



### Model THP Tweezer Handpiece

- Includes 1 Pair  
ET0402 Electrodes



### Model PHP Probe Handpiece

- Includes 1 Pair  
EP0402  
Electrodes  
for Handpiece  
and 1 Pair  
EP0802 for Probe



### Model HFP High Force Probe

- Includes 1 Pair  
EP0802 Electrodes



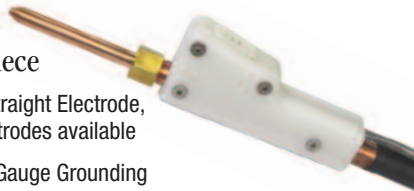
### Model GHP Gun Handpiece

- Includes 1 Pair  
EP0802 Electrodes,  
Straight Extension  
and 30° Elbow  
Adapter



### Model HDHP Heavy Duty Handpiece

- Includes 1 EP0902 Straight Electrode,  
35 or 90 degree Electrodes available  
  
4-30149-02, 10' #2 Gauge Grounding  
Cable sold separately



### Model VBTWK/115, Ball Tacking Kit.

- Includes Vacuum pump,  
Vacuum adapter,  
Tubing and 2 electrodes  
for 1mm ball.  
Used with GHP and HFP

10-400-01, VBTWK/115V  
10-400-02, VBTWK/230V



## Accessories

A successful resistance spot welding process generally requires a welding power supply, a spot welding head, and a weld monitor or weld checker. Selecting the right accessories for these critical components can enhance and improve your results, and provide additional safety for your operators.

### Handpieces

Generally speaking, welding handpieces should be used only when it is impractical to use a welding head. Their relative ease of use, combined with low maintenance and flexibility, make them well-suited for small batch production and R&D environments.

- Both the Model THP tweezer, and PHP probe handpiece are used to weld small parts which require less than 125 watt-seconds or 1/2 cycle AC, and welding forces less than 7 pounds. The Model HFP high force probe is used for applications which require higher energy and/or force than either THP or PHP. All three models are force fired to ensure repeatability.

- The Model GHP and HDHP are switch fired handpieces and can be used to weld or tack materials that don't require stringent force control.

Handpieces are available with either 6-foot or 10-foot long cables. As a general rule, the energy delivered to the workpiece with 10-foot #6 cables will be approximately 15% of that delivered with 4-foot #6 cables. Handpieces are furnished with cables, as indicated in the following table, and one pair of RWMA electrodes.

| Rating                       | THP       | PHP              | HFP               | GHP       | HDHP   |
|------------------------------|-----------|------------------|-------------------|-----------|--------|
| DC (watt seconds)            | 125       | 125              | 500               | 125       | 500    |
| AC (KVA-1/2 cycle)           | 2         | 2                | 7.5               | 2         | 10     |
| Force Range lbs. – Max (Min) | 7 (1.0)   | 7 (1.0)          | 25 (3)            | N/A       | N/A    |
| Cable Size (AWG)             | #2 or #6  | #2 or #6         | #2 or #6          | #2 or #6  | #2     |
| Cable Length (ft.)           | 6' or 10' | 6' or 10'        | 6' or 10'         | 6' or 10' | 6'     |
| Electrode Series             | ET0400    | EP0400 or EP0400 | EP0800 and EP0800 | EP0800    | EP0900 |

Accessories are an important part of any welding system. For your convenience Miyachi America Corporation provides:

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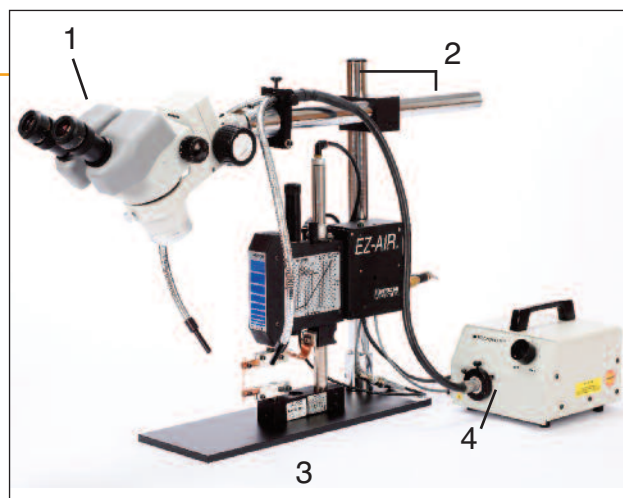
For assistance in selecting accessories or for accessories not included in this data sheet, contact your local Miyachi America Corporation sales representative or telephone our customer service department at (626) 303-5676.



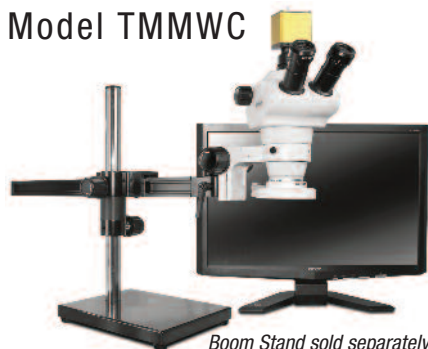
## Optic Accessories

The Model SMZ-660 Stereo Zoom Optic Pod (1) is supplied with 10X Eyepieces and a 0.5X Objective Lens. It provides magnification which is adjustable from 4.0-25X and a working distance of 211mm. Its lightweight housing is airtight, anti-mold and anti-electrostatic. It includes the C-Bonder Arm and is compatible with any Model 50 or 80 Series Miyachi Unitek welding head.

