



WEH

Minerals

**WARMAN® Centrifugal
Slurry Pumps**

Horizontal Pumps

Warman® horizontal slurry pumps deliver superior performance

The Warman® horizontal slurry pump range is one of the world's most comprehensive range of centrifugal slurry pumps for use in mining, chemical and industrial applications. Our horizontal slurry pumps are designed for ultra heavy duty applications such as mill discharge, process plant and tailings, high pressure pipelines, as well as other specialty applications.

Superior wear life, low cost of operation

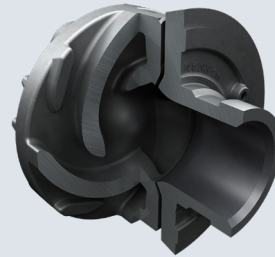
In slurry pumping, processing and control applications - where the cost of ownership often outweighs capital cost as a priority - we help our customers address issues such as longevity, capacity, efficiency of operation, and maintenance.

Product strength lies in the superiority of our advanced hydraulic designs and our high performing wear and corrosion resistant materials. Our leading research and materials scientists, plus our state-of-the-art material production facilities, support our world class products and materials with a focus on superior wear life and low cost of operation.

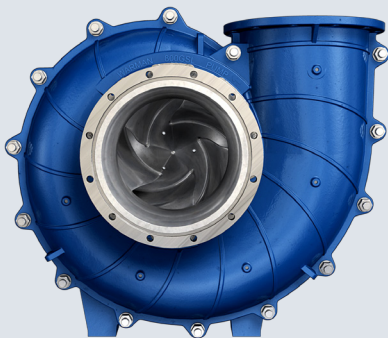
Genuine Warman® spare parts

Only Warman® spare parts provide the superior performance and longer wear life for which Warman® is renowned. Our spare parts are made from superior materials and are backed by technical knowledge and expert service.

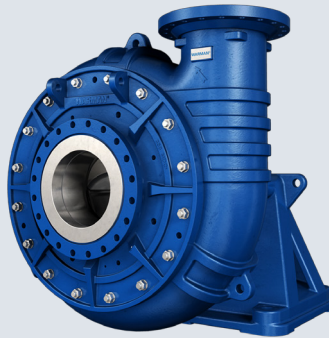
So to ensure your Warman® pump continues to work like a Warman® pump, only use genuine Warman® spare parts.



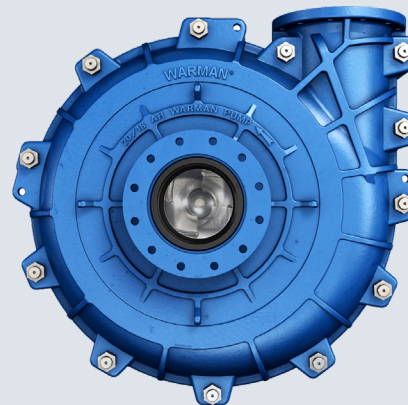
Warman® WRT® impeller and throatbush



Warman® GSL slurry pump



Warman® MDC slurry pump



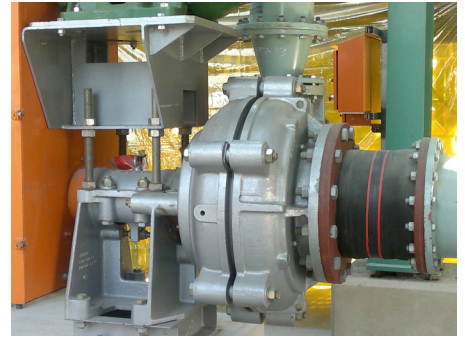
Warman® AH® slurry pump

A diverse range of horizontal slurry pumps designed for the toughest duties

Typical applications and pump models most suitable for these applications are shown below. For special applications not listed, contact your local Weir Minerals representative. Since particle size, concentration and abrasiveness may affect your final selection, please consult Weir Minerals for final pump selection.



Warman® MCU® mill circuit slurry pump



Warman® AHF slurry pump installation

Warman® Horizontal Pump Models

	AH® page 4	WBH® page 5	MCR®, MCR-M, MCU® page 6	HTP page 7	AHP, AHPP page 8	XU page 9	HH, H, HRM page 10	L page 11	AHF, LF, MF page 12	GSL page 13	WGR™ page 14	MDC page 15
wet crushers	■	■	■									
SAG mill discharge	■	■	■									
ball mill discharge	■	■	■				■	■				
rod mill discharge	■	■	■				■	■				
Ni acid slurry	■	■	■					■				
coarse sand	■	■	■	■	■	■	■	■			■	■
coarse tailings	■	■	■	■	■	■	■	■				■
phosphate matrix	■	■	■	■	■	■		■				■
minerals concentrate	■	■	■	■	■	■	■	■	■			
heavy media	■	■	■			■	■	■				■
dredging	■	■	■			■						■
bottom/fly ash, lime grinding	■	■	■	■	■	■	■	■				
oil sands	■	■	■	■	■	■	■	■	■		■	
mineral sands	■	■	■	■	■	■	■	■	■		■	■
fine tailings	■	■		■	■	■	■	■	■			
phosphoric acid	■	■		■	■		■	■				
coal	■	■	■	■	■	■	■	■				■
flotation	■	■				■	■	■	■			
sugar beets						■						
process chemical	■	■						■				
pulp and paper	■	■				■		■				
FGD	■	■				■		■		■		
waste water						■	■	■		■		

Warman® AH® Slurry Pump

Technical Specifications

Design Features

- Heavy duty construction with through-bolt design provides ease of maintenance and minimal downtime
- Ductile iron fully lined casing provides durability, strength, safety and long service life
- Large diameter, slow turning, high efficiency impellers designed to achieve maximum wear life and low operating costs
- Large, open internal passages designed to reduce internal velocities, maximise wear life and lower operating costs
- Thick elastomer or alloy bolt-in liners provide superior corrosion resistance plus offer ease of liner change-out and interchangeability to reduce overall maintenance costs and maximise wear life
- Minimal shaft/impeller overhang reduces shaft deflection and increases packing life
- Cartridge-style bearing assembly allows for maintenance in a clean environment without removal of the pump, resulting in reliable operation and prolonged bearing life
- Grease or oil lubrication bearing assembly options offer ease of maintenance and reduced downtime
- Now featuring Warman® WRT® throatbush and impeller combination designed to enhance efficiency and improve wear performance

