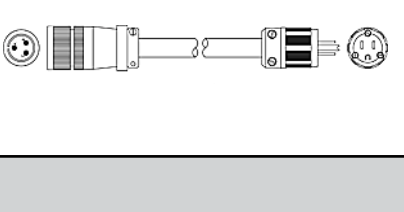
### Rental Program

Bonders (HCS 9200B, HCS 9000B and HCS 8800) and Hot Air Machines (HCS 2041-01) may be rented at favorable monthly rates.

## Warranty Services

HEATCON Composite Systems® now warranties all of our Hot Bonders for 3 full years and 1 full year on all of our HCS manufactured products against parts and workmanship defects from date of delivery, provided such products are properly applied, used, and maintained. Should any product fail under warranty conditions, it will be repaired or replaced at no charge. If you need warranty service for your product contact us for instructions on where to send your equipment. (See actual written warranty for complete coverage details and conditions.)
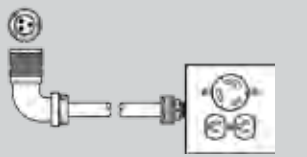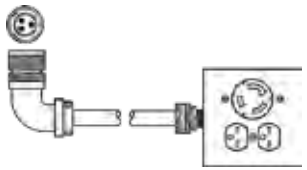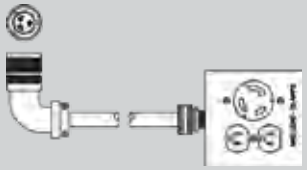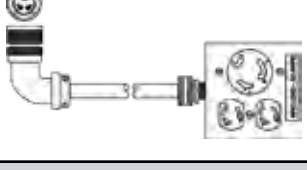
## *Equipment Input Cables*
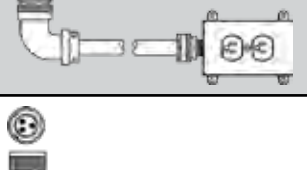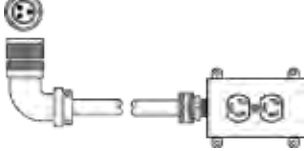
| B-Model Equipment Input Cables | | | | |
|---|---|---|---|---|
| **Description** | **Image** | **Part Number**[2] | **Color Code** | **Wire Support** |
| Input Power Cable - with plug | | HCS9000-70-145 | **U.S.**<br>Black<br>White<br>Green | Up to 30A @ 125VAC<br><br>15A Installed Plug |
| Input Power Cable - without plug[1] | | HCS9000-70-140 | **U.S./ASIA**<br>Black<br>White<br>Green | Up to 30A @ 250VAC |
| Input Power Cable - without plug[1] | | HCS9000-70-150 | **EUROPEAN**<br>Brown<br>Blue<br>Green | Up to 30A @ 250VAC |
| HCS8800 - Equipment Input Cables | | | | |
| Input Power Cable - without plug[1] | | HCS2001-46 | **U.S.**<br>Black<br>White<br>Green | Up to 20A @ 250VAC |
| Input Power Cable - with plug | | HCS2001-49 | **U.S.**<br>Black<br>White<br>Green | Up to 20A @ 125VAC<br><br>15A Installed Plug |
| Input Power Cable - with plug | | HCS2001-50 | **EUROPEAN**<br>Brown<br>Blue<br>Green | Up to 20A @ 250VAC<br><br>15A Installed Plug |

[1]**User installs plug.**
[2]**Part of Standard Accessory Package.  Based on Customer Requirements.**

**EQUIPMENT**

## Equipment Output Cables

| B-Model Equipment Output Cables | | | | | | | |
|---|---|---|---|---|---|---|---|
| Description | Image | Part Number | Lead Length | Blade Type | NEMA | Volts | Amps |
| Output Power Cable - with Receptacle | | HCS9000-71-220 | 5ft (1.52m) | Twist Lock | L5-30 | 125V | 30A |
| Output Power Cable - with Receptacle | | HCS9000-72-220 | 5ft (1.52m) | Twist Lock | L6-30 | 250V | 30A |
| Output Power Cable - with Receptacle | | HCS9000-72-225 | 10ft (3.05m) | Twist Lock | L6-30 | 250V | 30A |
| Output Power Cable - with Receptacle | | HCS9000-71-225 | 10ft (3.05m) | Twist Lock | L5-30 | 120V | 30A |
| Output Power Cable - 4-Gang Box | | HCS9000-71-175 | 5ft (1.52m) | Straight | 5-15 | 125V | 4-15A |
| Output Power Cable - 4-Gang Box | | HCS9000-72-175 | 5ft (1.52m) | Straight | 6-15 | 250V | 4-15A |
| Output Power Cable - 4-Gang Box | | HCS9000-71-155 | 5ft (1.52m) | Twist Lock | L5-15 | 125V | 4-15A |
| Output Power Cable - 4-Gang Box | | HCS9000-72-155 | 5ft (1.52m) | Twist Lock | L6-15 | 250V | 4-15A |

**EQUIPMENT**

## *Equipment Output Cables*

| B-Model Equipment Output Cables | | | | | | | |
|---|---|---|---|---|---|---|---|
| Description | Image | Part Number | Lead Length | Blade Type | NEMA | Volts | Amps |
| Output Power Cable - Duplex Receptacle |  | HCS9000-71-230 | 5ft (1.52m) | 1 @ 30A Twist Lock 2 @ 15A (Straight Blade available in any output configuration) | L5-30 /5-15 | 125V | 1-30A/ 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-72-230 | 5ft (1.52m) | 1 @ 30A Twist Lock 2 @ 15A (Straight Blade available in any output configuration) | L6-30 /6-15 | 250V | 1-30A/ 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-71-245 | 10ft (3.05m) | 1 @ 30A Twist Lock 2 @ 15A (Straight Blade available in any output configuration) | L5-30 /5-15 | 125V | 1-30A/ 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-72-245 | 10ft (3.05m) | 1 @ 30A 2 @ 15A Twist Lock | L6-30 /6-15 | 250V | 1-30A/ 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-71-170 | 5ft (1.52m) | Straight | 5-15 | 125V | 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-72-170 | 5ft (1.52m) | Straight | 6-15 | 250V | 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-71-145 | 5ft (1.52m) | Twist Lock | L5-15 | 125V | 2-15A |
| Output Power Cable - Duplex Receptacle |  | HCS9000-72-180 | 5ft (1.52m) | Twist Lock | L6-15 | 250V | 2-15A |

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## Equipment Output Cables

### HCS8800 - Equipment Output Cables

| Description | Image | Part Number | Lead Length | Blade Type | NEMA | Volts | Amps |
|---|---|---|---|---|---|---|---|
| Output Power Cable with Receptacle |  | HCS2005-56 | 5ft (1.52m) | Straight | 5-15 | 125V | 15A |
| Output Power Cable with Receptacle |  | HCS2005-57 | 5ft (1.52m) | Straight | 6-15 | 250V | 15A |
| Output Power Cable with Receptacle |  | HCS2005-60 | 5ft (1.52m) | Pin / Socket | CA Style | 125V 250V | 20A |
| Output Power Cable with Receptacle |  | HCS2005-61 | 5ft (1.52m) | Twist Lock | L5-15 | 125V | 15A |
| Output Power Cable with Receptacle |  | HCS2005-62 | 5ft (1.52m) | Twist Lock | L6-15 | 250V | 15A |

## Bonder Calibration Kit



The HCS2051 Hot Bonder Calibration Kit is used to perform equipment calibration, traceable to N.I.S.T. standards for FAA and other regulatory body certification.

Proper use of this equipment may eliminate the requirement to send your composite repair system off-site for calibration and certification, reducing repair downtime.

This kit also allows a calibration lab to be functional with a single purchase. Items provided can be used to calibrate most HEATCON composite repair systems. Yearly calibration recommended.

### Specifications:

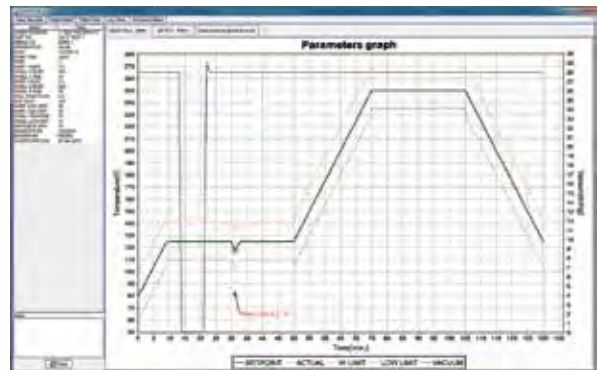| Weight | 5.5lbs (2.5kg) |
|---|---|
| Dimensions | 17.25in x 12.25in x 3.5in (43.82cm x 31.12cm x 8.89cm) |

### Items Included:

- Digital Temperature Calibrator
- Thermocouple Interconnect Cable
- Calibrated Vacuum Gauge
- Hose Assembly & Adapter
- Protective Case

# Data Capture and Analysis Software (DCAS)

The Data Capture and Analysis Software (HCS-DCAS) is a visual graphical program used for cure evaluation and to create / store a history of cure records for maintenance repair organizations.

| Software Package Includes: |
| --- |
| Data Capture Software Flash Drive |
| Installation Guide |
| |

| System Requirements: |
| --- |
| Windows® 98 or Newer Operating System[1] |
| Serial (DB9) or USB Connector |
| For legacy bonders equipped with a DB9 serial port, the HCS9000-74-100 Serial Cable is required for data export |
| For PCs not equipped with a DB-9 (RS-232) serial port, the HCS1018-020 USB to Serial Adapter is available |
| Note: Hot Bonder software revisions .8A - .8H require Data Export Software to be installed on the Hot Bonder |
| |

| Features: |
| --- |
| Summary and Detailed Graph Display of Cure with Time, Temperature, and Vacuum |
| Events Log Page with Time-stamped Alarms, Program Changes, Power-loss Events, and Program Step Changes |
| Cure Records Database with Ability to Easily Search for Individual or Groups of Cures by Single or Multiple Fields |
| Built-in Excel Spreadsheet Format Data Export |
| Built-in Print Function for any page of the Cure |
| Record, Enabling Hardcopy Distribution and Record Retention |
| [1]Windows is a Registered Trademark of Microsoft Corporation. All Rights Reserved. |

**Available as a FREE Download. Call your representative for more information.**

| Part Number | Description |
| --- | --- |
| HCS-DCAS-04 | Data Capture Software |
| HCS9000-74-100 | Serial Cable |
| HCS1018-020 | USB to Serial Adapter |



**Cure Records**



**Graph View**



**Table View**



**Log View**

**HEATCON COMPOSITE SYSTEMS**®

## *Power Booster Box*



The HCS2040 series Power Booster Boxes are designed to connect directly to the output from your HCS9000/HCS9200 Hot Bonder. Three-phase power is supplied to the booster on a separate circuit, and is internally switched to control your large repair. An emergency stop is included for operator safety.

| Power Booster Box | | | | |
|---|---|---|---|---|
| **Model Number** | **Maximum Output Load** | **Input Voltage 30Amps** | **Output 3 Phase** | **Output 1 Phase** |
| HCS2040-09 | 19.7kW | 380/415 VAC 3 Phase WYE | 2ea @ 380/415 VAC 20A | 6ea @ 220/240 VAC 15A |

## Typical Setup:



Input Power 120/240V

Power In 3 Phase

Heat Blanket

Heat Blanket
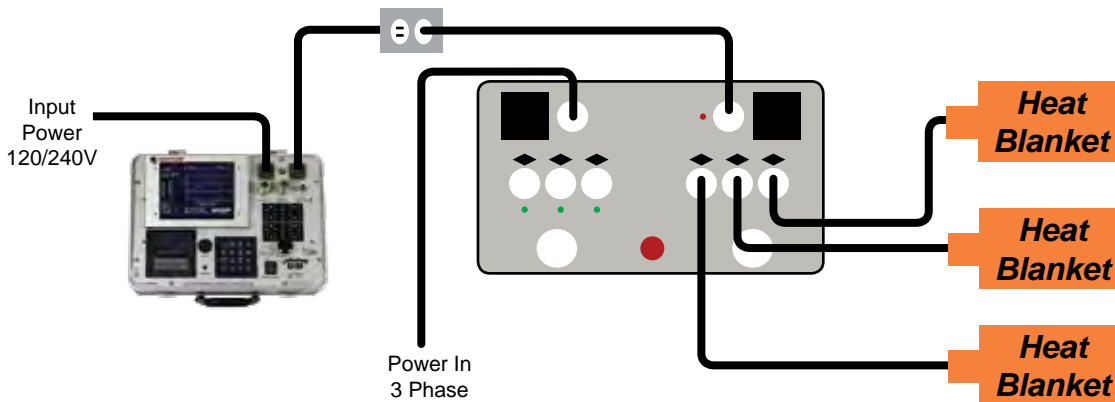
Heat Blanket

**Allows the user to operate up to 6 large Heat Blankets, at the same time!**

## Accessories Included:

- Input Power Cable
- Bonder Interface Cable

**Specific accessories are described by quotation**

## Specifications:

| Weight | 40lbs (18.1kg) |
|---|---|
| Dimensions | 24.5in x 15in x 12in (62.2cm x 38.1cm x 30.4cm) |

EQUIPMENT

## RepairClave



*Example Shown: HCS3100-36-120*
**US Patent - 7,137,799**
**Canadian Patent: 2,534,014**

Our patented HCS3100 RepairClaves are custom built semi-portable pressure vessels. They are designed to provide controlled temperature, vacuum, and pressure during composite and metal bond repair processes.

The positive internal pressure applied to the repair enables operators to achieve the higher pressure when required by aircraft manufacturer repair manuals. Heat is applied only where required using specially constructed silicone rubber heat blankets. This method results in reduced operational costs and fewer problems due to temperature induced part damage.

| SPECIFICATIONS | |
|---|---|
| **Dimensions*:** | • Standard lengths start at 3ft (36in), progressing in 3ft increments, up to 30ft (360in)<br>• Inside diameter: 3ft or 4ft (36in - 48in)<br>• Length and diameter may be customizable upon request |
| **Recommended Power Requirements:** | • 120-240V 1-Phase to 480V 3-Phase<br>• Amperage will depend on customer configuration requirements<br>• Other Voltages, Multiple Zones, and Phase Configurations Available |
| **Operating Pressure:** | • ASME certified pressure vessel rated at 150 psi maximum pressure at 400°F<br>• Nominal operating pressure is 100 psi<br>• Certified Pressure Relief Valve built in, per ASME to ensure vessel safety |
| **Construction:** | • Vessel: Constructed from certified rolled plate steel material (SA516-70)<br>• Vessel stamped with final ASME Hydrostatic Test on permanently affixed data plate<br>• Closures: Hinged Closure - various mechanical locking devices<br>• Fixed (Closed) End - Welded Domed Tank Head<br>• Locking Casters and Floor Jacks for mobility and stablization<br>• Additional Auxiliary Ports for future expansion |
| **Calibration:** | • 1 Year Intervals recommended by HEATCON Composite Systems |
| **Re-Certification:** | • No Annual Certification of the Pressure Vessel required |
| *(Please check local government directives which may supercede this requirement)* | |

**\* Non-standard sizes may be available, call for more information.**

**EQUIPMENT**

## RepairClave



*Example Shown:*
*HCS3100-36-36*

**Optimized Interior Space**



**Internal Connectors for ease of use**



**Features:**
- Lighted Interior
- Removable Part Carrier
- Internal Connections for Heat Blankets, Vacuum, and Thermocouples
- Built in Electric Vacuum Pump
- Adjustable Operating Pressures
- Custom Sizes to Suit your Applications
- Safety Indicator for Vessel Pressure
- Flanged Access Ports for Additional Options

**Typical Applications:**
- Rotor Blades • Ailerons • Rudders
- Wing Flaps • Winglets • Elevators

**Built-in Vacuum System**



**Customized Control Panels**



## CUSTOM SIZES AVAILABLE TO SUIT YOUR APPLICATIONS!



*Example Shown:*
*HCS3100-48-360*

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# Phosphoric Acid Containment System (PACS)

## Developed Under a Licensing Agreement from Boeing

The HCS2046-02 Phosphoric Acid Containment System (PACS) includes all equipment necessary for trained operators to perform a phosphoric acid anodizing process. The control methods for this unit are automatic timing and voltage monitoring and manual flow adjustment. Operator Interface is 20 character, backlit LCD display, 5 push-button operation, and flow control valve for flow adjustment. The HCS2046-02 also includes an alarm for both voltage shorts and low flow rate with 85dB and adjustable volume.



### Stainless Steel Screens in Kits (1ea):

**Mesh Size:** 16in x 16in, 0.018AWG

**Stainless Grade:** 304
12in x 12in (30.48cm x 30.48cm)
10in x 10in (25.4cm x 25.4cm)
8in x 8in (20.32cm x 20.32cm)
6in x 6in (15.24cm x 15.24cm)

### SPECIFICATIONS:

| Weight | 15lbs (10kg) |
|---|---|
| Dimensions | 16.5in x 12in x 9in (41.91cm x 30.5cm x 22.86cm) |
| Input Power | 90VAC - 264VAC (45 - 65Hz) |
| Output Power | 3-10V, 10A maximum |

Stainless Steel Screens, Fluid Recovery / Supply Bottles, and Connectors must be ordered separately or from the available kits **Specific accessories are described by quotation.**

### Accessories Included:

- PACS Console
- Flow Control Head
- Inlet Air Filter
- Power Lead Set
- (2) Carbon Filter for Vacuum Exhaust

| Bottle Kit Description | Image | Part Number | Details |
|---|---|---|---|
| Bottle Kit, Large<br><br>Designed for Larger Repair Areas |  | HCS2046-02-300 | Fluid Containment Bottles<br>- 2 ea 10L bottles<br>- 1 ea 4L bottle<br>- 1 ea 2L bottle<br><br>Stainless Steel Screens<br>12in x 12in, 10in x 10in, 8in x 8in, 6in x 6in<br>(30.48cm x 30.48cm, 25.4cm x 25.4cm, 20.32cm x 20.32cm, 15.24cm x 15.24cm)<br>(1ea) Connectors |
| Bottle Kit |  | HCS2046-02-200 | Fluid Containment Bottles<br>- 2 ea 5L bottles<br>- 2 ea 2L bottle<br><br>Stainless Steel Screens<br>12in x 12in, 10in x 10in, 8in x 8in, 6in x 6in<br>(30.48cm x 30.48cm, 25.4cm x 25.4cm, 20.32cm x 20.32cm, 15.24cm x 15.24cm)<br>(1ea) Connectors |

# HEATCON COMPOSITE SYSTEMS®

**EQUIPMENT**

## PACS Accessory Assortment

| Description | Image | Part Number | Details |
|---|---|---|---|
| Service Cart (Console) | | HCS2046-02-021 | Acid Resistant<br>24in x 36in x 32.5in<br>(60.96cm x 91.44cm x 82.55cm) |
| Phosphoric Acid Solution - 1 Liter | | HCS2046-02-002 | 12%, 1L Package |
| Phosphoric Acid Solution - 4 Liter | | HCS2046-02-002-4 | 12%, 4L Package - Cubitainer |
| Acid Disposal Container | | HCS2046-02-003 | Polyethylene Drum<br>55gal Capacity<br>(208.17L) |
| Spill Containment Pallet | | HCS2046-02-004 | 51.5in x 51.5in x 10in<br>(130.81cm x 130.81cm x 25.4cm)<br>62gal Spill Capacity<br>(234.67L) |
| Sodium Bicarbonate Powder | | HCS2046-02-005 | 500g<br>(0.5kg) |
| Emergency Spill Kit | | HCS2046-02-006 | For chemical/acid spill cleanup |
| Acid Storage Cabinet - 2 Door | | HCS2046-02-007 | 65in x 43in x 18in<br>(165.1cm x 109.22cm x 45.72cm) |
| Polarizing Inspection Filter | | HCS2046-02-008 | |
| Fluorescent Inspection Lamp | | HCS2046-02-009 | 15W, 120V, 60Hz<br>25ft (7.62m) Cord |
| pHydrion™ INSTA-CHEK 0-13 Jumbo pH Testing Paper | | HCS2046-02-010 | Dispenser w/paper<br>0-13pH |
| Safety Goggles | | HCS2046-02-011 | Chemical Splash resistant, anti-fog design |
| Safety Apron | | HCS2046-02-013 | Heavy-Duty Nitrile coated with adjustable neck and waist |
| Safety Gloves Nitrile | | HCS2046-02-012 | S, M, L or XL when ordering 50 Pair/box |

**Venting Closure Lid for PACS System Sold Separately**      **pHydrion is a registered trademark of Micro Essential Laboratory**

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# Composite Curing Ovens

Our HCS2910 series ovens have been designed to meet demanding composite curing requirements. Airflow patterns maximize temperature uniformity throughout the oven and provide rapid ramp rates. Digital controls and power switching components ensure accurate temperature control. We offer installation and startup assistance for all ovens. Consult your sales representative for a quotation.

## Standard Capabilities:
- **Dual or Horizontal Airflow**
- **Maximum Operation Temperature of 500°F (260°C)**
- **Standard Units - 80 ft³ (2.3 m³) to 1000 ft³ (28.3 m³)**

## Standard Construction:
- **Double front opening doors**
- **Double wall construction**
- **High temperature insulation and gaskets**
- **Internal vacuum connections**
- **Internal temperature monitoring thermocouple jacks**
- **Gas or electric heating options available**

*HCS2040-12 Oven Controller*

## HCS2040-12 SPECIFICATIONS:

| | |
|---|---|
| Weight | 20lbs (9kg) |
| Dimensions | 21in x 7.5in x 7.5in (53.34cm x 19.05cm x 19.05cm) |
| Power: | (Voltage) 90 – 264 Volts AC, 47 – 63 Hz |
| Current: | (Amperage) 2A |
| Operating Environmental Limitations: | Temperature: 32 – 122 °F Relative Humidity: 0 – 93% |
| Operator Interface: | Menu Selected / Real Language Screens Presented on a 6.8" X 5.2" Color LCD Panel |

## HCS2040-12 SPECIFICATIONS:

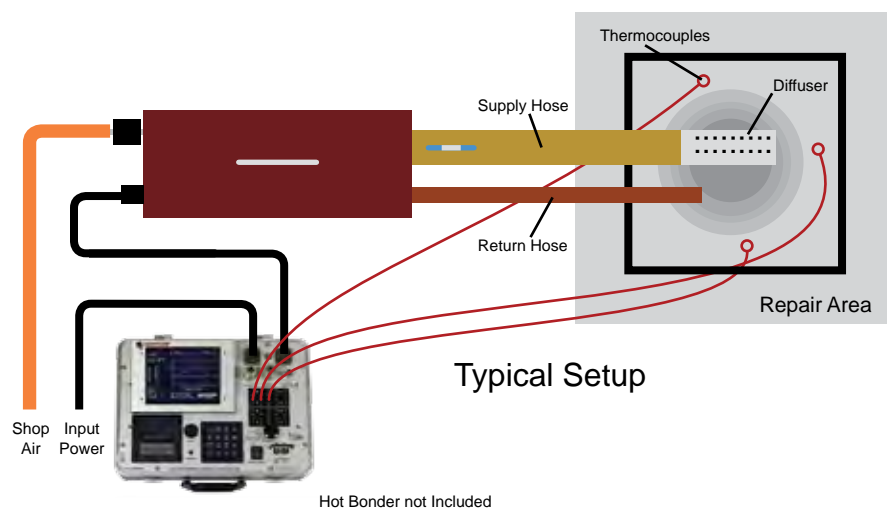| | |
|---|---|
| Power Failure / Recovery: | Programmable 1-15 Minute Auto-Recovery with Continued Program Operation. Default 2 Min. |
| Alarm Volume: | 90 dB, Adjustable Volume |
| Programs Stored to Memory: | 30 Separate, Operator Entered Programs |
| One Vacuum Level Transducer | |
| Two Dedicated Air Temperature Control Thermocouples with Eight Part Monitoring Thermocouple Channels | |

**HEATCON COMPOSITE SYSTEMS®**

## Hot Air Curing System

### Standard all Models

| Size | 22in x 8in x 6.5in (55.39cm x 20.3cm x 16.5cm) |
|------|------------------------------------------------|
| Weight | 9 lbs (4kg) |
| Safety | Internal High Limit |
| Plant Air | 80psi / 4CFM |

### SPECIFICATIONS

| Model | Power | Input | Coverage Area |
|-------|-------|-------|---------------|
| HCS2041-01 | 1800W | 110 / 120V | 19in x 19in (48cm x 48cm) |
| HCS2041-02 | 3000W | 220 / 240V | 24in x 24in (61cm x 61cm) |
| HCS2041-03 | 6000W | 220 / 240V | 30in x 30in (76cm x 76cm) |
| HCS2041-04 | 3600W | 110 / 120V | 24in x 24in (61cm x 61cm) |

Thermocouples

Supply Hose

Diffuser

Return Hose

Repair Area

Typical Setup

Shop Air    Input Power

Hot Bonder not Included

This Portable Hot Air Composite Curing System fills an important gap in composite repair techniques by applying heat to difficult shapes or hard to reach areas. Primary applications are composite repairs, secondary bonding, and modifications to composite structures. Powered and controlled by a Hot Bonder, it can be effectively used in place of standard silicone rubber heat blankets. More importantly, it provides even heating of contoured surfaces where a heat blanket cannot be used.

A typical procedure involves vacuum bagging the repair area and placing thermocouples in strategic locations. A second bag, and the supplied insulation shroud, is then applied to make a tent which fills with hot air. To provide consistent temperature, hot air enters the tent through a controllable diffuser and may be recirculated by way of a return hose. The system is easy to set-up and operate and includes the hot air generator as well as high temperature hoses, an air diffuser and insulation shrouds. It will heat an approximate surface area of up to 30in x 30in (76.2cm x 76.2cm) at 250°F (121°C) with ease. Depending on the application and techniques used, it is capable of heating a larger area at higher temperatures.

Applications are constantly evolving, so call for the latest developments.

# Infrared Curing Systems

## HCS2044-10-T

| | |
|---|---|
| Weight | 130lbs (58kg) |
| Frame Dimensions | 65.5in x 32.5in x 40in (166cm x 82cm x 101cm) |
| Input Power | 240VAC, 50-60Hz., 1 Phase, 14A |
| Output Power | 3000W |
| Head Lamp Modules | 3 |

## HCS2044-20-T

| | |
|---|---|
| Weight | 145lbs (65kg) |
| Frame Dimensions | 65.5in x 45in x 40in (166cm x 114cm x 101cm) |
| Input Power | 240VAC, 50-60Hz., 1 Phase, 28A |
| Output Power | 6000W |
| Head Lamp Modules | 6 |

## Distinct Specifications

| | |
|---|---|
| Arm Length | 54in (137cm) |
| Head Pivot Height | 34in to 76in (86cm to 193cm) |
| Head Swivel Left-Right | -90 to +90° |
| Head Swivel Up-Down | -90 to +90° |
| Head Lamp Angles | Fully open straight (2X 180°) to fully closed (2X 60°) |

## Standard Features

| Item Number | Feature |
|---|---|
| 1 | Pneumatic Spring Assist |
| 2 or 3 | Selectable Control: IR Sensor or Four Thermocouples |
| 4 | Fused System for Safety |
| 5 | Cable Hook for Easy Storage |
| 6 | Welded Steel Construction |
| 7 | Powder Coated Finish |
| Industrial Grade Components | |
| HCS2070 Printer Station Compatible | |
| CE Certified | |

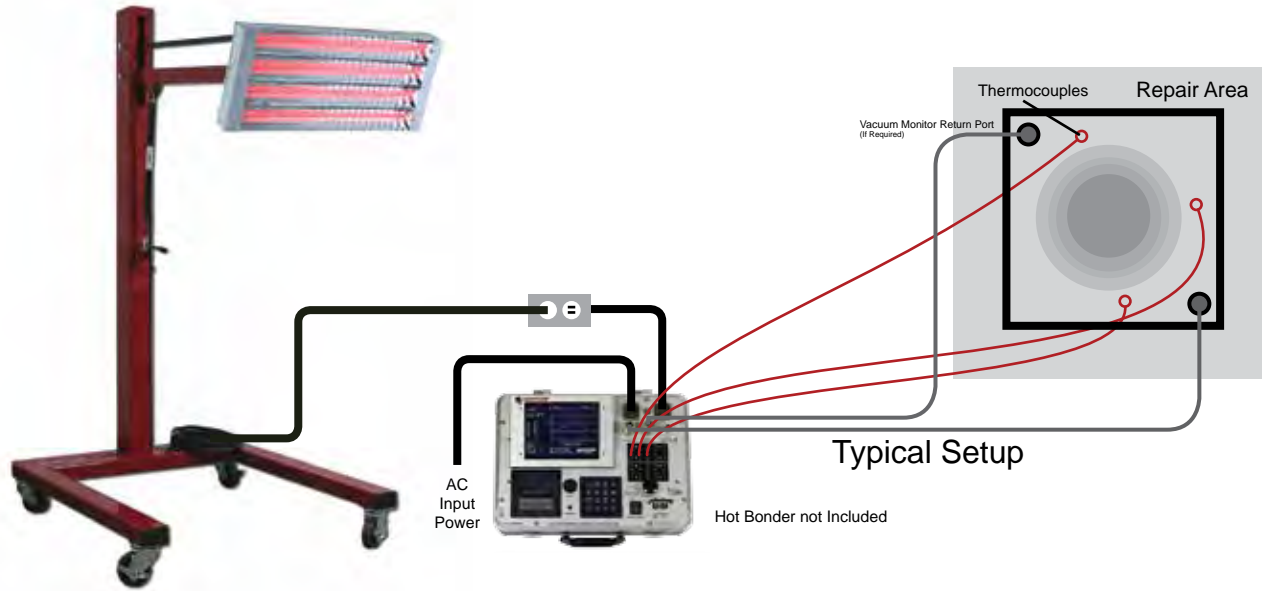*** Plug not included**



## Controller

| |
|---|
| LCD Display Screen |
| Programmable Ramp and Soak Settings |
| Data Export via built in USB port |
| Easy to Operate & Control |
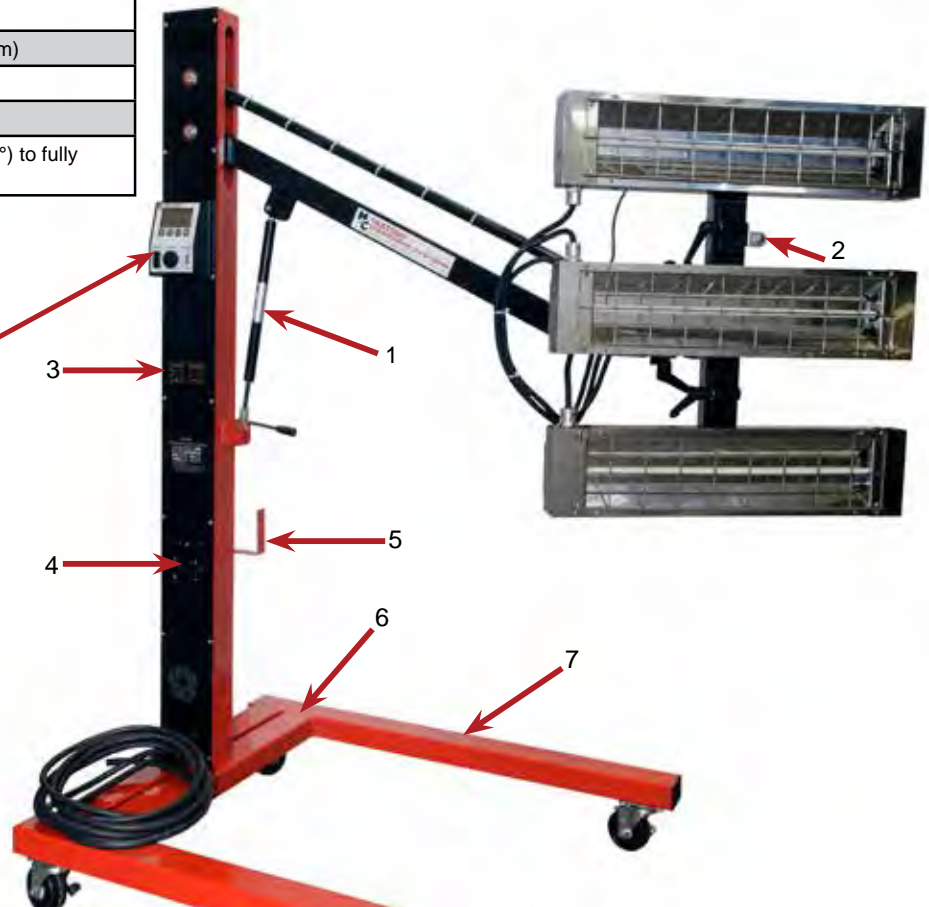
The primary system application is to accelerate the cure of two part resin systems, paint, primers and other coatings.