The Model OMA optic mounting assembly (2) provides the posts and hardware required to support the optic pod. The Model BPTL, Thin-Line base plate (3) is drilled to accept all 80 Series Thin-Line weld heads and the optic mounting assembly. The base plate is 6 inches wide x 14-7/8 inches deep x 1/4 inch thick (15.2 cm x 37.8 cm x 6.3 mm). The BLFOI fiber optic illuminator system (4) transmits light through bifurcated, fiber optic light guides to produce cool, flicker-free, high-intensity light at the worksite. The BLFOI fiber optic illuminator system (4) transmits light through bifurcated, fiber optic light guides to produce cool, flicker-free, high-intensity light at the worksite. The Model BLFOI operates at 115 volts, 50/60 Hz. Specify Model BLFOI/230 for operation at 230 volts, 50/60Hz.



## Model TMMWC



Boom Stand sold separately

The Model TMMWC (Trinocular Mounted Microscope with Camera) Stereo Zoom Microscope is supplied with 10X Eyepieces and a 0.5X Objective Lens. It provides magnification which is adjustable from 4.0-25X and a working distance of 211mm. It is available with Mounting Kits for weld heads shown in table below or sold as standalone system using part number 270-607 noted below. It is compatible with most 70 & 80 Series Miyachi Unitek welding heads.

## Loupe

An eye loupe is an indispensable item for quick observation. This pocket sized tool will magnify the process 10x and allows for the first line of inspection.



## Microscope Kits

| Kit Number | Description                                                                                                                                                                    | Applicable Weld Heads                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 10-430-01  | SMZ-660 Stereo Microscope kit, Includes OMA, BPTL and BFOI, 120V                                                                                                               | 80F,80A/EZ,86,87A/EZ                                                                               |
| 10-430-02  | SMZ-660 Stereo Microscope kit, Includes OMA, BPTL and BFOI, 230V                                                                                                               | 80F,80A/EZ,86,87A/EZ                                                                               |
| 10-431-01  | SMZ-660 Stereo Microscope kit, Includes OMA, and BFOI, 120V                                                                                                                    | 71 Weld head                                                                                       |
| 10-431-02  | SMZ-660 Stereo Microscope kit, Includes OMA, and BFOI, 230V                                                                                                                    | 71 Weld head                                                                                       |
| 10-432-01  | SMZ-660 Stereo Microscope kit, Includes OMA2, and BFOI, 120V                                                                                                                   | 72/180 Weld Heads                                                                                  |
| 10-432-02  | SMZ-660 Stereo Microscope kit, Includes OMA2, and BFOI, 230V                                                                                                                   | 72/180 Weld Heads                                                                                  |
| 10-440-01* | IVSC, Inspection Station, Includes Macro lens, Stand, Ring light, Smart Camera w/measurement tool, 23" LCD Monitor                                                             | N/A                                                                                                |
| 10-250-01* | TMMWC-120, Trinocular Micro Scope Kit, Includes 1080P HD Camera, 23" LCD Monitor, OMA, BPTL and BFOI, 120V                                                                     | 80F,80A/EZ,86,87A/EZ                                                                               |
| 10-250-02* | TMMWC-230, Trinocular Micro Scope Kit, Includes 1080P HD Camera, 23" LCD Monitor, OMA, BPTL and BFOI, 230V                                                                     | 80F,80A/EZ,86,87A/EZ                                                                               |
| 10-251-01* | TMMWC-120, Trinocular Micro Scope Kit, Includes 1080P HD Camera, 23" LCD Monitor, OMA2, BPTL and BFOI, 120V                                                                    | 72/180 Weld Heads                                                                                  |
| 10-251-02* | TMMWC-120, Trinocular Micro Scope Kit, Includes 1080P HD Camera, 23" LCD Monitor, OMA2, BPTL and BFOI, 230V                                                                    | 72/180 Weld Heads                                                                                  |
| 270-607*   | Trinocular Microscope System, Includes Trinocular Stereo Microscope, 0.4x video coupler, 10x eyepieces and 0.5x Objective lens, Focus Mount, 1080P HD camera, 23" LCD Monitor, | 50 Series weld heads, and any weld head with existing Microscope mount. Requires BFOI Light source |
| 475-549    | Jeweler's Loupe                                                                                                                                                                | N/A                                                                                                |
| 8-453-01   | USB Microscope and Stand                                                                                                                                                       | N/A                                                                                                |

\*Includes Image capture software

## IVSC Vision System

The Model IVSC (Inspection Vision System w/Camera) is a standalone system and contains a Macro video lens on extended post stand with HD Measurement camera and defused LED ring light. Includes 23" LCD monitor and Flash Card for saving images.



## Magnification

In many cases, the process is smaller than what the human eye can see, thus magnification is key to properly observing the process results. We offer a range of different magnification devices that can be used to look at the weld to detect small defects. An eye loupe is an indispensable item that can be used for quick observation. To take pictures of the process, portable, USB microscope, desktop stereoscopes, and Trinocular Microscopes are available.



USB Microscope and Stand



## Fume Extraction

Spot welding, fusing and brazing are all processes that can eject material of various sizes from the part. Fume extractors are necessary to remove harmful airborne particles so that operators and engineers are not exposed. These sometimes toxic fumes need to be collected and properly filtered. Use the following table to identify the best fume extractor for a given process:



| Part Name            | Part Number | Process         |
|----------------------|-------------|-----------------|
| Fume Extractor-Small | 4-61359-01  | Spot welding    |
| Fume Extractor-Large | 720-225     | Fusing, Brazing |



## Vortex Cold Air Gun

Cold Air Guns use vortex tube technology and filtered compressed air to produce sub-freezing air as low as -30 deg F for numerous industrial spot cooling applications. With no moving parts to wear out, Cold Air Guns require no electricity, just a compressed air source. The Vortex Cold Air Gun System includes a magnetic base and a 5 micron auto-drain compressed air filter. Great for spot cooling when water cooling is not sufficient or available.