Specifications

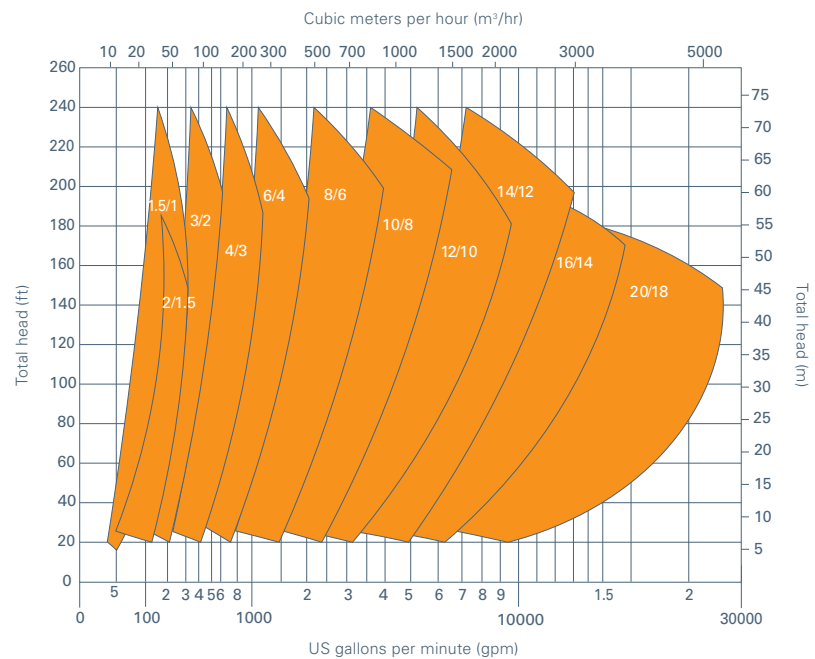
- Size range (discharge): 1" to 18" (25 mm to 450 mm)
- Capacities to: 22,000 gpm (5,000 m³/hr)
- Heads to: 240 ft (73 m)
- Pressures to: 300 psi (2,020 kPa)

Heavy duty pump range for continuous pumping of highly abrasive/dense slurries in processes from cyclone feed to regrind, flotation and tailings

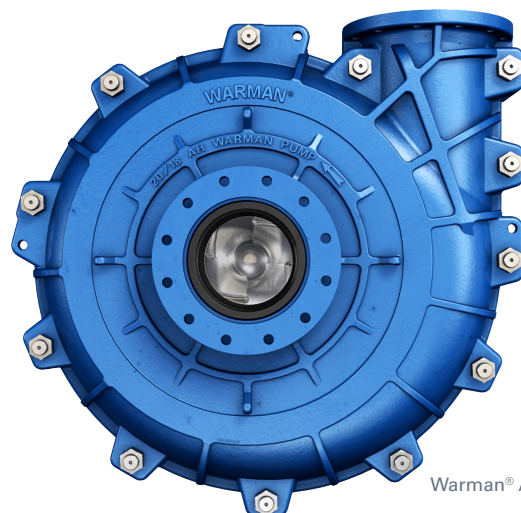
Since the introduction of the first AH® pump model more than half a century ago, the operational feedback and challenges faced by our customers and engineers have given us the opportunity to make innovative design upgrades and improvements over the years. Considering important issues including wear life, component arrangement, material composition and slurry abrasiveness, our slurry pump range continues to increase and our designs continue to evolve.

Warman® AH® pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® AH® slurry pump

Warman® WBH® Slurry Pump

Technical Specifications

Design Features

- Alignment features throughout ensure all components are in exact alignment along the pump shaft from drive coupling to the throatbush
- Seal chamber is aligned accurately with the shaft
- External ribs assist to transfer heat and keep the bearings cool
- Large robust bearings that can run at high speed
- Impeller release collar in larger sized models to ease impeller removal
- One point adjustable throatbush for manual, motorised or automatic throatbush adjustment while the pump is running
- Rigid overhung shaft with short overhang and large diameter shaft for minimum deflection, and improved reliability of mechanical seals
- Unique liner fixing method reduces assembly time — no fine threads so threads cannot become blocked and require re-tapping
- Improved assembly and disassembly procedures
- Throatbush adjustment allows the impeller to throatbush gap to be minimised at all times; during assembly and when installed in service either running or stopped
- Now featuring Warman® WRT® throatbush and impeller combination designed to enhance efficiency and improve wear performance

Specifications

- Size range (discharge): 1" to 12" (25 mm to 300 mm)
- Capacities to: 12,000 gpm (2,725 m³/hr)
- Heads to: 250 ft (76 m)
- Pressures to: 300 psi (2,020 kPa)

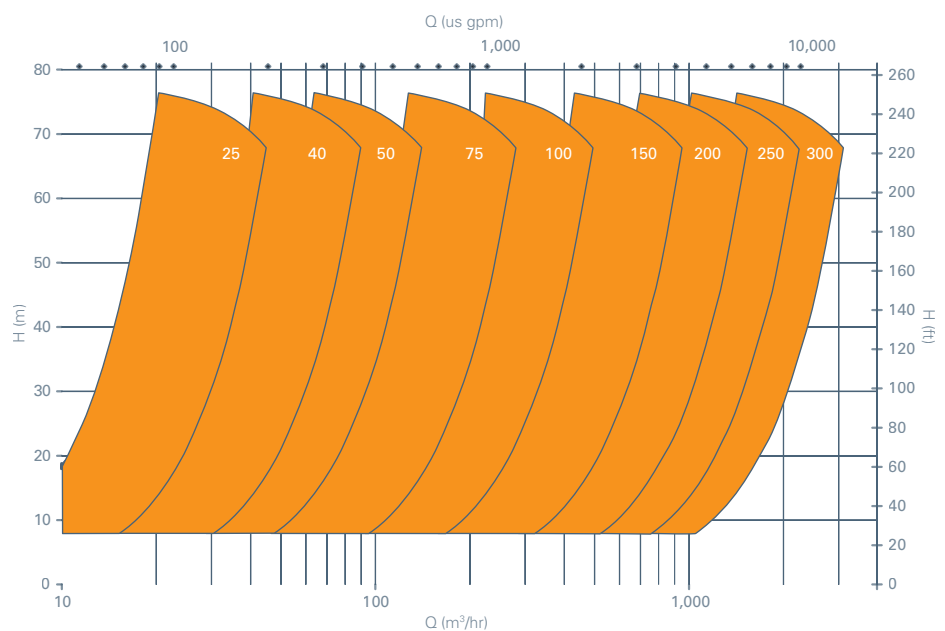
Heavy duty slurry pumps for a range of mill duties, from dirty water to the most difficult water flushed crusher services

The Warman® WBH® slurry pump range offers more than 20 enhancements to the already state-of-the-art Warman® AH® slurry pumping technology, including a fully adjustable and rotatable throatbush to more evenly spread the wear and maintain the pump in tip-top performance for longer periods.

