

# TORRENT™ WFI

## PHARMACEUTICAL WATER SOLUTIONS

### PREMIUM STANDARD FEATURES

*“Our smart design focus integrates many upgrades that combine sustainable operation and ergonomic sampling and maintenance in order to enhance the ownership experience of your Aqua-Chem system.”*

- Modular “plug-and-play” design
- Operator-focused sampling and maintenance
- Stainless steel frame and enclosures
- 316L tubing with  $\leq 20 \mu\text{-in Ra}$  after RO
- Catalytic carbon with spare exchange vessel
- Active feedwater disinfection and  $\text{Cl}_2$  monitor
- Insulated SST break tank with CIP functionality
- All-electric Hot Water Sanitization (HWS)
- Robust triple-membrane barrier protection
- 6.0 kDa ultrafilter for global WFI release
- Title 21 CFR Part 11 ready control system
- GAMP 5 documentation package
- Complete Factory Acceptance Test (wet FAT)
- Remote diagnostics & 24/7 post-sales support
- Made in and serviced from the USA

### FLEXIBLE OPTIONS & UPGRADES

- Hot or ambient storage and distribution
- 1 or 2 Pass reverse osmosis in FRP or SST
- Chemical dechlorination and pH adjust
- Steam sanitization and chiller exchangers
- Loop disinfection and 6.0 kDa ultrafiltration
- Upgraded sensors, TOC, and Bioburden
- Engineer-led Commissioning and Validation
- IQ/OQ Protocols and Execution
- Extended warranty, service, and spare parts



### AMBIENT WATER FOR INJECTION (WFI) GENERATION SYSTEMS

The **TORRENT™** WFI Packaged Membrane WFI System generates compendial water that exceeds current USP, PhEur, and JP requirements for parenteral solutions and other critical applications. A triple-membrane barrier is used to deliver purified water at ambient temperatures and ensures maximum quality with minimal risk. The innovative form factor improves ease of use, includes fully-automated operation and hot water sanitization, and is fully factory tested for fast installation, start-up, and qualification. All **TORRENT™** water systems are engineered for performance and reliability using only non-proprietary, premium components including Mettler-Toledo instrumentation, Bürkert valves, and IonPure® CDI-LX™ modules.

#### Aqua-Chem's **TORRENT™** Pharmaceutical Water Solutions Deliver:

- **Uncompromised Design**
- **Effortless Integration**
- **Intuitive Functionality**
- **Bulletproof Documentation**