Compressed air pressure: (psig) 80 – 100

Inlet size: (NPT pipe thread, inches) 1/4

Minimum Outlet Temperature, deg F: (at 70 deg F inlet air) -10

Air Consumption @ 100 psig: (scfm) 15

Outlet Air Flow Rate: (scfm) 2 to 15

Dimensions, inches – overall Length: 19 5/8,

Diameter: 1 3/4, Nozzle Length: 9

## Water Chillers

Water chillers are necessary for cooling higher powered welders. They control the temperature of the water to keep condensation from building when facility water cannot. The following chillers provide the necessary cooling capacity for the approximate kVA Rating running at full power and duty cycle. The table below is a general rule, always consider each circuit in the welding system for required GPM (Gallons Per Minute)



| Model                      | Part Number | kVA  | GPM (STD) |
|----------------------------|-------------|------|-----------|
| OTC-1.0A Chiller           | 4-66736-02  | <100 | 4         |
| OTC-2.0A Chiller           | 4-66736-05  | <200 | 7         |
| OTC-5.0A Chiller           | 4-66736-07  | <500 | 12        |
| OTC-7.5A Chiller           | 4-66736-09  | <500 | 18        |
| Water connector kit, small | 4-69984-01  |      |           |
| Water connector kit, large | 4-66985-01  |      |           |

## Pull Tester

One method to test the strength of a weld is to pull the two joined materials apart. The 200lb pull tester can be configured for tension or compression testing applications up to 200lbF (890N) for laboratory and production needs. The 10-420-01, 200lbs pull tester comes with motorized test stand, force gauge, and wedge grips. Platform is customizable for specific applications.



## ADAF

Auto drain air filter, 5 micron element, metal bowl with sight glass, differential pressure indicator, for use with all air actuated weld heads.



| Part Name | Part Number | Description         |
|-----------|-------------|---------------------|
| PT-200    | 10-420-01   | Pull Tester, 200lbs |
| VTAC      | 285-155     | Vortex Air Gun      |
| ADAF      | 10-373-01   | Compress Air Filter |



## Footswitches for Air Actuated Heads

The Model FS2L two-level footswitch is intended for use with all Miyachi Unitek power supplies. The first level actuates the weld head via the air valve driver of the power supply; the second level, along with the force firing switch in the weld head, initiates the welding current.

The Model FS1L one-level footswitch also may be used with all Miyachi Unitek power supplies. The single level switch actuates the weld head and initiates the welding current simultaneously (when the firing switch closes).

### Model FS

Single level Firing Switch without safety guard. Used to fire power supplies immediately upon initiation.



## Footpedals

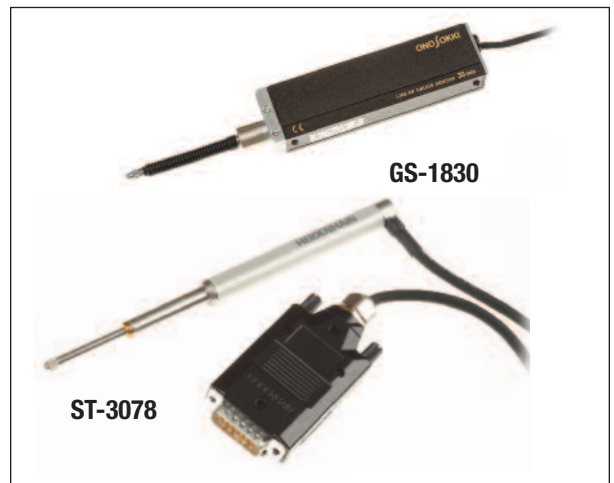
The Model CP cable pedal pivots under the heel for optimum force control. It is equipped with an adjustable down-stop which prevents the application of excess force. It is rated at 25 pounds, and can be used with the 50F, 80F, 86F, or 87F Thin-Line™ weld heads.

The Model MSP medium force swing pedal is fully adjustable for length, stroke, angle and left or right-foot operation. It provides a 5-to-1 mechanical advantage and is rated at 100 pounds. It is used with 83F, 84F, 88F, 89F, and 180F Thin-Line weld heads.



## Displacement Brackets

Holds Heidenhain type displacement sensors ST-1278 and ST-3078 to Thinline series weld heads as noted.



## Displacement Sensors

Displacement sensors can be used to measure initial part thickness, collapse during weld, and final part thickness. When used with the proper weld control or weld monitor, displacement sensors can also be used to stop the weld when the desired collapse has occurred.

| Model                          | IPB-5000A | MM-370B | ADAM | MG3 |
|--------------------------------|-----------|---------|------|-----|
| GS-1813(13mm)<br>GS-1830(30mm) | X         | X       |      |     |
| ST1278(12mm)<br>ST3078(30mm)   |           |         | X    | X   |





## Electrodes

Highly conductive workpiece materials generally require electrodes of high resistance. Similarly, hard materials require softer, copper-based electrodes. When welding dissimilar materials such as copper and nickel, the normal choice would be a molybdenum electrode against the copper and a GLIDCOP electrode against the nickel.

If stored energy or half-cycle equipment is used to weld dissimilar materials, place the more resistive material against the negative electrode. Likewise, if similar materials with thickness ratios greater than 4:1 are welded, place the thinner material against the negative electrode.

To clean electrode surface and maintain shape, electrodes should be dressed with either 600 or 1000 grit silicon carbide paper, rather than with a file. Refer to page 7 for polishing disks.