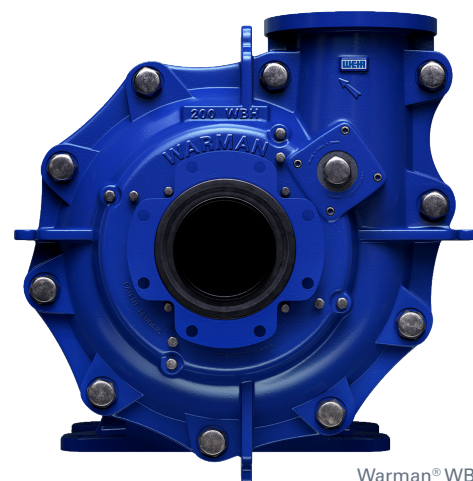
Boasting a revolutionary one-piece frame for correct alignment of bearings, seal and impeller to front liner; as well as easier access for impeller adjustments, the WBH® pump was built with enhanced efficiency and operational savings in mind.

Warman® WBH® pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® WBH® slurry pump

Warman® MCR®/MCR-M/MCU® Mill Circuit Slurry Pumps

Technical Specifications

Design Features

- Thick elastomer liners with alloy impellers provide superior wear life on the most difficult cyclone feed and screen feed services
- Adjustable side liner maintains efficiency and extends service life (adjustable while running)
- Large diameter, slow turning, high efficiency impellers designed to achieve maximum wear life and low operating costs
- Large, open internal passages designed to reduce internal velocities, maximise wear life and lower operating costs
- Unique, easily centered stuffing box reduces gland seal maintenance and extends packing life
- Quick wet end exchange minimises downtime
- Interchangeable elastomer and alloy bolt-in liner offer ease of liner change-out and reduced maintenance costs
- Ductile iron fully lined outer casing provides durability, strength, safety, and long service life
- Heavy duty construction with through-bolt design provides ease of maintenance and minimal downtime
- Minimal shaft/impeller overhang reduces shaft deflection and increases packing life
- Cartridge-style bearing assembly allows for maintenance in a clean environment without removal of the pump, resulting in reliable operation and prolonged bearing life

Specifications

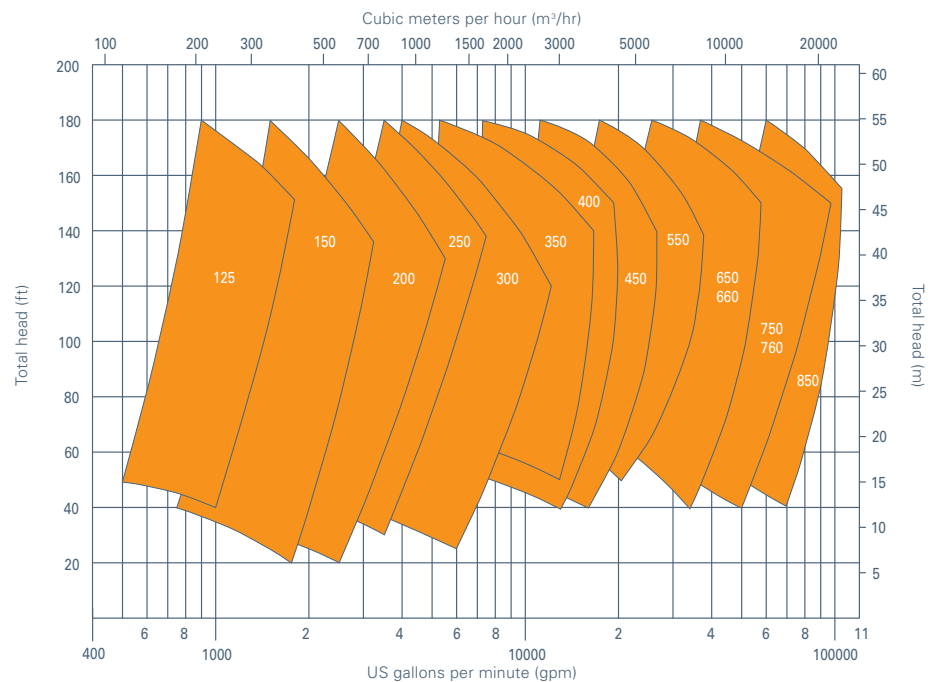
- Size range (discharge): 5" to 34" (125 mm to 850 mm)
- Capacities to: 100,000 gpm (22,700 m³/hr)
- Heads to: 180 ft (55 m)
- Pressures to: 130 psi (900 kPa)

Severe duty lined pump designed for the most aggressive duties and provide excellent wear life and reliability

The Warman® mill circuit pump series easily manages large size particles in dense abrasive slurries and offers the right combination of ruggedness, durability, hydraulics and materials. From the most difficult mill discharge to water flushed crusher, the Warman® mill circuit pump series is the best choice.

Warman® MC pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® MCR® mill circuit pump

Warman® HTP Slurry Pump

Technical Specifications

Design Features

- Alignment features throughout ensure all components are in exact alignment along the pump shaft from drive coupling to the throatbush
- Specifically designed hydraulics emphasise solid passing capability, head generation, wear life, and efficiency to deliver overall outstanding performance
- Multi-stage high pressure operation to 580 psi (4,000 kPa)
- Major components designed with lifting points located with respect to center of gravity and specialised lifting tools enable rapid pump maintenance and turnarounds
- Ductile iron fully lined casing provides durability, strength, safety, and long service life
- Separate, fully removable suction cover facilitates access and replacement of impeller, throatbush, and shaft sleeve without disturbing coverplate or discharge piping
- Unique, easily centered stuffing box reduces gland seal maintenance and extends packing life
- Grease or oil lubrication bearing assembly options offer ease of maintenance and reduced downtime
- Cartridge-style bearing assembly allows for maintenance in a clean environment without removal of the pump, resulting in reliable operation and prolonged bearing life
- Liner design reduces operating costs by allowing replacement of individual components

Specifications

- Range (discharge): 20" to 24" (500 mm to 600 mm)
- Capacities to: 40,000 gpm (9100 m³/hr)
- Heads to: 220 ft (67 m)
- Pressures to: 580 psi (4,000 kPa)

