



# BONAL META-LAX STRESS RELIEF SOLUTIONS

A PROVEN ALTERNATIVE TO THERMAL STRESS RELIEF

# META-LAX

## How It Works

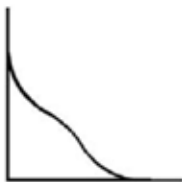
### How Meta-Lax Works For Stress Relief

Meta-Lax is a patented process by Bonal that relieves thermal stress within metal components by using non-destructive sub-harmonic vibrations. All metal structures exhibit harmonic/non-harmonic behavior (1st Scan). The harmonic curve of a thermally stressed structure (i.e. one that was subjected to a sharp temperature drop) will have its harmonic curve out of phase from its natural frequency. By applying mild sub-harmonic vibrational energy (which is optimum) and monitoring the response of the structure, the harmonic curve will gradually shift over (2nd Scan) and repeat (3rd Scan) when stress has been relieved. When the scans repeat stress relief is complete (3rd Scan)!

### How Meta-Lax Works During Welding

Meta-Lax vibrations are so mild they can be applied during welding (Meta-Lax Weld Conditioning- MLWC) to prevent 50-90% of normal distortion and/or cracking. The gentle vibrations force the molten weld metal to stay liquid a few seconds longer thereby resulting in uniform weld solidification from the root out to the face. This new solidification pattern negates the tremendous pull that would have normally distorted the base metal. Also, Meta-Lax Weld Conditioning allows more centers of freezing to occur simultaneously producing a finer weld grain structure which is crack resistant. Metallurgically, MLWC results in increased weld ductility and impact values, 400% and 75% respectively.

### Weld Profile Comparison



Weld Profile of Normal Weld

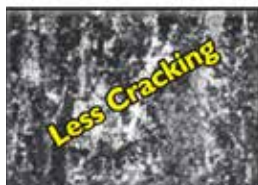


Weld Profile of MLWC Weld

### A36 Photomicrographs



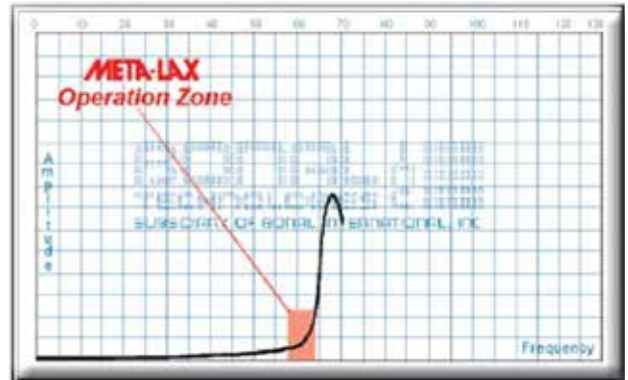
Normal Weld



Meta-Lax Weld Conditioned Weld

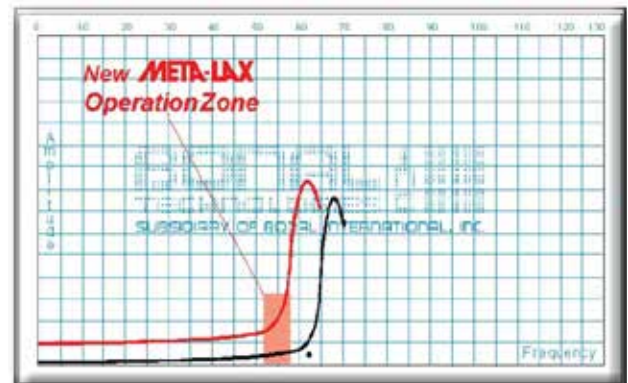
*Certification: A Meta-Lax<sup>®</sup> Exclusive*

### Principle 1 - Sub-harmonic Vibration



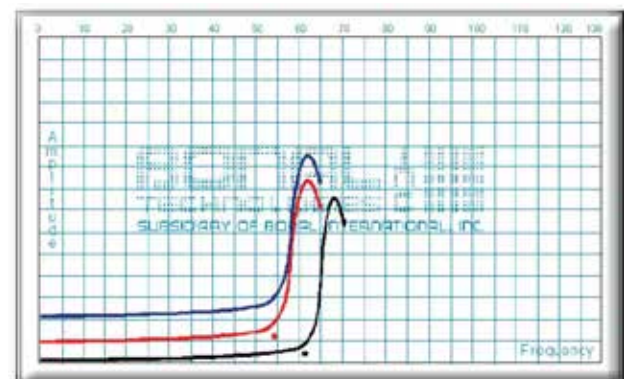
Record 1st scan showing initial response of workpiece and setting sub-harmonic (optimum) energy for stress relief.

### Principle 2a - Curve Shifts



Record 2nd scan showing reduction of thermal stress, then adjusting for new sub-harmonic zone.

### Principle 2b - Curve Repeats



Record 3rd scan showing scans repeat. When the scans repeat, this is an indication that stress relief is complete. No guessing is required!

# META-LAX

## Console & Force Inducer Selection

### Console Kits



- Computer controller with touch screen controls
- Two Choices of Operation - automatic stress relief and automatic weld conditioning, for ultimate ease of use
- 10" high definition color touch screen display
- Saves data on a flash drive for graphic printout
- Saves 500 customer and part profiles

Item Number	Volts	Electrical Certification
2810KIT	110	NFPA
2801KIT	110	CSA
2821KIT	220	CE

#### Console Kit Includes (1 each):

- Console
- AC power cord 6'
- Transducer and Isolator
- Transducer clamp 3"
- Transducer cord 10'
- USB flash drive
- Manual Certification pad
- Instruction manual

A complete system requires a Console Kit and at least one Force Inducer Kit.

### Force Inducer Kits



	V8KIT	2AKIT	3AKIT
Weight Range:	100-20,000 lbs (45-9,000)	150-40,000 lbs (70-18,000)	5,000 lbs + (2,250+)
Energy Levels:	650 lbs. (295) @ 100Hz	770 lbs. (350) @ 100Hz	1465 lbs. (655) @ 100Hz
Adjustment Time:	15 seconds	15 second	15 seconds
Size:	H: 7-1/2" x W: 10" x D: 11" (19 x 25 x 28)	H: 7-1/2" x W: 10" x D: 12" (19 x 25 x 31)	H: 8" x W: 11" x D: 13" (20 x 28 x 33)
Weight:	36 lbs (16)	47 lbs (21)	63 lbs (29)

#### Force Inducer Kits (FI) Include:

- (1) Force inducer
- (1) FI adjustment wrench
- (1) FI stop wrench
- (2) Plastic isolation shoes
- (2) Force inducer clamps
- Rubber isolation pads (4) for Kits V8 & 2A, (8) for 3A

### 190001 - Stainless Steel Cabinet

- Dimensions: 28" x 18" x 34.5"
- Heavy-duty stainless steel door with key locking security
- Chrome grab handle and bottom corner bumpers
- (1) height-adjustable shelf
- 0.75" thick solid hardwood work surface
- Powder coated steel body
- (4) 5" heavy-duty wheels (2 locking)
- Loading capacity: 300 lbs.
- Weight: 70 lbs.



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