High-efficiency, electric quartz infrared heat elements that provide non-contact radiant heat to the surface of the heated part. An adjustable head allows heat to be directed where it is needed.

**EQUIPMENT**

## Hot Bonder Controlled Heat Lamps



Thermocouples    Repair Area

Vacuum Monitor Return Port
(If Required)

AC
Input
Power

Hot Bonder not Included

Typical Setup

**HCS2044-30-02 Series**

| HCS2044-30-02-120 / 220 | |
|---|---|
| Wattage | 3600W |
| Head Dimension | 26in W x 12in H x 2in D (66.04cm W x 30.48cm H x 5.08cm D) |
| Controlled with Hot Bonder | |
| **HCS2044-30-01-120 / 220** | |
| Wattage | 1600W |
| Head Dimension | 12in W x 12in H x 2in D (30.48cm W x 30.48cm H x 5.08cm D) |
| Controlled with Hot Bonder | |
| **Standard Stand Size** | |
| Height | 68in (172.72cm) |
| Width | 31in (78.74cm) |
| Depth | 40in (101.6cm) |



**HCS2044-30-01 Series**

The primary system application is to accelerate the cure of two-part resin systems, paint, primers and other coatings. Head configurations can be custom designed to meet your needs

# Debulking and Curing Table

HCS7500-07 shown

The primary system application is curing and debulking of large size composite parts. This can be a difficult process, but HEATCON Composite Systems® has addressed this with our HCS7500 Series of Heated Vacuum Debulking and Curing Tables. By utilizing this equipment, debulking and curing of large panels can be accomplished with less time and less expense as compared with other methods. There are four different sizes and multiple options to choose from. Custom manufacturing of tables to customer requirements is also available.

## *MAKING EASY WORK OF LARGE PART REPAIRS!*

### Standard Features:
- **Welded Aluminum Tube Frame**
- **Locking Caster Wheels**
- **Reusable Vacuum Bag Assembly**
- **Electric Vacuum Pump System**
- **Temperature Range to 400°F (204°C)**
- **HCS9000 Panel Mount Control System**
- **8 Thermocouple Monitor Ports**

### Options:
- **Voltage - 240V (Model -06), 380V, 480V (3 Phase)**
- **Lid - None, Standard, or Insulated**
- **Electric Vacuum Pump or None (plumbing only)**
- **Vacuum Gauge (Inches Mercury and kiloPascals or Millibars)**

## SPECIFICATIONS:

| HCS7500 | -06 | -07 | -08 | -09 |
|---|---|---|---|---|
| Length | 60in (152.4cm) | 72in (182.9cm) | 72in (182.9cm) | 120in (304.8cm) |
| Width | 48in (121.9cm) | 48in (121.9cm) | 60in (152.4cm) | 60in (152.4cm) |
| Height | 36in (91.4cm) | 36in (91.4cm) | 36in (91.4cm) | 36in (91.4cm) |

**EQUIPMENT**

## Double Vacuum Debulking (DVD) Chamber

### *OUTSTANDING POROSITY REDUCTION CAPABILITY!*

The HCS7600 series DVD Chamber is a custom designed, double vacuum, debulking chamber used for pre-curing composite repair patches resulting in a near-autoclave quality repair. DVD Chamber operation is an operator and/or repair-specific combination of traditional Hot Bonder controlled heat and bag-vacuum with operator controlled chamber vacuum. The DVD Chamber is capable of holding 28 in/Hg vacuum over an extended period of time and is adjustable via an onboard vacuum regulator.

### Standard Features:
- Locking / Rolling Casters
- Pneumatically Operated Chamber Lid
- Hot Bonder Interface Panel to pass Control and Power through the platen to the chamber interior
- Aluminum Construction
- Super-smooth table surface
- Sight Glass and Interior Task Light on 48" sq. and Larger

### Options:
- Built-in Vacuum Supply Pump(s) and Regulator(s)
- Storage shelves, and drawers
- Electric Vacuum Pump for Chamber Vacuum
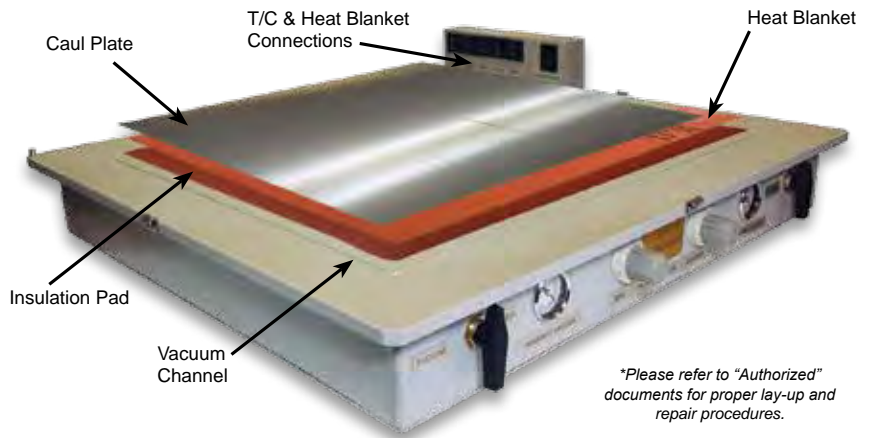
*Specific accessories are described by quotation*

**EQUIPMENT**

# Portable Double Vacuum Debulking (DVD) Chamber



**Vacuum Control Panel**



**Hot Bonder Interface Panel**



Caul Plate

T/C & Heat Blanket Connections

Heat Blanket

Insulation Pad
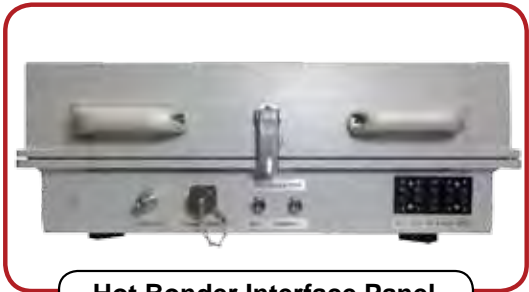
Vacuum Channel

*\*Please refer to "Authorized" documents for proper lay-up and repair procedures.*

**Model: HCS7600-05 Series**

The HCS7600-05 series is a custom designed portable double vacuum, debulking (DVD) chamber. The DVD chamber supports processing of high ply-count composite laminate repair patches in a single cycle. The DVD chamber allows a unique combination of pressure and temperature parameters which provides an improved ability to remove volatiles during debulking of thick laminates. The DVD chamber is capable of holding 28 in/Hg vacuum, either supplied from a hot bonder or facility source, over an extended period of time. The chamber and bag vacuum levels are operator adjustable via on-board vacuum regulators.

## SPECIFICATIONS:

| | |
|---|---|
| Dimensions | Exterior: 30.375in x 25.625in x 10in (77.15cm x 65.08cm x 25.4cm) |
| | Interior: 24.5in x 22.5in x 4in (62.23cm x 57.15cm x 10.16cm) |
| Weight | 88 lbs (39.9Kg) |
| Working Area | 18in X 18in (45.72cm x 45.72cm) |
| Control Input | One (1) Control Zones, 120-240/60/1 from HCS9000/HCS9200 Series Hot Bonder |
| Maximum Interior Temperature | 300°F (149°C) – Material strength decreases significantly when temperatures exceed 250°F (121°C). |
| Maximum Heater Load | 1620 Watts |
| Operating Environmental Limitations: | Temperature: 0° – 122° F (-17° – 50° C) Relative Humidity: 0 – 99 % |
| Interior 'Bag Vacuum' | Determined by vacuum source |
| Interior 'Chamber Vacuum' | Determined by vacuum source |

## Accessories Included:

- Insulation Pad
- Heat Blanket
- Caul Plate
- Thermocouples

**Specific accessories are described by quotation**

### *OUTSTANDING POROSITY REDUCTION CAPABILITY IN A COMPACT UNIT!*

**HEATCON COMPOSITE SYSTEMS®**

**EQUIPMENT**

# Walk-In Freezers



*Model HCS2710-0808 Shown*

The HCS2710 Walk-in freezers are a necessity for larger composite repair facilities. Sizes starting at 8ft x 8ft (2.43m x 2.43m) allow for bulk material storage with easy access. Standard and custom sizes are available to suit your storage needs.

**Refrigeration Units must be matched to the freezer/voltage requirements.**

**You will need to hire a refrigeration contractor to install the freezer and charge the system with refrigerant (not included with purchase).**

## SPECIFICATIONS:

| Model[1] | Length | Width | Height |
|---|---|---|---|
| HCS2710-0808 | 8ft (2.43m) | 8ft (2.43m) | 8ft 7in (2.61m) |
| HCS2710-0812 | 8ft (2.43m) | 12ft (3.65m) | 8ft 7in (2.61m) |
| HCS2710-1212 | 12ft (3.65m) | 12ft (3.65m) | 8ft 7in (2.61m) |
| HCS2710-1216 | 12ft (3.65m) | 16ft (4.87m) | 8ft 7in (2.61m) |
| HCS2710-1220 | 12ft (3.65m) | 20ft (6.09m) | 8ft 7in (2.61m) |
| **[1]Specify voltage when ordering.** | | | |

## Options:

• External access ramp
• Temperature chart recorder
• Strip curtains

Many accessories are available to complete your system. Items such as ramps, racking, freezer curtains, and non-skid coating can be purchased with the HCS2710 or separately. Contact a sales representative for more information.

## Standard Features:

• 26ga embossed galvanized steel, aluminum coated
• Smooth aluminum floor
• Integral thermometer and lighting
• Heavy duty hinges and hardware
• Designed for CFC-free (R-404A Refrigerant)
• 36in (91.44cm) wide self-closing door with emergency release
• Temperature rating to -10°F (-23°C)
• Timed defrost system built-in



## *Sizes start at 8ft x 8ft*
(2.43m x 2.43m)
### *available for quick shipment!*

## Composite Material Freezer

These large capacity freezers are specifically engineered to meet storage requirements for prepreg composite material and our standard 44in (1.12m) cores. Standard models are configured to include a digital temperature controller, chart recorder and an audible over-temperature alarm system.



## Convenient, Safe and Economical Cold Storage!

### Standard Features:

- Outer cabinet of welded steel, two-coat enamel finish, zinc coated
- Inner compartment; welded steel, zinc coated, epoxy enamel finish
- Cabinet sealed to minimized moisture accumulation
- Insulation is environmentally safe, high density, non-settling fiberglass or urethane foam
- Rigid compartment support
- Controls are conveniently mounted in instrument panel
- Refrigerants are CFC-free (non-ozone depleting)
- Breaker strips of ABS

### Standard Features:

- Heavy duty swivel type Casters (recessed)
- Counterbalanced lid, easy opening and safe with magnetic gasket
- Handle, chrome plated, solid die casting, with cylinder key lock
- Sub-lids for added content protection
- Permanently lubricated and hermetically sealed compressor
- Nontoxic, noncombustible refrigerant
- Temperature recorder
- Digital Temperature Controller
- Sonalarm Signal System

| HCS2700 Model | Cubic Feet/Liter | Temp | | Dimension to nearest inch/centimeter | | | | | | Amps 115V/ 230V | Approx. Ship Weight lb/kg | Approx. Net Weight lb/kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Outside | | | Inside | | | | | |
| | | °C | °F | H | W | D | H | W | D | | | |
| -34-22-[1] | 22/623 | -34 | -30 | 35/89 | 73/186 | 30/75 | 25/62 | 66/168 | 20/50 | 10/5 | 350/159 | 220/100 |

**Composite Material Freezer**

[1] 1 = 115V/60Hz, 2 = 230V/50Hz
**Note: Please specify voltage (115V/60Hz or 230V/50Hz) and special options when ordering.**

**EQUIPMENT**

## Circular Chart Recorder

The HCS1335 is a circular chart recorder like no other. Programmable alarm options combined with "ease of set-up" provide the flexibility required for multiple recording applications. The HCS1335 is the first recorder to "self-document" set-up configuration and can operate using standard or competitive charts, another first in the industry. Eliminate "multi-vendor" chart inventories while reducing operator confusion. Protect your process with the battery backup option, continuous recording for up to 48 hours in the event of power loss.

*HCS1335-1110111 (shown)*

*Not compatible with HCS2700-34 and cannot be used as a direct replacement.*

| Description | Part Number |
|---|---|
| 10in (25.4cm) Chart Paper | HCS1335-01 |
| Replacement Pen Units | HCS1335-02 |

[1]**Not available on single pen ink model**
[2]**48 hours of continuous recording**

**UL Pending, CE, CUL**

## Specifications:

| | |
|---|---|
| Weight | 7lbs Maximum (3.17kg) |
| Dimensions | 14in x 14in x 3.8in (35.56cm x 35.56cm x 9.65cm) |
| Line Voltage | 110/220VAC, 50/60Hz |
| Power Consumption | 15VA Maximum |
| Thermocouple (T/C) | Type J,K,T,R,B,S |
| Linear | 4-20 mA, 0-5VDC |
| Common Mode Rejection | > 120dB at 60Hz |
| Cold Junction Accuracy | ±0.2°C @ 25°C ambient |
| Ambient Error | ±0.01% span /°C from 25°C ambient |
| Isolation | PV inputs isolated from all alarm outputs |

### Recording:

| | |
|---|---|
| Chart Size: | 10in (25.4cm) |
| Recording Accuracy: | ±0.5% of span (100 division span) |

## Specifications:

| | |
|---|---|
| Sensor Break: | Full scale pen < 10 seconds |
| Chart Speed: | Configurable |
| Input Filtering: | Programmable up to 120 seconds |

### Miscellaneous Features:

| | |
|---|---|
| Operating Temperature: | 32°F to 140°F (0 to 60°C) |
| Storage Temperature: | 0°F to 149°F (-40 to 65°C) |
| Humidity: | 0-90% RH (non-condensing) |
| Vibration: | 0.3 to 100Hz @ 0.2g |
| Mounting: | ± 20 degrees of vertical ± 10 degrees of horizontal |
| Moldings: | Fire retardant Noryl w/acrylic window |
| Panel Rating: | Nema 3 std (Nema4 option) |
| Panel Cutout: | 12.7in x 12.7in (32.25cm x 32.25cm) |

# *Downdraft Tables*

Our HCS2037 series downdraft tables enable source capture collection efficiency for industrial applications requiring larger, open collection areas and work surfaces. These downdraft tables combine the work surface with the particulate collection area. The downdraft design draws contaminants away from the technician's breathing zone without hindering their movement or productivity. We offer a selection of portable and stationary downdraft tables for most any type of grinding, sanding, and welding application.

HCS2037-24

**Available Options:(Depending on Model Selected)**
- Pressure Gauge
- After Filter
- Silencer
- Center Divider & Side Shields
- Alternate Grate
- Regulator
- Casters
- Regain Enclosure
- Soft-mat Cover
- Backsplash Extension

HCS2037-25
(Designed for Light Duty or Schools)

HCS2037-22

## Downdraft Tables

| Part Number[1] | Table Dimensions (W x H x D) | Work Surface Dimensions (W x D) | Motor (HP) | Downdraft Velocity (FPM) | Noise Level (dBA) | Weight |
|---|---|---|---|---|---|---|
| HCS2037-22 | 32in x 33in x 31in (81.3cm x 83.8cm x 78.7cm) | 32in x 24.5in (81.3cm x 62.2cm) | 1.0 | 150 | 79 | 260 lbs (117.9 kg) |
| HCS2037-23 | 48.5in x 33in x 31in (123.1cm x 83.8cm x 78.7cm) | 48in x 24.5in (121.9cm x 62.2cm) | 1.5 | 208 | 79 | 350 lbs (158.7 kg) |
| HCS2037-24 | 70in x 33in x 42in (177.8cm x 83.8cm x 106.8cm) | 66.25in x 42in (168.2cm x 106.6cm) | 3.0 | 250 | 81 | 850 lbs (385.5 kg) |
| HCS2037-25 | 36in x 30in x 24in (91.4cm x 76.2cm x 60.9cm) | 24in x 36in (60.9cm x 91.4cm) | 0.25 | 250 - 1100 | 65 | 174 lbs (78.9 kg) |

[1]All units available in 50Hz configurations.
NOTE: Please specify voltage, frequency, and other options when requesting quote.

**EQUIPMENT**

## Portable Dust Collectors

Airborne contaminants produced during manufacturing and processing applications are not always effectively collected with ambient dust collector systems.

These portable dust collectors deliver up to 1600 CFM of source collection power anywhere it's needed on the shop floor. These portable dust collectors offer multiple filter options, including: aluminum mesh pre-filters, high-pressure polyester bag filters, and cartridge filters for collection of contaminants from mist and fumes to dust and smoke.

HCS2037-26

HCS2037-27

HCS2037-28

**Available Options:(Depending on Model Selected)**
- Pressure Gauge
- 7ft, 10ft, or 14ft Extractor Arms
- After Filter
- 65 watt Halogen Task Light
- Silencer
- Dual or Triple Extraction Arms
- Pre-Filter

| Portable Collectors | | | | | |
|---|---|---|---|---|---|
| **Part Number[1]** | **Dimensions (W x H x L)** | **Weight** | **Motor (HP)** | **Nominal Air Flow (CFM)** | **Noise Level (dBA)** |
| HCS2037-26 | 24in x 31in x 37in (60.9cm x 78.7cm x 93.9cm) | 255 lbs (115.6 kg) | 1.0 | 800 | 74 |
| HCS2037-27 | 24in x 34.25in x 49.25in (60.9cm x 86.9cm x 125.0cm) | 320 lbs (145.1 kg) | 1.5 | 1200 | 75 |
| HCS2037-28 | 14in x 28in x 21in (35.5cm x 71.1cm x 53.3cm) | 83 lbs (37.6 kg) | 0.5 | Single Arm - 120 Dual Arm - 105 ea. Triple Arm - 80 ea. | 61 |

[1]All units available in 50Hz configurations.
**Note: Please specify voltage, frequency, and other options when requesting quote.**

## Dust Control Booths

Many finishing operations generate heavy concentrations of dust or smoke that cannot be adequately handled by source collection systems. Dust Control Booths™ eliminate this problem by creating self-contained environments that remove airborne contaminants from technician breathing zones and prevent pollutants from interfering with other in-plant operations.

These Dust Control Booths include a stand-alone PowerBooth™, and a modular Dust Control Booth™ system both designed for grinding, sanding, brazing and welding applications. These Dust Control Booths™ are available with air flows up to 27,000 CFM and filtration efficiency to 99.97 with HEPA after-filers.

**Available Options:**(Depending on Model Selected)
- Pressure Gauge
- After Filter
- Regain Air Pattern (Push-Pull)
- Manual Filter Cleaning
- 12in Side Shields
- Casters

| Part Number[1] | Dimensions (W x H x D) | Weight | Motor | Avg. Air Flow (cfm) |
|---|---|---|---|---|
| HCS2037-29 | 48in x 122in x 24in (121.9cm x 309.8cm x 60.9cm) | 800 lbs (362.8 kg) | 5 HP | 4,500 |
| HCS2037-30 | 6ft x 8ft x 8ft (1.8m x 2.4m x 2.4m) | 840 lbs (381.0 kg) | 5 HP per Unit | 4,500 |
| HCS2037-31 | 8ft x 8ft x 8ft (2.4m x 2.4m x 2.4m) | 1572 lbs (713.0 kg) | 5 HP per Unit x 2 = 10 HP | 9,000 |
| HCS2037-32 | 12ft x 8ft x 8ft (3.6m x 2.4m x 2.4m) | 2360 lbs (1070.4 kg) | 5 HP per Unit x 3 = 15 HP | 13,500 |
| HCS2037-33 | 16ft x 8ft x 8ft (4.8m x 2.4m x 2.4m) | 3144 lbs (1426.0 kg) | 5 HP per Unit x 4 = 20 HP | 18,000 |
| HCS2037-34 | 20ft x 8ft x 8ft (6.0m x 2.4m x 2.4m) | 3932 lbs (1783.5 kg) | 5 HP per Unit x 5 = 25 HP | 22,500 |
| HCS2037-35 | 24ft x 8ft x 8ft (7.3m x 2.4m x 2.4m) | 4716 lbs (2139.1 kg) | 5 HP per Unit x 6 = 30 HP | 27,000 |

**Dust Control Booths**

[1]All units available in 50Hz configurations.
PowerBooth and Dust Control Booth is a registered trademark of Airflow Sytems, Inc.
Note: Please specify voltage, frequency, and other options when requesting quote.

EQUIPMENT

# Additional Dust Collection Products

**Dust Collection Systems**
Our full line of cartridge filter dust collectors and media filter, dust collection systems effectively capture welding smoke, fumes, dust, and other airborne contaminants before they reach open work areas.

**Air Cleaners**
Our line of high-efficiency air cleaners remove irritants such as smoke, odors, dust, and dirt from offices, break rooms, cafeterias, and computer rooms.

**Paint / Fume Booths**
Whether a bench top paint booth or a portable paint booth, our full line of paint, spray, and fume booth products is readily accessible for jobs involving spray painting, grinding, polishing, and soldering.

**High Vacuum**
The V Series industrial dust collector is designed to provide simultaneous, high-powered source capture dust collection of contaminants from multiple work stations.

**Collection Arms**
We offer a full line of extraction arms for virtually any industrial source collection application.

Dust Collection Systems

Paint / Fume Booths

Air Cleaners

# Positive Pressure Clamps

The HCS2034 series Positive Pressure Clamps are custom designed to be used on-location or localized "on-blade" repairs that require a positive pressure application.

These clamps enable repairs to be made on the aircraft which greatly reduces track and balance issues and provides additional labor and operational cost savings.

The bladder assembly and/or padded base can be reversed for even greater possibilities.

Custom configurations are available upon request.

## Specifications:

| | |
|---|---|
| Weight | 31lbs (2.3kg) |
| Dimensions Available | 39.375in x 14.75in (100cm x 37.47cm) |
| | 19in x 14.75in (48.26cm x 37.47cm) |
| Operating Pressure: | 10 PSI nominal, 15 PSI Maximum |
| Pressure Bladder Area: | 12.5in x 12.5in (31.75cm x 31.75cm) |
| Adjustable Height and Pressure Area Placement | |

# Thermowelder

Our HCS2030 Thermowelder provides a foolproof system for ensuring quality welded junctions for both type "J" and "K" thermocouples. Few things are more exasperating than having a composite part damaged by faulty thermocouple readings during its cure. Twisted wire junctions are susceptible to splitting open under pressure, and silver solder type welds often leave unwanted marks on the finished product.  Our Thermowelder provides a low profile micro-bead welded junction which eliminates thermocouple mark-off and breaks.

Not available in Europe

## Specifications:

| | |
|---|---|
| Weight | 9.5lbs (4.3kg) |
| Dimensions | 11in x 8in x 7.75in (279.4mm x 203.2mm x 196.8mm) |
| Input Power | 120V or 240V/50-60Hz |

**HTW-WP Weldpowder 4oz**
(for use in our Thermowelder)

**HEATCON COMPOSITE SYSTEMS®**

*Thermocouples*

## Thermocouples

| Description | Image | Part Number | Details |
|---|---|---|---|
| Thermocouple |  | HCS2010-01 | T/C, TYPE J KAPTON 10FT, STD. PLUG 24 GA KAPTON WIRE |
| Thermocouple |  | HCS2010-25 | T/C, TYPE J TEFLON 10FT, MOLDED PLUG, 24 AWG WITH STD SIZE PLUG, STRAIN RELIEF, 1/4" PARALLEL BEADED JUNCTION |
| Thermocouple |  | HCS2010-41 | THERMOCOUPLE, ACCUFLEX, 12 ft., TYPE-J, FLAT KAPTON, 28 AWG USED FOR MINIMAL MARK-OFF |

## Thermocouple Accessory Assortment

| Description | Image | Part Number | Details |
|---|---|---|---|
| Thermocouple Plug - Type "J" |  | HCS1353 | The HCS1353 is a type "J", 2-pole connector plug that provides dependable connections to the receptacle. This plug provides a continuous temperature rating to 400°F (200°C). |
| Thermocouple Clamp |  | HCS1354 | The HCS1354 strain relief attaches directly to the HCS1353 plug, relieving wire tension that can cause thermocouple failure. Packaged in bulk when necessary. |
| Thermocouple Plug - Type "K" |  | HCS1362 | The HCS1362 is a type "K", 2-pole connector plug that provides dependable connections to the receptacle. This plug provides a continuous temperature rating to 400°F (200°C). |
| Mini-Thermocouple Plug |  | HCS1355 | This is a type "J", 2-pole connector plug that provides dependable connections to the receptacle. This plug provides a continuous temperature rating to 400°F (200°C). |

# Thermocouple Accessory Assortment

## Thermocouple Accessory Assortment

| Description | Image | Part Number | Details |
|---|---|---|---|
| Thermocouple Wire Stripper |  | HCS2036-01-049 | One light squeeze strips wire clean up to 0.88in (22.35mm). |
| Thermocouple Wire - AutoBond™ FEP |  | HCS1385 | This is a color-coded, type "J", insulated singles, 24ga thermocouple wire, bonded with the AutoBond™ process. This eliminates the need for a conventional jacket. This wire is rated to 545°F (285°C) and is available in rolls of 500ft (152.4m) or 1000ft (304.8m). |
| Thermocouple Wire - Kapton® |  | HCS1351 | This is a type "J", 24ga thermocouple wire with Kapton® Insulation. It offers precise temperature readings along with exceptional kink resistance. This wire is rated to 600°F (316°C) and is available by the foot (30.48cm) or rolls of 500ft (152.4m). |
| Thermocouple Wire - Fiberglass |  | HCS1352 | This is a type "J", 24ga thermocouple wire with fiberglass insulation. It is an excellent choice for higher temperature applications such as thermoplastics. This wire has a continuous temperature rating to 900°F (482°C) and is available by the foot (30.48cm) or rolls of 500ft (152.4m). |
| Thermocouple Wire - Teflon® |  | HCS1350 | This is a type "K", 24ga thermocouple wire with Teflon® insulation. It offers precise temperature readings and calibrated conductors for high system accuracy. This wire is rated to 400°F (204°C) and is available by the foot (30.48cm) or rolls of 500ft (152.4m). |
| 5-Port Thermocouple Block |  | HCS1358 | The HCS1358 is a type "J", 5 port thermocouple block receptacle. This block provides a continuous temperature rating to 400°F (200°C) and 500°F (260°C) intermittent. |
| Thermocouple Round Single Port Block |  | HCS1365 | The HCS1365 is a type "J", round single thermocouple block that provides a continuous temperature rating to 400°F (200°C). |

**HEATCON**
**COMPOSITE SYSTEMS**®

EQUIPMENT

## *Vacuum Generator*



**Single Vacuum Models**
HCS2025-01 Single, in/Hg
HCS2025-02 Single, mb

**Dual Vacuum Models**
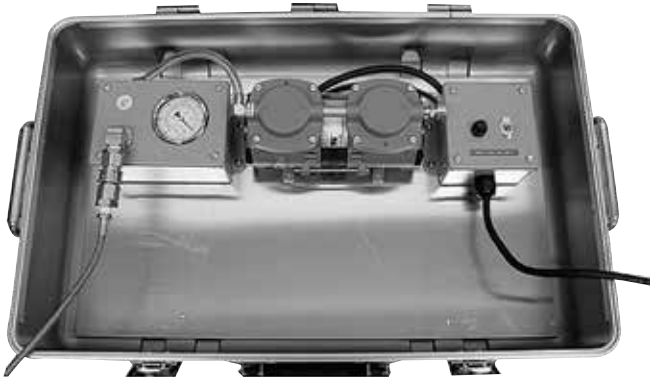HCS2025-03 Dual, in/Hg
HCS2025-04 Dual, mb



| Specifications: | |
| --- | --- |
| **HCS2025-01/02** | |
| Weight | 4lbs (1.8kg) |
| Dimensions | 10.25in x 6in x 5in (26.04cm x 15.24cm x 12.7cm) |
| **HCS2025-03/04** | |
| Weight | 8 lbs (3.6 kg) |
| Dimensions | 13.5 In X 9.0 In. X 8.0 In. (330mm X 229mm X 203mm) |

Our lightweight, rugged and portable vacuum generator is designed to provide regulable vacuum pressure for a wide range of applications. The HCS2025 can achieve up to 28 in/Hg or 933.33mb vacuum pressure. It can be used in conjunction with our composite repair systems for large area repairs or as a stand alone unit for wet lay-up repairs.

This unit features a vacuum gauge for precise readings and a brass regulator for exact control. Vacuum can be measured inches/Hg or Millibars. Positive air pressure of 80-100psi is needed to operate this device.

Both single vacuum source or dual configurations are available (see part number variations above image). The dual unit can be used to provide vacuum to two separate repairs or to provide vacuum to a double bag lay-up for use with our HCS2046-02 Phosphoric Acid Anodizing Kit.

# HEATCON COMPOSITE SYSTEMS®

## *Electric Vacuum Pumps*



**HCS2055-02 120V Version**
**HCS2055-04 220V Version**

This Accessory Case with Electrical Vacuum Pump is capable of delivering 28+ in/Hg (0.967kg/cm²) at 1 cubic ft/min (472cm³/sec) per and is equipped with power switch, fuse and built-in vacuum gauge. The lid of the case has a large storage compartment with a hinged divider and push button latches. The lower section of the case has additional storage capacity for hoses and cords.  An "F" adapter (HCS2016-06) and two vacuum hoses with sniffer are also included.

