

## UPA 1114 WRD Base- BT 60H Three Stage Automation System Specifications



### GENERAL:

This is a high performance automated ultrasonic cleaning system designed and manufactured by UPC in Freeport, Illinois. This three station system consists of an advanced model BT60H ultrasonic wash system, an advanced model BT60H spray over immersion rinse system and a BT60H hot air dryer system with integrated high performance blow-off system. The system utilizes a rugged, expandable 80/20 modular aluminum frame. Standard baskets are passed through the cleaning stages by an automated overhead carrier. The system includes a load and unload station with basket positioners and sensors and will clean multiple baskets simultaneously and monitor basket location from start to finish. System is controlled by Sonic Touch®II a highly advanced HMI system developed by Ultrasonic Power Corporation.

This system is engineered to use off-the-shelf technology. All of the tanks are based on standard UPC bench tops that can be removed and replaced in minutes making this system easy to assemble and maintain.

### System Summary:

Tank dimensions: 11" left to right, 14" front to back, 11" deep (10" working depth)

System dimensions: Approximately 83" left to right, 28" front to back, 60" high (not including robot arm)

Process: Ultrasonic wash, Spray over immersion rinse, Hot air dry

Chemistry: Wash- specified by application, Rinse- DI water

Automation: B&R Dual Axis linear actuators controlled by Sonic Touch®II

Facilities: 2-4 GPM, (8-10 GPM on demand) DIW @ minimum 1-2 Mohm, 30-35 psi and at process temperature, 110-115 CFM Clean Dry Air (CDA) @ 30psi for blow-off, unrestricted floor drain

Power Requirements: 240V/60Hz/ 1 phase

Work Flow: Left to Right

### System Detail:

#### Station 1

#### Ultrasonic Immersion Wash

#### Provides high-performance precision washing

Ultrasonic Frequency:

40kHz Simultaneous Multi-frequency®

Ultrasonic Power:

500 watts of ultrasonic power provided by :

- Six (6) Vibra-bar® transducers (12 piezoelectric (PZT) stacks) bonded to the bottom of the tank
- One (1) advanced patented Model 5400, 40kHz, 500W, 240V ultrasonic generator

Heat:

500 watts

- Provided by silicone blanket heaters

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Temperature Control: - Protected by independent overheat protection system  
Digital temperature controller with RTD-type temperature probe  
Filtration: A 4 GPM recirculation/filtration system with:

- One (1) "T" strainer
- One (1) centrifugal, magnetic drive pump
- One (1) 10", 20 micron, polyspun filter
- One (1) analog pressure gauge
- Manual flow control valves
- Controlled by Sonic Touch®II

Standard Features: Stainless steel lift off lid  
Agitation (selectable)  
Overflow fitting plumbed to drain  
Basket sensor

### **Station 2**

#### **Spray-over Immersion Rinse**

**Provides high performance spot free rinsing**

Heat: 500 watts

- Provided by silicone blanket heaters
- Protected by independent overheat protection system

Temperature Control: Digital temperature controller with RTD-type temperature probe  
Spray Rinse: Stationary spray rinse package with:

- Opposite quad spray rinse headers
- Provides final spray rinse from four directions
- Located near the top of the tank
- Solenoid valve on incoming water line
- Solenoid controlled via Sonic Touch®II

Standard Features: Stainless steel lift off lid  
DI water fill fitting with solenoid valve controlled by Sonic Touch®II  
Overflow fitting at 7" tank depth plumbed to drain  
Basket sensor

### **Station 3**

#### **Recirculating Hot Air Dryer**

**Provides complete drying of parts utilizing high performance air knives and hot air**

Heat: 1000 watts of heat

Temperature Control: Digital temperature controller with RTD-type temperature probe

Blower: 200 CFM

Blow off/Air Curtain: A stationary blow-off package with:

- One set of parallel-opposed air blow-off headers located near top of tank
- A solenoid valve on the incoming air line
- Valve is controlled by Sonic Touch®II
- Also functions as an air curtain keeping hot air from escaping when lid is open

Standard Features: Automatic sliding lid –  
- Movement controlled by electric linear actuator

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- controlled by Sonic Touch®II
- Includes basket sensor

