

# THE ULTIMATE HYFLO 218

## MORE FLOW - LESS POWER

Get the original - the impeller proven to produce more flow at less power than competitor designs. This fine-pitch hydrofoil impeller was developed through extensive testing and consultation with aerospace engineers until the maximum efficiency was reached.

Lightweight, curved-section blades are extremely strong and create less drag than other bent-blade "high efficiency" impellers. Proven the best in thousands of applications.

- Split-hub, 1-piece or bolted designs
- Polished, Coated or Special Alloys
- From 3" dia. to 210" diameters
- Other designs available for special applications:

HYF-312 - Pulp & Paper

HYF-518 - High Viscosity

- SS316 standard. Mild steel, SS304, Hastelloy, A-20, Titanium, Inconel, Nickel, AL6-XN, other alloys available

*Visit us on the web to see the entire family of SHARPE's impellers*

# SHARPE MIXERS

800-237-8815

[www.sharpemixers.com](http://www.sharpemixers.com)



**Overview:** Developed through extensive testing and consultation with aerospace engineers, the Sharpe Mixers Hyflo 218 (HYF-218) impeller is designed to produce the maximum flow per unit horsepower. Using the same procedures and computerized analysis equipment used in developing Boeing aircraft and wing design, the blade shape, curvature and angle of attack (blade pitch) were fine tuned until fluid flow was optimized and induced drag was reduced to a minimum to reach the maximum efficiency.

**Description:** A hydrofoil-style liquid impeller using four (4) low-pitch, curved-section blades. The blades are tapered to produce a narrow, low-pitch blade section at the tip where the velocity is greatest; and a wider, higher-pitch blade section nearer the hub where the blade speed is less. The curvature of the blade also increases from the tip to the hub to improve the pumping efficiency at the slower speeds nearer the hub.

**Advantages:**

- Independent analysis by Computational Fluid Dynamics software has shown that Sharpe's HYF-218 pumps more for less power than other energy-efficient impellers.
- The curved-section blades of the Hyflo are much stronger than flat or bent blades. The complex manufacturing process to build a HYF-218 results in a more efficient and extremely strong impeller, resistant to bending under the stresses from fluid forces.
- For a given horsepower, the HYF-218 impeller will typically be larger in diameter than other designs because of the lower-pitch blades. Since fluid forces are inversely proportional to impeller diameter, the larger Hyflo impeller will be more stable in operation and reduce the loads on the mixer drive. This also results in a larger D/T ratio (impeller diameter/tank diameter), which is preferred for most mixing applications.
- The four-bladed Hyflo is inherently more stable than a three-bladed impeller since the unbalanced fluid forces are more evenly distributed.
- The HYF-218 is available in one-piece, all-welded and split-hub designs. In all configurations the blades are welded to the hub, not bolted like most mass produced impellers. Bolted-blade impellers must have a thick flat section where the blade is bolted to the hub; a relatively weak section further compromised by drilling bolt holes through the blades. The stress concentration created when holes are drilled through a structural member can increase the stresses in that section by as much as 400%, right in the most highly loaded part of the impeller. To overcome this weakness, a bolted-blade impeller must have extremely thick blades to handle these forces. This makes the impeller heavier, which wreaks havoc with shaft harmonics and the overall stability of the mixer design. Sharpe's HYF-218 impellers use a strong, complex blade section where the blades are welded to the hub. The simple curved blade section is sufficient for low-torque applications, while higher-torque impellers use a tubular blade section that is exceptionally strong in torsion and bending, and yet very light to minimize the loads on the mixer drive.
- Bolted blade designs are also available, used mostly for exotic alloys and impellers larger than 144" in diameter. To maintain the strong blade section, no holes are drilled through the blades. Rather, the tubular blade section is welded to an extremely strong fabricated weld plate, which is bolted to a heavy-duty fabricated hub.

More details and photos of the HYF-218 impeller, as well as other Sharpe Mixers impellers and the various hub designs available may be seen at [www.sharpemixers.com](http://www.sharpemixers.com).