## Specifications:

| Weight | 29lbs (13kg) |
|---|---|
| Dimensions | 24in x 15in x 9in |
| | (60.96cm x 38.1cm x 22.86cm) |

Portable two-stage Electric Vacuum Pump for small to medium sized composite repairs. Unit has two modes of operation, maximum flow and maximum level. Maximum flow is 0.75 cubic ft/min (354 cm³/sec) and used for initial bag pull-down and seal.  Maximum level is 28+ in/Hg (0.967kgs/cm²) and used for final cure vacuum.

This unit includes universal power input for operation anywhere in the world (47-63Hz, 100-250VAC).  The removable accessory case lid holds a vacuum hose assembly. There is also an internal power cord storage area (shown). Vacuum hose included with vacuum pump.



**HCS2055-06**
**100-250V**

## Specifications:

| Weight | 13lbs (5.9kg) |
|---|---|
| Dimensions | 3.75in x 12.25in x 7.5in |
| | (34.93cm x 31.12cm x 19.05cm) |

## Vacuum Leak Checker

The HCS2018 Vacuum Leak Checker can help prevent one of the most common problems associated with composite fabrication and repair - loss of vacuum pressure during the cure process. This device allows you to check the integrity of your vacuum seal before you cure your composite lay-up.

The vacuum leak checker can be used in conjunction with autoclaves, ovens and composite repair systems (hot bonders). This simple yet effective system can detect the presence of hidden leaks before they damage a valuable part.

### Specifications:

| |
|---|
| Vacuum - 0-30 in/Hg |
| Used with HCS2015-06 Vacuum Sniffer |

## Vacuum Hose / Sniffer Assembly

### Specifications:

| |
|---|
| Collapse-proof, high temperature Teflon® hose |
| Stainless steel braided protective wrap to prevent crushing and abrasion |
| Quick release fitting for ease of operation and vacuum integrity |
| 250°F (121°C) High temperature 450F (Oven Use) versions available |
| High temperature machined aluminum vacuum sniffer |

The HCS2015 Vacuum Hose/Sniffer Assemblies are designed to eliminate problems such as vacuum leaks and collapsed vacuum lines. It is intended for use with both composite repair systems and curing ovens.
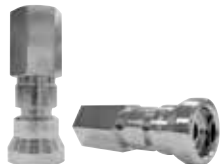
| HCS2015 | -05 | -08 | -11 | -32 | -33 |
|---|---|---|---|---|---|
| Length (ft) | 10 | 20 | 6 | 15 | 30 |

# *Vacuum Accessory Assortment*

| Description[1] | Image | Part Number | Details | Size |
|---|---|---|---|---|
| Vacuum Hose - Teflon® with stainless steel overbraid 450°F (232°C) | | HCS1404 | This collapse-proof hose with stainless steel over-braid offers excellent abrasion and puncture protection. Each end includes 0.25in (6.4mm) NPT male threads. This vacuum hose is offered in various lengths, including custom lengths. | 4ft (1.21m) |
| | | HCS1405 | | 5ft (1.52m) |
| | | HCS1406 | | 6ft (1.82m) |
| | | HCS1403 | | 10 ft (3.04m) |
| | | HCS1407 | | 20ft (6.09m) |
| Vacuum Sniffer | | HCS1418 | Made of machined aluminum with maximum temperature 500°F (260°C). Simple 1/4 turn installation, and breathable base design. Wrench flats for easy change of fittings. Very rugged and easy to seal. | |
| Vacuum Sniffer Assembly | | HCS2015-06 | Same as above, with the addition of the HCS1402 male quick-disconnect. | |
| Vacuum "F" Adapter | | HCS2016-06 | Allows composite repair system to monitor and record vacuum from an external source. | |
| Air Filter/Trap Assembly | | HCS2021-01 | Inline filter/trap, bulb style. Easy to clean and view contaminates. Installs directly to machine's plant air connection and has quick disconnect on plant air side. Can be used on other composite repair units. Please consult factory. | |
| Element, Replacement Filter | | HCS2021-01-001 | Replacement Filter Element for Air Filter/Trap Assembly | |
| Integrated Vacuum Pump & Sniffer | | HCS2026-01 | Attach to plant air and apply vacuum direct to repair. Use 80 to 100psi, at 2.0 SCFM for 27in - 28in/Hg at sea level. | |
| 5-Port Vacuum Manifold | | HCS2016-02 | Primarily designed for schools or training situations when curing multiple projects simultaneously. Allows vacuum to multiple bags. | |
| 4-Port Vacuum Manifold | | HCS2016-03 | Primarily designed for schools or training situations when curing multiple projects simultaneously. Allows vacuum to multiple bags | |

[1]**Replacement Accessories for HCS9000/9200 Series Composite Repair Systems.**

**HEATCON COMPOSITE SYSTEMS®**

## Vacuum Accessory Assortment

| Description[1] | Image | Part Number | Details |
|---|---|---|---|
| Quick Disconnect Coupler - Male |  | HCS1428-002 | Male version with 0.25in (6.35mm) NPT female threads. Also used on HCS2015-05 Vacuum Hose/Sniffer Assembly. |
| Quick Disconnect Coupler - Female |  | HCS1015-002 | Female version with 0.25in (6.35mm) NPT male threads. Mates with HCS1428-002. |
| Quick Disconnect |  | HCS1414 | Plant air hose fitting that mates with the composite repair equipment air input connection. For equipment that uses plant air. 0.25in (6.35mm) NPT female threads.<br><br>Used on HCS2021-01 filter assembly |
| Quick Disconnect - Female |  | HCS1401 | Vacuum hose fitting that mates with HEATCON Composite Systems®' vacuum sniffers. Allows for rapid, leak-proof vacuum connections. This parts 0.25in (6.35mm) NPT female threads mate with vacuum hoses or HCS1402 with 0.25in (6.35mm) NPT male fittings. |
| Quick Disconnect - Male |  | HCS1402 | Vacuum hose fitting that mates with HEATCON Composite Systems®' vacuum sniffers. Allows for rapid, leakproof vacuum connections. Attaches to HCS1418 vacuum sniffer with 0.25in (6.35mm) NPT male fittings or the HCS1401 |
| Vacuum Gauge |  | HCS2051-01-002 (gauge only) | Precision 0-30 in/Hg gauge with 3in (7.6cm) dial. 0.25in (6.35mm) NPT Stainless Steel fitting provides 0.5% accuracy. Available with certification documents for calibration purposes. Also used as a replacement gauge for the HCS2051 Calibration Kit. Not available in millibars. |
| Vacuum Gauge Assembly |  | HCS2051-01-005 | Precision 0-30 in/Hg gauge with 3in (7.6cm) dial. 0.25in (6.35mm) NPT Stainless Steel fitting provides 0.5% accuracy. Available with certification documents for calibration purposes. Also used as a replacement gauge for the HCS2051 Calibration Kit. Not available in millibars |
| Vacuum Gauge with Sniffer |  | HCS2027-01 | Inexpensive means of monitoring the vacuum of a composite repair bag. Available with certification documents as an option.<br><br>Also available: HCS2027-04 Vacuum Gauge with HCS1401 quick disconnect, without sniffer. |
| Vacuum Gauge with Quick Disconnect |  | HCS2027-03 | Precision 0-30 in/Hg and 0-100 Kilopascals (KPS) gauge and HCS1401 quick disconnect used to monitor vacuum of a composite repair bag. Available with certification documents as an option.<br><br>Used with HCS2015-06 Vacuum Sniffer. |

[1]Replacement Accessories for HCS9000/9200 Series Composite Repair Systems.

**EQUIPMENT**

# *Radome Moisture Meter*

The HCS2049 Radome Moisture Meter indicates moisture levels in aircraft radomes. A patented dielectric radio frequency power-loss absorption method is used to determine moisture levels.

**HCS2049-01 115V**
**HCS2049-02 220V**

**Kit Includes**:
• Metering unit
• Electrode gun
• Separate charger

| Features: | |
|---|---|
| • Direct reading scale for instantaneous reading of Good, Fair, Poor and Unacceptable radome moisture levels. | |
| • Spring-loaded contact points allow nondestructive testing of irregular radome surfaces. | |
| • Separate electrode gun permits testing in remote areas. | |
| • Rechargeable Ni-Cad batteries. | |
| • Available with 115V or 220V battery charger | |
| • Maximum 2.5 to 3.0cm measurement depth | |

**HEATCON COMPOSITE SYSTEMS®**

**EQUIPMENT**

## *Portable Electronic Scales*

Typically used for weighing fillers, adhesives, and resins during composite layup applications.The HCS2038-03 Series electronic scales allows for accurate weight measurements up to 6200g.

HCS2038-03-002 / 003

HCS2038-03-005

## Specifications

| Model Number | Description* | Pan Size | Capacity | Accuracy | Weighing Modes | Power Incl. / (Optional) |
|---|---|---|---|---|---|---|
| HCS2038-03-002 | Portable Scale Round Platform | 5.75x5.25in (14.61cm x 13.34cm) | 2000g | ±1g | g, lb/oz | 115 VAC (3 AA Alkaline Batteries) |
| HCS2038-03-003 | Portable Scale Round Platform | 5.5x5.5in (13.97cm x 13.97cm) | 620g | ±0.01g | g, ct, lb/oz | 115 VAC (230 VAC, EUROPEAN STYLE, HCS2038-03-009) |
| HCS2038-03-005 | Portable Scale Square Platform | 7.5x7.5in (19.05cm x 19.05cm) | 6200g | ±0.1g | g, ct, lb/oz | 115 VAC (230 VAC, EUROPEAN STYLE, HCS2038-03-009) |

| Model Number | Description | Voltage | Style |
|---|---|---|---|
| HCS2038-03-009 | ADAPTER, SCALE | 6VDC/230VAC | EUROPEAN STYLE, (FOR HCS2038-03-003, 005) |

*Above images are provided to represent the type of product only.

# Ultrasonic Leak Detector

The HCS2038-02 Ultrasonic Leak Detector is ideal for detecting and locating sources of vacuum leaks through the use of sophisticated electronic circuitry. The Ultrasonic Leak Detector incorporates an internal noise control that eliminates interference from audible noise and detects only high frequency sounds caused by vacuum leaks.

## Multiple Uses:

- Vacuum Bag Leaks
- Leaks in Compressed Air Systems
- Diagnosing Solenoid
- Operations
- Detecting Electric Arcing
- Detecting Gas Leaks
- Locating Worn Bearings

## Specifications:

| Weight with battery | 9oz (255g) |
|---|---|
| Operating Temp | 32° to 140°F (0° to 50°C) |
| Power | 9VDC (Battery) |
| Includes | 9V Battery, Rubber Probe Extension, Headphones, Storage Case |

# Magnehelic® Pressure Gages

The HCS2038-11 Magnehelic® Differential Pressure Gage is the industry standard to monitor and measure positive pressure in clean rooms, fan and blower pressures, and filter resistance.

| Part Number | Range in W.C. | Included* |
|---|---|---|
| HCS2038-11D | 0 - 0.25 | Single Unit |
| HCS2038-11 | 0 - 0.25 | 1 -Gage 1-Enclosure 10ft-Tube |

## Specifications:

| Service | Air and non-combustible, compatible gases. |
|---|---|
| Housing | Die cast aluminum case and bezel with acrylic cover. Exterior finish coated gray to withstand 168hr salt spray corrosion test. |
| Accuracy | ±4% of full scale throughout range at 70°F (21.1°C). |
| Pressure Limits | -20 in/Hg to 15psig† (-0.677 bar to 1.034 bar) |
| Overpressure | Relief plug opens at approximately 25psig (1.72kPa), standard gauges only. |
| Temperature Limits | 20 to 140°F (-6.67 to 60°C). |
| Size | 4in (101.6mm) Diameter dial face. |
| Mounting Orientation | Diaphragm in vertical position. |
| Process Connections | 1/8in (3.175mm) female NPT duplicate high and low pressure taps - one pair side and one pair back |
| Weight | 1lb 2oz (510g) |
| **Note: Magnehelic® is a registered trademark of Dwyer Instruments** | |

*Above image is to represent the type of product only.

**HEATCON COMPOSITE SYSTEMS®**

## *Custom Capabilities*



**Front of Control Panel**
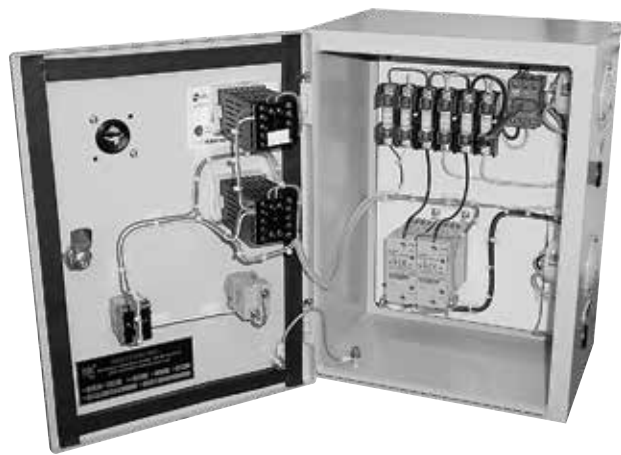


**Inside Control Panel**

For those applications where a portable composite repair system is not the best choice, we can provide custom heat control systems to suit your requirements.
   • Composite Fabrication
   • Larger Infrared Heat Lamps
   • Oven Control
   • Refrigeration Control

Simply provide us with your requirements and we will provide the solution.

### Capabilities:
   • UL 508 Listed Industrial
   • Standard or Made-to-Order
   • Single and Multiple OEM
   • Complete Systems Integration

### Available Options:
   • Controls:
         - Single and Multizone
         - Temperature Limit
         - Timers, Counters, Panel Meters
         - Chart Recorders
         - Programmable Logic
         - Operator Interface Terminals
   • Relays:
         - Contractor
         - Mercury Displacement
         - Solid State
         - Motor Starters and Drives
   • Enclosure Ratings:
         - NEMA 12 Dust Resistant (standard)
         - NEMA 4 Moisture Resistant
         - NEMA 4X Corrosion Resistant
   •      - NEMA 4/7 Moisture/Explosion
      Resistant
         - NEMA 7 Explosion Resistant

# Heat Blanket Tester

This easy-to-use Heat Blanket Tester will identify possible hidden damage to the blanket with a simple "Pass/Fail" feature. This will help to ensure uniform heating of the application by elimination of cold spots associated with blanket failure.

With prompting by on-screen menus, the repair technician connects the blanket to the tester, enters the voltage and wattage and views the results. The tester can identify open, shorted and intermittent circuits or power leads.

## IT'S AS SIMPLE AS "PASS" OR "FAIL"

**Protective Case Included!**

## Specifications:

| | |
|---|---|
| Weight | 2.5lbs (1.1kg) |
| Dimensions | 8.5in x 6in x 3in (21.59cm x 15.24cm x 7.62cm) |
| Power | 100-240VAC (47-63Hz), 0.1A |
| Construction | Aircraft Quality Aluminum Enclosure, Sealed Overlay Keypad, Backlit LCD Graphic Display |
| Includes | Carrying Case, Test Leads |

## Heat Blankets

**STRONG**

**FLEXIBLE**

**DURABLE**

**UNIFORM HEATING**

**UNIQUE**

**CONSTRUCTION**

Our silicone rubber heat blankets are specifically designed for the repair of composite structures using vacuum bagging techniques.

The unique construction of our heat blankets allows you to apply uniform heat exactly where you want it. Our design employs a grid of wound resistance wire, vulcanized between two layers of fiberglass reinforced silicone rubber. This design features strength, flexibility, durability and even heat distribution.

### Specifications:

Maximum Width - 48in (121.9cm) Unspliced

Maximum Length - 136in (345.44cm) Unspliced

Maximum Temperature - 450°F (232°C)

Watt Density - 5 W/in² (0.8 W/cm²)

Standard Material - Textured silicone rubber

Standard Leads - Teflon® insulated 600V/400°F (204°C)

Standard Lead Length - 5ft (1.52m)

Standard Input Power - 120V or 220/240V (others available)

Double Bus Bar Construction - to maximize strain relief

External Tabs - Increase heating area

CE Conformity

### Featured Options:

Heat Mapping - to test for thermal uniformity

Supervisory Circuits - for hazardous environments

Multiple Zones - for large repairs up to 30 Amps per zone

Custom Sizes/Shapes/Contours

Plugs - for various applications and power sources
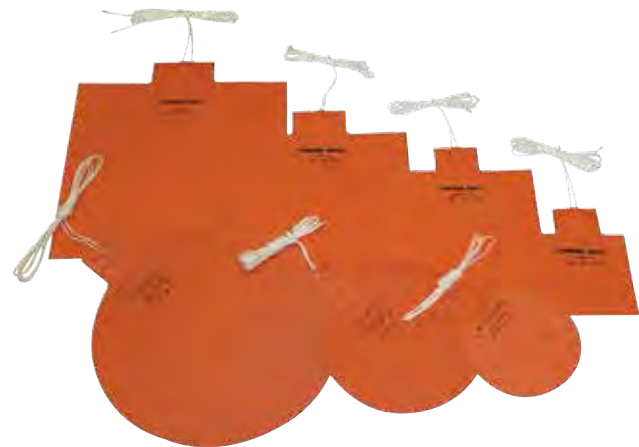


## The Solution to Uneven Heat Distribution is *Quality*!
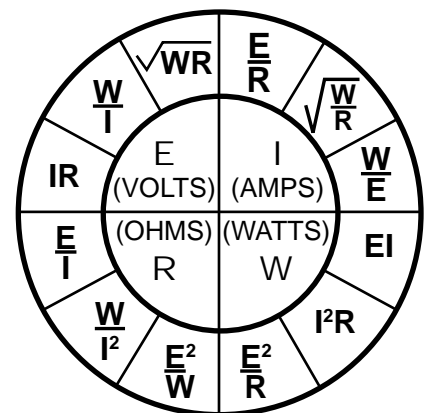
### Useful Formulas

**Heat Blanket Amperage**

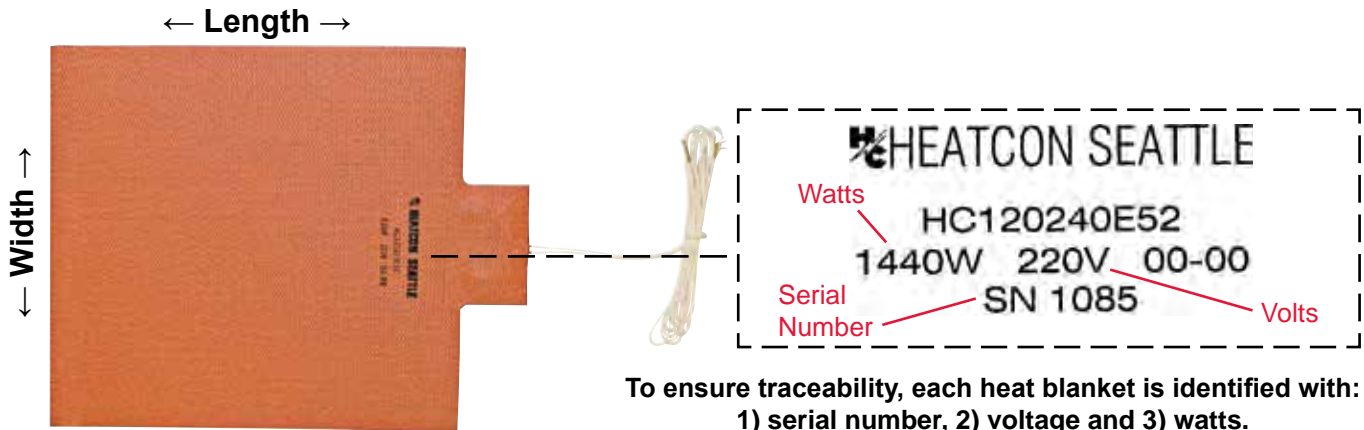$$\text{Amperage} = \frac{\text{Watts rated}}{\text{Volts rated}}$$

**Heat Output Due to Voltage Change**

$$W_{NEW} = W_{RATED} \frac{(V_{NEW})^2}{V_{RATED}}$$

$$\text{3 Phase Amperes} = \frac{\text{Total Watts}}{\text{Volts} \times 1.732}$$

**Ohm's Law**

← **Length** →

↑ **Width** ↓

**Watts**

**Serial Number**

**Volts**

HCHEATCON SEATTLE

HC120240E52
1440W   220V   00-00
SN 1085

**To ensure traceability, each heat blanket is identified with:
1) serial number, 2) voltage and 3) watts.**

| Normally Stocked 120V / 220V Rectangular Heat Blanket Assortment | | | | | | |
|---|---|---|---|---|---|---|
| **Description** | **120V Part Number** | **220V Part Number** | **Watts** | **Bonder Kit¹** | **Supervisory** | **Heat Mapping** |
| 4in x 10in (10.6cm x 25.4cm) | HC040100E51 | HC040100E52 | 200W | | √ | √ |
| 6in x 6in (15.2cm x 15.2cm) | HC060060E51 | HC060060E52 | 180W | √ | √ | √ |
| 6in x 8in (15.2cm x 20.3cm) | HC060080E51 | HC060080E52 | 240W | | √ | √ |
| 6in x 10in (15.2cm x 25.4cm) | HC060100E51 | HC060100E52 | 300W | | √ | √ |
| 6in x 12in (15.2cm x 30.5cm) | HC060120E51 | HC060120E52 | 360W | | √ | √ |
| 6in x 20in (15.2cm x 50.8cm) | HC060200E51 | HC060200E52 | 600W | | √ | √ |
| 6in x 24in (15.2cm x 61.0cm) | HC060240E51 | HC060240E52 | 720W | | √ | √ |
| 6in x 36in (15.2cm x 91.4cm) | HC060360E51 | HC060360E52 | 1080W | | √ | √ |
| 6in x 40in (15.2cm x 101.6cm) | HC060400E51 | HC060400E52 | 1200W | | √ | √ |
| 6in x 72in (15.2cm x 182.9cm) | HC060720E51 | HC060720E52 | 2160W | | √ | √ |
| 8in x 8in (20.3cm x 20.3cm) | HC080080E51 | HC080080E52 | 320W | | √ | √ |
| 9in x 12in (22.8cm x 30.4cm) | HC090120E51 | HC090120E52 | 540W | | √ | √ |
| 10in x 10in (25.4cm x 25.4cm) | HC100100E51 | HC100100E52 | 500W | √ | √ | √ |
| 12in x 12in (30.5cm x 30.5cm) | HC120120E51 | HC120120E52 | 720W | √ | √ | √ |
| 12in x 18in (30.5cm x 45.7cm) | HC120180E51 | HC120180E52 | 1080W | | √ | √ |
| 12in x 24in (30.5cm x 61.0cm) | HC120240E51 | HC120240E52 | 1440W | | √ | √ |
| 15in x 15in (38.1cm x 38.1cm) | HC150150E51 | HC150150E52 | 1125W | √ | √ | √ |
| 15in x 18in (38.1cm x 45.7cm) | HC150180E51 | HC150180E52 | 1350W | | √ | √ |
| 18in x 18in (45.7cm x 45.7cm) | HC180180E51 | HC180180E52 | 1620W | | √ | √ |
| 18in x 24in (45.7cm x 61.0cm) | HC180240E51 | HC180240E52 | 2160W | | √ | √ |
| 24in x 24in (61.0cm x 61.0cm) | HC240240E51 | HC240240E52 | 2880W | | √ | √ |
| **Normally Stocked 120V / 220V Round Heat Blanket Assortment** | | | | | | |
| 6in (15.2cm) | HC060060E51R | HC060060E52R | 141W | | √ | √ |
| 8in (20.3cm) | HC080080E51R | HC080080E52R | 250W | | √ | √ |
| 10in (25.4cm) | HC100100E51R | HC100100E52R | 393W | | √ | √ |
| 12in (30.5cm) | HC120120E51R | HC120120E52R | 565W | | √ | √ |
| 15in (38.1cm) | HC150150E51R | HC150150E52R | 884W | | √ | √ |
| 18in (45.7cm) | HC180180E51R | HC180180E52R | 1272W | | √ | √ |
| ¹Standard Sizes to be included with Hot Bonder Purchase.  Please specify requirement - 120V or 220V | | | | | | |

**HEAT BLANKETS**

## Heat Blankets

### Specifications:

| | |
|---|---|
| Maximum Width - 39in (99.1cm) Unspliced | |
| Maximum Length - 138in (350.5cm) Unspliced | |
| Maximum Temperature - 450°F (232°C) | |
| Watt Density - 5 W/in$^2$ (0.8 W/cm$^2$) | |
| Standard Material - Unsupported silicone rubber | |
| Standard Leads - Teflon® insulated 600V/ 400°F (204°C) | |
| Standard Lead Length - 5ft (1.52m) | |
| Standard Input Power - 120V or 220/240V (others available) | |
| External Tabs - increase heating area | |
| CE Conformity | |

### Featured Options:

Plugs - for various applications and power sources

Our stretchable heat blankets are specifically designed for the repair of complex 3D composite shapes or contoured surfaces. The design employs a grid of wound resistance wire vulcanized between durable unsupported silicone rubber.

Compared to traditional material used for stretchable heat blankets, we are now using Mosites Rubber Company, Inc. material that features improved strength, flexibility, and durability. In combining Heatcon's technology with Mosites material it upgrades the most important property of the stretchable heat blanket which is providing a greater degree of conformability.

The unique construction of our stretchable heat blankets allows you to apply uniform heat exactly where you want it.
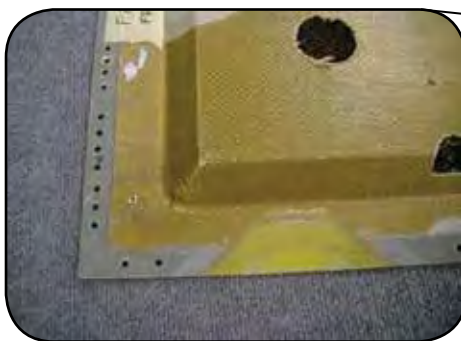
**TEAR RESISTANT**

**FLASH TAPE COMPATIBILITY**

**FITS INTO TIGHT RADIUS**

**UNIQUE CONSTRUCTION**

## Complex Problem



## Stretchable Heat Blankets are the Innovative Solution

# Heat Blankets

| | Normally Stocked Stretchable Heat Blanket Assortment 120V / 220V | | | |
|---|---|---|---|---|
| **Description** | **Part Number 120V** | **Part Number 220V** | **Watts** | **Heat Mapping** |
| 6in x 6in (15.2cm x 15.2cm) | HC060060E51E1 | HC060060E52E1 | 180W | √ |
| 8in x 8in (20.3cm x 20.3cm) | HC080080E51E1 | HC080080E52E1 | 320W | √ |
| 10in x 10in (25.4cm x 25.4cm) | HC100100E51E1 | HC100100E52E1 | 500W | √ |
| 12in x 12in (30.5cm x 30.5cm) | HC120120E51E1 | HC120120E52E1 | 720W | √ |
| 15in x 15in (38.1cm x 38.1cm) | HC150150E51E1 | HC150150E52E1 | 1125W | √ |
| 18in x 18in (45.7cm x 45.7cm) | HC180180E51E1 | HC180180E52E1 | 1620W | √ |
| 18in x 24in (45.7cm x 60.9cm) | HC180240E51E1 | HC180240E52E1 | 2160W | √ |
| 24in x 24in (60.9cm x 60.9cm) | HC240240E51E1 | HC240240E52E1 | 2880W | √ |

# Thermal Uniformity Testing

The quality of the repair can, in many cases, be traced back to the quality of the cure. A heat blanket that provides temperature uniformity over the entire surface is a key step in the repair process.

Thermal mapping is becoming the quality standard for many maintenance facilities. The Commercial Aircraft Composite Repair Committee (CACRC) refers to SAE Document ARP 5144 Section 7, which states specific recommendations for the handling, maintenance and thermal testing of heat blankets.

Our testing follows the recommendations of SAE Document ARP 5144. HEATCON is a Boeing authorized and formally delegated supplier of Thermal Uniformity Testing qualified per Appendix A of Boeing Specification D6-56273.

This additional quality process can be specified for most of your Silicone Rubber Heat Blankets at an additional charge and includes the following services:

- Supply of heat blankets that are pre-qualified
- Qualification and Re-Qualification services for HEATCON heat blankets

Please contact us for a quote.
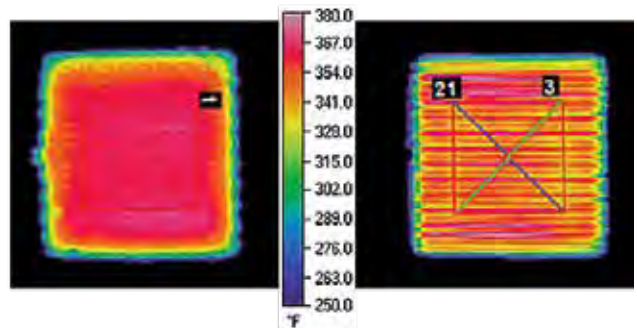


Infrared thermal image displays HEATCON heat blanket (left side) compared to competitor's heat blanket (right side). Temperature uniformity across the surface of the heat blanket is illustrated by the color gradient scale.
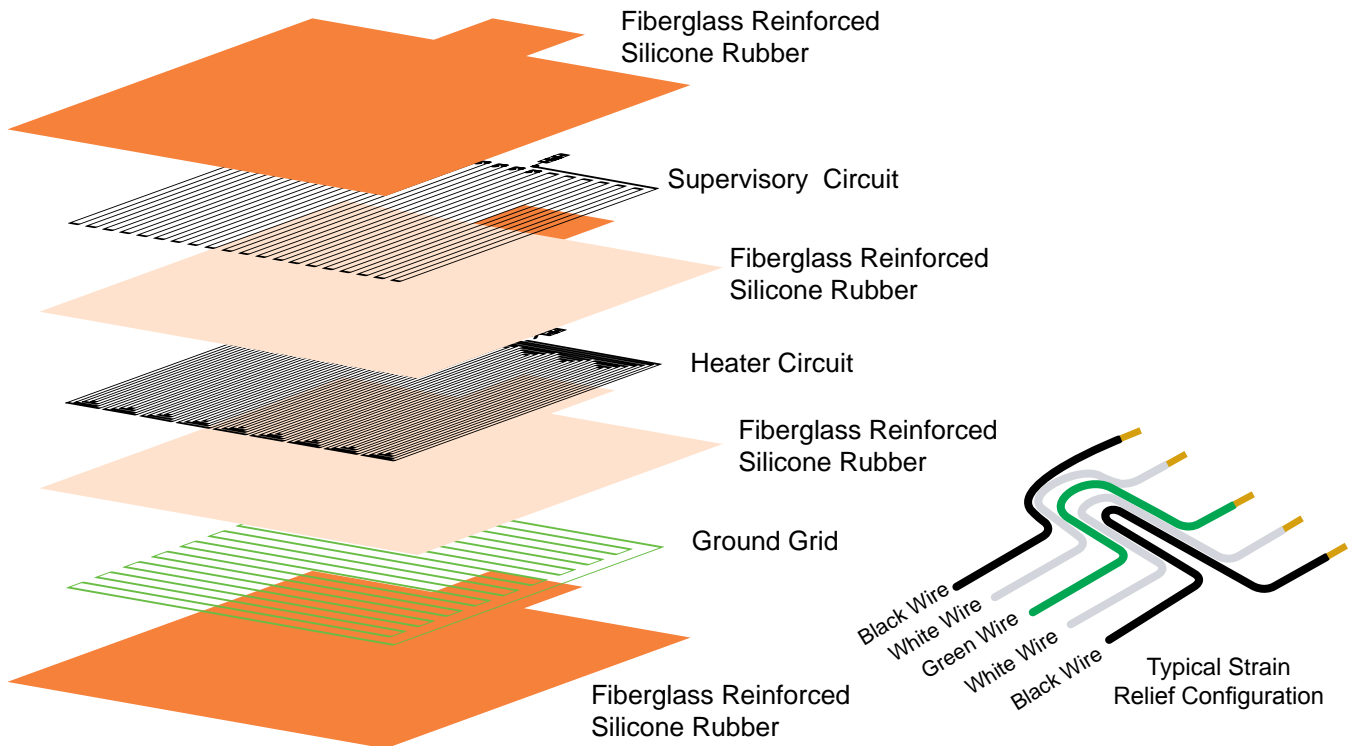
## Our Heat Blankets have Superior Thermal Uniformity

## Heat Blankets

Supervisory Heat Blankets are used when performing a composite repair in a hazardous or flightline environment. These blankets have a very unique construction that includes an additional supervisory temperature sensing circuit to effectively reduce hazardous situations in a vapor volatile environment.