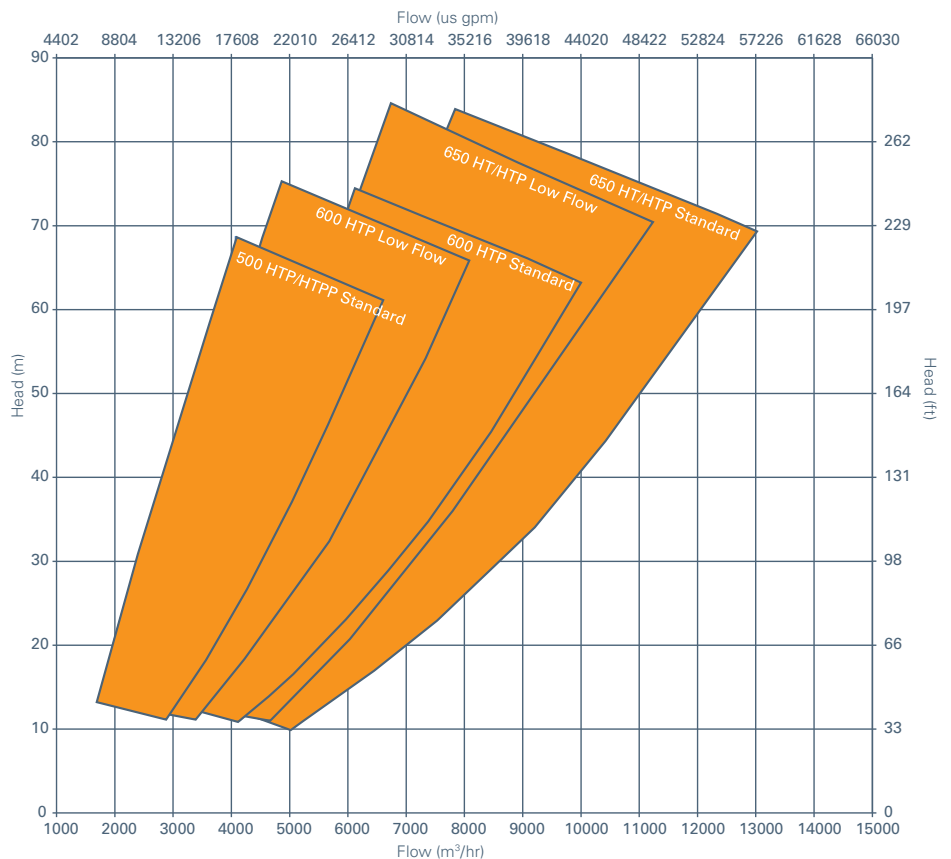
Fully lined pump for severe multi-stage applications which offers numerous ease of maintenance features

The Warman® HTP pump range represents the highest pressure-rated, large, lined pumps available from Weir Minerals with priority given to increased safety, wear life and reliability.

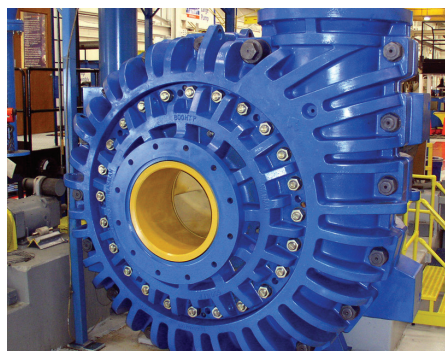
The HTP pump is rapidly establishing itself as the dominant and preferred pump in the Canadian oil sands, providing an efficient and durable solution to long distance hydro-transport and tailings duties.

Warman® HTP pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® HTP slurry pump

Warman® AHP/AHPP Slurry Pumps

Technical Specifications

Design Features

- Multi-stage high pressure operation to 1000 psi (6,900 kPa)
- Heavy duty construction with through-bolt design provides ease of maintenance and minimal downtime
- Ductile iron fully lined casing provides durability, strength, safety, and long service life
- Large diameter, slow turning, high efficiency impellers designed to achieve maximum wear life and low operating costs
- Large, open internal passages reduce internal velocities, maximise wear life and lower operating costs
- Thick elastomer or alloy bolt-in liners provide superior corrosion resistance plus offer ease of liner change-out and interchangeability to reduce overall maintenance costs and maximise wear life
- Minimal shaft/impeller overhang reduces shaft deflection and increases packing life
- Grease or oil lubricated bearing options offer ease of maintenance and reduced downtime
- Cartridge-style bearing assembly allows for maintenance in a clean environment without removal of the pump, resulting in reliable operation and prolonged bearing life
- Now featuring Warman® WRT® throatbush and impeller combination designed to enhance efficiency and improve wear performance

Specifications

- Size range (discharge): 4" to 18" (100 mm to 450 mm)
- Capacities to: 22,000 gpm (5,000 m³/hr)
- Heads to: 240 ft (73 m)
- Pressures to: 1,000 psi (6,900 kPa)

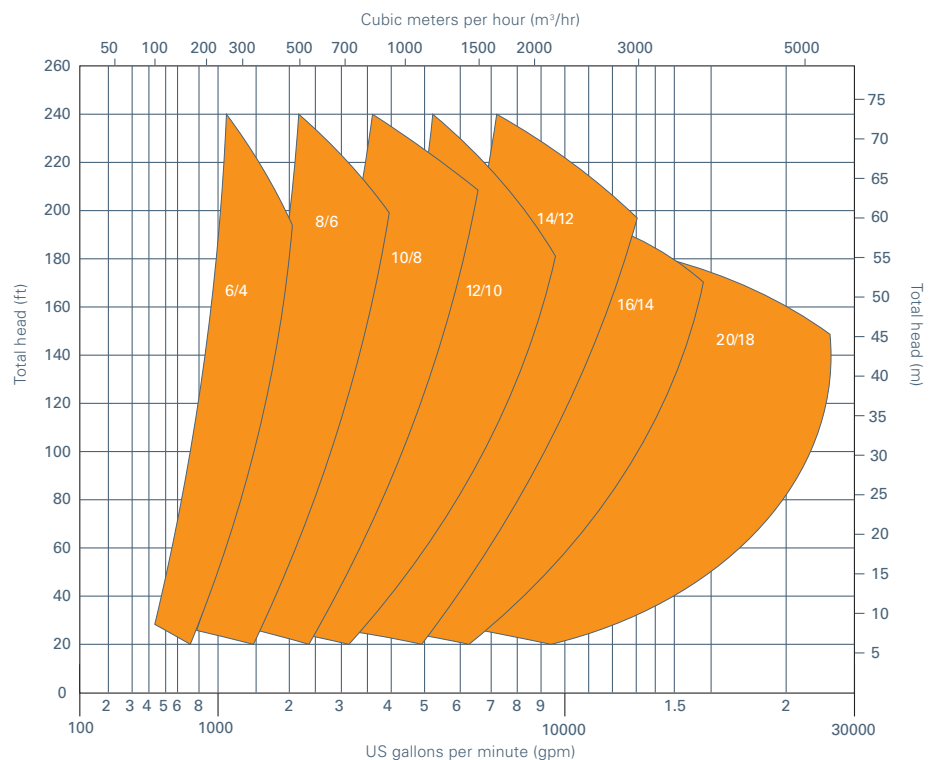
Fully lined high pressure pump for multi-stage applications