## Electrode Force Gauges

Electrode force gauges are used to establish weld schedules and to calibrate weld heads and handpieces. They are color coded to indicate the usable force range. The accuracy is  $\pm 2\%$  of full scale.

| Model    | Capacity | Scale          | Notes      |
|----------|----------|----------------|------------|
| FG20*    | 20 lbs   | 20 lbs x .2 lb | Serialized |
| FG10kg*  | 10 kg    | 10 kg x 0.1 kg | Serialized |
| FG100*   | 100 lbs  | 100 lbs x 1 lb | Serialized |
| FG100kg* | 100 kg   | 100 kg x 1 kg  | Serialized |

\*Calibration Certificate models also available

## Electrode Materials

GLIDCOP - DISPERSION STRENGTHENED COPPER with 0.15% ALUMINUM OXIDE - 68B Rockwell hardness, 92% conductivity. Longer life, greater thermal stability, higher strength than RWMA 2. Generally interchangeable with RWMA 2 without changing schedules. All Miyachi Unitek weld heads are supplied with GLIDCOP electrodes.

RWMA 2 - COPPER CHROMIUM ALLOY - 83B Rockwell hardness, 85% conductivity. Used for welding steels, nickel alloys and other high resistance materials.

RWMA 3 - COPPER COBALT BERYLLIUM ALLOY - 100B Rockwell hardness, 48% conductivity. Used for welding high resistance materials requiring high weld forces.

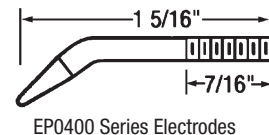
RWMA 11 - COPPER TUNGSTEN ALLOY 99B Rockwell hardness, 46% conductivity. Usually inserted into an RWMA 2 shank. Used for welding cuprous and precious metals. Used for light projection welding dies.

RWMA 13 - TUNGSTEN - 70A Rockwell hardness, 32% conductivity. Usually inserted into an RWMA 2 shank. Cannot be machined but may be ground to the desired shape. Used to weld non-ferrous metals such as copper and brass.

RWMA 14 MOLYBDENUM - 90B Rockwell hardness, 31% conductivity. Usually inserted into an RWMA 2 shank. Machineable. Used for welding copper, silver, gold and their alloys.

EP0400 - 1/8" dia. PROBE ELECTRODES 6-32 NC2 thread  
Used with THP and PHP handpieces

| Model  | Material |
|--------|----------|
| EP0402 | RWMA 2   |
| EP0403 | RWMA 3   |
| EP0450 | GLIDCOP  |



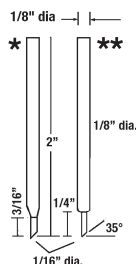
## 1/8 Inch Electrodes

E00400 - 1/8" dia. OFFSET ELECTRODES  
Used with 80 Series weld heads

| Model  | Material       |
|--------|----------------|
| E00402 | RWMA 2         |
| E00403 | RWMA 3         |
| E00411 | RWMA 11 Insert |
| E00413 | RWMA 13 Insert |
| E00420 | Moly Insert    |

\* Copper Alloy

\*\* Refractory Alloy Insert



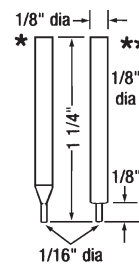
E00400 Series Electrodes

ES0400 - 1/8" dia. STRAIGHT ELECTRODES  
Used with 80, 82 weld heads

| Model  | Material       |
|--------|----------------|
| ES0402 | RWMA 2         |
| ES0403 | RWMA 3         |
| ES0411 | RWMA 11 Insert |
| ES0413 | RWMA 13 Insert |
| ES0420 | Moly Insert    |
| ES0450 | GLIDCOP        |

\* Copper Alloy

\*\* Refractory Alloy Insert



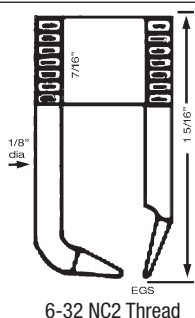
ES0400 Series Electrodes



ESG0402 - 1/8" dia. STRAIN GAUGE  
ELECTRODES Used with THP

| Model    | Material |
|----------|----------|
| ESG00402 | RWMA 2   |

ESG0400 Series  
Electrodes  
For Strain Gauges



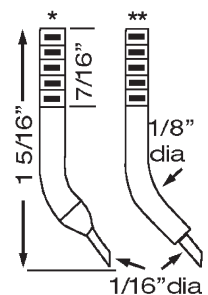
6-32 NC2 Thread

ET0400 - 1/8" dia. TWEEZER ELECTRODES  
Used with THP AND PHP

| Model  | Material       |
|--------|----------------|
| ET0402 | RWMA 2         |
| ET0403 | RWMA 3         |
| ET0411 | RWMA 11 Insert |
| ET0413 | RWMA 13 Insert |
| ET0420 | Moly Insert    |
| ET0450 | GLIDCOP        |

\* Copper Alloy

\*\* Refractory Alloy Insert



ET0400 Series Electrodes

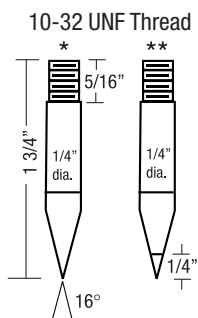
## 1/4 Inch Electrodes

EP0800 - 1/4" dia. PROBE ELECTRODES  
Used with GHP AND HFP handpieces

| Model  | Material       |
|--------|----------------|
| EP0802 | RWMA 2         |
| EP0803 | RWMA 3         |
| EP0811 | RWMA 11 Insert |
| EP0820 | Moly Insert    |

\* Copper Alloy

\*\* Refractory Alloy Insert



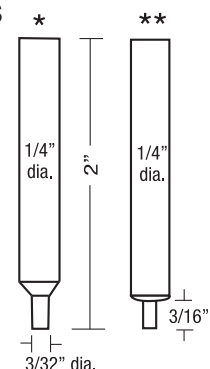
EP0800 Series Electrodes

ES0800 - 1/4" dia. STRAIGHT ELECTRODES  
Used with 82, 83, 84, 90 Series and  
180 Series weld heads

| Model   | Material             |
|---------|----------------------|
| ES0802  | RWMA 2               |
| ES0803  | RWMA 3               |
| ES0850  | GLIDCOP              |
| ES0811  | RWMA 11 Insert       |
| ES0813  | RWMA 13 Insert       |
| ES0820  | Moly Insert          |
| ES0820A | 1/8" dia Moly Insert |