The Supervisory Heat Blankets are designed to be used with our HCS9000/9200FL (Flightline) Series Composite Repair Systems. If the blanket sensor detects a high cure temperature, the controller will disable the power output to the blanket. The circuit will then reset itself when the temperature falls below the critical level. An indicator and alarm on the HEATCON® Flightline Repair System will alert the operator to the condition.

Fiberglass Reinforced Silicone Rubber

Supervisory Circuit

Fiberglass Reinforced Silicone Rubber

Heater Circuit

Fiberglass Reinforced Silicone Rubber

Ground Grid

Fiberglass Reinforced Silicone Rubber

Black Wire
White Wire
Green Wire
White Wire
Black Wire

Typical Strain Relief Configuration

| Supervisory Heat Blanket Assortment 120V / 220V | | |
|---|---|---|
| Description | Part Number 120V | Part Number 220V |
| 8in (15.2cm) Diameter | HC080080M51R-X | HC080080M52RX |
| 10in (25.4cm) Diameter | HC100100M51R-X | HC100100M52RX |
| 12in x 12in (30.5cm x 30.5cm) | HC120120M51X | HC120120M52X |
| 8in x 18in (15.2cm x 45.7cm) | HC080180M51X | HC080180M52X |
| 6in x 6in (15.2cm x 15.2cm) | HC060060M51X | HC060060M52X |
| 10in x 10in (25.4cm x 25.4cm) | HC100100M51X | HC100100M52X |
| 15in x 15in (38.1cm x 38.1cm) | HC150150M51X | HC150150M52X |

**HEAT BLANKETS**

# Heat Blankets

| Standard - 220 Volt - Two Zone Radome Stock | | | | | |
|---|---|---|---|---|---|
| **Aircraft Model** | **Part Number** | **Height (inches)** | **Watt Density** | **Wattage Zone 1** | **Wattage Zone 2** |
| B707/727/737 | HC737130G42Z2 | 13in (33.02cm) | 4 | 1936W | 2720W |
| B747 | HC747130G42Z2 | 13in (33.02cm) | 4 | 2500W | 5493W |
| B757 | HC757130G42Z2 | 13in (33.02cm) | 4 | 1936W | 2596W |
| B767/777 | HC777130G42Z2 | 13in (33.02cm) | 4 | 2500W | 5493W |
| A300/310/330/340 | HCA30130G42Z2 | 13in (33.02cm) | 4 | 1936W | 2944W |
| A318/319/320/321 | HCA32130G42Z2 | 13in (33.02cm) | 4 | 1936W | 5492W |
| DC9/MD80/MD90 | HCM80100G42Z2 | 10in (25.4cm) | 4 | 1936W | 2944W |
| RJ200 | HCRJ2220GX2Z2H | 22in (55.88cm) | 5 / 4 | 2446W | 2545W |
| B787 - Inner | HC0693 | 12in (30.48cm) | 4 | 2500W | 4936W |
| B787 - Outer | HC787120G42Z2 | 12in (30.48cm) | 4 | 2500W | 5306W |

**Note: plug not included**

## Capabilities:

- Standard Configuration for Boeing, Airbus, and McDonnell-Douglas
- Custom Radome heat blankets available for any aircraft
- Repair side is made of one piece of silicone, to eliminate mark-off from seams, creating an exact fit
- Storage fixture available
- Single or Dual Zone
- Uniform heat



HEIGHT    ZONE 1    ZONE 2
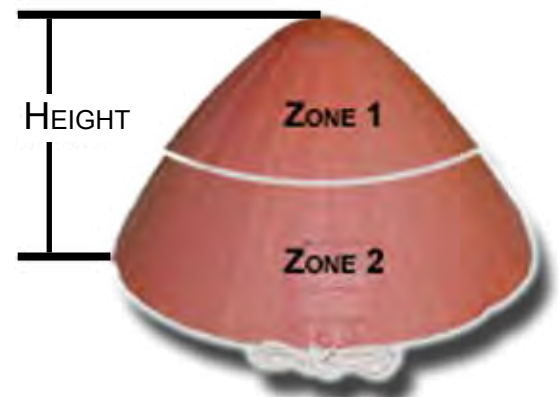
2 ZONE CONFIGURATION

HEAT BLANKETS

## Heat Blankets

**HEAT BLANKETS**

HEATCON Composite Systems has the knowledge and expertise to provide solutions for all your Abradable/Fan Track seal replacement challenges. With our state-of-the-art hot bonders and custom designed fan track heat blankets, your seal replacement will be done right the first time, every time. HEATCON Composite Systems has a proven track record for successful repairs on the following engine series: RB211, V2500, CFM56.
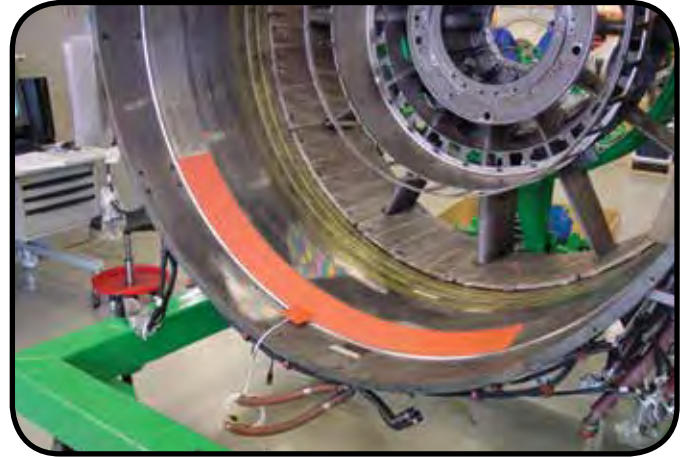


### You Know the Problem!

### We Know the Solution!

| Worksheet | |
|---|---|
| Simply supply us with the details listed below, and we'll begin designing the blankets to suit your specific needs. | |
| Inside Circumference | |
| Outside Circumference | |
| Width | |
| Lead Length | |
| Input Voltage | |
| Watt Density | |

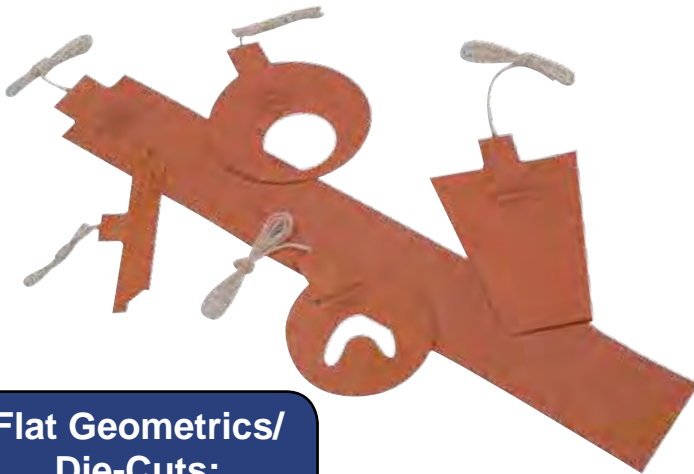**LET US DESIGN A CUSTOM PACKAGE FOR YOU!**

### Capabilities:
- Standard Configurations for
  - RB211
  - V2500
  - CFM56
- Single or Multiple Zone Heat Blankets
- Bagging Materials

**Custom Package Available Upon Request**

# HEATCON COMPOSITE SYSTEMS®

# Heat Blankets

## Flat Geometrics/ Die-Cuts: Various Shapes & Cut-Out Blankets

## 3-D: Radome Heat Blanket

## Contoured: Leading Edge & Angled (V-Shaped) Blankets

The need for custom shaped, flexible heat blankets in composite repair has increased dramatically in recent years with all of the emerging applications being performed. HEATCON Composite Systems® has both the experience and capability to meet all of your custom heat blanket requirements from design to delivery.

**Our Design Capabilities Include:**

- Flat Geometrics/Die-Cuts
- 3D - An excellent example for a 3-D heat blanket application is a radome repair. The nose cone, or radome, of an airplane is a highly sensitive and odd shape which requires a heat blanket designed for very specific form.

**Radome Capabilities:**

Custom configurations available

**Contours:**

Some application examples for contoured heat blankets include: leading edge, trailing edge, propeller, rotor, flap, fan-track and fan-cowl repairs.

**HEAT BLANKETS**

### Worksheet

Simply supply us with the details listed below, and we'll begin designing the blankets to suit your specific needs.

| | |
|---|---|
| Width | |
| Length | |
| Lead Length | |
| Input Voltage | |
| Watt Density - 1 to 5 W/in² | |
| Dimensional Drawings | |

Note: All tabs are centered unless otherwise specified

## *Our Process*

HEATCON Composite Systems® can manufacture custom Heat Blankets to fit your specific needs. Using your part, we produce a finished Heat Blanket with our unique fabrication processes.
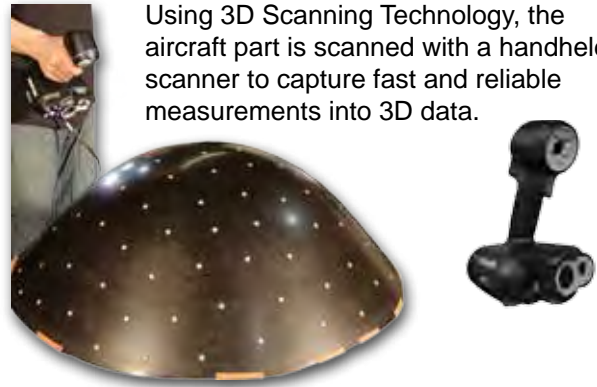
**HEAT BLANKETS**

### 1. Aircraft Part

Supply us with your part or with a tooling "splash"

### 2. Scan Part

Using 3D Scanning Technology, the aircraft part is scanned with a handheld scanner to capture fast and reliable measurements into 3D data.

### 3. Custom Tooling

Custom high temperature tool is produced to fabricate the heat blanket. This is used during the manufacturing and curing process of the heat blanket.
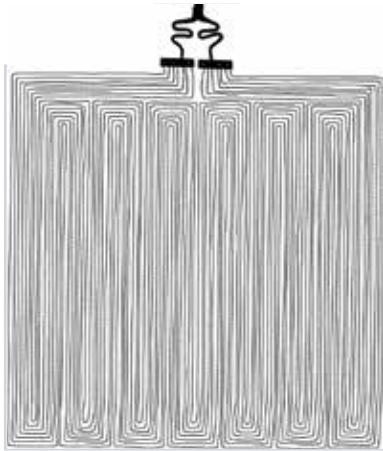
### 4. Finished Heat Blanket

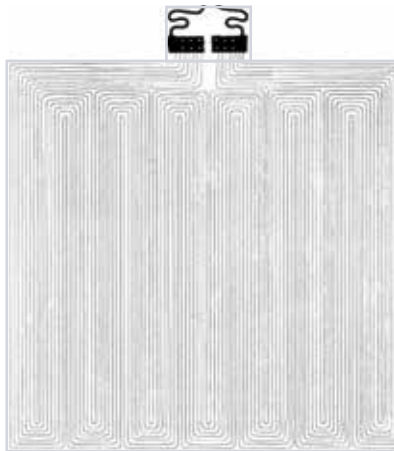The finished heat blanket is an exact fit to your supplied part or tooling "splash".

# Heat Blanket Construction

## Heat Blanket Circuit Spacing & Quality Comparisons

Competitor "A" Heat Blanket
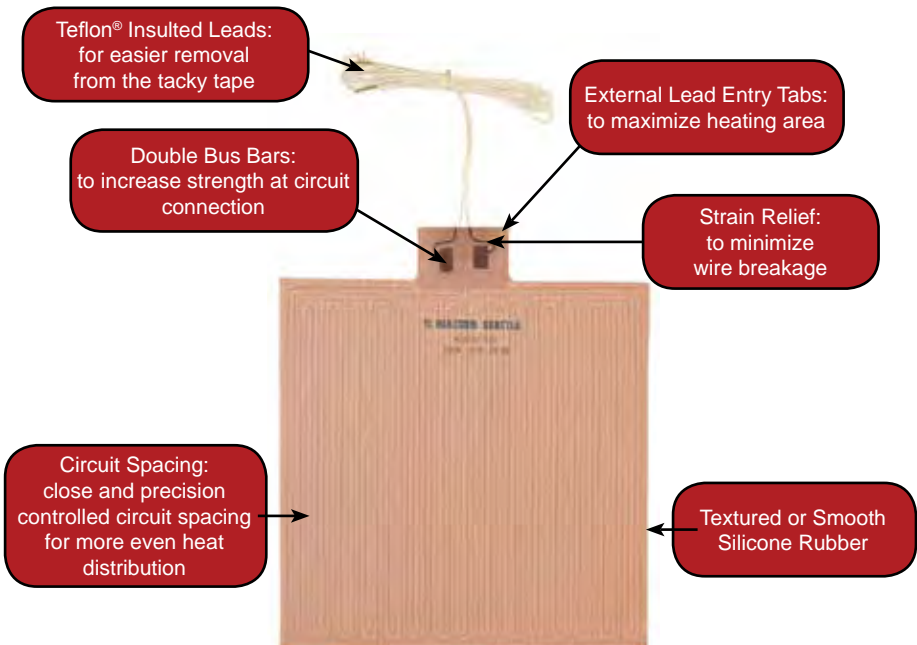
HEATCON Composite Systems®' Heat Blanket

## A Quality Difference:

Non-uniform heating by a heat blanket is generally caused by one of two factors, poor quality construction or improper handling. HEATCON Composite Systems® has the solution to both issues.

The most effective means to evenly distribute heat is by placing the heater wires closer together. Poorly designed heat blankets have circuit spacing of often 0.5in (12.7mm) or more, whereas our blankets have a circuit spacing of 0.15in (3.81mm) on average.

We have also addressed the improper handling factor by incorporating a strain relief in the power-lead entry tab, using special eyelet crimping techniques and utilizing double buss bars which minimize open circuits at the buss bar connection. Computer-generated circuitry optimizes circuit design to create even heat distribution. Our standard leads are Teflon® insulated for easy removal, from the tacky tape, after a repair.

## HEATCON Composite Systems®' Standard Quality Features
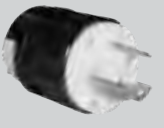
Teflon® Insulted Leads: for easier removal from the tacky tape

External Lead Entry Tabs: to maximize heating area

Double Bus Bars: to increase strength at circuit connection

Strain Relief: to minimize wire breakage

Circuit Spacing: close and precision controlled circuit spacing for more even heat distribution

Textured or Smooth Silicone Rubber

*Plugs and Receptacles*

## Heat Blanket Accessories

| Description | Image | | Part Number | Application | Volts | Amps | NEMA | Max. Wattage |
|---|---|---|---|---|---|---|---|---|
| Straight Blade Plugs | | | HCS1201 | For standard use | 125V | 15A | L5-15 | 1800W |
| Straight Blade Plugs | | | HCS1202 | For standard use with higher voltage | 250V | 15A | L6-15 | 3600W |
| Straight Blade Receptacles - Female | | | HCS1213 | Used to extend cables | 125V | 15A | L5-15 | 1800W |
| Straight Blade Receptacles - Female | | | HCS1219 | Used to extend cables | 250V | 15A | L6-15R | 3600W |
| Twist Lock Plugs | | | HCS1204 | Used primarily in school applications to prevent burnout of blankets | 125V | 15A | L5-15P | 1800W |
| Twist Lock Plugs | | | HCS1205 | Used with large Heat Blankets | 125V | 30A | L5-30P | 3600W |

**Note: Other Plugs and Receptacles also available.**

# *Plugs and Receptacles*

| | | | **Heat Blanket Accessories** | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Description** | **Image** | | **Part Number** | **Application** | **Volts** | **Amps** | **NEMA** | **Max. Wattage** |
| Twist Lock Plugs | | | HCS1207 | | 250V | 15A | L6-15P | 3600W |
| Twist Lock Plugs | | | HCS1209 | Used when high amps are required | 250V | 30A | L6-30P | 7200W |
| Twist Lock Receptacles - Female | | | HCS1208 | Used to extend cables | 250V | 30A | L6-30R | |
| 3-Pin Connector - B-Model Repair Part | | | HCS1223 CA3108E-19PB | Connects directly to Composite Repair Units or used as a HCS9000B /9200B-Model output cable repair part. | 120/ 240V | 30A | | |
| 3-Pin Connector Supervisory Plug | | | HCS1211 | Connects directly to Composite Repair Units *(supervisory blankets only)* | 120/ 240V | 30A | | |
| 2-Pin Connector Supervisory | | | HCS1009-060 | Connects directly to Composite Repair Units *(supervisory blankets only)* | 120/ 240V | 13A | | |
| Cable Clamp | | | HCS1009-061 | Connects directly to Composite Repair Units *(supervisory blankets only)* | 120/ 240V | 13A | | |
| **Note: Other Plugs and Receptacles also available.** | | | | | | | | |

**MATERIALS**

## *Aircraft on Ground (A.O.G.)*

As an added service to our customers, we offer A.O.G. priority service for composite repair materials.  Contact us if you have a grounded aircraft, or a work stoppage due to material requirements.  We can have a shipment of the material you require, in the quantity you need, on the way to your facility the same day we receive your purchase order.  A.O.G. orders must be received by 11:00am (PST) in order to allow sufficient processing time for same-day-shipment.  International A.O.G. priority shipments are subject to space availability on the next flight out.  The use of a customs broker is recommended to avoid unnecessary delays. An additional A.O.G. fee may also apply.

## *Small Quantities*

Prepreg repair materials typically have a nine to fifteen month shelf-life.  For many facilities, a full roll of materials would not be used in this time-frame and the excess would have to be thrown away. Buying from the manufacturer can take months of waiting for delivery with large minimum order requirements.  For these reasons, we provide material in large (full roll) or small (by the yard) quantities.  All of our materials are inspected prior to shipping and packed in dry ice with the appropriate quality assurance paperwork, (Certificate of Conformance, Material Safety Data Sheets and IATA forms).
We offer the following quantities for most repair materials:
- 5 yard cut
- 10 yard cut
- Full Roll (sizes depend on the type of material)

## *Frozen Material - Packaging*

In addition, our frozen materials shipments are packaged in an insulated box with dry ice and suspended in an inner box **to ensure that your material will remain at the manufacturer recommended temperatures and meet the manufacturer specifications.** Trip recorders are also added to record material out-time while in transit.  Our detailed service will save you time and money, with little or no wasted material.

## *Material Recertification*

**HEATCON Composite Systems offers material recertification testing for Boeing Material Specification (BMS) materials.**

This testing will often allow material to be recertified to extend the original shelf life. Test reports are issued directly by Boeing, providing you with the piece of mind and the assurance that your material has been properly handled.

Please contact us with your requirements.

## *Material Cutting and Kitting*

Using a state of the art cutting table, we can cut virtually any shape and size. All we need is your material specification and a CAD file with your patterns.

In addition to providing a highly accurate cut, reducing labor in the cutting process, we can minimize your material waste by nesting patterns together.

Send us your requirements and we can help you start saving time and money today!

## *Authorized Distributor*

Heatcon Composite Systems is an authorized distributor for HEXCEL and 3M materials needed for composite repairs. Our materials are inspected and arrive with the appropriate quality assurance paperwork.

**HEXCEL®**
Official Distributor

**3M**

MATERIALS

## Pre-assembled Kits

**1.** Nylon Bagging Film
(HCS2101)

Vacuum Hose/Sniffer Assembly
(HCS2015-05)

**3.** Release Film Non-Perforated
(HCS2108-NP)
OR
Teflon Coated Fiberglass/
Non-Porous
(HCS2103-NP)

**2.** Breather/Bleeder
(HCS2102)

Vacuum Gauge
(HCS2027)

Silicone Rubber Heat Blanket
(Contact Sales for P/N)

Caul Plate (optional)

**4.** Release Film, Perforated
(HCS2108-P)
OR
Teflon Coated Fiberglass/Porous
(HCS2103-P)

**8.** Fiberglass Bleeder Cloth
(HCS2410-010)

**9.** Repair Plies

**7.** Peel Ply
(HCS2112)

Core Splice Adhesive
(HCS2405)

Thermocouples

**5.** Flash Tape
(HCS2114)
OR
Polyester Discs
(HCS2115)

**6.** Sealant Tape
(HCS2125)

This kit provides everything that is required for temporary and permanent repair of composite structures assembled in one convenient kit. Estimated coverage is nine repairs of 10in (25.4cm) in diameter. Other materials available upon request.

Note: Resin not included.  Please call for pricing and delivery.

MATERIALS

# HEATCON COMPOSITE SYSTEMS®

## Pre-assembled Kits

### Bagging Kit - HCS2510-09

| Item Number | Part Number | Description | Size | Qty |
|---|---|---|---|---|
| 1 | HCS2101-04-60V | Bagging Film, Nylon | 30in (Open 60in) x 333 yds Wide (76.2cm (1.52m) x 304.5m) | 3yds (27m) |
| 2 | HCS2102-10 | Breather/Bleeder (10oz) | 60in x 36in (152.4cm x 91.44cm) | 1yd (0.9m) |
| 3 | HCS2108-NP | Release Film, Non-Perforated | 48in x .001in (121.9cm x .025mm) | 1yd (0.9m) |
| 4 | HCS2108-P | Release Film, Perforated | 48in x .001in x .045in (121.9cm x .025mm x 0.114cm) | 1yd (0.9m) |
| 5 | HCS2114 | Flash Tape | 1in x 72yds x .0025in (2.54cm x 6583.68cm x .228cm) | 1 Roll |
| 6 | HCS2125 | Sealant Tape, Tacky Tape | 0.125in x .5in x 25ft (11.43cm x 1.3cm x 762cm) | 2 Rolls |
| 7 | HCS2112 | Peel Ply, Nylon | 46in x .005in (116.84cm x .12mm) | 1yd (0.9m) |
| 8 | HCS2410-010 | Fiberglass Bleeder Cloth | 38in x .0045in (96.5cm x .11mm) | 1yd (0.9m) |

**Bagging Kit Dimensions: 29in x 10in x 9.5in** (73.7 cm x 25.4 cm x 24.1 cm)
**Shipping Weight: 7lbs** (3.2kg)

### Repair Plies and Bagging Kit

| Item Letter | Part Number[1] | Material | Description | Size | Qty |
|---|---|---|---|---|---|
| a | HCS2510-10 | BMS9-3 | Dry Fiberglass Cloth (Style 7781, MIL-C-9084) | 38in x .0089in (96.52cm x .22mm) | 1yd (0.9m) |
| b | HCS2510-11 | BMS9-8 | Dry Graphite Cloth (Style 3K-70-PW TY1, CL2) | 42in x .007in (106.68cm x .17mm) | 1yd (0.9m) |
| c | HCS2510-12 | BMS9-8 | Dry Graphite Cloth (Style 3K-135-8H TY1, CL2) | 42in x .0135in (1.06cm x .34mm) | 1yd (0.9m) |
| d | HCS2510-13 | Kevlar™49 | Dry Kevlar™ Cloth (STYLE 120) | 38in x .0040in (96.52cm x .1mm) | 1yd (0.9m) |
| e | HCS2510-14 | Kevlar™49 | Dry Kevlar™ Cloth (STYLE 285) | 38in x .010in (96.52cm x .25mm) | 1yd (0.9m) |

**[1]Repair Plies listed above include Bagging Kit (Items 1, 2, 3, 4, 5, 6, 7, 8)**

MATERIALS

# HEATCON COMPOSITE SYSTEMS®

## *Resin Kits*

Used on wet lay-up and repair. These are two part epoxy paste adhesive/resin systems for potting, bonding, fairing and repair.

**Typical Coverage for 50g (40/60 resin to fiber ratio)**
24in x 24in  (60.96cm x 60.96cm)
for style 7781 Fiberglass Cloth
6 - 8 repair plies 8in (20.32cm) diameter

• Practical
• No Waste
• Mix Only What is Required
• No Weighing

**SAVE TIME AND MONEY!**

| Part Number | Specification Number (Mfr Part #) | Storage Temp | Mix Ratio | Size | Cure Time | Cure Temp |
|---|---|---|---|---|---|---|
| HCS2407-091 | BMS8-301 (EY 3804) | Below 40°F (4°C) | 100:66 | 50g | 3 Hours | 150°F (66°C) |
| HCS2407-101 | BMS8-301 (EA 9390) | 40°F (4°C) | 100:56 | 50g | 3-4 Hours | 200°F (93°C) |
| HCS2407-131 | EA 934NA | 40°F (4°C) | 100:33 | 50g | 1 Hour | 200°F (93°C) |
| | | | | | 5-7 Days | 77°F (25°C) |
| HCS2407-141 | EA 9394 | 77°F (25°C) | 100:17 | 50g | 1 Hour | 150°F (66°C) |
| | | | | | 3-5 Days | 77°F (25°C) |
| HCS2407-151 | EA 956 | 40°F (4°C) | 100:58 | 50g | 1 Hour | 200°F (93°C) |
| | | | | | 5-7 Days | 77°F (25°C) |
| HCS2407-161 | EA 9309.3NA | 35°F (1°C) | 100:22 | 50g | 1 Hour | 180°F (82°C) |
| | | | | | 3-5 Days | 77°F (25°C) |

Please contact us for current price and lead time. Minimum order may apply.
EPOCAST® is a registered trademark of Vantico A&T US Inc.

## *Resins*

| Part Number | Specification (Mfr Part #) | Type | Class | Unit Size | Cure Temp |
|---|---|---|---|---|---|
| HCS2407-040 | BMS8-201 (EPOCAST 50-A1/946) | 4 | N/A | Quart Kit (0.9463L) | 150°F - 100°F (66°C - 93°C) After RT Gel |
| HCS2407-060 | BMS8-201 (EPOCAST 50-A1/9816) | 3 | N/A | Quart Kit (0.9463L) | 150°F - 200°F (66°C - 93°C) After RT Gel |
| HCS2407-090 | BMS8-301 (EY 3804 A/B) | N/A | 2 | Quart Kit (0.9463L) | 150°F (66°C) |
| HCS2407-100 | BMS8-301 (EA9390) | N/A | 1 | Quart Kit (0.9463L) | 200°F - 300°F (93°C - 149°C) |

**MATERIALS**

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# Fiberglass, Carbon Fiber, and Kevlar™ Prepreg

## Fiberglass

| Part Number | Manufacturer (Mfr Part #)[2] | Specification | Type | Class | Grade/ Style/Form | Nominal Cured Thickness | Roll Size[1] | Cure Temp |
|---|---|---|---|---|---|---|---|---|
| HCS2401-015 | HEXCEL (F155-5) | BMS8-79 | N/A | III | Style 120 | .0047in (0.12mm) | 38in x 100yds (96.52cm x 91.44m) | 250°F (121°C) |
| HCS2401-025 | HEXCEL (F155-5) | BMS8-79 | N/A | III | Style 1581 | .0095in (0.2413mm) | 38in x 65yds (96.52cm x 59.44m) | 250°F (121°C) |
| HCS2401-035 | HEXCEL (F155-5) | BMS8-79 | N/A | III | Style 7781 | .0095in (0.2413mm) | 38in x 65yds (96.52cm x 59.44m) | 250°F (121°C) |
| HCS2401-045 | HEXCEL (F161-108) | BMS8-139 | N/A | 1 | Style 120 | .0045in (0.1143mm) | 38in x 100yds (96.52cm x 91.44m) | 350°F (177°C) |
| HCS2401-055 | HEXCEL (F161-108) | BMS8-139 | N/A | 1 | Style 1581 | .0095in (0.2413mm) | 38in x 60yds (96.52cm x 54.86m) | 350°F (177°C) |
| HCS2401-060 | CYTEC (MXB7668/7781) | BMS8-139 | N/A | 1 & 2 | Style 7781 | .0095in (0.2413mm) | 38in x 60yds (96.52cm x 54.86m) | 350°F (177°C) |
| HCS2401-075 | HEXCEL (F161-138) | BMS8-154 | III | 1 | Style 6581 | .0084in (0.213mm) | 38in x 60yds (96.52cm x 54.86m) | 350°F (177°C) |
| HCS2401-M20 | HEXCEL (M20/120) | BMS8-340 & AMS-3970 | III | 2 | Style 120 | .0083in (0.211mm) | 42in x 65yds (106.68cm x 59.44m) | 250°F (121°C) |

## Carbon Fiber

| Part Number | Manufacturer (Mfr Part #)[2] | Specification | Type | Class | Grade/ Style/Form | Nominal Cured Thickness | Roll Size[1] | Cure Temp |
|---|---|---|---|---|---|---|---|---|
| HCS2402-015 | HEXCEL (F155-76) | BMS8-168 | II & III | 2 | Style 3K-70-PW | .0086in (0.2184mm) | 42in x 75yds (106.68cm x 68.58m) | 250°F (121°C) |
| HCS2402-025 | HEXCEL (F263-8) | BMS8-212 | IV | 2 | Style 3K-70-PW | .0083in (0.2108mm) | 42in x 75yds (106.68cm x 68.58m) | 350°F (177°C) |
| HCS2402-035 | HEXCEL (F263-7) | BMS8-212 | III | 2 | Style 3K-135-8H | .0141in (0.3581mm) | 42in x 75yds (106.68cm x 68.58m) | 350°F (177°C) |
| HCS2402-040 | CYTEC (CYCOM 970/PWC T300 3K UT) | BMS8-256 | IV | 2 | Style 3K-70-PW | .0085in (0.2159mm) | 42in x 80yds (106.68cm x 73.15m) | 350°F (177°C) |
| HCS2402-050 | CYTEC (CYCOM 934/PWC T300 UT) | BMS8-297 | IV | 2 | Style 3K-70-PW | .0083in (0.2108mm) | 60in x 65yds (152.4cm x 59.43m) | 350°F (177°C) |
| HCS2402-060 | CYTEC (CYCOM 934/PX T300 ST) | BMS8-297-2 | IV | 2 | Style 3K-70-PX | .0083in (0.2108mm) | 60in x 65yds (152.4cm x 59.43m) | 350°F (177°C) |
| HCS2402-070 | CYTEC (CYCOM 934/8HS T300 ST CCF) | BMS8-297 | III | 2 | Style 3K-135-8H | .0150in (0.3810mm) | 60in x 50yds (152.4cm x 45.72m) | 350 F (177°C) |
| HCS2402-M20 | HEXCEL (M20/G904) | BMS8-340 & AMS-3970 | I | 1 | Style 3K-70-PW | .0037in (0.094mm) | 50in x 50yds (127cm x 45.72m) | 250°F (121°C) |

## Kevlar™

| Part Number* | Manufacturer (Mfr Part #)[2] | Specification | Grade/ Style/Form | Nominal Cured Thickness | Roll Size[1] | Cure Temp |
|---|---|---|---|---|---|---|
| HCS2403-015 | HEXCEL (F155-71) | BMS8-219 | Style 285 | .010in (0.254mm) | 38in x 65yds (96.52cm x 59.44m) | 250°F (121°C) |

**NOTE:** All quoted material subject to availability.
Please call for pricing and delivery.
Other specifications available upon request.

