



## **SPECIFICATIONS - ENDURANCE™: MODEL CSU** **1500, 1750, 2000, 2250 GPM**

The ENDURANCE™ Model CSU fire pump gives you the same big performance as the Model CS with one exception—you get more power. Even though the ENDURANCE model is 16% lighter than the old CSU, it still delivers a big punch with a performance rating of up to 2250 GPM (8550 L/min). CSU pumps come with a variety of transmissions to fit your needs, notably the new C20 transmission that is 40 lbs lighter than the C10 transmission and uses 5 less quarts of oil. The CSU is also backed by a standard five-year warranty. An optional Total Protection Package (TPP-5) is available.



### **Design Features:**

The CSU pump has a two-piece, horizontally-split body with intake and discharge passageways in a single casting and on the same level, providing the lowest possible height, a lower center of gravity, and more room for hose reels, hose beds and other equipment. Large intake adapters are standard, and provide large passageways to reduce friction losses to the pump. Interior passageways are carefully matched to assure peak performance. Diametrically opposed dual stripping edges and a double intake impeller balance radial and axial forces, contributing to smooth operation and long life.

Flame-plated impeller hubs for extreme wear resistance are standard on all CSU pumps. Reverse-flow, labyrinth-type wear rings resist water bypass and maintain high efficiency and lasting performance. These replaceable wear rings increase pump life and minimize maintenance costs. The two-piece, horizontally-split pump body design allows removal of the bottom pump cover

without disturbing the main pump body mounting or any piping. After inspection or repair, there is only a single hydraulic flange to seal, which gives you the shortest possible down time. Your Waterous CSU equipped apparatus can be back in service faster than apparatus equipped with other brands of pumps.

Braided flexible graphite (BFG) packing is standard on CSU pumps. These graphite rings of packing are held in place by a split-bronze gland which is fully removable and adjustable. BFG packing improves heat dissipation, reduces maintenance and minimizes shaft wear. Self-adjusting, spring-loaded mechanical seals are available to eliminate leakage and routine maintenance.

An exclusive two-piece impeller shaft allows true separation of the pump and pump transmission without disassembling either unit. This greatly reduces labor time for repair work.

### **Simple to Operate:**

At the flip of a single switch or valve the proven power shift system engages the pump, an indicating light system confirms that the shift is complete, and the patented shift lock mechanism assures that the transmission remains in PUMP.

A single control activates the complete priming system, automatically opening the priming valve and starting the primer.

A single ON-OFF control will activate the automatic relief valve system.

### **Versatility:**

The Waterous CSU pump was designed with versatility in mind. Waterous offers a complete selection of intake and discharge locations and sizes, and overall piping arrangements.

Discharge locations are available to meet any need, and sizes from 2-1/2 inches to 5 inches are available. The extra large discharge system assures you of the most efficient water delivery system available to the fire service.

The result of Waterous' advanced engineering capabilities is a quality product which has been thoroughly tested to meet NFPA and special contract provisions. Versatility combined with simple operation and exclusive design features have enabled us to continue providing the most reliable fire pumps in the industry for over 100 years

### **Industry-Leading Sales and Support**

When you purchase Waterous equipment, not only do you get quality products, you get quality service. Our expert service technicians are the best in the business and they are always happy to answer any service questions you might have.

**Sales/Applications Assistance**  
Phone: 651-450-5234 (Press 3)  
pumpsales@waterousco.com

**Service Assistance**  
Phone: 651-450-5200  
Fax: 800-488-1228  
service@waterousco.com

# SPECIFICATIONS - ENDURANCE™: MODEL CSU

## Pump Specifications

### Casing

Two-piece, horizontally-split, high-tensile, close grained gray iron or bronze (optional). All passageways are carefully matched to assure the very best hydraulic flow characteristics.

### Wear Rings

Bronze, reverse-flow, labyrinth-type replaceable wear rings increase pump life and keep maintenance costs to a minimum.

### Impellers

Bronze impeller, balanced both mechanically and hydraulically for vibration-free operation. Flame-plated impeller hubs are standard to assure longer life despite the presence of abrasives in the water supply.