\* Copper Alloy

\*\* Refractory Alloy Insert



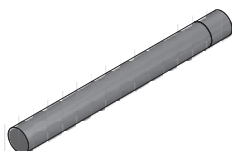
ES0800 Series Electrodes

ES-0820B - Moly Brazed insert, 1/4"  
diameter by 2.5" long, sold as each

| Model   | Material |
|---------|----------|
| ES0820B |          |

\* Copper Alloy

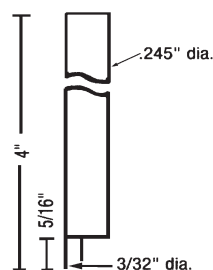
\*\* Refractory Alloy Insert



ES0820B Series Electrodes

ES0800E - .245" dia.  
ECCENTRIC STRAIGHT ELECTRODES  
Used with 88, 89 and 188 weld heads  
and HE38V and HE88 holders

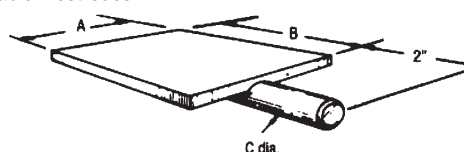
| Model    | Material             |
|----------|----------------------|
| ES0802E  | RWMA 2               |
| ES0803E  | RWMA 3               |
| ES0850E  | GLIDCOP              |
| ES0820E  | Moly Insert          |
| ES0850ES | GLIDCOP (.062" Face) |



ES0800 Series Electrodes

## Other Electrodes

ETB Table Electrodes - RWMA 2

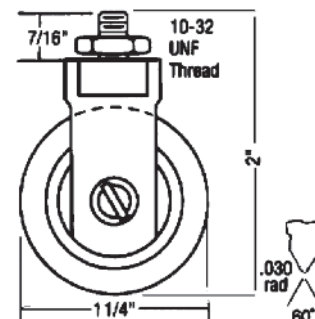


|      | A" | B"    | C"  | Used With      |
|------|----|-------|-----|----------------|
| ETB2 | 2  | 1-3/4 | 3/8 | 80 Series      |
| ETB3 | 3  | 3     | 5/8 | 90, 180 Series |



|      | A" | B"    | Used With |
|------|----|-------|-----------|
| ETB4 | 3  | 3-3/4 | 80, 86    |

EW4002 1.25"  
WHEEL ELECTRODE  
RWMA2, Used  
with HW1090



HW1090 Holder  
with EW4002 Wheel

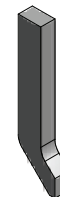
4-38924-01 - 73-Z pincer electrode,  
Moly, Sold as Pair

| Model | Material |
|-------|----------|
|-------|----------|

4-38924-01  
\* Copper Alloy

\*\* Refractory Alloy Insert

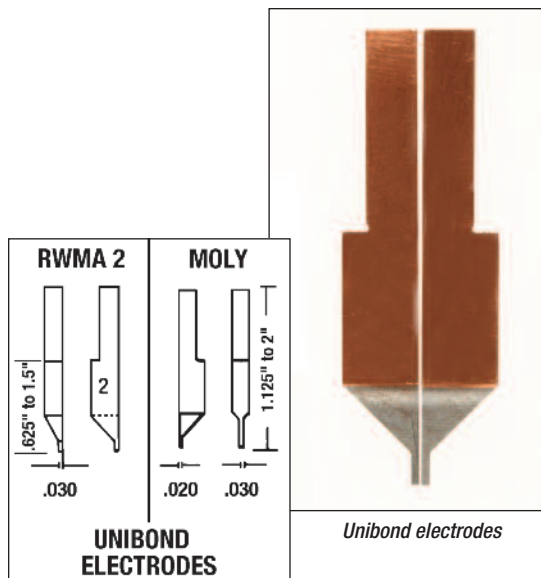
73-Z pincer  
electrode



## Electrode Rod (12" length)

| Model  | Material | Dia.(in) | Model   | Material | Dia.(in) |
|--------|----------|----------|---------|----------|----------|
| ER0213 | RWMA 13  | 1/16     | ER0802  | RWMA 2   | 1/4      |
| ER0220 | MOLY     | 1/16     | ER0803  | RWMA 3   | 1/4      |
| ER0402 | RWMA 2   | 1/8      | ER0811* | RWMA 11  | 1/4      |
| ER0403 | RWMA 3   | 1/8      | ER0820* | Moly     | 1/4      |
| ER0413 | RWMA 13  | 1/8      | ER0850  | GLIDCOP  | 1/4      |
| ER0420 | MOLY 1/8 | 1/8      | ER1202  | RWMA 2   | 3/8      |
| ER0450 | GLIDCOP  | 1/8      | ER2002  | RWMA 2   | 5/8      |

\* 18" long



## Unibond® Electrodes

Unibond electrodes are used for parallel gap bonding and reflow soldering. Generally, RWMA2 copper Unibond electrodes are used with resistive and/or hard materials such as gold plated kovar and nickel. Molybdenum Unibond electrodes are used for bonding conductive or soft materials such as copper or gold. The face of a Unibond electrode is 0.020 inches (0.5 mm) wide by 0.030 inches (0.75 mm) deep. In unfixed applications, this limits their use to bonding ribbons (wire) which are at least 0.010 inches (0.25 mm) wide because of the limited visibility.