### **AUTOMATION PACKAGE**

#### Dual Axis Servo Solution

##### Capacity:

- 50 pounds

##### Travel Speed:

- Horizontal - 6.4 in/sec
- Vertical – 2.5 in/sec

##### Positioning Accuracy:

- Horizontal: +/- .008"
- Vertical: +/- .002"

##### Horizontal:

- Belt driven transfer slide
- Position via optical encoders
- Over travel protection via travel limit sensors

##### Vertical:

- Ball screw driven actuator
- Position via optical encoders
- Provides safety and high lift capacity
- Over travel protection via travel limit sensors
- 42.7 inch stroke

##### Lift Arm:

- Cantilever arm with four point stainless steel pick-up hook assembly

##### Base:

- Horizontal slide mounts directly to the 80/20 system base with bracket kit

##### Automation Control:

- Sonic Touch®II- B&R Automation C70 7" HMI & PLC
- Sonic Touch®II mounted in convenient heavy duty movable stand
- Maintenance-free, real time clock with 1,000 hour buffer gold foil capacitor
- Analog resistive touch screen for use with gloves in industrial environments
- IP65 Front Screen Protection with multipoint sealing solution provides long lasting protection
- High resolution (800 x 480px), TFT screen, 262,000 colors with LED backlight
- CE, UL & cUL certified
- USB ports -allow upgrades, program changes, recording and downloading data
- Ultrasonic Power function On/Off control
- Pump and filter system On/Off control
- Countdown Timer for Ultrasonic operation
- 7-day programmable Timer for Pump and filter system
- Switching between Celsius and Fahrenheit
- Ultrasonic intensity display slider and indicator
- Sweep Control for the Generator

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- Clock and Date Indicator
- Elapsed Time Meter for ultrasonic Power monitoring
- Elapsed Time Meter for pump and filter system monitoring
- Patented LCS (Liquid Condition Sensor) display- monitors cavitation activity levels for validation functions
- Frequency Display- displays frequency output for individual generators
- Power Output Display- displays accumulative output relative to number of generators
- System Setting Monitor- Auto saves system settings every 5 minutes\*
- Heating system temperature offset adjustment
- Ultrasonic generator power output indicator alarm
- Ultrasonic generator power output indicator alarm log
- Data Recorder- continuous recording of system status in real time. Records while machine is on. Data can be stored on flash drives.
- Email/ SMS functions- can provide email or text notices for maintenance schedules or alerts selected by supervisor (optional)
- System Diagnostics
- VNC Control Technology- Android/iOS capability using a VNC app for full system monitoring and control
- Password protected control for Level of User (Operator/Supervisor)
- Preventative Maintenance Timer/Schedule function
- SOVI ® (Sonic Output Validation Indicator) diagnostic system- validates operating condition of the system. Error code indicates fault.
- Monitors basket location from start to finish

**Automation PLC will control:**

Transporting baskets through process (multiple basket capability)

Wash time

Wash agitation option

Rinse time

Immersion rinse DI replenishment time

Rinse agitation option

Rinse spray time

Rinse spray agitation option

Dryer lid open/close

Dryer blow-off time

Dryer blow-off agitation option

Dryer time

Load and unload table sensors

Robot arm basket sensor

Wash tank basket sensor

Rinse tank basket sensor

Dryer tank basket sensor

Unload alarm if basket is not removed

Multiple programmable recipes

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### **Manual Controls-**

- Main Power mounted on NEMA box
- E-stop mounted on NEMA box- E-stop stops automation functions
- Wash temperature On/Off on wash tank
- Wash temperature setting on wash tank
- Rinse temperature On/Off on rinse tank
- Wash temperature setting on rinse tank
- Dryer temperature On/Off on Dryer
- Dryer temperature setting on Dryer

### **GENERAL CONSTRUCTION**

Tank Material: 316L stainless steel with a #4 finish  
Skirt Material: 304 stainless steel  
Base: 80/20 aluminum extrusion  
Plumbing: 

- Individual fill connections located on rear of each system
- Overflow connections located on rear of each system
- Individual drain connections located on front of each system

Blow off: 

- One set of parallel-opposed air blow-off headers located near top of tank

Electrical Box: Single point electrical connection located on an end mounted NEMA 12 enclosure

### **INSTRUCTION MANUAL:**

The equipment is furnished with an operator's manual containing a description of the ultrasonic generator and the transducers, general care, safety precautions and a list and description of the operation system controls and indicators along with an electric schematic.