[1] Roll yardages vary. Five yard minimum order.
Confirmation of approximate yardage supplied at time of order.
[2] Dry Ice and Trip Recorders required per certification.

**MATERIALS**

## Adhesive Film

| Part Number | Manufacturer (Mfr Part #)[2] | Specification | Type | Class | Grade/Style/Form | Material Weight | Roll Size[1] | Cure Temp |
|---|---|---|---|---|---|---|---|---|
| HCS2404-010 | 3M (AF163-2K) | BMS5-101 | 2 | N/A | Grade 10 | .060lb/ft² (0.293kg/m²) | 36in x 50yds (91.44cm x 45.72m) | 250°F (121°C) |
| | | BMS5-129 | 4 | IID | Grade 10 | | | |
| | | DMS2169G | 2 | 1 | Grade B | | | |
| HCS2404-030 | 3M (AF-126-2) | BMS5-129 | 2 | IIA | Grade 5 | .030lb/ft² (0.146kg/m²) | 36in x 36yds (91.44cm x 32.92m) | 250°F (121°C) |
| HCS2404-040 | Cytec (FM-123-5) | BMS5-129 | 2 | 2C | Grade 10 | .060lb/ft² (0.293kg/m²) | 36in x 55yds (91.44cm x 50.29m) | 250°F (121°C) |
| HCS2404-050 | Cytec (1515-4M) | BMS5-154 | 2 & 3 | 1 & 2 | Grade 5 | .050lb/ft² (0.244kg/m²) | 36in x 55yds (91.44cm x 50.29m) | 350°F (177°C) |
| HCS2404-060 | Cytec (FM355) | BMS8-145 | 1 | N/A | N/A | .075lb/ft² (0.366kg/m²) | 48in x 50yds (121.92cm x 50.29m) | 350°F (177°C) |
| HCS2404-100 | 3M (AF131-2) | BMS8-145 | 1 | N/A | N/A | .075lb/ft² (0.366kg/m²) | 40in x 36yds (101.6cm x 32.9m) | 350°F (177°C) |
| HCS2404-190 | 3M (AF163-2OST) | BMS5-101 | 2 | N/A | Grade 5 | .030lb/ft² (5.5mm) | 36in x 50yds (91.44cm x 50.29m) | 250°F (121°C) |
| HCS2404-070 | 3M (AF163-2K) | BMS5-101 | 2 | N/A | Grade 15 | .085lb/ft² (0.415kg/m²) | 36in x 50yds (91.44cm x 45.72m) | 250°F (121°C) |
| HCS2404-186 | 3M (AF163-2OST) | BMS5-101 | 2 | N/A | Grade 10 | .060lb/ft² (0.293kg/m²) | 36in x 50yds (91.44cm x 45.72m) | 250°F (121°C) |
| | | BMS5-129 | 4 | 2 | Grade A | .060lb/ft² (0.293kg/m²) | | 250°F (121°C) |
| | | DMS-2169 G | 2 | 2 | Grade A | .060lb/ft² (0.293kg/m²) | | 250°F (121°C) |
| HCS2404-207 | 3M (AF 30) | BMS5-42 | 2 | N/A | Grade A | .050lb/ft² (0.244kg/m²) | 20in x 72yds (50.8cm x 65.83m) | 250/350°F (121/177°C) |
| HCS2404-208 | 3M (AF191K) | N/A | N/A | N/A | N/A | .080lb/ft² (0.391kg/m²) | 36in x 50yds (91.44cm x 45.72m) | 350°F (177°C) |
| HCS2404-215 | 3M (AF 30) | BMS5-42 | 2 | N/A | Grade A | .050lb/ft² (0.244kg/m²) | 0.625in x 72yds (1.59cm x 65.83m) | 250/350°F (121/177°C) |
| HCS2404-218 | 3M (AF 3109-2U) | N/A | N/A | N/A | N/A | .035lb/ft² (0.171kg/m²) | 48in x 25yds (121.92cm x 22.86m) | 250/350°F (121/177°C) |
| HCS2404-219 | 3M (AF 3109-2K) | N/A | N/A | N/A | N/A | .085lb/ft² (0.415kg/m²) | 48in x 25yds (121.92cm x 22.86m) | 250/350°F (121/177°C) |
| HCS2404-087 | 3M (AF 163-2K) | N/A | N/A | N/A | N/A | .045lb/ft² (0.219kg/m²) | 36in x 50yds (91.44cm x 45.72m) | 250°F (121°C) |

**NOTE:** All quoted material subject to availability. Please call for pricing and delivery. Other specifications available upon request.

[1] Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.
[2] Dry Ice and Trip Recorders required per certification.

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

MATERIALS

# Epoxy Adhesive and Foam Adhesive

## Epoxy Adhesive

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Grade/ Style/Form/ Rev | Packages Includes | Unit Size | Storage Temp |
|---|---|---|---|---|---|---|---|---|
| HCS2407-031 | 3M (EC 3587 B-1) | N/A | N/A | N/A | N/A | Part A & B | 1 Quart (946mL) 2 PART KIT | 60-80°F (16-27°C) |
| HCS2407-032 | 3M (EC 3587 B-1/4) | N/A | N/A | N/A | N/A | Part A & B | 1 Quart (946mL) 2 PART KIT | 60-80°F (16-27°C) |
| HCS2407-033 | 3M (EC 2216) | BMS5-92 | 1 | 4 | N/A | Part A & B | 1 Quart (946mL) 2 PART KIT | 60-80°F (16-27°C) |
| HCS2407-035 | 3M (EC 3524 AN) | BMS5-28 | 9 | N/A | N/A | Part A & B | 1/2 Gallon (1.89L) 2 PART KIT | 80°F (27°C) |
| HCS2407-038 | 3M (EC 3501) | N/A | N/A | N/A | N/A | Part A & B | 1 Pint (470mL) 2 PART KIT | 60-80°F (16-27°C) |
| HCS2407-045 | 3M (EC 3501) | N/A | N/A | N/A | N/A | Part A & B | 2 fl oz Tube (59mL) 2 PART KIT | 60-80°F (16-27°C) |
| HCS2407-039 | 3M (EC 3333) | BMS5-92 J | 5 | 1 | N/A | Part A & B | 1 Quart (946mL) 2 PART KIT | 80°F (27°C) |
| HCS2407-048 | 3M (EC 1300L) | BMS5-7 | 1 | N/A | Rev G | 1 Container | 1 Quart (946mL) | 60-80°F (16-27°C) |
| HCS2407-049 | 3M (EC 1660) | BMS5-42 V | 1 | 2 | N/A | 1 Container | 1 Gallon (3.785L) | 40°F (4.4°C) |

## Foam Adhesive

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Grade/ Style/ Form/Rev | Nominal Cured Thickness/ Weight | Unit Size | Cure Temp |
|---|---|---|---|---|---|---|---|---|
| HCS2405-010 | CYTEC (FM490A) | BMS5-90 | 3 | 1 | Grade 50 | .05in (1.143mm) 0.395lb/ft² (6.33kg/m²) | Roll Size 1in x 25ft (2.54cm x 7.62m) | 250/350°F (121/177°C) |
| HCS2405-040 | HENKEL (EF526) | BMS5-90 | III | 1 | Grade 50/ Rev W | .05in (1.143mm) | Sheet Size 1ft x 2ft (30.48cm x 60.96cm) | 250/350°F (121/177°C) |
| | | IPS 10-02-001-05 | N/A | N/A | Grade B | 05in (1.143mm) | Sheet Size 1ft x 2ft (30.48cm x 60.96cm) | 250/350°F (121/177°C) |

**NOTE:** All quoted material subject to availability.
Please call for pricing and delivery.
Other specifications available upon request.

**MATERIALS**

## Surface Pre-Treatment

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Grade/Rev Style/Form | Unit Size | Storage Temp |
|---|---|---|---|---|---|---|---|
| HCS2407-320 | 3M (AC 130-2) | BMS10-128 | 1 | A | Grade A | 50ml 2 PART KIT | 40-100°F (4-38°C) |
| | | BMS 5-162 | N/A | N/A | Form 2S | | |
| HCS2407-321 | 3M (AC 130-2) | BMS10-128 | 1 | A | Grade A | 100ml 2 PART KIT | 40-100°F (4-38°C) |
| | | BMS 5-162 | N/A | N/A | Form 2S | | |
| HCS2407-322 | 3M (AC 131 CB) | BMS10-128 | 1 | A | Grade A | 50ml 2 PART KIT | Room Temp |
| | | AMS-3175 | 1 | C | Grade I / Rev A | | |
| HCS2407-323 | 3M (AC 131 CB) | BMS10-128 | 1 | A | Grade A | 100ml 2 PART KIT | Room Temp |
| | | AMS-3175 | 1 | C | Grade I / Rev A | | |
| HCS2407-324 | 3M (AC 770 B-1) | BMS 5-142 | 2 | B-1 | Rev G | 3.5oz 2 PART KIT | 80°F (27°C) |

## Primers

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Grade/Rev Style/Form | Unit Size | Storage Temp |
|---|---|---|---|---|---|---|---|
| HCS2406-011 | CYTEC (BR127) | BMS5-89 | 1 | N/A | Grade A | 1 Gallon (3.785L) | 0°F (-18°C) |
| HCS2406-019 | 3M (EC 3917) | N/A | N/A | N/A | N/A | 1 Gallon (3.785L) | 40°F (4.4°C) |
| HCS2406-020 | 3M (EC 3964) | N/A | N/A | N/A | N/A | 1 Gallon (3.785L) | 0°F (-18°C) |
| HCS2406-025 | 3M (EW 5000) | BMS 5-89 | 3 | N/A | N/A | 1 Quart (0.95L) | 35-40°F (-15-4.4°C) |
| HCS2406-035 | CYTEC (BR6747) | BMS 5-89 | II | N/A | N/A | 1 Pint (470mL) | 35-40°F (-15-4.4°C) |
| | | BMS 5-137 | I | 3 | N/A | 1 Pint (470mL) | 35-40°F (-15-4.4°C) |

## Fillers and Potting Compound

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Description | Unit Size |
|---|---|---|---|---|---|---|
| HCS2407-010 | HUNTSMAN (CG 1305) | BMS5-28 | 7 | 1 | Potting Compound Pourable | Gallon Kit (3.785L) |
| HCS2407-020 | HUNTSMAN (EC 89537) | BMS5-28 | 7 | 2 | Potting Compound Pourable | Gallon Kit (3.785L) |
| HCS2407-030 | HUNTSMAN (EPOCAST 1511 A/B) | BMS5-28 | 3 | N/A | Non Flow Edge Filler | Quart Kit (0.9463L) |
| HCS2201 | WACKER (EPOCAST 1511 A/B) | N/A | N/A | N/A | Resin Epoxy Filler/Fumed Silica | 1 Gallon (3.785L) |
| HCS2202 | 3M (K1) | N/A | N/A | N/A | Lightweight Epoxy Filler/Micro Balloons | 1 Gallon (3.785L) |
| HCS2202-01 | Malayan Adhesives (BJO-0930) | N/A | N/A | N/A | Phenolic Micro Balloons | 1 Gallon (3.785L) |

Note: Minimum order may apply.

**MATERIALS**

# Fiberglass, Carbon, and Kevlar™ Dry Fabric

## Fiberglass Dry Fabric

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Grade/ Style/Form | Thickness | Roll Width[1] |
|---|---|---|---|---|---|---|---|
| HCS2410-010 | HEXCEL (120-38) | BMS9-3 | D | 7 | Style 120 | 3.5mils (.09mm) | 38in (96.52cm) |
| HCS2410-020 | HEXCEL (1581-38) | BMS9-3 | H-2 | 7 | Style 1581 | 8.5mils (0.22mm) | 38in (96.52cm) |
| HCS2410-030 | HEXCEL (7781-38) | BMS9-3 | H-3 | 7 | Style 7781 | 8.6mils (0.22mm) | 38in (96.52cm) |

## Carbon Dry Fabric

| Part Number | Manufacturer (Mfr Part #) | Specification | Type | Class | Grade/ Style/Form | Thickness | Roll Width[1] |
|---|---|---|---|---|---|---|---|
| HCS2409-010 | HEXCEL (584-42) | BMS9-8 | I | 2 | Grade 3 / Style 3K-135-8H | .0135in (0.3429mm) | 42in (106.68cm) |
| HCS2409-020 | HEXCEL (282-42) | BMS9-8 | I | 2 | Grade 3 / Style 3K-70-PW | .007in (0.1778mm) | 42in (106.68cm) |
| HCS2409-022 | HEXCEL (282-50) | BMS9-8 | I | 2 | Grade 3 / Style 3K-70-PW | .007in (0.1778mm) | 50in (127cm) |
| HCS2409-031 | HEXCEL (AH370-5H) | N/A | N/A | N/A | N/A | .015in (0.381mm) | 39in (99.06cm) |

## Kevlar™ Dry Fabric

| Part Number | Manufacturer (Mfr Part #) | Specification | Style/Weave | Thickness Dry Nominal | Roll Width[1] |
|---|---|---|---|---|---|
| HCS2411-010 | HEXCEL (120-38) | Kevlar™49 | Style 350/Plain | 3.3mils (.08mm) | 38in (96.52cm) |
| HCS2411-035 | HEXCEL (353-38) | Kevlar™49 | Style 353/4H Satin | 9.4mils (0.24mm) | 50in (127cm) |
| HCS2411-040 | HEXCEL (352-38) | Kevlar™49 | Style 352/Plain | 10mils (0.254mm) | 38in (96.52cm) |

[1]Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.
Note: All quoted material subject to availability.
Please call for pricing and delivery. Other specifications available upon request.

**MATERIALS**

**HEATCON COMPOSITE SYSTEMS®**



1. Nylon Bagging Film (HCS2101)
3. Release Film Non-Perforated (HCS2108-NP) OR Teflon Coated Fiberglass/Non-Porous (HCS2103-NP)
Vacuum Hose/Sniffer Assembly (HCS2015-05)
2. Breather/Bleeder (HCS2102)
Vacuum Gauge (HCS2027)
Silicone Rubber Heat Blanket (Contact Sales for P/N)
Caul Plate (optional)
8. Fiberglass Bleeder Cloth (HCS2410-010)
4. Release Film, Perforated (HCS2108-P) OR Teflon Coated Fiberglass/Porous (HCS2103-P)
9. Repair Plies
7. Peel Ply (HCS2112)
Core Splice Adhesive (HCS2405)
Thermocouples
5. Flash Tape (HCS2114) OR Polyester Discs (HCS2115)
6. Sealant Tape (HCS2125)

Vacuum Bagging Consumables are used in wet lay-up applications. Heatcon Composite Systems provides you the materials required in your bagging schedule to get the job done.

**Vacuum Bagging Consumables:**
- Nylon Bagging Film
- Breather/Bleeder Cloth
- Release Film Perforated or Non-Perforated
- Teflon Release Fabric Porous or Non-Porous
- Peel Ply
- Flash Tape
- Polyester Discs
- Sealant Tape

# Nylon Bagging Film

The HCS2101 Series Nylon Bagging Film is a high-grade nylon film which is heat-stabilized for long-term cures. The films are soft, pliable and ideal for high temperature composites, metal bonding and any function requiring heat and/or pressure. Nylon Bagging Film is the final layer of material that is applied during the repair process to form the vacuum bag.

## Nylon Bagging Film Properties

| | |
|---|---|
| *Tensile Strength -* 10,000psi -16,000psi | *Fold Endurance -* > 250,000 cycles |
| *Elongation -* 375-500% | *Brittleness Temp -* < 75°F |
| *Graves Tear Strength -* 500-600gms | *Dimensional Stability (300°F, 10min) -* < 2.0% |
| *Elmerdorf Tear Strength -* 20-50gms | *Flammability Self Extinguishing* |

| Part Number | Specification (Mfr Part #) | Type | Grade/Rev Style/Form | Nominal Thickness | Roll Size[1] | Maximum Use Temp. |
|---|---|---|---|---|---|---|
| HCS2101-04-5MIL | N/A | N/A | N/A | 5mils (0.127mm) | 54in x 254yds (137.2cm x 232.3m) **50 Yard Minimum Buy** | 400°F (204°C) |
| HCS2101-04-30T 30in TUBE | N/A | N/A | N/A | 2mils (.0508mm) | 30in Tube x 166yds (76.2cm x 151.8m) | 400°F (204°C) |
| HCS2101-04-60V V-FOLD | N/A | N/A | N/A | 2mils (.0508mm) | 30in (Open 60in) x 333yds (76.2cm (1.52m) x 304.5m) | 400°F (204°C) |
| HCS2101-38 | BMS 5-121 (23030) | 1 | Rev C | 3mils (.0762mm) | 36in x 3000yds (91.44cm x 2743.2m) **10 Yard Minimum Buy** | 400°F (204°C) |

[1]Roll yardages vary. Five yard minimum order.  Confirmation of approximate yardage supplied at time of order.

**MATERIALS**

## Breather / Bleeder Cloth

The HCS2102 Series Breather/Bleeder Cloth is a needlepunch polyester breather system commonly used as a vacuum transfer medium in the vacuum bagging process. It can be used at pressures up to 85psi (5.8 bars). The HCS2102-04 cloth can be used at pressures up to 200psi (13.8 bars). Multidirectional conformability make it a very efficient breather. This cloth does <u>not</u> contain any binders which could seal off air flow. The breather is required for air evacuation while the bleeder system is required to absorb excess resin. Recommended maximum use temperature: 400°F (204°C).

| Part Number | Weight | Roll Size[1] |
|---|---|---|
| HCS2102-04 | 4oz (113.4g) | 60in x 100yds (152.4cm x 91.4m) |
| HCS2102-10 | 10oz (283.4g) | 60in x 50yds (152.4cm x 45.7m) |

## Release Film

| Release Film Properties | | | |
|---|---|---|---|
| Specific Gravity - 2.12-2.17sq ft/lb | Elongation @ Break - 300% | Max Use Temp - 400°F (204.44°C) | Melt Point - 485-540°F |
| Yield (1 mil film) - 90sq ft/lb | Tensile Modulus - 70000psi | Flammability - Self Extinguishing | |
| Water Absorption - <0.01% | Initial Tear Strength - 1mil 0.5lb-0.6lb | Tensile Strength @ Break - 3500psi | |

The **HCS2108-P Release Film** is a perforated, high-quality film made for contoured surfaces. This film is strong and has high elongation. Perforated Release Film is used as a porous release ply that allows volatile outgassing during processing.

| Release Film - Perforated | | | | | | |
|---|---|---|---|---|---|---|
| Part Number | Thickness | Roll Size[1] | Resin Loss | Hole Size | Mark Off | Color |
| HCS2108-P (P3) | 1mil (.001in) | 48in x 200yds (121.9cm x 182.88m) | 35% | 0.015in (0.38mm) Diameter on .25in (0.63cm) Centers | None | Red |
| HCS2108-P4 | 1mil (.001in) | 48in x 200yds (121.9cm x 182.88m) | .04% | 0.045in (1.14mm) Diameter on 2.0in (5.08cm) Centers | None | Red |
| HCS2108-P5 | 1mil (.001in) | 48in x 200yds (121.9cm x 182.88m) | .023% | 0.045in (1.14mm) Diameter on 3.5in (8.89cm) Centers | None | Red |

[1]Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.

The **HCS2108-NP Release Film** is a non-perforated, fluoropolymer release film for cures to 500°F (260°C). This film is an economical alternative to high-cost FEP release film. It is ideally used for flat or single contour lay-ups. Non-Perforated Release Film is used as a parting film.

| Release Film - Non-Perforated | | | |
|---|---|---|---|
| Part Number | Thickness | Roll Size[1] | Color |
| HCS2108-NP | 1mil (.001in) | 48in x 200yds (121.92cm x 182.88m) | Red |

[1]Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.

**MATERIALS**

# Teflon® Release Fabric

The **HCS2103-P Release Fabric** is a porous release Teflon® coated fiberglass with the same porosity that will release from all commercial resin systems. Teflon® Coated Fiberglass/Porous Release Fabric is used as a release ply that allows outgassing of volatiles during processing.

## Release Fabric Teflon® - Porous

| Part Number | Thickness | Roll Size[1] | Maximum Use Temp. |
|---|---|---|---|
| HCS2103-P | 2mils (.002in), (0.05mm) | 38in x 100yds (96.52cm x 91.4m) | 550°F (288°C) |

[1]Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.

The **HCS2103-NP Release Fabric** is a non-porous release Teflon® coated fiberglass designed for release and resin restriction. This fabric will release from all commercial resin systems without transfer. Non-Porous Teflon® Coated Fiberglass is commonly used as a parting film.

## Release Fabric Teflon® - Non Porous

| Part Number | Thickness | Roll Size[1] | Maximum Use Temp. |
|---|---|---|---|
| HCS2103-NP | 3mils (.003in), (0.08mm) | 38in x 100yds (96.52cm x 91.4m) | 550°F (288°C) |

[1]Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.

# Release Peel Ply

The HCS2112 Series Nylon Release Peel Ply is a heatset and scoured smooth weave nylon fabric used as a release fabric directly against bond lines or laminates where a finish for subsequent bonding or painting is needed. This Release Peel Ply is excellent for controlling adhesive squeeze out and works well on all fiber/epoxy laminates.

| Part Number | Thickness | Weight | Roll Size[1] | Yarn Type |
|---|---|---|---|---|
| HCS2112 | 6mil (.006in) | 2oz/yd$^2$ (66.5g/sq.m) | 46in x 300yds (121.9cm x 274.3m) | Nylon |

[1]Roll yardages vary. Five yard minimum order. Confirmation of approximate yardage supplied at time of order.

**MATERIALS**

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# Flash Tape

The HCS2114 Flash Tape is a polyester-backing film with a rubber adhesive. This tape is very tough and ideal for resin or adhesive flash removal.

| Part Number | Case | Thickness | Roll Size | Maximum Use Temp. |
|---|---|---|---|---|
| HCS2114 | 36 Rolls | 2.5mils (.06mm) | 1in x 72yds (2.54cm x 65.8m) | Up to 400°F (204°C) |
| HCS2114-02 | 18 Rolls | 2.5mils (.06mm) | 2in x 72yds (5.08cm x 65.8m) | Up to 400°F (204°C) |

# Polyester Discs

The HCS2115 is a high temperature polyester disc that is ideal for thermocouple isolation on composite repairs.

| Part Number | Size | Quantity per roll | Maximum Use Temp. |
|---|---|---|---|
| HCS2115-01 | 1in (2.54cm) | 500 | Up to 450°F (232°C) |
| HCS2115-02 | 1.25in (3.17cm) | 500 | Up to 450°F (232°C) |

# Sealant Tape

The HCS2125 Sealant Tape contains aggressive tack to hold vacuum bag to tools. Releases from metal or composite tools, hot cold. Ideal for standard 250°F (121°C) and 400°F (204°C) cures.

| Part Number | Case | Roll Size | Maximum Use Temp. | Color |
|---|---|---|---|---|
| HCS2125 | 24 Rolls | 0.125in x 0.5in x 32ft (3.18mm x 12.7mm x 9.75m) | 450°F (232°C) | Black |
| HCS2125-02 | 24 Rolls | 0.125in x 0.5in x 32ft (3.18mm x 12.7mm x 9.75m) | 450°F (232°C) | Light Gray |

**MATERIALS**

**HEATCON COMPOSITE SYSTEMS**®

## Aluminum Foil

| Part Number | Specification (Mfr Part #) | Type | Grade/ Style/Form | Size[1] | Cure Temp |
|---|---|---|---|---|---|
| HCS2408-010 | BMS8-289 | Ty 0/250/2/1235/002 Ty 0/350/2/1235/002 | Grade B/ Form 1 | 36in x 1078sq ft (91.44cm x 100.15 sqm) | 250°F / 350°F (121°C / 177°C) |

[1]**Twelve square foot minimum order. Order in three square foot increments.**

## Pre-Formed Core Materials

Pre-formed core materials are machined to three-dimensional contour from aluminum or non-metallic honeycomb. It can be supplied with or without recesses or splice bonding.

| Image | Style | Aircraft Models | | | |
|---|---|---|---|---|---|
| 1 | Vanes | DC9, DC10 | | MD11, MD80 | |
| 2 | Spoilers | 707, 727, 737 | 747, 757, 767 | DC9, DC10 | MD11, MD80, L1011 |
| 3 | Flaps | 707, 727, 737 | 747, 757 | DC9, DC10, MD80 | |
| 4 | Slats | 727, 737 | | 747, 767 | |
| 5 | Tabs | 707, 727, 737 | 747, 757 | DC9, DC10, MD80 | |

**Please call for part numbers, pricing and delivery.**
**Note: Among the many configurations available, machining is available for the following: Cargo Barrier Doors, Fan Casings, Rotor Blades, Trust Reversers, Cowl Doors and Blocker Doors.**

**MATERIALS**

1 Vanes

2 Spoilers

3 Flaps

4 Slats
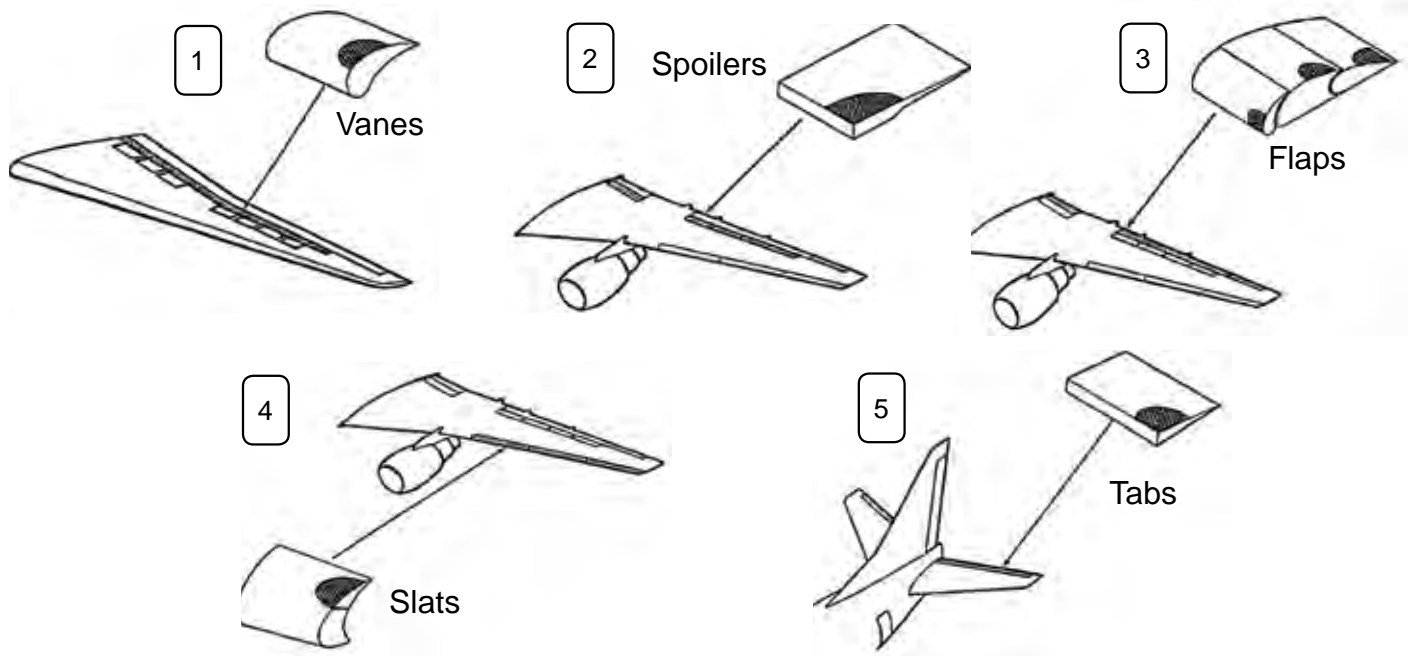
5 Tabs

## *Aluminum and Non-Metallic*

# Tired of Long Lead Times and Buying in Full Sheets?

HEATCON Composite Systems® offers Metallic and Non-Metallic Honeycomb core by the square foot.

## Please call for price and stock availability.
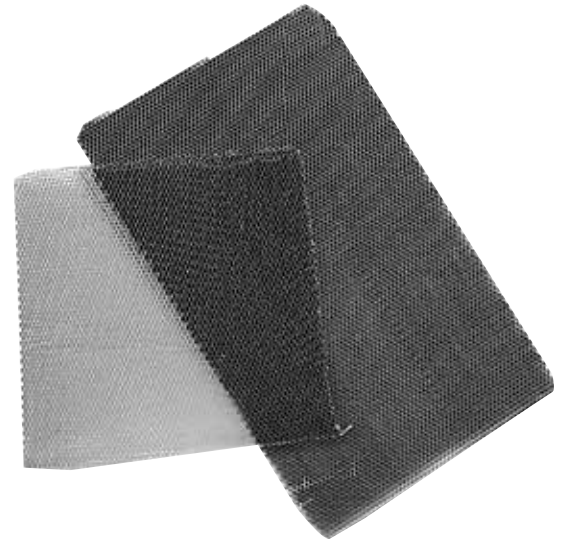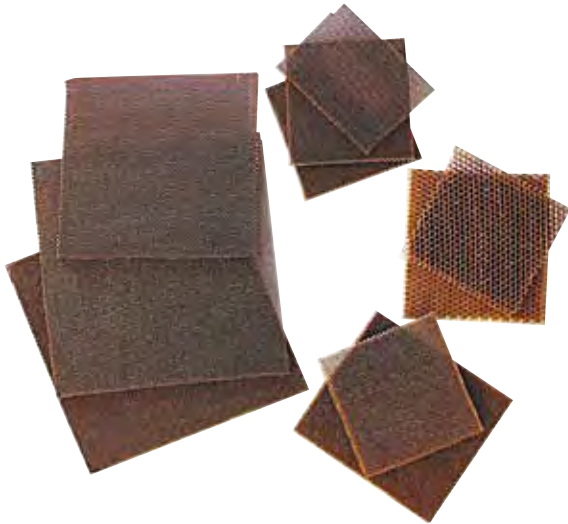
**Non-Metallic Honeycomb Core**

**Aluminum Honeycomb Core**

- HRH10* - Aramid Fiber/ Phenolic Resin
- HRH10* - Flex-Core
- HRP* - Reinforced Plastic Honeycomb

- Certified to the Boeing Material Specifications

  \* Other types may also be available

## *Tack Rags*

| Carton Availability | |
|---|---|
| **Part Number** | **Carton Quantity** |
| HCS-C60-50 | 50 |
| HCS-C60-100 | 100 |
| HCS-C60-400 | 400 |

The HCS-C60 Tack Rag is used to remove dust from surfaces before coating or painting application. High quality cheesecloth is oil and wax free to resist surface contamination. The Tack Rag meets or exceeds many aerospace specifications. Sized at 30in x 36in (76.2cm x 91.4cm) the HCS-C60 is folded and packaged individually in sealed plastic bags.