| Model    | Material         | Length | Width | FACE<br>Depth | Length |
|----------|------------------|--------|-------|---------------|--------|
| EU1000   | RWMA2            | 1.125" | .020  | .030          | .080   |
| EU1002   | RWMA2            | 2"     | .020  | .030          | .080   |
| EU2030M  | Copper Clad Moly | 1.125" | .020  | .030          | .080   |
| EU2030ML | Moly             | 2"     | .020  | .030          | .080   |
| EU2537M  | Moly             | 1.125" | .025  | .037          | .100   |
| EU2030MR | Moly             | 1.125" | .020  | .030          | .080   |

## Unitip® Electrodes

Unitips are electrodes for parallel gap bonding of gold plated kovar, copper, or gold ribbons (wires) which are smaller than 0.010 inches (0.25 mm). They are made from two pieces of molybdenum, which are permanently bonded to an insulating spacer. This fixed gap and bonded construction results in a tip which wears uniformly when properly dressed. The length of the Unitip and the flat area on the front allows it to bond ribbons extremely close to the walls of packages as deep as 0.450 inches (11.5 mm). The narrower Thinline "L" series Unitips have a tapered profile, enabling them to be used closer to the corners of packages.

| Model    | FACE  |       |      |        | Max. Force<br>Oz. | Max. Force<br>Kgf. |
|----------|-------|-------|------|--------|-------------------|--------------------|
|          | Width | Depth | Gap  | Length |                   |                    |
| UTM111L  | .009  | .010  | .001 | .025   | 33                | .94                |
| UTM112L  | .010  | .010  | .002 | .025   | 33                | .94                |
| UTM152L  | .010  | .005  | .002 | .025   | 17                | .47                |
| UTM222L  | .018  | .020  | .002 | .050   | 132               | 3.75               |
| UTM237L  | .020  | .030  | .007 | .050   | 161               | 4.57               |
| UTM111C  | .009  | .010  | .001 | .025   | 33                | .94                |
| UTM112C  | .010  | .010  | .002 | .025   | 33                | .94                |
| UTM222C  | .018  | .020  | .002 | .050   | 132               | 3.75               |
| UTM224C  | .020  | .020  | .004 | .050   | 132               | 3.75               |
| UTM224L  | .020  | .020  | .004 | .050   | 132               | 3.75               |
| UTM112CS | .010  | .010  | .002 | .015   | 33                | .94                |
| UTM112LS | .010  | .010  | .002 | .015   | 33                | .94                |

All dimensions in inches unless noted.

NOTE: Refer to Unitip & Unibond Electrodes Data Sheet 991-461.

## Polishing Disks

Model PD Polishing Disks, 600 and 1000 grit silicon carbide, 1.5 inch diameter.

Package of 50.

10-031-02, PD-600

10-031-02-01, PD-10000

Model CPD Ceramic Polishing Disks, 1 inch square x .025 inch thick.

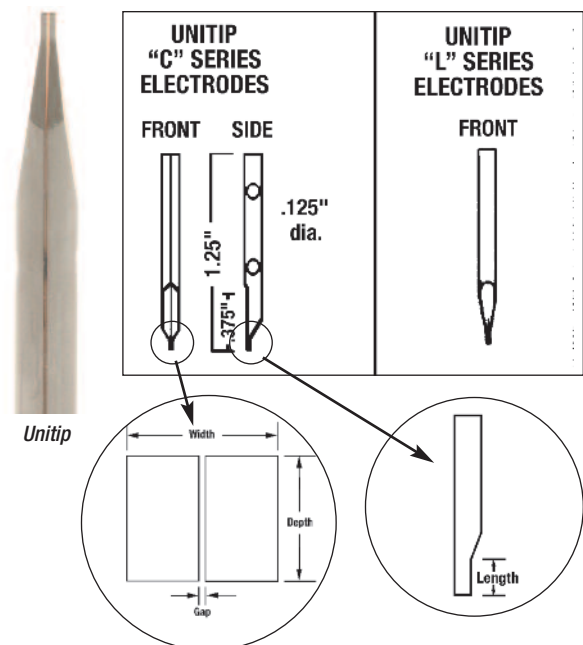
Package of 20.



1 1/2" dia. Polishing Disk



1" square Ceramic Polishing Disk



## Gold Plated Kovar Ribbon

| Model | Size                             |
|-------|----------------------------------|
| KR207 | .002 inch x .0065 inch x 10 feet |
| KR306 | .002 inch x .010 inch x 20 feet  |
| KR307 | .002 inch x .005 inch x 20 feet  |
| KR310 | .003 inch x .010 inch x 20 feet  |
| KR315 | .003 inch x .015 inch x 20 feet  |
| KR320 | .003 inch x .020 inch x 20 feet  |

## Nickel Tab Material

| Part number | Part Name                                       | Description |
|-------------|-------------------------------------------------|-------------|
| 145-026     | 145-025, Nickel Battery Tab .250"x1.125"x.005   | Nickel 201  |
| 145-026     | 145-026, Nickel Battery Tab .375"x1.125"x.005", | Nickel 201  |