### Impeller Shaft

Heat-treated stainless steel is ground at all critical areas, polished under packing. An exclusive two-piece impeller shaft allows separation of the transmission from the pump without disassembling either component. This simplifies repair procedures, resulting in less down time.

### Bearings

Three deep-groove, anti-friction ball bearings, located outside the pumping chamber, give support and proper alignment to the impeller shaft assembly. Bearings are oil or grease lubricated, completely separated from the water being pumped, and protected by seal housings, flinger rings and oil seals.

### Shaft Seal

Seal housings on packed pumps are equipped with braided flexible graphite (BFG) rings held in place by a split bronze gland which is fully removable and adjustable. BFG packing improves heat dissipation, reduces maintenance and minimizes shaft wear. Self-adjusting, spring-loaded mechanical seals are available which eliminate leakage and routine maintenance.

### Flinger Rings

Located on the impeller shaft between seal housings and bearing housings, flinger rings provide added protection and keep water and foreign matter out of the bearings.

### Oil Seals

Standard lip type for lubrication and additional bearing protection from dirt and water.

### Pump Characteristics

The Waterous CSU pump meets or exceeds all requirements of NFPA standard

## Pump Transmissions

### C20 Series

**Housings:** High-strength aluminum, three-piece, horizontally-split.

**Drive Ratios:** 1.27, 1.41, 1.48, 1.58, 1.69, 1.79, 1.88, 1.97, 2.03, 2.27, 2.46 and 2.73.

**Shafts:** Drive line shafts made from alloy steel forgings, hardened and ground to size, 2.35 inch 46-tooth involute spline.

### Drive and Driven Sprockets

Made of steel. All sprockets are hardened and have ground bores.

### Drive Chain

Morse HV® high-strength involute form chain.

### Bearings

Deep-groove, anti-friction ball bearings give support and proper alignment to the impeller shaft assembly. Bearings are oil-splash lubricated, completely separated from the water being pumped, and protected by a V-ring and oil seals.

### Lubrication System

An internal lubrication system delivers lubricant directly to the drive chain. This unique design eliminates the need for an external lubrication pump and auxiliary cooling.

### Shift Mechanism

Constant-mesh, two-position sliding collar that engages all teeth simultaneously. In-cab controlled pneumatic shift. An internal locking mechanism provides a positive lock in PUMP or ROAD position.

## Accessories & Optional Equipment

The accessories below are available for Waterous CSU pumps. For detailed information about these accessories, request each specification sheet by number.

### Pneumatic Shift

Air power allows the operator to shift to ROAD or PUMP position by actuating a simple valve. Illuminated LED's signal completion of shift from ROAD to PUMP. See Power Shift, F-1154.

### Total Protection Package (TPP-5)

The Total Protection Package is a comprehensive warranty that increases your standard warranty to include labor expenses to dismantle, remove and reinstall covered products or parts, F-2626.

### Primer

Select an electric rotary vane primer for fast, reliable priming, F-2418.

### Pressure Control Systems

#### Discharge Relief Valve

Simple ON-OFF control permits placing the system in or out of operation in seconds. See Relief Valve, F-897.

#### Intake Relief Valves

The Waterous intake relief valve is designed to dump excess pressure from the inlet side of the pump. See Intake Relief Valves, F-2192.

### Corrosion Protection

Waterous offers replaceable zinc intake screens and anodes to provide corrosion protection. These items are designed to sacrifice the zinc element to galvanic corrosion. Without this protection, galvanic corrosion may damage the iron pump body and fittings.

### Overheat Protection Manager

The OPM consists of an illuminated warning light on the operator's panel whenever the pump approaches an overheat condition, F-2422.

### Drain Valves

Drains all points of the pump simultaneously with the operation of a single control. F-1158

### Tank to Pump Valve

The tank to pump valve is a full-flow 3-1/2 in. diameter ball valve which is attached directly to the pump. The valve is operated by either a 90° spring detent remote control handle or an electric rotary actuator, F-2536.

### Discharge Valves

The following Waterous ball-type discharge valves are available: 2-1/2 inch, 3-1/2 inch, rack and sector push-pull, worm gear and electric. Chrome-plated brass ball and hydraulically-balanced seal assembly standard. See Discharge Valves, F-1161.