Based upon the popular Warman® AH® series pump, the Warman® AHP/AHPP series high pressure pump offers the same features and benefits as the AH® pump, including identical hydraulics at up to 1,000 psi.

The high pressure capability allows the user to operate several pumps in series all consolidated into one pump house, saving the expense of supporting systems like gland water supply systems in an alternative design of several pump houses along the transport line.

Warman® AHP/AHPP pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® AHP slurry pump installation

Warman® XU Slurry Pump

Technical Specifications

Design Features

- Configured volute casing distributes material at point of maximum wear to extend life when pumping large solids
- Low V cutwater design reduces slurry velocities and wear in the casing, allowing operation over a wide range of flows
- Five-vane, thick sectioned, high efficiency impellers offer maximum wear life and low operating costs
- Impeller wear ring profile reduces wear on impeller and throatbush area by restricting recirculation
- Unique “tear drop” shaped frame plate liner insert ensures any localised side wall wear occurs on liner and not on casing
- Wet end components constructed from abrasion resistant solid chrome iron, providing excellent wear life in most slurry applications
- Multiple shaft sealing configurations are available to best suit application requirements and are easily converted from one to another without expensive mechanical end changes
- Compact cartridge-style bearing assemblies offer reduced shaft/impeller overhang and minimise shaft deflection resulting in increased packing life and the ability to accept a range of mechanical seals
- Exceptional dry gland sealing performance due to improved expeller/impeller ratios reduces flush water requirements and lowers operating costs

Specifications

- Size range (discharge): 3" to 12" (75 mm to 300 mm)
- Capacities to: 10,000 gpm (2,275 m³/hr)
- Heads to: 240 ft (73 m)
- Pressures to: 150 psi (1,035 kPa)

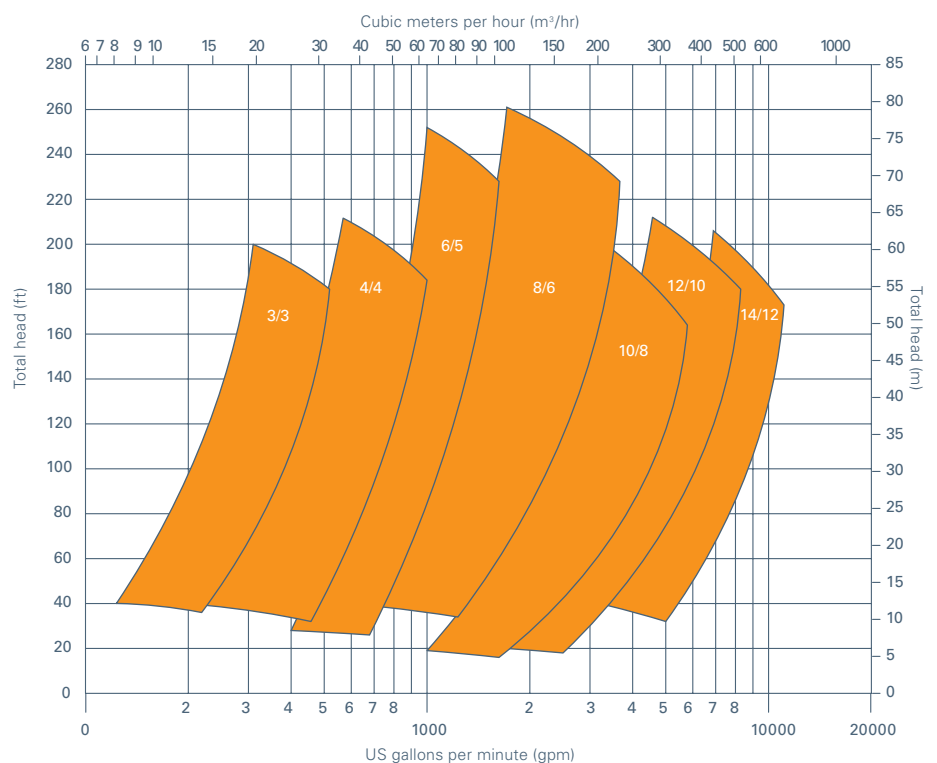
Heavy duty slurry pump

The Warman® XU pump range is the most recently released all-metal unlined pump range from Weir Minerals that integrates newly designed wet end wear components with the long proven Warman® mechanical end. Casing, impeller and liner have been optimised to provide low wear while delivering outstanding efficiency over a wide range of medium to heavy slurry applications such as coal, sand and gravel.

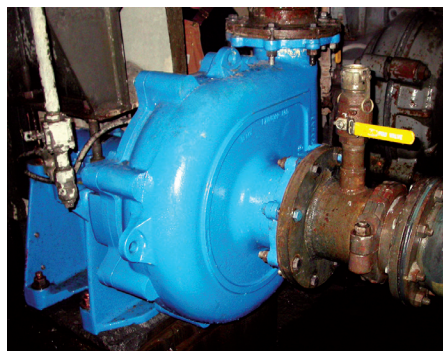
With many unique features, the Warman® XU pump is easy to maintain and is designed to offer the lowest cost of ownership in its class.