## *Scrapers, Grip, and Sharpener*

3M Sky Products by Elixair **3M**

**3M™ SkyMill™ Revolution by Elixair™ Sharpener**

### 3M™ SkyMill™ Revolution by Elixair™ Sharpener

The 3M™ SkyMill™ Revolution by Elixair™ Sharpener is a hand-held and portable sharpening machine used to sharpen the SkyScraper tools. The device is designed for low maintenance and fast emptying which can be quickly recharged. It enables the operator to remain by the job without the need for more tooling. The SkyMill is extremely durable plus fast and effective giving scrapers a sharp edge every time.

### 3M™ SkyScraper™ by Elixair

Save time and money with high performance scrapers which can be re-sharpened. The SkyScraper gently removes sealant, adhesive, and tape residue from most surfaces. Combined with the SkyGrip*, is an ergonomic option that provides increased worker comfort while improving safety. Multiple widths provide the right tool for the right job. Scrapers are approved by Boeing** and Airbus (see specifications). Four sizes are available.

*3M™ SkyGrip by Elixair attachment is sold separately

**SkyScrapers conform to Boeing BAC 5000

Boeing
BAC 5000

Airbus

### 3M™ SkyGrip™ by Elixair

The SkyGrip is an ergonomic rubberized grip handle attachment for the SkyScraper sealant removal tools. It is interchangeable on all scrapers and is designed to increase operator comfort and safety. The attachment is easy to install and one size fits all scrapers.

### 3M™ SkyScraper™ by Elixair
**Note that grip is illustrated on scraper (Grip sold separately)**

# Scrapers, Grip, and Sharpener

3M Sky Products by Elixair **3M**

Skyscraper is used as a tool in the removal of cured sealant and adhesives.

## 3M SkyScraper by Elixair

| Part Number | Product ID | Material | Color | Size | Minimum Buy Qty |
|---|---|---|---|---|---|
| HCS2036-01-191 | Airbus 310/03 | Ultem Plastic | Amber | 3 mm width x 6 mm depth | 5 |
| HCS2036-01-192 | Airbus 310/14 | Ultem Plastic | Amber | 14 mm width x 6 mm depth | 5 |
| HCS2036-01-193 | Airbus 310/25 | Ultem Plastic | Amber | 25 mm width x 6mm depth | 5 |
| HCS2036-01-194 | Airbus 310/37 | Ultem Plastic | Amber | 37 mm width x 6 mm depth | 5 |
| HCS2036-01-195 | Boeing 311/03 | POM Plastic | White | 3 mm width x 6 mm depth | 5 |
| HCS2036-01-196 | Boeing 311/14 | POM Plastic | White | 14 mm width x 6 mm depth | 5 |
| HCS2036-01-197 | Boeing 311/25 | POM Plastic | White | 25 mm width x 6mm depth | 5 |
| HCS2036-01-198 | Boeing 311/37 | POM Plastic | White | 37 mm width x 6 mm depth | 5 |

## 3M SkyGrip by Elixair

| Part Number | Product ID | Color | Qty |
|---|---|---|---|
| HCS2036-01-199 | Airbus and Boeing 310/1 | Black | 1 |

## 3M SkyMill Revolution/Sharpener

| Part Number | Product ID | Qty |
|---|---|---|
| HCS2036-01-200 | Airbus and Boeing 501/1 | 1 |

**TOOLS & STORAGE**

**HEATCON COMPOSITE SYSTEMS®**

## Composite Repair Tool Kit

Our selection of Tool Kits were designed by mechanics for mechanics. We have included a wide variety of only the most necessary tools used for completing a composite, a metal bond or a floor panel repair efficiently.

A wide variety of tools are included to provide you everything you need to complete the job, and our pre-assembled, convenient cases have a place for each tool so you always know where to find them. Best of all, each kit is lightweight and portable for the mechanic on the go.



| Features: | | |
|---|---|---|
| Weight - Only 23lbs (10.4kg) | | |
| Size - Compact 15in x 20in x 9in (38.1cm x 50.8cm x 22.9cm) | | |
| Easy to Use | | |
| Each item has its place within the case  - reducing the possibility of loss | | |
| Individual items can be ordered seperately - should replacement be needed | | |
| The case is made out of a high impact, shock absorbent material | | |
| Portability - Ready for any field repair | | |
| Optional - Vacuum for easy clean-up | | |

**TOOLS & STORAGE**

# Itemized List of Contents

## Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| Drill Motor | HCS2036-01-002 | 1 |
| Hole Saws - Piloted, Diamond Cut | HCS2036-01-089 | 1 |
| Hole Saws - Piloted, Diamond Cut | HCS2036-01-090 | 1 |
| Hole Saws - Piloted, Diamond Cut | HCS2036-01-091 | 1 |
| Counter Sink Feed - Cage Assembly | HCS2036-01-034 | 1 |
| Counter Sinks - Piloted, Carbide Tip | HCS2036-01-035 | 1 |
| Counter Sinks - Piloted, Carbide Tip | HCS2036-01-036 | 1 |
| Counter Sinks - Piloted, Carbide Tip | HCS2036-01-037 | 1 |
| Counter Sinks - Piloted, Carbide Tip | HCS2036-01-038 | 1 |
| Grinder Motor | HCS2036-01-022 | 1 |
| Grinder - Barrel Attachment for Sanding Disks | HCS2036-01-025 | 1 |
| Sanding Pad Holders | HCS2036-01-028 | 1 |
| Sanding Pad Holders | HCS2036-01-029 | 1 |
| Diamond Wheel Arbor | HCS2036-01-092 | 1 |
| Router Motor | HCS2036-01-012 | 1 |
| Router Motor Base - Two-Handed | HCS2036-01-013 | 1 |
| Router Bit - 40 Mesh Diamond | HCS2036-01-014 | 1 |
| Collets | HCS2036-01-101 | 1 |
| Collets | HCS2036-01-102 | 1 |
| Router Bit - Split Helix | HSC2036-01-043 | 1 |
| Random Orbital Sander | HCS2036-01-100 | 1 |
| Sandpaper | HCS2036-01-084 | 10 |

## Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| Sandpaper | HCS2036-01-085 | 10 |
| Sanding Disk | HCS2036-01-030 | 10 |
| Sanding Disk Bayonets | HCS2036-01-031 | 10 |
| Sanding Disk Bayonets | HCS2036-01-040 | 10 |
| Sanding Disk Bayonets | HCS2036-01-041 | 10 |
| Sanding Barrels | HCS2036-01-026 | 5 |
| Sanding Barrels | HCS2036-01-075 | 5 |
| Sanding Barrels | HCS2036-01-076 | 5 |
| Sanding Barrels | HCS2036-01-077 | 5 |
| Sanding Barrels | HCS2036-01-078 | 5 |
| Sanding Barrels | HCS2036-01-079 | 5 |
| Sanding Barrels | HCS2036-01-080 | 5 |
| Sanding Barrels | HCS2036-01-081 | 5 |
| Sanding Barrels | HCS2036-01-082 | 5 |
| Sanding Barrels | HCS2036-01-083 | 5 |
| Fiberglass Cut-Off Wheel | HCS2036-01-087 | 3 |
| Cutter - Honeycomb Core | HCS2036-01-039 | 1 |
| Retractable Utility Knife | HCS2036-01-051 | 1 |
| Shears - Soft Touch | HCS2036-01-053 | 1 |
| Vacuum Cleaner - Air Driven | HCS2036-01-069 | 1 |
| Resin Applicator | HCS2036-01-086 | 3 |
| Manifold, Air, 3 Way | HCS2036-01-088 | 1 |

For detailed part number descriptions, please proceed to pages 100-115

**TOOLS & STORAGE**

**HEATCON COMPOSITE SYSTEMS**®

# Composite Repair Tool Kit

| Itemized List of Contents |||
|---|---|---|
| **Description** | **Part Number** | **Qty** |
| Reamer, Tapered Drill | HCS2036-01-006A | 1 |
| Reamer, Tapered Drill | HCS2036-01-006B | 1 |
| Reamer, Tapered Drill | HCS2036-01-006C | 1 |
| Reamer, Tapered Drill | HCS2036-01-006D | 1 |
| Reamer, Tapered Drill | HCS2036-01-006E | 1 |
| Router Bit Diamond Cut | HCS2036-01-015A | 1 |
| Router Bit Diamond Cut | HCS2036-01-015B | 1 |
| Router Bit Diamond Cut | HCS2036-01-015C | 1 |
| Router Bit Diamond Cut | HCS2036-01-043A | 1 |
| Router Bit Diamond Cut | HCS2036-01-043B | 1 |
| Router Bit Diamond Cut | HCS2036-01-043C | 1 |
| Router Bit Diamond Cut | HCS2036-01-044A | 1 |
| Roller, Steel | HCS2036-01-054 | 1 |
| Drill Bits Key Point | HCS2036-01-059B | 1 |
| Drill Bits Key Point | HCS2036-01-059C | 1 |
| Drill Bits Key Point | HCS2036-01-059D | 1 |
| Drill Bits Key Point | HCS2036-01-059E | 1 |
| Drill Bits Key Point | HCS2036-01-059F | 1 |
| Scribe | HCS2036-01-114 | 1 |
| Knife, Cutting | HCS2036-01-120A | 1 |
| Knife, Cutting | HCS2036-01-120B | 1 |
| Blade, Cutting | HCS2036-01-120-18 | 10 |
| Blade, Cutting | HCS2036-01-120-19 | 10 |
| Blade, Cutting | HCS2036-01-120-24 | 10 |
| Ruler, Steel | HCS2036-06-012 | 1 |

The HCS2036-05A Composite Repair Tool Kit is designed as a supplement to our HCS2036-05 Composite Repair Tool Kit, providing additional tools for the repair technician. This kit includes a popular selection of drills, drill stops, guides, reamers and countersinks. All are supplied in a durable, lightweight, impact resistant carrying case.

| Features: |
|---|
| Lightweight |
| Compact size |
| Easy to use |
| Items can be ordered individually |
| Portable and ready for any field repair |

**TOOLS & STORAGE**

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# Metal Bond Tool Kit



| Itemized List of Contents | | |
|---|---|---|
| Description | Part Number | Qty |
| Router Bits - Taper Pin | HCS2036-01-017 | 4 |
| Router Bits - Taper Pin | HCS2036-01-018 | 4 |
| Router Bits - Taper Pin | HCS2036-01-018A | 4 |
| Cleco® Pliers | HCS2036-01-050 | 1 |
| Clecos® Fasteners | HCS2036-01-045A | 10 |
| Clecos® Fasteners | HCS2036-01-045 | 10 |
| Clecos® Fasteners | HCS2036-01-046 | 10 |
| Clecos® Fasteners | HCS2036-01-047 | 10 |
| Clecos® Fasteners | HCS2036-01-048 | 10 |
| Clecos® Side Grip Clamp | HCS2036-06-009 | 10 |
| Sanding Pad Holders | HCS2036-01-028 | 1 |
| Sanding Pad Holders | HCS2036-01-029 | 1 |
| Sanding Disk | HCS2036-01-030 | 25 |
| Sanding Disk Bayonets | HCS2036-01-031 | 25 |
| Sanding Disk Bayonets | HCS2036-01-040 | 25 |
| Sanding Disk Bayonets | HCS2036-01-041 | 25 |
| Belt Sander | HCS2036-06-001 | 1 |
| Sanding Belts | HCS2036-06-001-80 | 10 |
| Sanding Belts | HCS2036-06-001-120 | 10 |
| Countersink Feed - Cage Assembly | HCS2036-01-034 | 1 |
| .5in (12.7mm) Countersinks - Piloted, Carbide Tip | HCS2036-01-035 | 1 |
| .5in (12.7mm) Countersinks - Piloted, Carbide Tip | HCS2036-01-036 | 1 |
| .5in (12.7mm) Countersinks - Piloted, Carbide Tip | HCS2036-01-037 | 1 |
| .5in (12.7mm) Countersinks - Piloted, Carbide Tip | HCS2036-01-038 | 1 |
| Drill Stops | HCS2036-01-060 | 1 |
| Drill Stops | HCS2036-01-061 | 1 |
| Drill Stops | HCS2036-01-062 | 1 |
| Drill Stops | HCS2036-01-063 | 1 |
| Drill Stops | HCS2036-01-063A | 1 |
| Drill Bits Carbide Tipped | HCS2036-01-056A | 10 |
| Drill Bits Carbide Tipped | HCS2036-01-057A | 10 |
| Drill Bits Carbide Tipped | HCS2036-01-058A | 10 |
| Drill Bits Carbide Tipped | HCS2036-01-059G | 10 |
| Drill Bits Carbide Tipped | HCS25036-01059H | 10 |

Our Metal Bond Repair Tool Kit includes a selection of tools necessary for performing most metal bond repairs. All items are supplied in a compact, impact-resistant carrying case.

| Features: |
|---|
| Lightweight |
| Compact size |
| Easy to use |
| Items can be ordered individually |
| Portable and ready for any field repair |

For detailed part number descriptions, please proceed to pages 100-115

**TOOLS & STORAGE**

# HEATCON
# COMPOSITE SYSTEMS®

## *Metal Bond Tool Kit*

| Itemized List of Contents | | |
|---|---|---|
| Description | Part Number | Qty |
| Drill Reamers - Solid Carbide | HCS2036-01-010A | 1 |
| Drill Reamers - Solid Carbide | HCS2036-01-010 | 1 |
| Drill Reamers - Solid Carbide | HCS2036-01-009 | 1 |
| Drill Reamers - Solid Carbide | HCS2036-01-008 | 1 |
| Drill Reamers - Solid Carbide | HCS2036-01-007 | 1 |
| Drill Guide Housing | HCS2036-01-001 | 1 |
| Drill Guide Brushings | HCS2036-01-001B | 1 |
| Drill Guide Brushings | HCS2036-01-001D | 1 |
| Drill Guide Brushings | HCS2036-01-001F | 1 |
| Drill Guide Brushings | HCS2036-01-001H | 1 |
| Drill Guide Brushings | HCS2036-01-001J | 1 |
| Steel Rule | HCS2036-06-012 | 1 |
| Scribe, 10in (25.4cm) Metal | HCS2036-01-114 | 2 |
| Center Punch, Auto | HCS2036-06-006 | 1 |
| Replacement Punch | HCS2036-06-006A | 6 |
| Tap Hammer | HCS1104-01 | 1 |
| Motor Combination Cushion Grip Pliers - 6.5in (16.51cm) | HCS2036-06-007 | 1 |
| Aviation Snips - Straight Cut | HCS2036-06-011A | 1 |
| Aviation Snips - Left Cut | HCS2036-06-011B | 1 |
| Aviation Snips - Right Cut | HCS2036-06-011C | 1 |
| Case, Tool Kit | HCS1011-021 | 1 |
| Placard, Tool Kit | HCS1010-113 | 1 |
| Air Input FTG, Male, 0.25in Male NPT | HCS1014-005 | 1 |

**TOOLS & STORAGE**

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# Floor Panel Repair Tool Kit



### Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| Cutter, Rebate | HCS2036-07-002A | 2 |
| Closing Tool | HCS2036-07-003A | 1 |
| Drill Bits - Kevlar™ | HCS2036-07-001 | 4 |
| Counter Bores | HCS2036-01-066A | 2 |
| Counter Bores | HCS2036-01-066B | 2 |
| Counter Bores | HCS2036-01-066C | 2 |

Our Floor Panel Repair Tool Kit includes an assortment of tools needed for common floor panel repairs. The Floor Panel Repair Tool Kit is packaged in a compact, impact resistant case.

### Features:

| |
|---|
| Lightweight |
| Compact size |
| Easy to use |
| Items can be ordered individually |
| Portable and ready for any field repair |

**TOOLS & STORAGE**

# HEATCON COMPOSITE SYSTEMS®

## UAV Composite Repair Tool Kit

The HCS2036-09 "UAV" Composite Repair Tool Kit is designed to provide you with all the necessary tools you need to efficiently perform a composite repair.

A wide array of tools and accessories are included to provide you with everything you need to effectively complete the job.

These pre-assembled cases have a convenient place for each tool so you always know where to find them. Best of all, each kit is rugged, lightweight, and portable for those on-location field repairs.

### Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| FITTING, AIR INPUT, MALE, 1/4" NPT MALE, TYPE-M | HCS1014-005 | 4 |
| HAMMER, TAP INSPECTION, COMPOSITE STRUCTURES, ALUMINUM CONSTRUCTION WITH LOGO | HCS1104-01 | 1 |
| VACUUM PUMP AND SNIFFER ASSEMBLY | HCS2026-01 | 1 |
| DRILL GUIDE/HOUSING, FOR BUSHING PART # HCS2036-01-001B TO 001J | HCS2036-01-001 | 1 |
| DRILL GUIDE/BUSHING 3/32" | HCS2036-01-001B | 1 |
| DRILL GUIDE/BUSHING 1/8" | HCS2036-01-001D | 1 |
| DRILL GUIDE/BUSHING 5/32" | HCS2036-01-001F | 1 |
| DRILL GUIDE/BUSHING 3/16" | HCS2036-01-001H | 1 |
| DRILL GUIDE/BUSHING 1/4" | HCS2036-01-001J | 1 |
| DRILL MOTOR, AIR, 5200 RPM, 0-3/8" ID CHUCK | HCS2036-01-002 | 1 |
| ROUTER MOTOR, 208 (1/4") COLLET STD, 0.9HP MOTOR, AIR DRIVEN, 25,000 RPM, STRAIGHT HANDLE, ORANGE HOUSING | HCS2036-01-012 | 1 |
| ROUTER BASE, TWO-HANDED, FOR SERIES, 10-20 GRINDERS | HCS2036-01-013 | 1 |
| ROUTER BIT, 1/4"X 3" OAL, 40 MESH, DIAMOND CUT, 1" CUTTING SURFACE | HCS2036-01-014 | 1 |
| ROUTER BIT, 1/4"X 2" OAL, END MILL STYLE, DIAMOND CUT, 1/4" SHANK DIA., 2" O.A.L., 3/4" FLUTE LENGTH | HCS2036-01-015 | 1 |
| ROUTER BIT, 1/4"X 2" OAL, DRILL PT, DIAMOND CUT, 3/4" FLUTE LENGTH, 1/4" SHANK DIA., 2" O.A.L. | HCS2036-01-015A | 1 |
| ROUTER BIT, 3/16"X 2" OAL, BURR STYLE, DIAMOND CUT, 3/16" SHANK DIA., 2" O.A.L., 3/4" FLUTE LENGTH | HCS2036-01-015C | 1 |

### Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| GRINDER, AIR DRIVEN 90 DEG., REAR EXHAUST, 20,000 RPM | HCS2036-01-022 | 1 |
| DRUMS, RUBBER SANDING W/ SLEEVE ASSORTMENT, 1/4"DIA SHANK WITH THE FOLLOWING SIZED BARRELS: 1/2" X 1/2", (1/8" DIA SHANK), 3/4" X 1", 1" X 1", 1-1/2" X 1-1/2", 2" X 1-1/2", INCLUDES:1 SET, 50 GRIT AND 1 SET 120 GRIT SLEEVES | HCS2036-01-025 | 1 |
| SANDING BARREL, 1" X 1" X 80 GRIT | HCS2036-01-026 | 1 |
| SANDING PAD, 2", SPEED LOC TS MOUNT WITH THREADED MANDREL (STD ABRASIVES SOCATT MOUNT) | HCS2036-01-028 | 1 |
| SANDING PAD, 1", SPEED LOC TS MOUNT WITH THREADED MANDREL (STD ABRASIVES SOCATT MOUNT) | HCS2036-01-029 | 1 |
| SANDING DISK, 2" DIA, 80 GRIT,SPD LOC TS, STD. ABR. SOCATT MOUNT, ALUM OXIDE | HCS2036-01-030 | 10 |
| SANDING DISK, 1" DIA, 80 GRIT SPD LOC TS, STD. ABR. SOCATT MOUNT, ALUM OXIDE | HCS2036-01-031 | 10 |
| SANDING DISK, 2" DIA, 180 GRIT, SPD LOC TS, STD. ABR. SOCATT MOUNT, ALUM OXIDE | HCS2036-01-032 | 10 |
| SANDING DISK, 1" DIA, 180 GRIT, SPD LOC TS, STD. ABR. SOCATT MOUNT, ALUM OXIDE | HCS2036-01-033 | 10 |
| COUNTERSINK FEED (CAGE ASSEMBLY) | HCS2036-01-034 | 1 |
| COUNTERSINK, 1/2" X 100 DEGREE, 1/8" PILOT, CARBIDE TIPPED | HCS2036-01-035 | 1 |
| COUNTERSINK, 1/2" X 100 DEGREE, 5/32" PILOT, CARBIDE TIPPED | HCS2036-01-036 | 1 |

# UAV Composite Repair Tool Kit

## Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| COUNTERSINK, 1/2" X 100 DEGREE, 3/16" PILOT, CARBIDE TIPPED | HCS2036-01-037 | 1 |
| COUNTERSINK, 1/2" X 100 DEGREE, 1/4" PILOT, CARBIDE TIPPED | HCS2036-01-038 | 1 |
| CUTTER, HONEYCOMB CORE, FLAT KNIFE | HCS2036-01-039 | 1 |
| SANDING DISK, 1" DIA, 120GRIT SPD LOC TS, STD ABR. SOCATT MOUNT, ALUM OXIDE | HCS2036-01-040 | 10 |
| SANDING DISK, 2" DIA, 120 GRIT SPD LOC TS, STD ABR. SOCATT MOUNT, ALUM OXIDE | HCS2036-01-041 | 10 |
| ROUTER BIT, 1/4" SPLIT HELIX, FOR CUTTING KEVLAR LAMINATES, CARBIDE 1/4" DIA 2.5" LONG, SPEED 1600-1900 SFM, **MUST SUPPLY WITH WARNING NOTICES | HCS2036-01-043 | 1 |
| ROUTER BIT, 1/4" X 3" OAL, BURR | HCS2036-01-043A | 1 |
| ROUTER BIT, 1/4"X 3" OAL, DRILL PT, CARBIDE, 3" LONG X 1" FLUTE LENGTH FOR KEVLAR, DIAMOND CUT | HCS2036-01-043B | 1 |
| ROUTER BIT, 1/4"X 3" OAL, END MILL CARBIDE, 3" LONG X 1" FLUTE LENGTH, FOR KEVLAR, DIAMOND CUT | HCS2036-01-043C | 1 |
| ROUTER BIT, 1/4"X 3" OAL, BI SHEAR, COMPRESSION, FOR KEVLAR 1" FLUTE LENGTH | HCS2036-01-044A | 1 |
| KNIFE, RETRACTABLE UTILITY | HCS2036-01-051 | 1 |
| SHEARS, FISKAR SOFT TOUCH NOT FOR USE ON KEVLAR MATERIAL, 10-1/2" OAL X 3-5/8" CUTTING LENGTH | HCS2036-01-053 | 1 |
| SHEARS, FOR KEVLAR, RH, 12" OAL, CARBIDE COATED | HCS2036-01-186 | 1 |
| SWEEP KIT, 7PC, 1/4", POLYETHYLENE | HCS2036-01-055 | 1 |
| DRILL BIT, 3/32" SOLID CARBIDE, 118 DEG POINT, JOBBER LENGTH**NOT RECOMMENDED FOR KEVLAR** | HCS2036-01-056A | 10 |
| DRILL BIT, 1/8", CARBIDE TIPPED, 135 DEGREE POINT, JOBBER LENGTH**NOT RECOMMENDED FOR KEVLAR** | HCS2036-01-057A | 10 |
| DRILL BIT, 5/32", CARBIDE TIPPED, 135 DEGREE POINT, JOBBER LENGTH**NOT RECOMMENDED FOR KEVLAR** | HCS2036-01-058A | 10 |
| DRILL BIT, 3/32", KEV POINT, FOR KEVLAR | HCS2036-01-059B | 5 |
| DRILL BIT, 1/8", KEV POINT, FOR KEVLAR | HCS2036-01-059C | 5 |
| DRILL BIT, 5/32", KEV POINT, FOR KEVLAR | HCS2036-01-059D | 5 |
| DRILL BIT, 3/16", KEV POINT, FOR KEVLAR | HCS2036-01-059E | 5 |

## Itemized List of Contents

| Description | Part Number | Qty |
|---|---|---|
| DRILL BIT, 1/4", KEV POINT, FOR KEVLAR, OAL UNDER 3" | HCS2036-01-059F | 5 |
| DRILL BIT, 3/16", CARBIDE TIPPED, 135 DEGREE SPLIT POINT, 2.5", NOT RECOMMENDED FOR KEVLAR | HCS2036-01-059J | 10 |
| DRILL BIT, 1/4", CARBIDE TIPPED, 135 DEGREE SPLIT POINT, 2.5", NOT RECOMMENDED FOR KEVLAR | HCS2036-01-059K | 10 |
| MICROSCOPE, MAGNIFER, 30X | HCS2036-01-067 | 1 |
| SANDER, RANDOM/ORBITAL, 5" PAD, 12,000 RPM 1/2HP | HCS2036-01-100 | 1 |
| SANDING BARREL, 1/2"X1/2", 120 GRIT | HCS2036-01-075 | 1 |
| SANDING BARREL, 3/4"X1", 120 GRIT | HCS2036-01-076 | 1 |
| SANDING BARREL, 1" X 1", 120 GRIT | HCS2036-01-077 | 1 |
| SANDING BARREL, 1-1/2"X1-1/2", 120 GRIT | HCS2036-01-078 | 1 |
| SANDING BARREL, 2"X 1-1/2", 120GRIT | HCS2036-01-079 | 1 |
| SANDING BARREL, 1/2" X 1/2", 80 GRIT | HCS2036-01-080 | 1 |
| SANDING BARREL, 3/4" X 1", 80 GRIT | HCS2036-01-081 | 1 |
| SANDING BARREL, 1-1/2" X 1-1/2"X 80 GRIT | HCS2036-01-082 | 1 |
| SANDING BARREL, 2"X 1-1/2", 80 GRIT | HCS2036-01-083 | 1 |
| SANDING DISK, 5" DIA, 80 GRIT ALUMINUM OXIDE, PSA STICK-IT | HCS2036-01-084 | 10 |
| SANDING DISK, 5" DIA, 120 GRIT ALUMINUM OXIDE, PSA STICK-IT | HCS2036-01-085 | 10 |
| CUT-OFF WHEEL, 3", FIBERGLASS REINFORCED 3" X 1/16" X 1/4" ARBOR, MAX SPEED 25,465 RPM | HCS2036-01-087 | 10 |
| ARBOR, DIAMOND WHEEL 1/4" SHANK | HCS2036-01-092 | 1 |
| COLLET, 5/32", FOR .110 SMALL END, .128 SHANK, #2 ROUTER BIT, (USE WITH HCS2036-01-012 ROUTER MOTOR) | HCS2036-01-101 | 1 |
| BLADE, CUTTING KNIFE, CHISEL, #18, FITS KNIFE HCS2036-01-120, 5 BLADES PER PACKAGE | HCS2036-01-120-18 | 5 |
| BLADE, CUTTING KNIFE, CARVING, #19, FITS KNIFE HCS2036-01-120 5 BLADES PER PACKAGE | HCS2036-01-120-19 | 5 |
| BLADE, CUTTING KNIFE, ANGLED, #24 FITS KNIFE HCS2036-01-120A 5 BLADES PER PACKAGE | HCS2036-01-120-24 | 5 |
| KNIFE, CUTTING, #2, REPLACABLE BLADE | HCS2036-01-120A | 1 |
| KNIFE, CUTTING, HEX METAL HANDLE, REPLACEABLE BLADE | HCS2036-01-120B | 1 |

**TOOLS & STORAGE**

**HEATCON COMPOSITE SYSTEMS**®

## UAV Composite Repair Tool Kit

| Itemized List of Contents | | |
|---|---|---|
| **Description** | **Part Number** | **Qty** |
| ROLLER, FIBERGLASS, 1/2" X 3", ALUM | HCS2036-01-121 | 1 |
| SANDING DISK, 5" DIA, 150 GRIT, PSA, ALUMINUM OXIDE ON 'C' WEIGHT PAPER | HCS2036-01-161 | 10 |
| SANDING DISK, 5" DIA, 180 GRIT, PSA, ALUMINUM OXIDE ON 'C' WEIGHT PAPER | HCS2036-01-162 | 10 |
| SANDING DISK, 5" DIA, 220 GRIT, PSA, ALUMINUM OXIDE ON 'C' WEIGHT PAPER | HCS2036-01-163 | 10 |
| SANDING DISK, 5" DIA, 320 GRIT, PSA, ALUMINUM OXIDE ON 'C' WEIGHT PAPER | HCS2036-01-164 | 10 |
| SANDING DISK, 5" DIA, 500 GRIT, PSA, ALUMINUM OXIDE ON 'C' WEIGHT PAPER | HCS2036-01-165 | 10 |
| SANDING DISK, 5" DIA, 800 GRIT, PSA, ALUMINUM OXIDE ON FILM BACK | HCS2036-01-166 | 10 |
| SANDING DISK, 5" DIA, 1200 GRIT, PSA, ALUMINUM OXIDE ON FILM BACK | HCS2036-01-168 | 10 |
| SANDING DISK, 2" DIA, 150 GRIT, SPEED LOK TS, ALUMINUM OXIDE | HCS2036-01-172 | 10 |
| SANDING DISK, 2" DIA, 240 GRIT, SPEED LOK TS, ALUMINUM OXIDE | HCS2036-01-174 | 10 |
| SANDING DISK, 2" DIA, 320 GRIT, SPEED LOK TS, ALUMINUM OXIDE | HCS2036-01-175 | 10 |
| SANDING DISK, 1" DIA, 150 GRIT, SPEED LOK TS, ALUMINUM OXIDE | HCS2036-01-178 | 10 |
| SANDING DISK, 1" DIA, 240 GRIT, SPEED LOK TS, ALUMINUM OXIDE | HCS2036-01-180 | 10 |
| SANDING DISK, 1" DIA, 320 GRIT, SPEED LOK TS, ALUMINUM OXIDE | HCS2036-01-181 | 10 |
| BOX, PLASTIC FLEX-A-TOP HINGED LID, ID 2.64" X 3.60" X 1.5" | HCS2036-125 | 22 |
| BOX, PLASTIC FLEX-A-TOP HINGED LID, ID 4.41" X 7.89" X 1.16" | HCS2036-126 | 4 |
| PETRI DISH, 150mm X 25mm, STYRENE PLASTIC W/ LID | HCS2036-127 | 4 |
| PLACARD, HCS2036-09 TOOL KIT (1 OF 2), 2 X 6", BLACK W/WHITE LETTERS, PLASTIC | HCS1010-182 | 1 |
| PLACARD, HCS2036-09 CONSUMABLES KIT (2 OF 2), 2 X 6", BLACK W/WHITE LETTERS, PLASTIC | HCS1010-183 | 1 |
| CASE, HCS2036-09 TOOL KIT, TOOLS, REMOVABLE LID, DIVIDER FLAP, CUSTOM FOAM | HCS1011-033 | 1 |
| CASE, TOOL KIT HCS2036-09, COMSUMABLES, 3.0" TOP, 3.0" BOTTOM, DIVIDER FLAP IN TOP PORTION, TAKE-APART HINGES, CUSTOM FOAM FILLER | HCS1011-034 | 1 |

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

## *MobileTool Cart*

The HCS2050 series mobile tool cart is designed to provide you with a central storage for all the necessary tools you need to efficiently perform a composite repair.

