

UltraPAC™ Immersion Systems

High-Speed, Heavy-Duty Immersion Systems:

We design and build complete immersion inspection and gantry systems in a range of sizes. Immersion systems are supplied in 3 classes of product: Standard, High-Speed (HS) and High Resolution (HR). Both High-Speed and High-Resolution systems use NDTA's Heavy-Duty Framing system. These designs incorporate an extremely rigid and precise industrial framing system in order to provide high strength, rigidity and minimal backlash.

High Speed System Specifications & Performance:

Linear Velocity:

>20 inches/second (500-750 mm/sec.) X-Y Axes,
system size dependent 1 inches/second (25 mm/sec)
Z Axis (High Speed Option Available)

Note: Actual scanning velocity can be limited by UT resolution and gate settings

Position Resolution:

0.00275 in. (.07 mm) X-Y 0.001 in. (.025 mm) Z

Configuration:

Plexiglas (stainless steel available) tank supported in low-backlash, heavy-duty aluminum framing system

Materials:

Highly corrosion resistant

Drives:

Minimum-backlash belt (HS) or ball-screw (HR).
Closed loop X-Y, high-speed, micro-stepping drives & motors (Z optional)

Options:

Turntable, bar/pipe rotator, dual search tubes (through transmission)



High Speed 3-Axis Immersion Tank System

Fully Integrated System:

UltraWin™ C-Scan based software with choice of UT components. Smooth, non-linear acceleration

Upgrades Available:

Active control (computer-controlled stepper motor drivers) or passive (add-on encoder) upgrades also available. Tank upgrades convert existing control and/or data acquisition systems to fully computerized C-Scan based imaging and data analysis systems.

UltraPAC™ - Tank Frame Design:

We have incorporated several new features with the UltraPAC™ immersion tank design

- Highly modular design concept
- A new, low-noise, high-power, high-speed motor driver system with closed loop performance
- A new frame assembly with significantly increased rigidity permits high-speed scanning coupled with high-resolution performance

Design Features:

- Stiffened corners and redundant structural elements
- Double X-axis drive (driven from both sides of bridge)
- Double Z-axis mounting bracket (heavy-duty, vibration reduction)
- Double Y-axis bridge structure
- Modular motor driver system (not shown) with high-speed drivers - X-Y axis scanning speeds in excess of 20 inches (500 mm)/second with resolution of .00275 inch (.07 mm) or 10 inches (250 mm)/second with resolution of better than .001 inch (<.025 mm). Direct drive Z axis with ball screw, self-locking drive, maximum speed of 1 inches (25 mm)/second with resolution of better than .001 inches (<.025 mm). Options available for high-speed Z, turntable and bar rotator.



Figure 2: Overall view of frame assembly



Figure 3: Close-up of bridge detail



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