Warman® XU pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® XU slurry pump installation

Warman® HH/H/HRM Slurry Pumps

Technical Specifications

Design Features

- Ductile iron fully lined casing provides durability, strength and long service life
- Multi-stage high pressure operation to 750 psi (5,170 kPa)
- Heavy duty construction with through-bolt design provides ease of maintenance and minimal downtime
- Large diameter, slow turning, high efficiency impellers designed to achieve maximum wear life and low operating costs
- Large, open internal passages designed to maximise wear life and lower operating costs
- Thick elastomer and alloy liners provide superior corrosion resistance and maximum wear life
- Full flush gland, low flow, and dry running centrifugal seals reduce flush water usage minimising pump operating costs

Specifications

- Size range (discharge): 1.5" to 6" (25 mm to 150 mm)
- Capacities to: 4,500 gpm (1,025 m³/hr)
- Heads to: 325 ft (100 m)
- Pressures to: 750 psi (5,170 kPa)

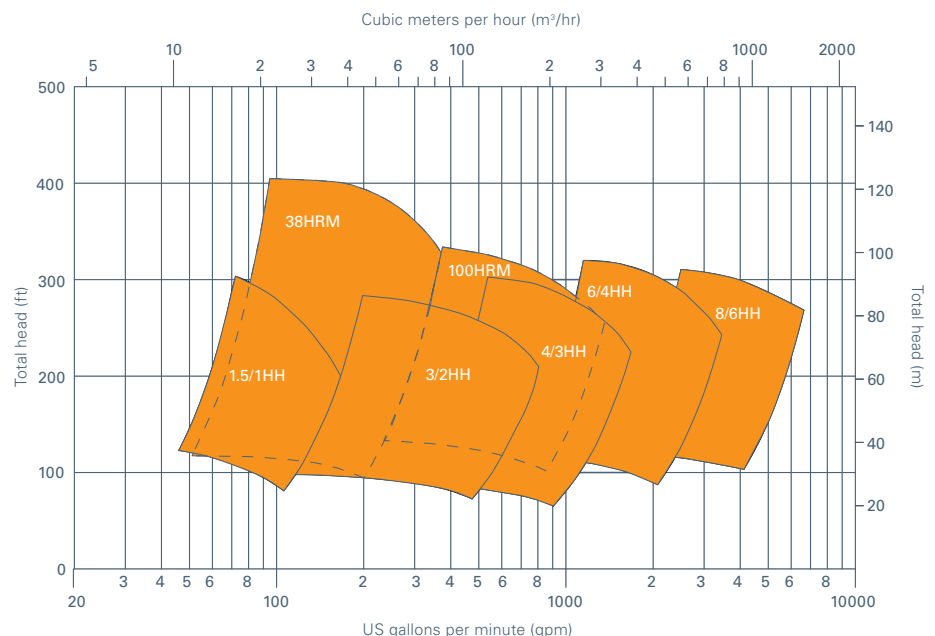
Heavy duty high head lined slurry pump

The Warman® HH/H/HRM pump lines were designed to produce high heads per stage at high pressures.

Commonly used for long distance transport lines, the Warman® HH/H/HRM pump lines can often satisfy application duties with a single pump where others require multiple pumps in series.

Warman® HH/H/HRM pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® HRM slurry pump installation

Warman® L Slurry Pump

Technical Specifications

Design Features

- Heavy duty construction with through-bolt design provides ease of maintenance and minimal downtime
- Ductile iron fully lined casing provides durability, strength, safety, and long service life
- Large diameter, slow turning, high efficiency impellers designed to achieve maximum wear life and low operating costs
- Large, open internal passages designed to reduce internal velocities, maximise wear life and lower operating costs
- Thick elastomer or alloy bolt-in liners provide superior corrosion resistance plus offer ease of liner change-out and interchangeability to reduce overall maintenance costs and maximise wear life
- Designed for rugged duties while offering excellent efficiencies
- Minimal shaft/impeller overhang reduces shaft deflection and increases packing life
- Cartridge-style bearing assembly allows for maintenance in a clean environment without removal of the pump, resulting in reliable operation and prolonged bearing life
- Grease or oil lubrication bearing assembly options offer ease of maintenance and reduced downtime
- Full flush gland, low flow, and dry running centrifugal seals reduce flush water usage minimising pump operating costs
- Mechanical seals reduce flush water usage, minimising pump operating costs

Specifications

- Size range (discharge):
.75" to 26" (20 mm to 650 mm)
- Capacities to:
45,000 gpm (10,225 m³/hr)
- Heads to: 180 ft (55 m)
- Pressures to: 250 psi (1,725 kPa)

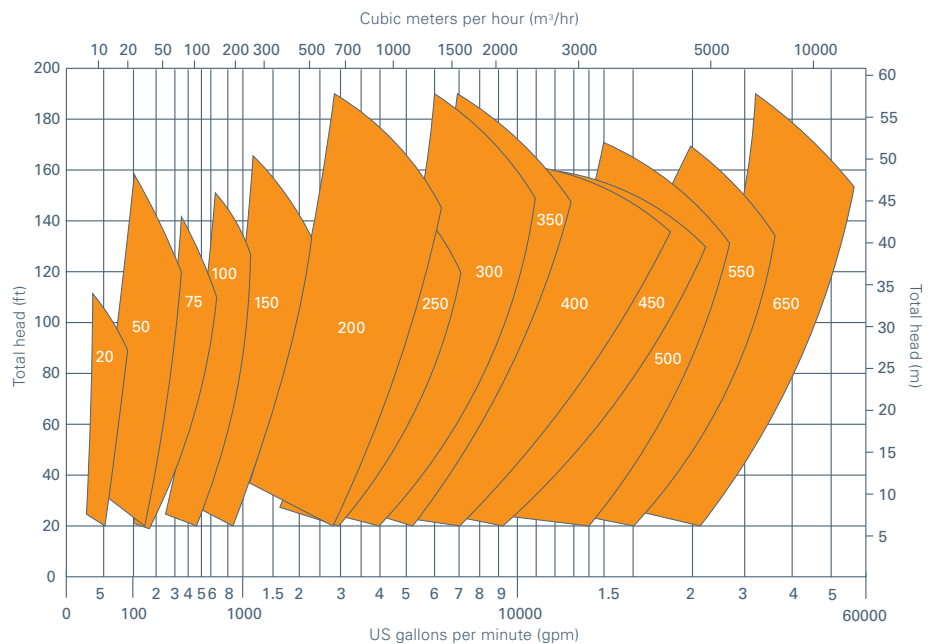
Rugged heavy duty slurry pump for medium to lower heads

The Warman® L series pumps incorporate the same design points as the Warman® AH® pump plus higher efficiency impellers at an attractive initial cost.

Designed for rugged duties while offering higher efficiencies, the L series is a combination of the proven AH® pump's unique features. The L series provides the widest range of hydraulics from the ¾" to a 26" discharge pumps. The ¾" is perfect for the laboratory or in demonstration plants.