A wide array of tools and accessories are available to provide you with everything you need to effectively complete the job.

This pre-assembled cart includes drawer dividers so you can have a place for each tool and storage for your hot bonder, so you always know where to find them.



Actual Configuration May Vary

| Features: |
| --- |
| 35.5" H x 70" L x 28.5" D |
| Cable Hook and handle |
| 4ea locking casters |
| Ribbed top mat on work surface |
| Four storage drawers with configurable dividers |
| Bonder storage compartment |
| |
| HCS2050-04 is for "Cart Only" |







| HCS2050-03 - Itemized List of Contents | | |
| --- | --- | --- |
| Description | Part Number | Qty |
| TAP HAMMER | HCS1104-01-P | 1 |
| DRILLGUIDE HOUSING | HCS2036-01-001 | 1 |
| DRILL MOTOR | HCS2036-01-002 | 1 |
| ROUTER MOTOR | HCS2036-01-012 | 1 |
| TOOL, SOCKET, 12 POINT, ROUTER MOTOR DISASSEMBLY | HCS2036-01-012-TOOL | 1 |
| ROUTER MOTOR BASE | HCS2036-01-013 | 1 |
| GRINDER MOTOR | HCS2036-01-022 | 1 |
| RETRACTABLE UTILITY KNIFE | HCS2036-01-051 | 1 |
| MATERIAL ROLLER | HCS2036-01-054 | 1 |
| AIR DRIVEN VACUUM CLEANER | HCS2036-01-069 | 1 |
| RANDOM ORBITAL SANDER | HCS2036-01-100 | 1 |
| MANIFOLD, AIR, 3-WAY | HCS2036-01-088 | 1 |
| RULER, 12", STEEL, 1/2" WIDE | HCS2036-06-012 | 1 |

**TOOLS & STORAGE**

## Storage Solutions

Durable, secure cabinets are designed to provide years of safe, convenient storage and problem-free operation. Our cabinets:
- Provide the highest density storage, reducing the footprint needed for storage by as much as 50%
- Provide maximum weight-bearing capacity, organization and access
- Feature all the benefits of our unique, infinitely customizable drawer
- Offer the flexibility to adapt to your future requirements
- Can be stacked for even greater storage density in the same footprint
- Allow keyed-alike cabinet groupings to be created. Our removable core locks can be switched in the field for both keyed-alike and master key systems.

| Features: |
|---|
| Lockable cabinets |
| Ergonomic handles |
| Hinged label holders |
| Drawer dividers with ability to add labeling |
| PrevenTip® interlock system |
| Exclusive suspension system |
| Optional wood counters |

### One-Piece Drawer Face And Handle
The drawer front has an integral handle and is welded to the bottom of the drawer for added stability. No hardware is used to attached the drawer front or handle, resulting in superior durability and ergonomic safety.

### Suspension System
Our exclusive suspension system incorporates a guide track, which wraps under the drawer body for additional stability and strength. This unique system features quiet Polyoxymethylene (POM) bearings, combining strength, hardness, dimensional stability, fatigue resistance, low wear and low friction, to give Lista drawers remarkably smooth, quiet operation.

### Drawer Performance
When we say our drawers provide unequaled performance, we have the results to back that claim up. To test our drawers, we chose the RAL-RG 614 standard from the German Institute of Quality Assurance and Marking, a globally respected standard. This test required our drawers to pass a series of difficult test criteria. In these demanding tests, our cabinets excelled. Our suspensions exceeded the required number of cycles, fully loaded, without diminished performance.

# Storage Solutions continued

| Part Number | Width x Depth x Height | Number of Drawers | Number of Compartments |
|---|---|---|---|
| **Counter Height Cabinets** | | | |
| HCS2038-04-001 | 28.25in x 28.5in x 41.75in (71.75cm x 72.39cm x 106.04cm) | 5 | 61 |
| HCS2038-04-002 | 28.25in x 28.5in x 41.75in (71.75cm x 72.39cm x 106.04cm) | 7 | 114 |
| HCS2038-04-003 | 28.25in x 28.5in x 41.75in (71.75cm x 72.39cm x 106.04cm) | 9 | 154 |
| HCS2038-04-004 | 28.25in x 28.5in x 41.75in (71.75cm x 72.39cm x 106.04cm) | 10 | 210 |
| HCS2038-04-005 | 40.25in x 22.5in x 41.75in (102.23cm x 57.15cm x 106.04cm) | 5 | 57 |
| HCS2038-04-006 | 40.25in x 22.5in x 41.75in (102.23cm x 57.15cm x 106.04cm) | 7 | 96 |
| HCS2038-04-007 | 40.25in x 22.5in x 41.75in (102.23cm x 57.15cm x 106.04cm) | 9 | 117 |
| **Eye-Level Height Cabinets** | | | |
| HCS2038-05-001 | 28.25in x 28.5in x 59.5in (71.75cm x 72.39cm x 151.13cm) | 8 | 88 |
| HCS2038-05-002 | 28.25in x 28.5in x 59.5in (71.75cm x 72.39cm x 151.13cm) | 9 | 124 |
| HCS2038-05-003 | 28.25in x 28.5in x 59.5in (71.75cm x 72.39cm x 151.13cm) | 11 | 172 |
| HCS2038-05-004 | 28.25in x 28.5in x 59.5in (71.75cm x 72.39cm x 151.13cm) | 12 | 210 |
| HCS2038-05-005 | 28.25in x 28.5in x 59.5in (71.75cm x 72.39cm x 151.13cm) | 15 | 300 |
| HCS2038-05-006 | 40.25in x 22.5in x 59.5in (102.23cm x 72.39cm x 151.13cm) | 7 | 66 |
| HCS2038-05-007 | 40.25in x 22.5in x 59.5in (102.23cm x 72.39cm x 151.13cm) | 9 | 105 |
| HCS2038-05-008 | 40.25in x 22.5in x 59.5in (102.23cm x 72.39cm x 151.13cm) | 10 | 159 |
| **Mobile Cabinets** | | | |
| HCS2038-06-001 | 22.18in x 28.5in x 35.5in (56.36cm x 72.39cm x 105.41cm) | 5 | 53 |
| HCS2038-06-002 | 22.18in x 28.5in x 41.5in (56.36cm x 72.39cm x 105.41cm) | 6 | 61 |
| HCS2038-06-003 | 39in x 28.5in x 37.25in (99.06cm x 72.39cm x 94.61cm) | 5 | 57 |
| HCS2038-06-004 | 28.25in x 22.5in x 41.5in (71.75cm x 57.15cm x 105.41cm) | 7 | 72 |
| HCS2038-06-005 | 40.25in x 22.5in x 41.5in (102.23cm x 57.15cm x 105.41cm) | 7 | 94 |

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**HEATCON COMPOSITE SYSTEMS**®

## *Vacuum and Grinder Equipment*

HEATCON Composite Systems® offers Clayton vacuum and grinder equipment.

Available in both electric and pneumatic models, Clayton HEPA vacuums are an ideal solution for dustless sanding, dust extraction, and general cleanup. They are designed for the removal of Hexavalent Chromium (Cr VI), paints containing lead or chromates, aluminum dust, carbon fiber, ceramic dust, fiberglass and mold. These units are extremely portable, lightweight and feature extra heavy duty components that ensure long life and extreme durability for extreme environments.

Clayton also provides a complete family of shrouded tools to complement grinder supplied in kits which provide outstanding dust collection during sanding, grinding, cutting, drilling, and other operations. These tools are the choice for aerospace customers involved in manufacturing and maintenance. Contact us to discuss your requirements today.

# Vacuum and Accessories

**Warthog HEPA Vacuums**

Available in both electric and pneumatic models, Clayton HEPA vacuums are an ideal solution for dustless sanding, dust extraction, and general cleanup. They are designed for the removal of Hexavalent Chromium (Cr VI), paints containing lead or chromates, aluminum dust, carbon fiber, ceramic dust, fiberglass and mold. These units are extremely portable, lightweight and feature extra heavy duty components that ensure long life and extreme durability for extreme environments.



| Part Number | Image | Description | Qty |
|---|---|---|---|
| HCS2035-VAC-01 | 1 | WARTHOG VACUUM, 5 GAL, PNEUMATIC, HEPA | 1 |
| HCS2035-VAC-02 | 2 | WARTHOG VACUUM, 15 GAL, PNEUMATIC, HEPA | 1 |
| HCS2035-VAC-03-120 | 3 | WARTHOG VACUUM, 5 GAL, 120V, ELECTRIC, HEPA | 1 |
| HCS2035-VAC-03-220 | 3 | WARTHOG VACUUM, 5 GAL, 220V, ELECTRIC, HEPA | 1 |
| HCS2035-VAC-04-120 | 4 | WARTHOG VACUUM, 15 GAL, 120V, ELECTRIC, HEPA | 1 |
| HCS2035-VAC-04-220 | 4 | WARTHOG VACUUM, 15 GAL, 220V, ELECTRIC, HEPA | 1 |
| HCS2035-ACC-01 | | ADAPTER HOSE, 1" HOSE TO 1.5" SLEEVE, 5 ft. | 1 |
| HCS2035-ACC-02 | | CLEANUP HOSE, VACUUM, 1.5" X 10 ft, NO COMPRESSED AIR LINE | 1 |
| HCS2035-ACC-03 | | SAFE FILTER CHANGE HOSE, 3FT, WARTHOG VACUUMS | 1 |
| HCS2035-ACC-04 | | COMPRESSED AIR LINE, 1/2" X 20 FT, WITH FITTINGS, 200 PSI MAX | 1 |
| HCS2035-FLT-01 | | HEPA FILTER FOR WH-105 / WH-115, WARTHOG VACUUMS | 1 |
| HCS2035-FLT-02 | | PREFILTER, WARTHOG VACUUMS, PROLONGS HEPA FILTER LIFE | 3 |
| HCS2035-FLT-03 | | FILTER BAG, 15 GAL, DISPOSABLE, WARTHOG VACUUM | 5 |
| HCS2035-FLT-04 | | FILTER BAG, DISPOSABLE, DM & 5 GAL WARTHOG | 5 |

**TOOLS & STORAGE**

# Grinder Kits and Accessories

**Surface Prep Grinder & Shroud Kits**
Dotco Right Angle Grinders are suitable for a wide range of finishing applications. The small, lightweight, and comfortable design has moving parts to keep vibration to a minimum while maintaining the durability, dependability, and versatility of the grinder. Combined with other accessories, operators can focus on doing the best job possible in the least amount of time. Available in 2" or 3" versions, each kit includes, 1 Clear Revolution Shroud, 2 feet of 1" vacuum hose, swivel fttings to connect to your vacuum system, and an assortment of abrasives. All packed in a deep bin professional organizer.

**Kits are available for purchase with or without grinders. See part numbers listed.**


Surface Prep Grinder & Shroud Kit
Case Dimension: 19" x 15" x 4 1/2"

Grinder with Shroud

| Kits with Grinder | | |
|---|---|---|
| Part Number | Description | Qty |
| HCS2035-05-TR | SURFACE PREP DOTCO RIGHT ANGLE GRINDER & SHROUD KIT, 2", TR Style | 1 |
| HCS2035-05-TS | SURFACE PREP DOTCO RIGHT ANGLE GRINDER & SHROUD KIT, 2", TS Style | 1 |
| HCS2035-06-TR | SURFACE PREP DOTCO RIGHT ANGLE GRINDER & SHROUD KIT, 3", TR Style | 1 |
| HCS2035-06-TS | SURFACE PREP DOTCO RIGHT ANGLE GRINDER & SHROUD KIT, 3", TS Style | 1 |

**Surface Prep Shroud Kits**
If you have a grinder, then try the Clayton Surface Prep Shroud Kits. They include everything in the Grinder Kit except the grinder.

2" Right Angle Shroud    3" Right Angle Shroud

| Kits without Grinder | | |
|---|---|---|
| Part Number | Description | Qty |
| HCS2035-07-TR | SURFACE PREP SHROUD KIT, 2", TR Style | 1 |
| HCS2035-07-TS | SURFACE PREP SHROUD KIT, 2", TS Style | 1 |
| HCS2035-08-TR | SURFACE PREP SHROUD KIT, 3", TR Style | 1 |
| HCS2035-08-TS | SURFACE PREP SHROUD KIT, 3", TS Style | 1 |

| Abrasives Included in Kits | | |
|---|---|---|
| Grit | Abrasive Type | Qty |
| 36 | QUICK CHANGE - RESIN BOND | 25 |
| 60 | QUICK CHANGE - RESIN BOND | 25 |
| 80 | QUICK CHANGE - RESIN BOND | 25 |
| 120 | QUICK CHANGE - RESIN BOND | 25 |
| COARSE | QUICK CHANGE - NON WOVEN | 25 |
| MEDIUM | QUICK CHANGE - NON WOVEN | 25 |
| FINE | QUICK CHANGE - NON WOVEN | 25 |

Resin Bond

Non Woven

For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

**TOOLS & STORAGE**

# Additional Dust Control Accessories

**Customize your Surface Prep Kits with additional dust control attachments.**

**Clear Revolution Shrouds**
The Clear Revolution Shrouds come in three sizes. They are made of crystal clear Lexan and does not obscure the working edges of the abrasive discs, so users can easily see the work surface. The Edge Finishing Shroud has a skirt that surrounds the abrasive to physically contain the debris and effectively capture particles.

**Radial Shrouds**
The Radial Shroud fits ANY tool with a ¼" collet and accepts up to four bristle discs with 3/8" center hole. This shroud does not obscure visibility and swivels freely around shaft, so the hose can be repositioned with ease.

**Belt Sander Shroud**
The Belt Sander Shroud has precision finished anodized aluminum housing with a 6" arm that accepts ½" x 12" belts. The shroud swivels on the tool with sander belt and does not obscure the working edges of the abrasive belt. It is best complemented with a 12K RPM 6" x ½" Dotco belt sander (sold separately).

1" Right Angle Shroud

Edge Finishing Shroud

Radial Shroud

Dotco Belt Sander with Shroud

| Part Number | Description | Qty |
|---|---|---|
| HCS2035-09-TR | CLEAR REVOLUTION SHROUD, 1 INCH, RIGHT ANGLE, TR STYLE | 1 |
| HCS2035-09-TS | CLEAR REVOLUTION SHROUD, 1 INCH, RIGHT ANGLE, TS STYLE | 1 |
| HCS2035-10-TR | CLEAR REVOLUTION SHROUD, 2 INCH, RIGHT ANGLE, TR STYLE | 1 |
| HCS2035-10-TS | CLEAR REVOLUTION SHROUD, 2 INCH, RIGHT ANGLE, TS STYLE | 1 |
| HCS2035-11-TR | CLEAR REVOLUTION SHROUD, 3 INCH, RIGHT ANGLE, TR STYLE | 1 |
| HCS2035-11-TS | CLEAR REVOLUTION SHROUD, 3 INCH, RIGHT ANGLE, TS STYLE | 1 |
| HCS2035-12 | RADIAL SHROUD, 3", NARROW, FOR 1 OR 2 ROW BRISTLE DISCS OR CUTOFF WHEEL | 1 |
| HCS2035-13-TR | CLEAR REVOLUTION EDGE DEBURRING & FINISHING SHROUD, TR STYLE | 1 |
| HCS2035-14 | 6" ARM BELT SANDER SHROUD ASSY, 2FT x 1" SWIVEL VACUUM HOSE ADAPTER | 1 |
| HCS2035-15 | DOTCO BELT SANDER, 12K RPM, 6" x 1/2" WITH 1 BELT SANDER SHROUD | 1 |

TOOLS & STORAGE

# HEATCON COMPOSITE SYSTEMS®

## Drill Motor and Bits

The HCS2036-01-002 Drill Motor is ergonomically designed, compact, quiet and powerful. This tool comes with a short body length, ideal for working in tight areas, while the light weight and perfect balance makes it the mechanics' favorite drill.

**HCS2036-01-002**

### Specifications:

| | |
|---|---|
| *Weight* - 1.5lbs (0.7kg) | |
| *Height* - 6.3in (15.9cm) | |
| *RPM* - 5,200 | |
| *Diameter Capacity* - .0375in (9.525mm) | |
| *Throttle* - Two Stage | |
| *Exhaust* - 360° Rotable | |

### Drill Bits - Carbon Fiber and Kevlar™

| Description | Image | Part Number | Overall Diameter | Angle | Flute Length | Overall Length |
|---|---|---|---|---|---|---|
| Drill Bit - Carbide Tipped | | HCS2036-01-056A (solid carbide) | .09in (2.5mm) | 118° | 1.125in (2.86cm) | 2.25in (5.72cm) |
| Drill Bit - Carbide Tipped | | HCS2036-01-057A | 0.125in (3.2mm) | 135° | 1.75in (4.45cm) | 2.75in (6.99cm) |
| Drill Bit - Carbide Tipped | | HCS2036-01-058A | 0.16in (4.0mm) | 135° | 2in (5.08cm) | 3.125in (7.94cm) |
| Drill Bit - Carbide Tipped | | HCS2036-01-059G | 0.19in (4.8mm) | 135° | 2.375in (6.03cm) | 3.5in (8.89cm) |
| Drill Bit - Carbide Tipped | | HCS2036-01-059H | 0.25in (6.4mm) | 135° | 2.75in (6.99cm) | 4in (10.16cm) |
| Drill Bit - Kev Point Twist | | HCS2036-01-059B | .09in (2.5mm) | | 1in (2.54cm) | 2in (5.08cm) |
| Drill Bit - Kev Point Twist | | HCS2036-01-059C | 0.125in (3.2mm) | | 1.25in (3.18cm) | 2.25in (5.72cm) |
| Drill Bit - Kev Point Twist | | HCS2036-01-059D | 0.16in (4.0mm) | | 1.375in (3.49cm) | 2.5in (6.3.5cm) |
| Drill Bit - Kev Point Twist | | HCS2036-01-059E | 0.19in (4.8mm) | | 1.625in (4.13cm) | 2.75in (6.98cm) |
| Drill Bit - Kev Point Twist | | HCS2036-01-059F | 0.25in (6.4mm) | | 2in (5.08cm) | 3.25in (8.26cm) |

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# HEATCON COMPOSITE SYSTEMS®

## *Drill Motor Accessories and Counter Bores*
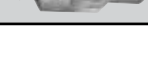
### Drill Motor Accessories and Attachments

| Description | Image | Part Number | Overall Diameter |
|---|---|---|---|
| Drill Stop |  | HCS2036-01-060 | #40 |
| Drill Stop |  | HCS2036-01-061 | #30 |
| Drill Stop |  | HCS2036-01-062 | #21 |
| Drill Stop |  | HCS2036-01-063 | #11 |
| Drill Stop |  | HCS2036-01-063A | #14 |
| Drill Guide Bushing* |  | HCS2036-01-001B | .09in (2.5mm) |
| Drill Guide Bushing* |  | HCS2036-01-001D | 0.125in (3.2mm) |
| Drill Guide Bushing* |  | HCS2036-01-001F | 0.16in (4.0mm) |
| Drill Guide Bushing* |  | HCS2036-01-001H | 0.19in (4.8mm) |
| Drill Guide Bushing* |  | HCS2036-01-001J | 0.25in (6.4mm) |
| Drill Guide Housing* |  | HCS2036-01-001 | Used for drilling straight holes at 90° |

**\* Also available as a kit: HCS2036-01-001K**

### Counter Bores

| Description | Image | Part Number | Overall Diameter |
|---|---|---|---|
| Counter Bore |  | HCS2036-01-064 | 0.5in (12.7mm) |
| Counter Bore |  | HCS2036-01-065 | 0.75in (19.2mm) |
| Counter Bore |  | HCS2036-01-066 | 1in (2.54cm) |

**TOOLS & STORAGE**

**HEATCON COMPOSITE SYSTEMS®**

# Drill Motor Accessories and Reamers

## Reamers

| Description | Image | Part Number | Overall Diameter | Flute Length | Overall Length |
|---|---|---|---|---|---|
| Reamers - Solid Carbide | | HCS2036-01-010A | .09in (2.5mm) | 1in (2.54cm) | 6in (15.24cm) |
| Reamers - Solid Carbide | | HCS2036-01-010 | 0.125in (3.2mm) | 1.125in (2.86cm) | 6in (15.24cm) |
| Reamers - Solid Carbide | | HCS2036-01-009 | 0.16in (4.0mm) | 1.25in (3.18cm) | 6in (15.24cm) |
| Reamers - Solid Carbide | | HCS2036-01-008 | 0.19in (4.8mm) | 1.5in (3.81cm) | 6in (15.24cm) |
| Reamers - Solid Carbide | | HCS2036-01-007 | 0.25in (6.4mm) | 1.75in (4.44cm) | 6in (15.24cm) |
| Reamers - Taper Drill | | HCS2036-01-006A | .09in (2.5mm) | 1.5in (3.81cm) | 4in (10.16cm) |
| Reamers - Taper Drill | | HCS2036-01-006B | 0.125in (3.2mm) | 1.5in (3.81cm) | 4in (10.16cm) |
| Reamers - Taper Drill | | HCS2036-01-006C | 0.16in (4.0mm) | 1.5in (3.81cm) | 4in (10.16cm) |
| Reamers - Taper Drill | | HCS2036-01-006D | 0.19in (4.8mm) | 1.5in (3.81cm) | 4in (10.16m) |
| Reamers - Taper Drill | | HCS2036-01-006E | 0.25in (6.4mm) | 1.5in (3.81cm) | 4in (10.16cm) |

## Drill Motor Accessories and Attachments

| Description | Image | Part Number | Overall Diameter | Angle | Shank Length |
|---|---|---|---|---|---|
| Piloted, Diamond Cut Hole Saws | | HCS2036-01-089 | 1in (2.54cm) | | 0.375in (9.525mm) |
| Piloted, Diamond Cut Hole Saws | | HCS2036-01-090 | 1.5in (3.81cm) | | 0.375in (9.525mm) |
| Piloted, Diamond Cut Hole Saws | | HCS2036-01-091 | 2in (5.08cm) | | 0.375in (9.525mm) |
| Counter Sink Feed - Cage Assembly | | HCS2036-01-034 | 28 Female Threads: 0.25in (6.4mm) | Shaft Travel: 0.28in (7.1mm) | 0.25in x 4in (6.4mm x 10.16cm) |
| Counter Sinks - with Piloted Carbide Tip | | HCS2036-01-035 | 0.125in (3.2mm) | 100° | |
| Counter Sinks - with Piloted Carbide Tip | | HCS2036-01-036 | 0.16in (4.0mm) | 100° | |
| Counter Sinks - with Piloted Carbide Tip | | HCS2036-01-037 | 0.19in (4.8mm) | 100° | |
| Counter Sinks - with Piloted Carbide Tip | | HCS2036-01-038 | 0.25in (6.4mm) | 100° | |

**TOOLS & STORAGE**

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## *Router Motor and Bits*



**HCS2036-01-012 Router Motor**

The HCS2036-01-012 Router Motor is small, comfortable and lightweight, yet it can withstand rugged treatment. This tool can be used with the HCS2036-01-013 Two-Handed Router Motor Base.

**HCS2036-01-013 Router Motor Base**
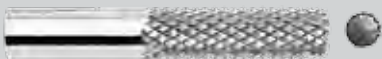
### Specifications:

| | |
|---|---|
| *Weight* - 1.1lbs (0.5kg) | |
| *Height* - 6.3in (15.9cm) | |
| *Head Height* - 2.9in (7.4cm) | |
| *RPM* - 23,000 | |
| *Exhaust* - Front | |
| *Collet Size* - 0.25in (6.35mm) | |
| *Sanding Capacity* - 2in (5.08cm) | |

### Router Bits - Fiberglass and Carbon Fiber

| Description | Image | Part Number | Overall Length | Shank Diameter | Flute Length | Cutter Diameter |
|---|---|---|---|---|---|---|
| Router Bits - 40 Mesh Diamond Cut | | HCS2036-01-014 | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.25in (6.4mm) |
| Router Bits - 40 Mesh Diamond Cut | | HCS2036-01-014A | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.375in (9.5mm) |
| Router Bits - 40 Mesh Diamond Cut | | HCS2036-01-016 | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.5in (12.7mm) |
| Router Bits - Diamond Cut - End Mill | | HCS2036-01-015 | 2in (5.08cm) | 0.25in (6.4mm) | 0.75in (19.1mm) | 0.25in (6.4mm) |
| Router Bits - Diamond Cut - Drill Point | | HCS2036-01-015A | 2in (5.08cm) | 0.25in (6.4mm) | 0.75in (19.1mm) | 0.25in (6.4mm) |
| Router Bits - Diamond Cut - Burr Style | | HCS2036-01-015B | 2in (5.08cm) | 0.25in (6.4mm) | 0.75in (19.1mm) | 0.25in (6.4mm) |
| Router Bits - Diamond Cut - Burr Style | | HCS2036-01-015C | 2in (5.08cm) | 0.19in (4.8mm) | 0.625in (15.9mm) | 0.19in (4.8mm) |

**TOOLS & STORAGE**

## *Router Motor Kevlar™ Bits*

### Router Bits - Kevlar™

| Description | Image | Part Number | Overall Length | Shank Diameter | Flute Length | Cutter Diameter |
|---|---|---|---|---|---|---|
| Router Bits - *Split Helix |  | HCS2036-01-043 | 2.5in (6.35cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.25in (6.4mm) |
| Router Bits - Diamond Cut Burr Style |  | HCS2036-01-043A | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.25in (6.4mm) |
| Router Bits - Diamond Cut - Drill Point |  | HCS2036-01-043B | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.25in (6.4mm) |
| Router Bits - Diamond Cut - End Mill |  | HCS2036-01-043C | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.25in (6.4mm) |
| Router Bits - Honeycomb Panel |  | HCS2036-01-044A | 3in (7.62cm) | 0.25in (6.4mm) | 1in (2.54cm) | 0.25in (6.4mm) |
| Router Bits - *Bi Shear Compression |  | HCS2036-01-044 | 2.5in (6.35cm) | 0.25in (6.4mm) | 0.75in (19.1mm) | 0.25in (6.4mm) |

**TOOLS & STORAGE**

104 | 17.1  For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

## Router Motor Bits, Collets, and Templates

### Router Bits - Aluminum

| Description | Image | Part Number | Overall Length | Shank Diameter | Flute Length | Cutter Diameter |
|---|---|---|---|---|---|---|
| Router Bits - Taper Pin | | HCS2036-01-017 | 2.25in (5.72cm) | 0.128in (3.3mm) | 0.875in (22.2mm) | 0.110in (2.8mm) |
| Router Bits - Taper Pin | | HCS2036-01-018A | 2.5in (6.35cm) | 0.19in (4.8mm) | 1.19in (2.55cm) | 0.165in (4.2mm) |
| Router Bits - Taper Pin | | HCS2036-01-018 | 2.75in (6.99cm) | 0.25in (6.4mm) | 1.25in (3.18m) | 0.25in (6.4mm) |
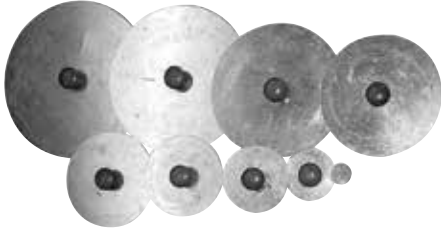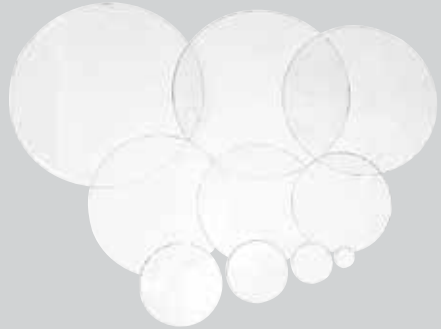
### Router Collets

| Description | Image | Part Number | Overall Length | Minimum Capacity | Maximum Capacity |
|---|---|---|---|---|---|
| Collets | | HCS2036-01-101 | 1.19in (30.22mm) | 0.125in (3.2mm) | 0.16in (4.0mm) |
| | | HCS2036-01-102 | 1.19in (30.22mm) | 0.156in (4.0mm) | 0.1875in (4.8mm) |
| | | HCS2036-01-103 | 1.19in (30.22mm) | 0.343in (8.7mm) | 0.375in (9.5mm) |

### Router Templates - Aluminum

| Description | Image | Part Number | Inner Diameter | Outer Diameter |
|---|---|---|---|---|
| Router Templates | | HCS2036-01-122A | 4.9in (12.5cm) | 8.86in (22.5cm) |
| | | HCS2036-01-122B | 5.9in (15cm) | 9.84in (25cm) |
| | | HCS2036-01-122C | 6.89in (17.5cm) | 10.83in (27.5cm) |
| | | HCS2036-01-122D | 7.87in (20cm) | 11.81in (30cm) |
| | | HCS2036-01-122E | 8.85in (22.5cm) | 12.79in (32.5cm) |
| | | HCS2036-01-122F | 9.84in (25cm) | 13.78in (35cm) |

**TOOLS & STORAGE**

## Router Motor Lay-up Cutting Templates

| Lay-up Cutting Templates - Aluminum and Plastic | | | |
|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Overall Diameter** |
| Lay-up Cutting Templates - Metal Kit<br><br>(HCS2036-123 consists of all part numbers listed on the right) | | HCS2036-01-123A | 0.98in<br>(25mm) |
| | | HCS2036-01-123B | 1.96in<br>(5cm) |
| | | HCS2036-01-123C | 2.95in<br>(7.5cm) |
| | | HCS2036-01-123D | 3.93in<br>(10cm) |
| | | HCS2036-01-123E | 4.92in<br>(12.5cm) |
| | | HCS2036-01-123F | 5.9in<br>(15cm) |
| | | HCS2036-01-123G | 6.89in<br>(17.5cm) |
| | | HCS2036-01-123H | 7.87in<br>(20cm) |
| | | HCS2036-01-123I | 8.85in<br>(22.5cm) |
| | | HCS2036-01-123J | 9.84in<br>(25cm) |
| Lay-up Cutting Templates - Plastic Kit<br><br>(HCS2036-124 consists of all part numbers listed on the right) | | HCS2036-01-124A | 0.98in<br>(25mm) |
| | | HCS2036-01-124B | 1.96in<br>(5cm) |
| | | HCS2036-01-124C | 2.95in<br>(7.5cm) |
| | | HCS2036-01-124D | 3.93in<br>(10cm) |
| | | HCS2036-01-124E | 4.92in<br>(12.5cm) |
| | | HCS2036-01-124F | 5.9in<br>(15cm) |
| | | HCS2036-01-124G | 6.89in<br>(17.5cm) |
| | | HCS2036-01-124H | 7.87in<br>(20cm) |
| | | HCS2036-01-124I | 8.85in<br>(22.5cm) |
| | | HCS2036-01-124J | 9.84in<br>(25cm) |

HEATCON COMPOSITE SYSTEMS®

## *Grinder Motor and Sanding Barrels*
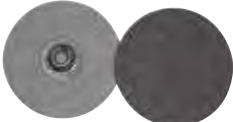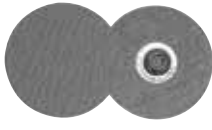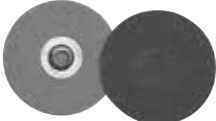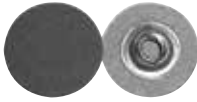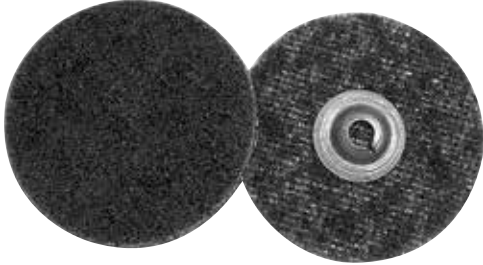


HCS2036-01-022

The HCS2036-01-022 Grinder Motor is designed to reduce vibration and operate as quietly as possible while still providing substantial power. This is accomplished by using precision parts, high-quality bearings and elastomer housings.