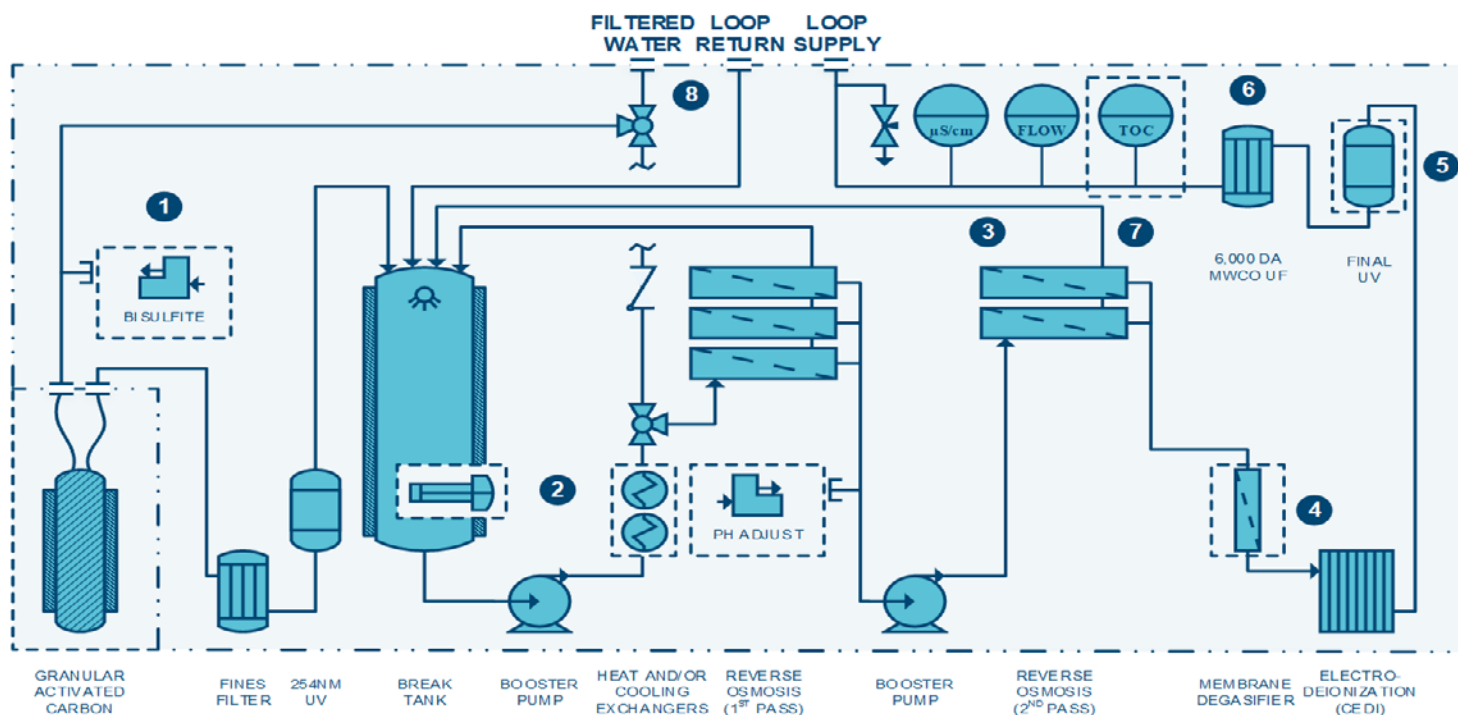
## TORRENT™ WFI GENERAL SPECIFICATIONS

STANDARD MODELS <sup>1</sup>	TNTWFI03	TNTWFI05	TNTWFI10	TNTWFI30	TNTWFI45
<b>LOOP SUPPLY RATE<sup>2</sup></b>	2.7-3.3 gpm 0.6-0.75 m³/h	4.5-6.0 gpm 1.0-1.36 m³/h	9.0-11.0 gpm 2.0-2.5 m³/h	27.0-33.0 gpm 6.1-7.5 m³/h	40.5-49.5 gpm 9.2-11.2 m³/h
<b>MINIMUM RETURN FLOW<sup>2</sup> (RECOMMENDED)</b>	1.0 gpm 0.2 m³/h	1.0 gpm 0.2 m³/h	5.5 gpm 1.2 m³/h	14.0 gpm 3.2 m³/h	14.0 gpm 3.2 m³/h
<b>DIRECT FEED MODE (OPTIONAL)</b>	2.7-3.3 gpm 0.6-0.75 m³/h	4.5-6.0 gpm 1.0-1.36 m³/h	9.0-11.0 gpm 2.0-2.5 m³/h	27.0-33.0 gpm 6.1-7.5 m³/h	40.5-49.5 gpm 9.2-11.2 m³/h
<b>DESIGNED TO EXCEED</b>	FDA cGMP Guidelines and USP, PhEur (EP), and JP Requirements for Water for Injection (WFI)				
<b>TRIPLE-MEMBRANE WFI BASE CONFIGURATION</b>	Catalytic Activated Carbon, Fines Filter, 254nm Disinfection UV, Break Tank + Electric HWS, Two-Pass Reverse Osmosis, Continuous Electrodeionization, 6.0 kDA MWCO Ultrafiltration				
<b>NOMINAL RECOVERY</b>	75.0-85.0% (Up to 100.0% in Conservation Mode)				
<b>FEEDWATER SOURCE</b>	Filtered and Softened EPA Potable Water				
<b>FEEDWATER TEMPERATURE</b>	55.0 °F - 95.0 °F (12.8 °C - 35.0 °C)				
<b>FRAME CONSTRUCTION</b>	Bead Blasted 304 Stainless Steel				
<b>PIPING MATERIALS</b>	304 SST Sanitary Tubing, ≤ 20 Ra after 2P-RO and Electropolished Post-UF Product Contacts				
<b>ENCLOSURES</b>	Stainless Steel NEMA 12 with Oversized HMI (Allen Bradley PanelView™ Plus 7 15" Standard)				
<b>ELECTRONICS RECORDS</b>	Title 21 CFR Part 11 Ready with Options for Audit Trail and Active Directory User Administration				

<sup>1</sup>Alternate configurations, including higher flows, are available via our dedicated project engineering and management team.

<sup>2</sup>Feedwater conditions may affect system performance. Given ranges assume specified water source and operation at 77.0 °F (25.0 °C)

## PROCESS FLOW DIAGRAM



### PROCESS OPTIONS AND UPGRADES

- |  |   |   |
|--|---|---|
| <b>3</b> FRP OR SST PRESSURE VESSELS         | <b>1</b> CARBON OR CHEMICAL DECHLORINATION            | <b>2</b> ELECTRIC OR STEAM HEATING & COOLING HX |
| <b>6</b> LOOP ULTRAFILTRATION VARIOUS RATING | <b>4</b> MEMBRANE OR CHEMICAL CO <sub>2</sub> REMOVAL | <b>5</b> LOOP DISINFECTION                      |
|  | <b>7</b> TOC + BIOBURDEN & CHART RECORDER             | <b>8</b> UTILITY PRETREATMENT & DRAIN QUENCHING |