Warman® L pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® L slurry pump installation

Warman® AHF/LF/MF Slurry Pumps

Technical Specifications

Design Features

- Heavy duty construction with through-bolt design provides ease of maintenance and minimal downtime
- Ductile iron fully lined casing provides durability, strength, safety, and long service life
- Large diameter, slow turning, high efficiency impellers designed to achieve maximum wear life and low operating costs
- Large, open internal passages designed to reduce internal velocities, maximise wear life and lower operating costs
- Unique impeller design for most difficult froth applications
- Thick elastomer or alloy bolt-in liners provide superior corrosion resistance plus offer ease of liner change-out and interchangeability to reduce overall maintenance costs and maximise wear life
- Minimal shaft/impeller overhang reduces shaft deflection and increases packing life
- Cartridge-style bearing assembly allows for maintenance in a clean environment without removal of the pump, resulting in reliable operation and prolonged bearing life
- Standard Warman® AH® pump and Warman® LF pump can be converted by replacing cover plate, throatbush and impeller
- Full flush, low flow or dry running centrifugal seals minimise water usage and operating costs

Specifications

- Size range (discharge): 2" to 22" (50 mm to 550 mm)
- Capacities to: 20,000 gpm (4,550 m³/hr)
- Heads to: 120 ft (37 m)
- Pressures to: 500 psi (3,445 kPa)

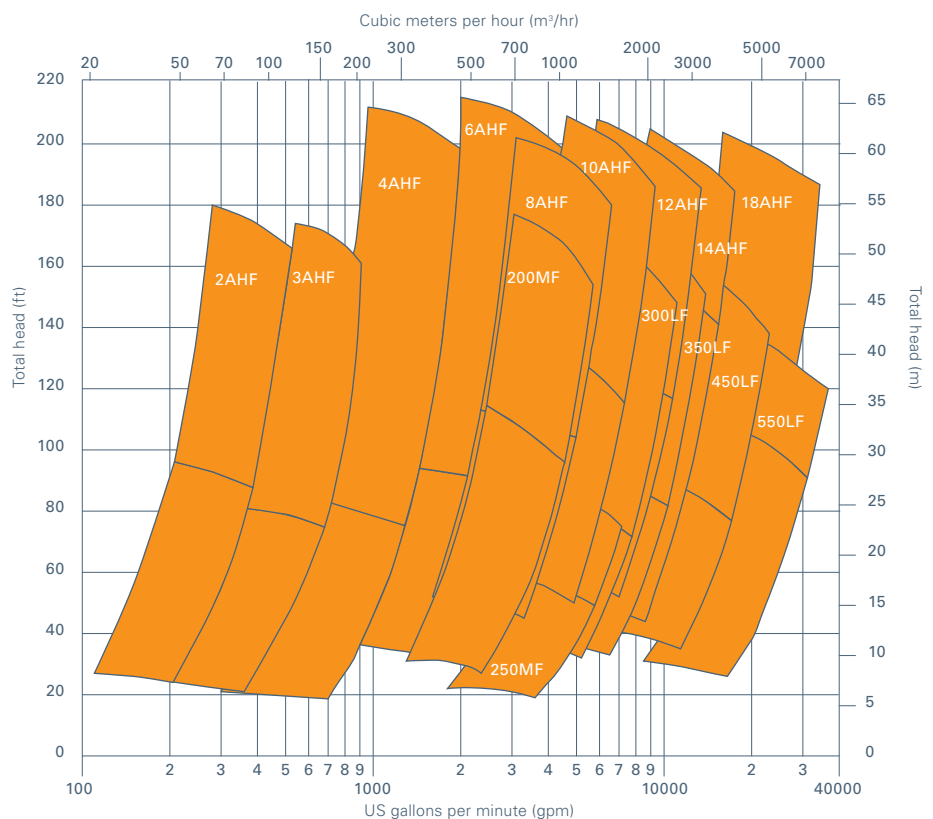
Heavy duty froth pump for tough flotation froth duties

Designed to handle heavy froth, the Warman® horizontal froth pump has a unique inlet and impeller design that is very successful where others fail.

A large oversized inlet with a unique impeller inducer blade handles heavy froth and higher viscosity dense slurries with ease. The Warman® AHF/LF/MF line of horizontal froth pumps has proven valuable for very dense slurries where viscosity starts to become a pumping issue for the standard slurry pump.

Warman® AHF/LF/MF pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® AHF slurry pump installation

Warman® GSL/GSLHD Slurry Pumps

Technical Specifications

Design Features

- New standard design severe heavy duty (HD) impeller, throatbush and suction cover combination
- Wear materials are available in elastomer, high chrome alloys and SiCP (Silicone Carbide Polymer). Most wear parts are designed to integrate between material types and with existing parts to create the lowest total ownership cost
- Increased efficiency at maximum flow for excellent scrubbing performance
- Cone to cone fit, designed to minimise recirculation and wear between the impeller and throatbush
- Maximised component cross section designed to increase wear life
- Externally axially and radially adjustable throatbush, eliminating the need to reposition the bearing assembly to maintain impeller to throatbush clearances
- Retrofits with existing pump designs

Specifications

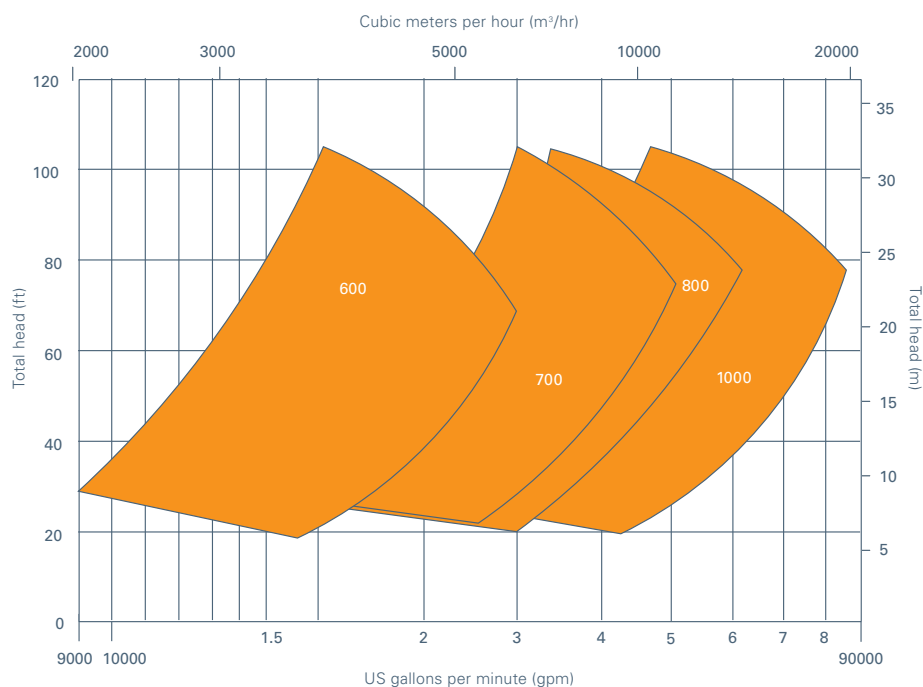
- Size range (discharge): 24" to 40" (600 mm to 1000 mm)
- Capacities to: 80,000 gpm (18,180 m³/hr)
- Heads to: 105 ft (32 m)
- Pressures to: 125 psi (860 kPa)