### Specifications:

| | |
|---|---|
| *Weight* - 1.25lbs (0.6kg) | |
| *Height* - 6.9in (17.5cm) | |
| *RPM* - 20,000 | |
| *Exhaust* - Front | |
| *Collet Size* - 0.25in (6.35mm) | |
| *Abrasives Capacity* - 0.75in (19.1mm) Carbide Bur, 1.5in (38.1mm) Mounted Wheel | |
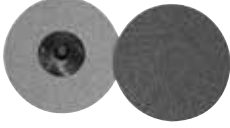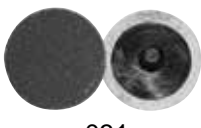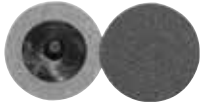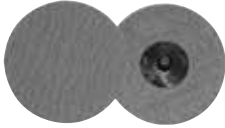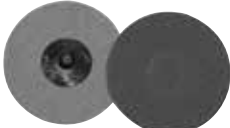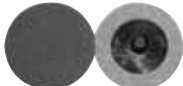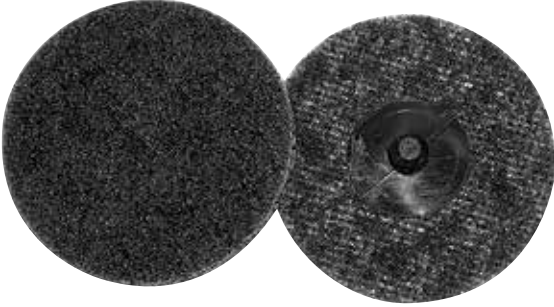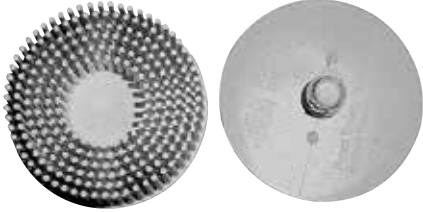
## Sanding Barrels

| Description | Image | | Part Number | Overall Diameter | | Grit |
|---|---|---|---|---|---|---|
| Grinder - Barrel Attachment for Sanding Disks |  | | HCS2036-01-025 | 0.5in x 0.5in (12.7mm x 12.7mm) 0.75in x 1in (19.1mm x 2.54mm) 1in x 1in (25.4mm x 2.54mm) | 1.5in x 1.5in (3.81cm x 3.81cm) 2in x 1.5in (5.08cm x 3.81cm) | |
| Sanding Barrels | -027 | -077 | HCS2036-01-027 | 1in x 1in (2.54cm x 2.54cm) | | 180 |
| | | | HCS2036-01-077 | 1in x 1in (2.54cm x 2.54cm) | | 120 |
| | -075 | -080 | HCS2036-01-075 | 0.5in x 0.5in (12.7mm x 12.7mm) | | 120 |
| | | | HCS2036-01-080 | 0.5in x 0.5in (12.7mm x 12.7mm) | | 80 |
| | -076 | -081 | HCS2036-01-076 | 0.75in x 1in (19.1mm x 2.54mm) | | 120 |
| | | | HCS2036-01-081 | 0.75in x 1in (19.1mm x 2.54mm) | | 80 |
| | -078 | -082 | HCS2036-01-078 | 1.5in x 1.5in (3.81cm x 3.81cm) | | 120 |
| | | | HCS2036-01-082 | 1.5in x 1.5in (3.81cm x 3.81cm) | | 80 |
| | -079 | -083 | HCS2036-01-079 | 2in x 1.5in (5.08cm x 3.81cm) | | 120 |
| | | | HCS2036-01-083 | 2in x 1.5in (5.08cm x 3.81cm) | | 80 |

TOOLS & STORAGE

## Grinder Motor Sanding Disks / Bayonets

| Sanding Disks and Bayonets - Quick Connect Lock - TS Mount | | | | | |
|---|---|---|---|---|---|
| **Description** | **Image** | | **Part Number** | **Overall Diameter** | **Grit** |
| Sanding Pad Holders Sanding Disks | -028 | -029 | HCS2036-01-028 | 2in (5.08cm) | |
| | | | HCS2036-01-029 | 1in (2.54cm) | |
| Sanding Disk Bayonets | -030 | -031 | HCS2036-01-030 | 2in (5.08cm) | 80 |
| | | | HCS2036-01-031 | 1in (2.54cm) | 80 |
| | -040 | -041 | HCS2036-01-040 | 1in (2.54cm) | 120 |
| | | | HCS2036-01-041 | 2in (5.08cm) | 120 |
| | -032 | -033 | HCS2036-01-032 | 2in (5.08cm) | 180 |
| | | | HCS2036-01-033 | 1in (2.54cm) | 180 |
| Surface Reconditioning Disks (Nylon Pads) | | | HCS2036-01-117A | 1in (2.54cm) | Fine |
| | | | HCS2036-01-117B | 2in (5.08cm) | Fine |
| | | | HCS2036-01-118A | 1in (2.54cm) | Med |
| | | | HCS2036-01-118B | 2in (5.08cm) | Med |
| | | | HCS2036-01-119A | 1in (2.54cm) | Coarse |
| | | | HCS2036-01-119B | 2in (5.08cm) | Coarse |

## *Grinder Motor Sanding Disks / Bayonets*

| Sanding Disks and Bayonets - Roloc™1 - TR Mount | | | | |
|---|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Overall Diameter** | **Grit** |
| Sanding Pad Holders Sanding Disks | -028 / -029 | HCS2036-02-028 | 2in (5.08cm) | |
| | | HCS2036-02-029 | 1in (2.54cm) | |
| Sanding Disk Bayonets | -030 / -031 | HCS2036-02-030 | 2in (5.08cm) | 80 |
| | | HCS2036-02-031 | 1in (2.54cm) | 80 |
| | -040 / -041 | HCS2036-02-040 | 1in (2.54cm) | 120 |
| | | HCS2036-02-041 | 2in (5.08cm) | 120 |
| | -032 / -033 | HCS2036-02-032 | 2in (5.08cm) | 180 |
| | | HCS2036-02-033 | 1in (2.54cm) | 180 |
| Surface Reconditioning Disks (Nylon Pads) | | HCS2036-02-117A | 1in (2.54cm) | Fine |
| | | HCS2036-02-117B | 2in (5.08cm) | Fine |
| | | HCS2036-02-118A | 1in (2.54cm) | Med |
| | | HCS2036-02-118B | 2in (5.08cm) | Med |
| | | HCS2036-02-119A | 1in (2.54cm) | Coarse |
| | | HCS2036-02-119B | 2in (5.08cm) | Coarse |
| Bristle Reconditioning Disks (Rubber Pads) | | HCS2036-08-250 | 2in (5.08cm) | 50 |
| | | HCS2036-08-280 | 2in (5.08cm) | 80 |
| | | HCS2036-08-220 | 2in (5.08cm) | 120 |

¹**Roloc™ is a registered trademark of the 3M Corporation.**

**TOOLS & STORAGE**

# *Grinder Motor Cut-Off Wheel / Stones*

| Grinder Motor Accessories and Attachments | | | | |
|---|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Overall Diameter** | **Grit** |
| Arbor |  | HCS2036-01-092 | 0.25in<br>(6.4mm) | |
| Fiberglass Cut-Off Wheel |  | HCS2036-01-087 | 3in<br>(7.62cm) | |
| Grinder Stone Barrel<br><br>Zirconia Alumina Points |  | HCS2036-01-023 | 1in x 1.125in<br>(2.54cm x 3.81cm) | 30 |
| Grinder Stone Mushroom<br><br>Zirconia Alumina Points |  | HCS2036-01-024 | 0.75in x 1.125in<br>(19.1mm x 2.86cm) | 30 |

**TOOLS & STORAGE**

110 | 17.1   For more information call: USA / ASIA 1-206-575-1333 • UK +44(0)1480-410740 • CHINA 86-21-52359043 • info@heatcon.com

# *Orbital Sander*



**HCS2036-01-100**

The HCS2036-01-100 Random Orbital Sander is designed to help the end-user run a clean operation. This tool, along with the HCS2036-01-022 Grinder Motor, come standard with oiless blades, making it a clean operating tool.

Also available with vacuum (HCS2036-01-100-VAC), eliminating inhalation and mess of particles from sanding.

## Specifications:

| | |
|---|---|
| *Weight* - 2.4lbs (1.1kg) | |
| *Height* - 4.2in (10.7cm) | |
| *Length* - 5.3in (13.5cm) | |
| *RPM* - 10,000 | |
| *Sanding Pad* - 5in (12.7cm) | |
| *Exhaust* - Rear (or vacuum) | |

| Random Orbital Sander Accessories and Attachments | | | | |
|---|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Overall Diameter** | **Grit** |
| Sandpaper | For use with sander shown above | HCS2036-01-084 | 5in (12.7cm) | 80 |
| | | HCS2036-01-085 | 5in (12.7cm) | 120 |
| | For use with HCS2036-01-070-VAC | HCS2036-01-111 | 5in (12.7cm) | 80 |
| | | HCS2036-01-112 | 5in (12.7cm) | 120 |

**HEATCON COMPOSITE SYSTEMS**®

# *Belt Sander / Cleco® Pliers*

The HCS2036-06-001 Belt Sander is a right angle sander used for contouring honeycomb when performing a metal bond repair.

**HCS2036-06-001**

## Specifications:

| | |
|---|---|
| Weight - 1.4lbs (1.1kg) | |
| Length - 11.3in (13.5cm) | |
| RPM - 20,000 | |
| Sanding Pad - 0.5in x 12in (12.7mm x 30.48cm) | |
| Exhaust - Front | |

## Belt Sander Accessories and Attachments

| Description | Image | Part Number | Overall Diameter | Grit |
|---|---|---|---|---|
| Sanding Belts | | HCS2036-06-001-80 | 0.5in x 12in (12.7mm x 30.48cm) | 80 |
| | | HCS2036-06-001-120 | 0.5in x 12in (12.7mm x 30.48cm) | 120 |

**HCS2036-01-050**

The HCS2036-01-050 Cleco® Pliers are constructed out of top quality forged steel and nickel-plated to resist wear and tear. This manual plier makes for ease of operation when installing Cleco® fasteners.

## Cleco® Pliers Accessories and Attachments

| Description | Image | Part Number | Overall Diameter | Grip | Size Number |
|---|---|---|---|---|---|
| Clecos<br><br>*Also available as a kit. HCS2036-06-008 (kit includes 10 each) | | HCS2036-01-045A | .09in (2.5mm) | 0.5in (12.7mm) | #40 |
| | | HCS2036-01-045 | 0.125in (3.2mm) | 0.5in (12.7mm) | #30 |
| | | HCS2036-01-046 | 0.16in (4.0mm) | 0.5in (12.7mm) | #21 |
| | | HCS2036-01-047 | 0.19in (4.8mm) | 0.5in (12.7mm) | #10 |
| | | HCS2036-01-048 | 0.25in (6.4mm) | 0.25in (6.4mm) | #10 |
| Cleco® Side Clamp Grip | | HCS2036-06-009 | 0.75in x 0.5in (19.1mm x 12.7mm) | | |

**TOOLS & STORAGE**

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# Additional Repair Tools and Accessories

| Additional Repair Tools and Accessories | | | |
|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Details** |
| Soft Touch Shears | | HCS2036-01-053 | Cushion Grip<br>Left/Right Handed Use<br>Spring Action<br>Adjustable Rivet<br>NOT for cutting Kevlar™ |
| Kevlar™ Shears | | HCS2036-01-053K | 8in - High Leverage<br>Serrated Edge for Kevlar™ |
| Kevlar™ Shears | | HCS2036-01-186 | 11in - Left / Right Shears<br>Ideal for Cutting Kevlar™ |
| Kevlar™ Shears | | HCS2036-01-187 | 8in - High Leverage<br>Serrated Edge for Kevlar™ |
| Aviation Snips-<br>Left Cut* | | HCS2036-06-011B | 0.8 lbs<br>(0.36kg) |
| Straight Cut* | | HCS2036-06-011A | 0.8 lbs<br>(0.36kg) |
| Right Cut*<br>*Also available as a kit:<br>HCS2036-06-011 | | HCS2036-06-011C | 0.8 lbs<br>(0.36kg) |
| Honeycomb Core Knife | | HCS2036-01-039 | Blade: 4in x 1.75in<br>(10.2cm x 3.2cm)<br>Leather Handle |
| Retractable Utility Knife | | HCS2036-01-051 | Three Blade Positions<br>Aluminum Diecast Handle -<br>Gray |
| Step-Ply Cutting Knife | | HCS2036-01-120A | Handle: Aluminum<br>Diameter: 0.44in (1.1cm)<br>Length: 4.61in (11.9cm) |
| Step-Ply Cutting Knife | | HCS2036-01-120B | Handle: Plastic<br>Diameter: 0.75in (1.9cm)<br>Length: 4.375in (11.1cm) |
| Step-Ply Cutting Knife Blades<br><br>*Also available as a kit:<br>HCS2036-01-120 | | HCS2036-01-120-18 | Chiseling Blade<br>Length: 1.81in (4.6cm) |
| | | HCS2036-01-120-19 | Straight Cutting Blade<br>Length: 1.63in (4.1cm) |
| | | HCS2036-01-120-24 | Detail Cutting Blade<br>Length: 1.56in (4.0cm) |

**TOOLS & STORAGE**

## Additional Repair Tools and Accessories

| Description | Image | Part Number | Details |
|---|---|---|---|
| Cushion Grip Peel Pliers | | HCS2036-06-007 | Length: 6.5in (16.5 cm) Jaw: 1in (2.5 cm) Nose Type: Regular |
| Thermocouple Wire Stripper | | HCS2036-01-049 | One light squeeze strips wire clean up to 0.875in (2.2 cm) |
| Magnifier | | HCS2036-01-067 | Used to determine fiber alignment during ply removal |
| Pocket Rule | | HCS2036-01-132 | Stainless Steel 6in x 0.5in (15.24cm x 12.7mm) Metric and English |
| Air Driven Vacuum Cleaner | | HCS2036-01-069 | Venturi Design with 1in ID 12in (30.5 cm) Rigid Tube 0.25in Inlet 0.53lbs (0.24kg) |
| Blue Applicator | | HCS2036-01-086 | Used for applying liquid laminating resin during a wet lay-up procedure to smooth and compact pre-preg materials. Also used to smooth paste adhesives or fillers. |
| Sweep Kit (7 pieces) | | HCS2036-01-055 | Plastic Polyethylene Squeegee used for applying liquid laminating resin to saturate dry fabric during a wet lay-up procedure to smooth and compact prepeg materials during hand lay-up process. Also used to smooth paste adhesives or fillers. |

TOOLS & STORAGE

## Additional Repair Tools and Accessories

| Additional Repair Tools and Accessories | | | |
|---|---|---|---|
| **Description** | **Image** | **Part Number** | **Details** |
| Material Roller |  | HCS2036-01-054 | 2in (5.1cm) Wide Steel Roller |
| Fiberglass Roller |  | HCS2036-01-121 | 0.5in x 3in Aluminum Roller (1.27cm x 7.6cm) |
| Fiberglass Replacement Rollers |  | HCS2036-01-121A | 0.5in x 3in Aluminum Roller (1.27cm x 7.6cm) |
| Fiberglass Replacement Rollers |  | HCS2036-01-121B | 0.5in x 3in Plastic Roller (1.27cm x 7.6cm) |
| Tap Hammer |  | HCS1104-01 | Aluminum Construction Handle: 8in (20.3 cm) Head: 0.5in x 1.5in (1.3cm x 3.8cm) |
| Scribe |  | HCS2036-01-114 | Used to mark metals for processing Length: 10in (25.4cm) |
| Auto Center Punch |  | HCS2036-06-006 | Fully adjustable heavy and light marking Length: 5.5in (13.97cm) Handle Diameter: 0.5in (12.7mm) *Point Diameter: .03in (.794mm) |
| Replacement Punch |  | *HCS2036-06-006A | * Point Diameter: .03in (.794mm) |
| Insert Closing Tool |  | HCS2036-07-003A | Used on floor panel inserts Diameter: 1in (2.54cm) Pilot Diameter: 0.1875in (4.8mm) |
| 3-way Air Manifold |  | HCS2036-01-088 | 3 NPT Female Threads - 0.25in (6.35mm) 1 NPT Female Thread - 0.375in (9.5mm) |

**TOOLS & STORAGE**

## Composite Repair Safety Items

**Our Composite Repair Safety Items provide your maintenance personnel with all the materials necessary for a safe repair.**

| Composite Repair Safety Items | | |
|---|---|---|
| **Description** | **Part Number** | **Unit of Issue** |
| Mask, Dust | HCS2510-06-001A | Box of 20 |
| Glasses, Safety | HCS2510-06-002A | EA |
| Ear Plugs | HCS2510-06-003A | Box of 50 |
| Gloves, Nylon Inspection, Lint Free, White (specify size when ordering) | HCS2510-06-004A | Box of 12 pairs (S, M, L, XL) |
| Gloves, Latex, Powder Free (specify size when ordering) | HCS2510-06-004B | Box of 100 (S, M, L, XL) |
| Coveralls, Tyvek (specify size when ordering) | HCS2510-06-005A | EA - S, M, L, XL |

**HCS2510-06-004B**

**HCS2510-06-004A**
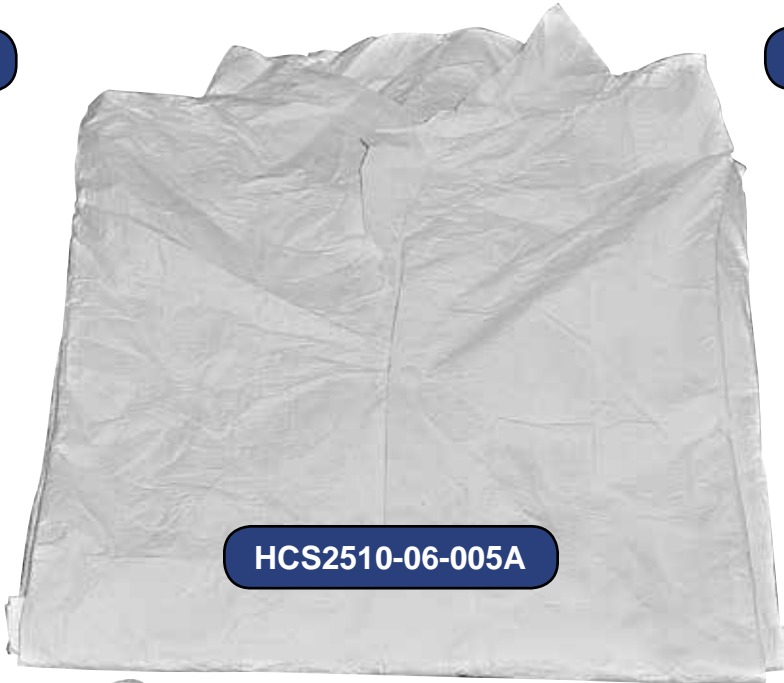
**HCS2510-06-005A**

**HCS2510-06-002A**

**HCS2510-06-003A**

**HCS2510-06-001A**

TOOLS & STORAGE

## Customized Training Services

Training is an integral part of our "Composite Repair Solutions" philosophy which includes training, equipment and material. Courses are designed to meet a range of student needs, including those who are new to the composite repair industry and seasoned professionals in need of refresher training on the latest composite repair techniques. The instructors have experience in practical applications involving composite repair, and our students come from organizations which represent some of the leading names in a variety of industries.

Students will be using the actual tools, equipment, and materials required in the composite repair profession. Training courses are hands-on as well as theoretical, providing students with the skills and knowledge necessary to advance their careers and enhance the capabilities of their represented organizations. With HEATCON you will receive the best training in the composites industry.

## Fundamentals of Composites

This course is best suited for students wishing to be exposed to the exciting technology of composite materials and its career opportunities. Topics include basic composites history and technology, with a strong emphasis on laboratory projects. After receiving a certificate of completion, students may choose to take more advanced composite courses. This course may serve as an overview or as a prerequisite for further study.

Students will acquire a basic understanding of composite industry terminologies and technologies through laboratory experiences.

### Hands-on training exercises:

Wet layup practices

Mixing of two-part resins

Pre-impregnated reinforcement system practice ("prepregs")

Use of equipment for preparing and curing composites

### What you will learn:

- Composite terminologies

- Types of composites and advanced composites in industry

- Familiarization with composite practices

- Advantages of composites

- Hygiene and safety

- Issues associated with composite repairs

# Composite Repair I (CRI)

This course is designed for aircraft repair technicians who desire to learn more about the fundamentals of advanced composite materials manufacturing and repair techniques and have, for example, a background in sheet metal with some exposure to composites technology.

The hands-on exercises are extensive, practical, and allow students to work with advanced composite materials including fiberglass, carbon fiber, and aramid fibers in their individual projects. Students will have the opportunity to work with various core materials including Nomex® honeycomb and high and low density foams. Fabricating a composite panel using these materials to learn manufacturing techniques and elevated temperature curing processes using the "hot bond" method is also part of the course curriculum offered in Composite Repair I. Discussions and practical exercises will include proper use of the HEATCON Composite Systems Hot Bonders and accessories used throughout the world. These composite panels will be damaged and afterwards repaired, using basic repair techniques and various lay-up repair materials and processes. The final repaired parts will be inspected to determine the quality of the repair.

## Hands-on training exercises:

Component lay-up using prepreg materials, including: sandwich panels in carbon fiber unidirectional tape, fiberglass and aramid fiber cloth panels, ply orientation, warp direction, stacking vs. nesting, material cutting and handling, honeycomb and foam core installation

Component lay-up using fiberglass dry cloth and liquid epoxy resin materials, including: fiber orientation, lay-up, resin mixing procedures, health/safety concerns, controlling fiber-resin ratios, vacuum bagging

Vacuum bagging: materials and processes, bleeder/breather schedules, bridging, debulking, leak checking, potential problems, use of caul plates, use of thermocouples, use of an ultrasonic leak detector

Curing processes: ramp rates, vacuum schedule, oven cures, and potential problems

Repairs: damage removal, scarf preparation, skin repair fabrication, use of wet resins and cloth for repairs, core plug repairs

Introduction to the use of manufacturers' repair instructions

Introduction to vacuum bagging (without crushing fragile structures)

Introduction to the inspection of repaired area

## What you will learn:

- Advantages and disadvantages of composite structures.
- Fabrication methods
- Resin matrix systems properties
- Fabrication
- Curing methods
- Inspection criteria
- Health and safety issues
- Principles of tooling
- Repair methods
- Damage assessment and classification
- Introduction to determining unknown lay-ups

- Drying moisture-contaminated honeycomb cores
- Bagging techniques for on and off-aircraft repairs
- Introduction to programming and use of composite repair kits
- Introduction to dealing with contaminated structures
- Heat management issues
- Bagging techniques for on and off-aircraft repairs
- Introduction to programming and use of composite repair kits
- Introduction to dealing with contaminated structures
- Heat management issues: Heat blanket and thermocouple problems

# Composite Repair II (CRII)

This course is designed to follow Composite Repair I course and it is therefore assumed the student has mastered the learning objectives necessary to be successful in Composite Repair II. Concentration for this course is focused on more challenging repair situations that an aircraft mechanic may encounter.

Emphasis is on practical repair procedures with less time being spent in the classroom. Students will be given a variety of projects to expand their knowledge of composite components and structures. These projects will allow the students to determine the manufacturing methods, extent of damage, ply orientation and lay-up of an unknown structure, as well as preparing the component for the repair process which includes, for example, removing liquid contamination. Vacuum bagging of complex shapes is another challenge presented to students.

Students will continue to be exposed to the HEATCON hot bond equipment, which is an essential part of the training in composite repair. Determining the best repair method and carrying out the complete repair will help prepare the student by providing them with a better understanding of repair solutions in practice. Programming HEATCON Composite Systems (HCS) "hot-bonders" to carry out these repairs is an integral part of this course. Students will become familiar with the operation and advantages of each HCS bonders.

## Hands-on training exercises:

Damage identification and assessment

Core removal

Unknown lay-up determination; repair procedure determination

Use of manufacturers' repair instructions

Repair scarfing: including curved surfaces

Vacuum bagging (without crushing fragile structures)

Thermocouple welding and repair

Cure programming and monitoring using portable composite repair sets

Introduction to metal bonding

Inspection of repaired area

## What you will learn:

- Determining unknown lay-ups

- Drying moisture-contaminated honeycomb cores

- Bagging techniques for on and off-aircraft repairs

- Programming and use of composite repair sets

- Dealing with contaminated structures

- Handling heat blanket and thermocouple problems

- Repair design considerations

# Composite Repair I and II

**Hands-on training exercises:**

Component lay-up using prepreg materials

Component lay-up using fiberglass dry cloth and liquid epoxy resin materials

Damage identification and assessment

Curing processes

Core removal

Unknown lay-up determination; repair procedure determination

Use of manufacturers' repair instructions

Repair scarfing: including curved surfaces

Vacuum bagging (without crushing fragile structures)

Thermocouple welding and repair

Cure programming and monitoring using portable composite repair sets

Introduction to metal bonding

Inspection of repaired area

**WEEK ONE DETAILS:**

The hands-on exercises are extensive, practical, and allow students to work with advanced composite materials including fiberglass, carbon fiber, and aramid fibers in their individual projects. Students will have the opportunity to work with various core materials including Nomex® honeycomb and high and low density foams. Fabricating a composite panel using these materials to learn manufacturing techniques and elevated temperature curing processes using the "hot bond" method is also part of the course curriculum offered in Composite Repair I. Discussions and practical exercises will include proper use of the HEATCON Composite Systems Hot Bonders and accessories used throughout the world. These composite panels will be damaged and afterwards repaired, using basic repair techniques and various lay-up repair materials and processes. The final repaired parts will be inspected to determine the quality of the repair.

**WEEK TWO DETAILS:**

Emphasis is on practical repair procedures with less time being spent in the classroom. Students will be given a variety of projects to expand their knowledge of composite components and structures. These projects will allow the students to determine the manufacturing methods, extent of damage, ply orientation and lay-up of an unknown structure, as well as preparing the component for the repair process which includes, for example, removing liquid contamination. Vacuum bagging of complex shapes is another challenge presented to students.

Students will continue to be exposed to the HEATCON hot bond equipment, which is an essential part of the training in composite repair. Determining the best repair method and carrying out the complete repair will help prepare the student by providing them with a better understanding of repair solutions in practice. Programming HEATCON Composite Systems (HCS) "hot-bonders" to carry out these repairs is an integral part of this course. Students will become familiar with the operation and advantages of each HCS bonders.

**What you will learn:**

• All learning points listed under Composite Repair I and Composite Repair II

# *Metal Bonding*

*A basic familiarity with sheet metal work and repair techniques is helpful, but not required.*

This course provides a solid foundation in the principles of adhesively bonded repairs in aluminum structures, including both lap joints and face sheet bonding in sandwich structures with aluminum honeycomb cores. The emphasis in this course is on metallic structures only, and many aluminum-specific surface preparation and bonding methods are covered in detail.

The proper surface preparation of aluminum and aluminum honeycomb for structural adhesive bonding is a complex subject involving many different processes. For example, some techniques which improved durability have also increased health and safety risks, as well as created hazardous waste disposal problems. Other techniques mitigate these concerns, but introduce additional complexities and process control issues.

These processes are discussed extensively and the students will perform some of these operations while building test panels. Different surface preparation techniques, adhesives, and curing methods are introduced. Panels will be cured and destructively tested to assess the effects of anomalies introduced during the metal bonding preparation.

## Hands-on training exercises:

Use equipment associated with performing Metal Bonding operations, including, for example, common hand tools, anodizing equipment, and hot bonders

Demonstrate and/or describe inspection methods, such as visual and tap testing

Evaluate different types of damage

Demonstrate damage removal and surface preparation

Perform general metal bonding repairs, including application of repair parts and adhesives, and curing processes

## What you will learn:

- Fundamentals of structural adhesives

- Various methods for surface preparation of aluminum and other metals

- Bond line integrity, thickness and contamination considerations

- Aluminum honeycomb core material types and cleaning

- Repair of damaged aluminum sandwich structures

- Adhesive cure cycles

- Vacuum bagging

- Destructive and non-destructive testing

- Health and safety issues

# *Tooling Workshop*

*Aircraft composite repair or previous composite material handling and repair experience is required to participate in this workshop.*

This workshop will provide an opportunity for participants to be exposed to fundamental repair tooling concepts, in a laboratory environment. Students will be introduced to shop procedures and practices. The workshop is interactive between the instructor and participants, and will be modified based on the student background, experience and expectations.

Issues to consider in the repair environment include porosity measures, thermal expansion during following cure operations, surface preparation, and surface coating. Different materials will be discussed in addition to describing techniques for establishing tool contours to maintain configuration control of the final repaired product. Participants have an opportunity to build tooling in a hands-on, practical application, experiencing the total development cycle.

## Hands-on training exercises:

Vacuum bagging process

Usage of single and dual zone Hot Bonders, heat blankets and thermocouple in curing composite tooling materials

Mixing and applying of tooling epoxy resins

Fabrication of composite wet lay up and prepreg tooling structures

## What you will learn:

- Terminology, history and current developments in composites technology

- Shop procedures and practices, health and safety issues

- Composite tooling materials handling

  procedures

- Proper storage and handling of composite fabrics, materials and resin systems

- Composite curing techniques: Oven & Hot Bonders

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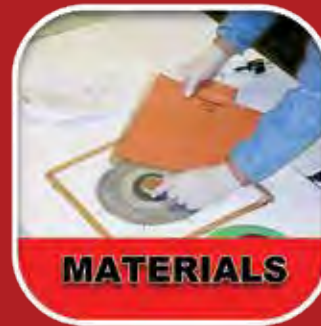
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