Other sizes available upon request



# Cables, Terminals, Connectors and Adapters

Common size weld cables, sold in pairs

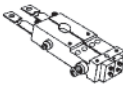
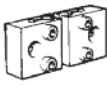
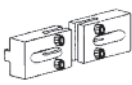
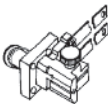
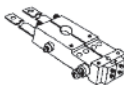
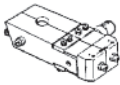
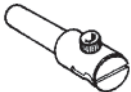
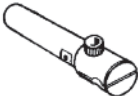
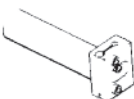
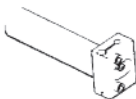
| #2 AWG Cables  |        |               |
|----------------|--------|---------------|
| Part Number    | Length | Terminal Size |
| 18-2U-AA-12    | 12"    | 5/16          |
| 18-2U-AA-16    | 16"    | 5/16          |
| 18-2U-AA-18    | 18"    | 5/16          |
| 18-2U-AA-24    | 24"    | 5/16          |
| 18-2U-AA-28    | 28"    | 5/16          |
| 18-2U-AA-36    | 36"    | 5/16          |
| 18-2U-AA-40    | 40"    | 5/16          |
| 18-2U-AA-48    | 48"    | 5/16          |
| 18-2U-DD-6     | 6"     | 10-32         |
| 18-2U-DD-14    | 14"    | 10-32         |
| 18-2U-DD-17    | 17"    | 10-32         |
| 18-2U-DD-30    | 30"    | 10-32         |
| 18-2U-DD-36    | 36"    | 10-32         |
| 18-2U-DD-42    | 42"    | 10-32         |
| 18-2U-DD-48    | 48"    | 10-32         |
| 2/0 AWG Cables |        |               |
| Part Number    | Length | Terminal Size |
| 18-20U-BB-12   | 12"    | 5/16          |
| 18-20U-BB-16   | 16"    | 5/16          |
| 18-20U-BB-24   | 24"    | 5/16          |
| 18-20U-BB-30   | 30"    | 5/16          |
| 18-20U-BB-36   | 36"    | 5/16          |
| 18-20U-BB-48   | 48"    | 5/16          |
| 4/0 AWG Cables |        |               |
| Part Number    | Length | Terminal Size |
| 18-40U-EE-24   | 24"    | 5/16          |
| 18-40U-EE-36   | 36"    | 5/16          |
| 18-40U-EE-45   | 45"    | 5/16          |
| 18-40U-EE-48   | 48"    | 5/16          |
| 18-40U-EE-57   | 57"    | 5/16          |
| 18-40U-EE-60   | 60"    | 5/16          |
| 18-40U-JJ-11   | 11"    | 7/16          |
| 18-40U-JJ-12   | 12"    | 7/16          |
| 18-40U-JJ-24   | 24"    | 7/16          |
| 18-40U-JJ-36   | 36"    | 7/16          |
| 18-40U-JJ-42   | 42"    | 7/16          |
| 18-40U-JJ-44   | 44"    | 7/16          |
| 18-40U-JJ-48   | 48"    | 7/16          |
| 18-40U-JJ-60   | 60"    | 7/16          |
| 18-40U-JJ-70   | 70"    | 7/16          |
| 18-40U-JJ-72   | 72"    | 7/16          |

Special size cables can be purchased on request

|                                                                                                                                     |                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>A</b><br/>4-36578-01, Voltage cable, 15' long with flying leads (Large scale applications typically)</p>                      | <p><b>A</b><br/>4-35670-01, Voltage cable, 6' long with #2 stud size ring terminals<br/>4-35670-02, Voltage cable, 6' long with #6 stud size ring terminals<br/>4-35670-03, Voltage cable, 6' long with #8 stud size ring terminals</p> |
| <p><b>B</b><br/>10-381-01, Firing switch Extension Cable, 6' long</p>                                                               | <p><b>J</b><br/>18-042-01, Current Coil Extension Cable, 15" long</p>                                                                                                                                                                   |
| <p><b>C</b><br/>18-045-01, Transformer Sense Cable, 15' long,<br/><br/>Mates with ISA series welders and IT-XXXX-X transformers</p> | <p><b>K</b><br/>18-044-01, Transformer Sense Cable, 6' long, Mates with IS-120B welders and IT-XXXX-X transformers</p>                                                                                                                  |
| <p><b>D</b><br/>SRCN6A21-16P, MM-370 Multi-pin Connector</p>                                                                        | <p><b>P</b><br/>Standard Firing Switch Panel Mount Receptacle #18 AWG 550-001</p>                                                                                                                                                       |
| <p><b>E</b><br/>AA-8801, GS-1830 Extension Cable, 15 meters, used with MM-370 and IPB-5000A</p>                                     | <p><b>S</b><br/>#18 AWG Firing Switch Plug-Male 520-001</p>                                                                                                                                                                             |
| <p><b>F</b><br/>#18 AWG 4-PIN Female Receptacle for Footswitch 550-006</p>                                                          | <p><b>T</b><br/>#18 AWG Firing Switch Jack-Female 520-011</p>                                                                                                                                                                           |
| <p><b>G</b><br/>#18 AWG 4-PIN Male Plug for Footswitch 520-009</p>                                                                  | <p><b>V</b><br/>DFS/88 Dual firing switch adapter, Series configuraton</p>                                                                                                                                                              |
| <p><b>H</b><br/>#2 AWG Cable Connector (for HFP) 4-02688-01</p>                                                                     | <p><b>W</b><br/>#6 AWG Cable Connector 4-28071-02, used with PHP and THP</p>                                                                                                                                                            |