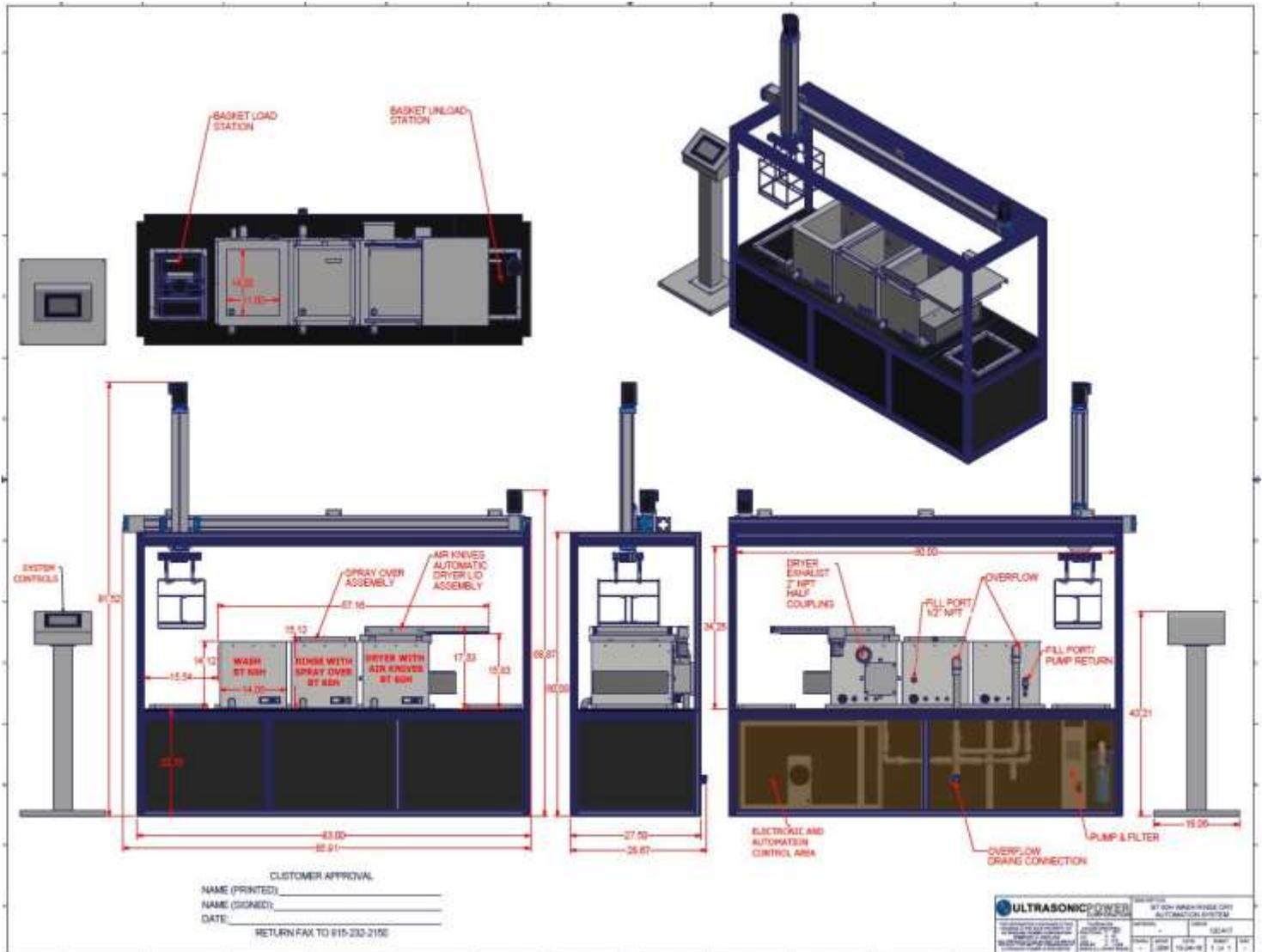
### **TEST:**

The machine is given a full operational test prior to shipping. If the customer wants to witness this test he must advise Ultrasonic Power Corporation in writing of any specific criteria he will want to test in addition to the normal operational test. This notification of witnessing of the test must accompany the purchase order.

### **GUARANTEE:**

The equipment is warranted in accordance with the standard Ultrasonic Power Corporation warranty certificate.

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