

WARMAN®
Centrifugal Slurry Pumps

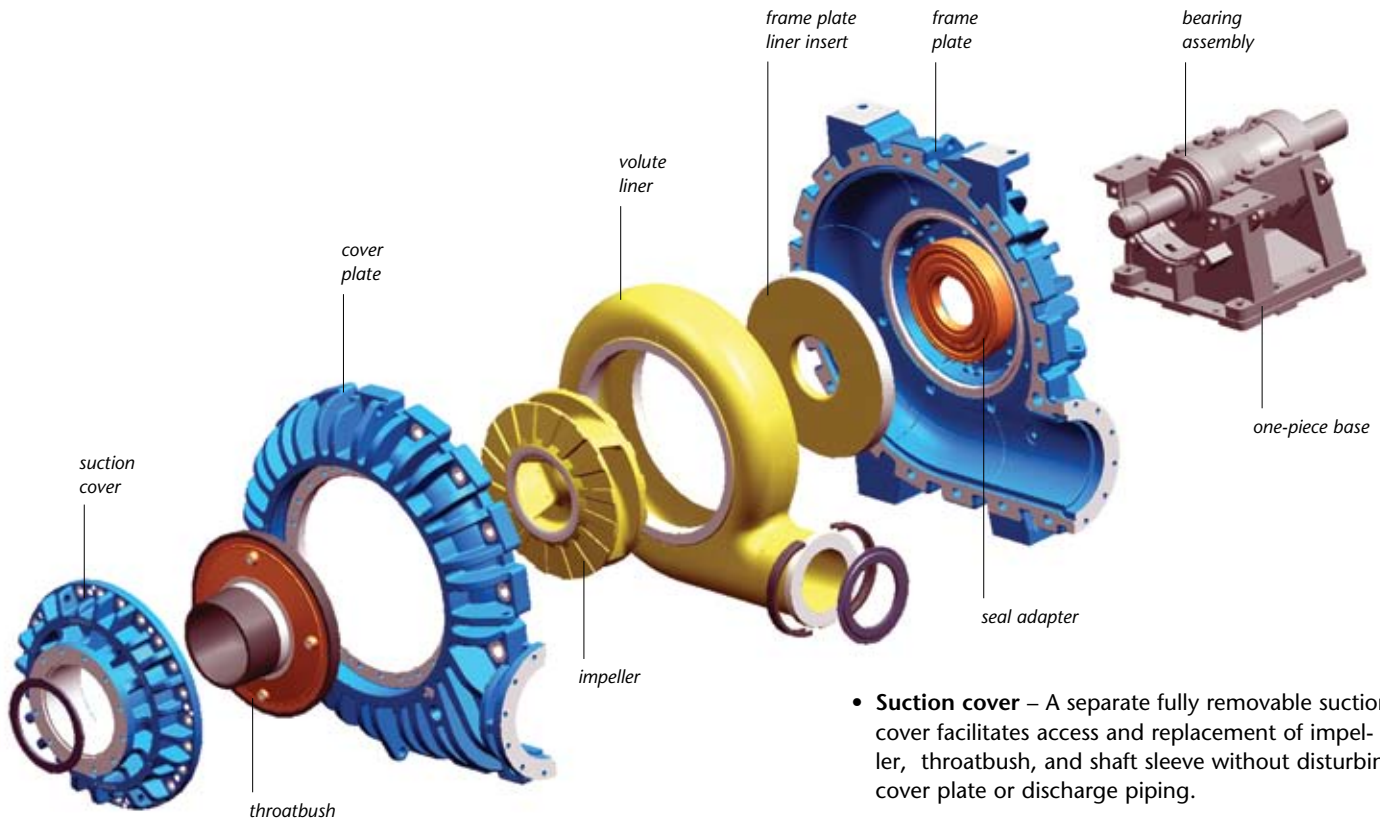
Excellent
Minerals
Solutions



HTP



Drawing from years of proven field experience, the new Warman® HTP range includes numerous ease of maintenance features.



A market leader

The Warman HTP range offers the highest pressure-rated large lined pumps available with priority given to increased safety, wear life and reliability.

Combining advanced, all new hydraulic designs, a wide range of material options, an enhanced Warman mechanical end, ease of maintenance features, and the inherent safety of the proven Warman double wall construction, the HTP range provides the industry's most cost effective pumping solution for demanding high-pressure slurry services.