## Electrode Holders and Adapters

|                                                                                                                                |                                                                                                                                                                                                                          |                                                                                                                                                                           |                                                                                                                                                 |                                                                                                                                                               |                                                                                                                                                                                   |                                                                                                                                                                                    |                                                                                                                                         |                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               |                                                   |  |                                                                |                                                                              |                                                                                                |                              |                                                      |                                                                                                                                                                                                         |
| HE87<br>HOLDERS,<br>UNITIP/THERMODE<br>for 87F and 87A.                                                                        | HE88<br>ELECTRODE HOLDER<br>Holder .245" dia.<br>ES0800 Series<br>Electrodes in 88<br>Weld Head. Set (2)                                                                                                                 | HE188<br>ELECTRODE HOLDER<br>Holder .245" dia.<br>ES0800E Series<br>Electrodes in 188<br>Weld Head. Set (2)                                                               | HE50<br>HOLDERS, UNITIP<br>for 50F and 50A<br>Weld Heads.                                                                                       | HE50RF HOLDER,<br>THERMODE, for<br>50F and 50A Weld Heads.                                                                                                    | HE50UB FLEXURE<br>SET Holds Unibond Elec-<br>trodes and Unitip Adapter<br>in 50 Weld Head.                                                                                        | HE127SFRE ROUND<br>ELECTRODE HOLDER SET<br>Holds 1/8" dia. Electrodes<br>in 86 Weld Heads. Set (2)                                                                                 | HE127SF STANDARD<br>FIXTURE SET<br>Holds Unibond<br>electrodes in 86<br>Weld Head. Set (2)                                              |                                                                                                                                                                                                         |
|                                               |                                                                                                                                         |                                |                                                                |                                                                              |  |  |  |  |
| HE127FWC WATER<br>COOLED FIXTURE SET<br>Holds Reflow Tips in 86<br>Weld Head. Set (2)                                          | HE1208 ELECTRODE<br>HOLDER, 3/8 dia. x<br>2 long. for 1/4 dia.<br>electrodes.                                                                                                                                            | HE1600 STANDARD<br>ELECTRODE HOLDERS,<br>for 84 Weld Heads,<br>holds 1/4" Electrodes,<br>1/2" dia. x 2.312 Long.                                                          | ELN<br>Nuts for THP and PHP<br>Handpieces. Pkg. (15)                                                                                            | HE30GH 30° ANGLED<br>ELECTRODE HOLDER<br>Holders EP0800 Series<br>Electrodes in GHP at<br>30° angle.                                                          | HE1200S STANDARD<br>2" ELECTRODE HOLDER<br>Holds 1/8" dia.<br>electrodes in 80<br>Weld Head.                                                                                      | HE1200L 3-1/2"<br>ELECTRODE HOLDER<br>Holds 1/8" dia.<br>electrodes in 80<br>Weld Head.                                                                                            | HE0435 35° OFFSET<br>ELECTRODE HOLDER<br>Holds 1/8" dia.<br>electrodes in 80<br>Weld Head.                                              | HE08040 SLEEVE<br>ADAPTER Adapts 3/8"<br>electrode holder (for<br>1/8" electrodes) to 1<br>80 and 188 Weld<br>Heads. Set (2)                                                                            |
|  |  |  |  |  |                                                                                                |                                                                                                                                                                                    |                                                                                                                                         |                                                                                                                                                                                                         |
| HE2000 ELECTRODE<br>HOLDER<br>Holds 1/4" electrodes<br>in 180 Weld Head.                                                       | HE2000WC WATER COOLED ELEC-<br>TRODE HOLDER Holds 1/4" dia.<br>and 1/8" dia. electrodes in 88, 180,<br>188 Weld Heads. Includes plastic<br>tubing. Set (2)                                                               | HE38V ELECTRODE<br>HOLDER<br>Holds .245" dia.<br>ES0800E Series<br>electrodes in 188 Weld Head.<br>Set (2)                                                                | HE38V04 ELECTRODE<br>HOLDERS, vertical,<br>anti-rotation feature.<br>Holds 1/8" dia series<br>electrodes in 188 weld head                       | MTA ADAPTER<br>Connects cables with<br>eyelet connectors to<br>"old style" Stored<br>Energy Power<br>Supplies. Set (2)                                        | UTA UNITIP ADAPTER<br>SET Adapts HE50UB and 86 Weld<br>Heads to hold UNITIPS. Set (2)                                                                                             |                                                                                                                                                                                    |                                                                                                                                         |                                                                                                                                                                                                         |

## Starter Kits

Starting new welding project can seem daunting at first. Not only do you need to purchase the welding equipment, but also need to consider peripheral equipment to ensure that the process is successful and safe. We have created start-up kits for the different products to help you get started.

| Kit                    | 10-415-01                                                                                              | 10-416-01                                                                                              | 10-417-01                                                                                              | 10-418-01                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Includes</b>        | Includes 20lbs force gauge, 1000 grit polishing disc, 10X Loupe, Safety glasses and various electrodes | Includes 20lbs force gauge, 1000 grit polishing disc, 10X Loupe, Safety glasses and various electrodes | Includes 100lbs force gauge, 600 grit polishing disc, 10X Loupe, Safety glasses and various electrodes | Includes 100lbs force gauge, 600 grit polishing disc, 10X Loupe, Safety glasses and various electrodes |
| <b>Weld Head Model</b> | 80/71 series                                                                                           | 88 series                                                                                              | 180/73 Series                                                                                          | 188 Series                                                                                             |

## Calibration Kits

Calibration of your equipment is essential to maintain proper operation, calibration should be done on an annual basis. These kits include everything needed to calibrate the UB/DC25 or HF25/27 power supplies. Choose the kit with or without Oscilloscope depending on your needs

| Part Number      | Part Name                              | Description                                                                              |
|------------------|----------------------------------------|------------------------------------------------------------------------------------------|
| <b>10-377-02</b> | UB/DC25 Calibration Kit                | Calibration Kit for UB/DC25, Includes Shunt, Cables and necessary hardware               |
| <b>10-377-03</b> | UB/DC25 Calibration Kit w/Oscilloscope | Calibration Kit for UB/DC25, Includes Oscilloscope, Shunt, Cables and necessary hardware |
| <b>10-410-01</b> | HF25/27 Calibration Kit                | Calibration Kit for HF25/27, Includes Shunt, Cables and necessary hardware               |
| <b>10-410-02</b> | HF25/27 Calibration Kit w/Oscilloscope | Calibration Kit for HF25/27, Includes Oscilloscope, Shunt, Cables and necessary hardware |

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