Warman HTP design features

- **Bearing assembly** – A large diameter shaft with reduced impeller overhang results in minimal deflection in the seal area and decreased load at the bearings. Heavy-duty roller bearings extend mean time between rebuilds. Only six through bolts and two clamping plates are needed to rigidly secure the cartridge housing to the one-piece base.
- **Cover/frame plates** – High strength ductile iron cover and frame plates support the abrasion resistant liner components and provide an industry leading 4000 KPa (580 psi) working pressure. Extensive reinforcing ribs minimize liner deflection, improving wear and performance characteristics. The double wall construction permits full wear utilization of the replaceable liners while still providing inherent safety. Integral frame plate support feet increase allowable piping loads, while minimizing displacement at the stuffing box. Direct bolting of discharge piping to the ductile cover/frame plates minimizes risk of flange failures common on hard iron unlined pumps.
- **Suction cover** – A separate fully removable suction cover facilitates access and replacement of impeller, throatbush, and shaft sleeve without disturbing cover plate or discharge piping.
- **Liners** – Field replaceable liners are bolted to the cover and frame plates for positive attachment and ease of maintenance. Liners are available in a variety of erosion and corrosion resistant metals and elastomers to maximize individual part life and extend preventative maintenance cycles. The hydraulic design of the volute liner has an optimized geometry to provide long wear life across a wide range of flows.
- **Impeller** – Specifically designed hydraulics emphasize solid passing capability, head generation, wear life, and efficiency to deliver overall outstanding performance. Aggressive expelling vanes on the front shroud minimize recirculation and improve throatbush wear life. Optional expelling vanes on the back shroud reduce stuffing box pressure and axial loads to improve bearing life.
- **One-piece base** – A massive one-piece base supports the cartridge bearing assembly and effectively transmits forces to foundation. Base includes an external adjustment mechanism to maintain impeller to throatbush clearance for optimal pump performance.
- **Lifting provisions** – Major components have been designed with lifting points located with respect to the center of gravity and work in conjunction with available part specific lifting tools to safely and easily perform all maintenance functions.

Innovative arrangement for effective shaft sealing for high pressure operation.

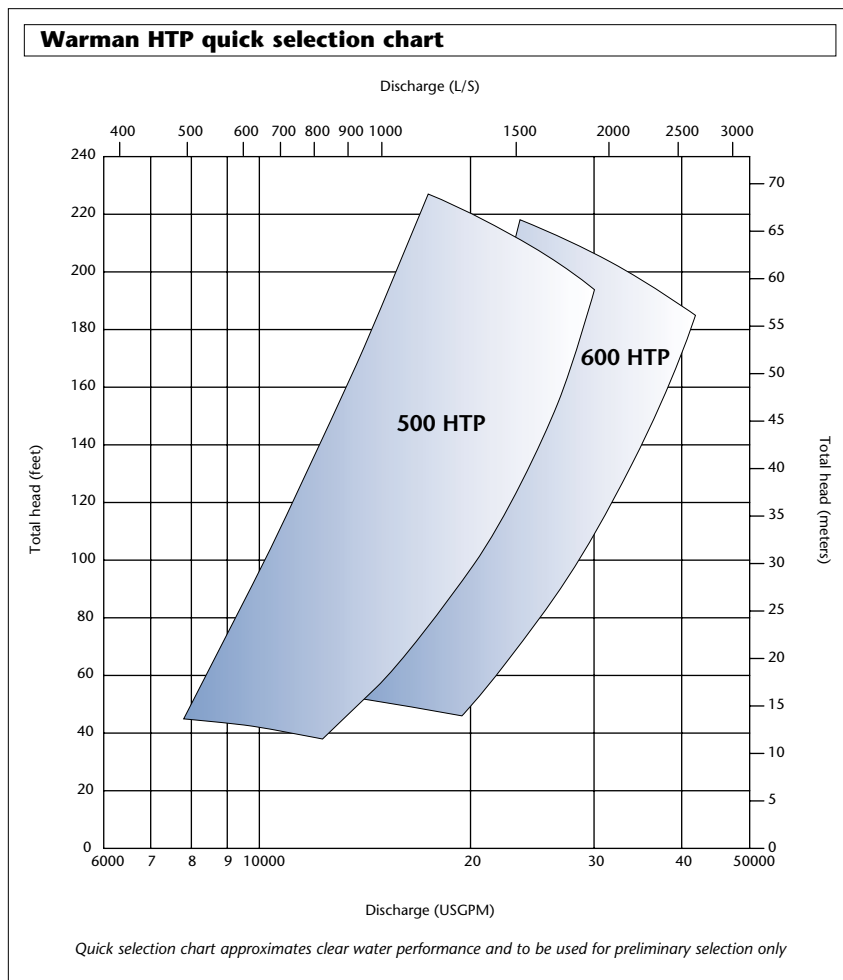
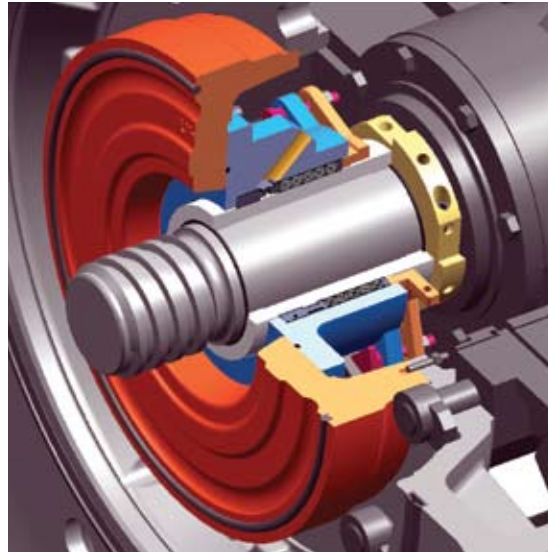
Stuffing box arrangement

Adjustable stuffing box – Allows for centering of stuffing box and lantern restrictor to shaft sleeve. May be adjusted after piping loads have been applied to compensate for associated casing displacement.

Lantern restrictor – Close tolerance design allows for minimum gland water consumption.

Shaft sleeve – Thick cross section further increases shaft stiffness and reduces deflection in seal area extending packing life. Hardened 420 SS or ceramic coated 420 SS with o-ring seals at each end protects the shaft from abrasive or corrosive contaminants.

Release collar – A segmented release collar with threaded jacking holes is provided to allow for easy removal of impeller.



Typical applications

- Hydrotransport
- Matrix transfer
- Tailings
- Booster service



The 600 HTP being prepared for hydraulic testing. The massive casing reinforcing ribs and 102,000 lb bare weight illustrate the robust design and inherent safety.

Warman HTP pump dimensions (inches)

pump size	A*	B	C	D	U	key size	E	F	G	H	J*	K	L	M*	N	wt/lbs
	inches	inches	inches	inches	mm	mm	inches	inches	inches	inches	inches	inches	inches	inches	inches	
500 UHTP	130.71	56.69	54.13	35.43	240	56x32	17.91	55.51	60.00	36.42	57.09	66.93	57.09	31.50	1.57	78800
600 UHTP	135.24	56.69	54.13	35.43	240	56x32	17.91	60.04	66.54	41.54	63.98	71.26	63.00	34.84	1.06	101700

* Dimension includes compression of Warman rubber joint.

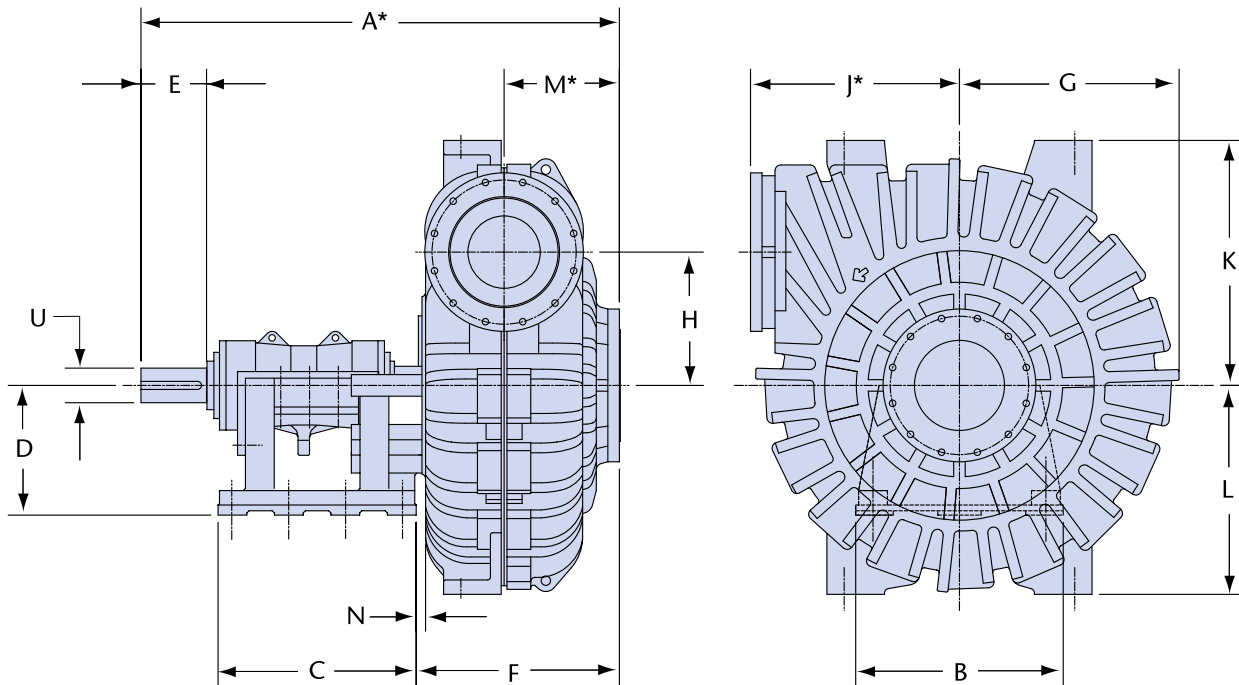
Note: U dimensions and key sizes are in millimeters. All others are in inches. Dimensions are for reference only.

Warman HTP pump dimensions (millimeters)

pump size	A*	B	C	D	U	key size	E	F	G	H	J*	K	L	M*	N	mass/Kg metal
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
500 UHTP	3320	1440	1375	900	240	56x32	455	1410	1524	925	1450	1700	1450	800	40	35745
600 UHTP	3435	1440	1375	900	240	56x32	455	1525	1690	1055	1625	1810	1600	885	27	46130

* Dimension includes compression of Warman rubber joint.

Note: All dimensions in millimeters. Dimensions are for reference only.



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