Absorber recycle pump

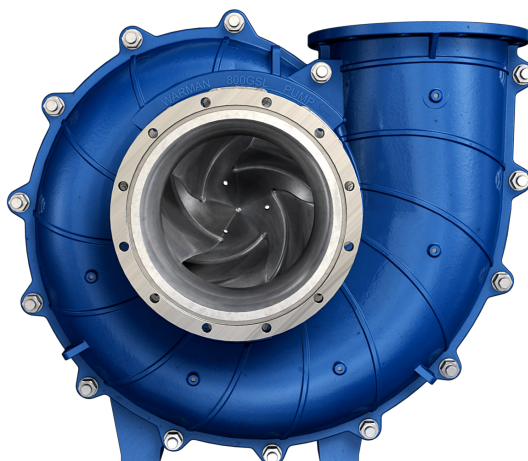
Since the introduction of the first Flue Gas Desulfurization (FGD) systems in 1970, Weir Minerals has supplied more than 4,000 specially designed FGD pumps worldwide. With an ever evolving industry, Weir Minerals prides itself on continual product improvements and has researched and designed the next generation of the Warman® GSL pump series to meet these needs and provide customers with the ultimate in wear and corrosion resistant pumps.

Warman® GSL/GSLHD pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® GSL slurry pump

Warman® WGR™ Slurry Pump

Technical Specifications

Design Features

- Our patented Warman® WRT® throatbush and impeller designs minimise turbulence and cavitation for extended wear life and maintenance performance
- Impeller and gland assembly can be replaced through the suction side of the pump
- Replaceable Linatex® rubber liners provide superior abrasion resistant performance in fine slurry applications
- Patented flexible discharge adaptor is the same size as the inlet and positioned so the pump can be fully serviced without removing the discharge piping
- Loose swivel flanges are offered to match mating pipe orientations
- Adjustable impeller with release collar can be adjusted externally to achieve optimum clearance between the impeller and the throatbush for the full working life of the wear components
- Newly designed larger impeller allows for lower speeds which results in longer wear life
- Incorporation of the removable suction cover in the cover plate means that the throatbush can be replaced without incurring the cost of removal of the cover plate
- New design gives increased durability, resulting in lower overall lifetime costs

Specifications

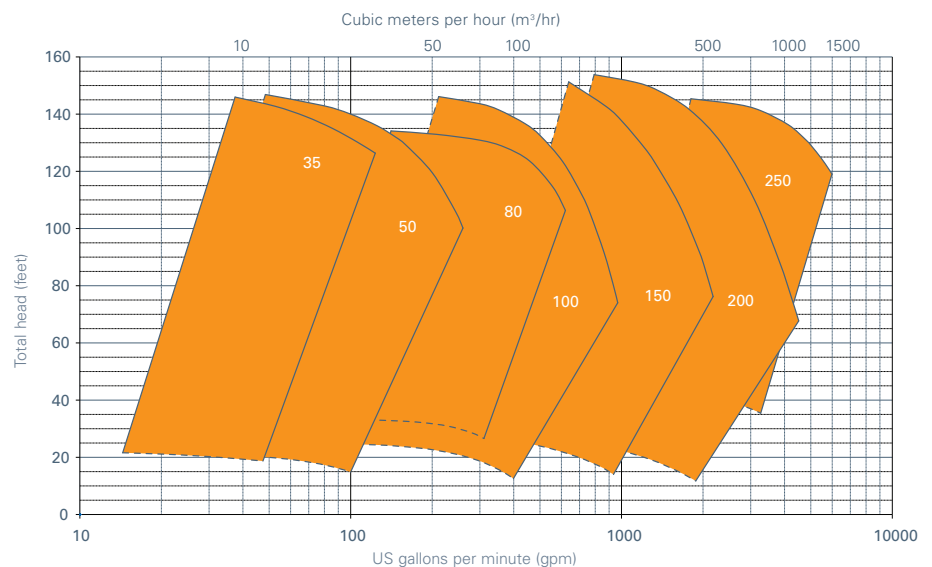
- Size range (discharge): 1.5" to 10" (35 mm to 250 mm)
- Capacities to: 6,000 gpm (1363 m³/hr)
- Heads to: 150 ft (46 m)
- Pressures to: 130 psi (896 kPa)

Medium duty slurry pumps for sand and aggregate applications

The streamlined design allows easy access to all parts of the pump and the internal components, making servicing easier and reducing downtime. When this is combined with the long service life of our parts and the proven wear life of our proprietary Linatex® premium rubber, Weir Minerals provides pumping solutions that are designed to achieve the lowest total cost of ownership in operation.

Warman® WGR™ pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Warman® WGR™ slurry pump installation

Warman® MDC Slurry Pump

Technical Specifications

Design Features

- Simple, low cost wet end bolts on to existing Warman® mechanical ends
- Centrifugal seal design eliminates the need for costly gland seal water systems
- 3-vane impeller design with reverse layover vanes designed to pass very large solids and provide extended wear life
- Unlined pump casing design allows for quick pump maintenance
- Factory designed lift tools provide a safe means for pump assembly and disassembly
- All process wetted parts constructed from Ultrachrome® wear resistant material to maximise part wear life
- Half-clamp intake and discharge flanges reduce piping alignment issues

Specifications

- Size range (discharge): 8" to 12" (200 mm to 300 mm)
- Capacities to: 13,000 GPM (2,950 m³/hr)
- Heads to: 200 ft (61 m)
- Pressures to: 130 psi (896 kPa)



Warman® MDC slurry pump

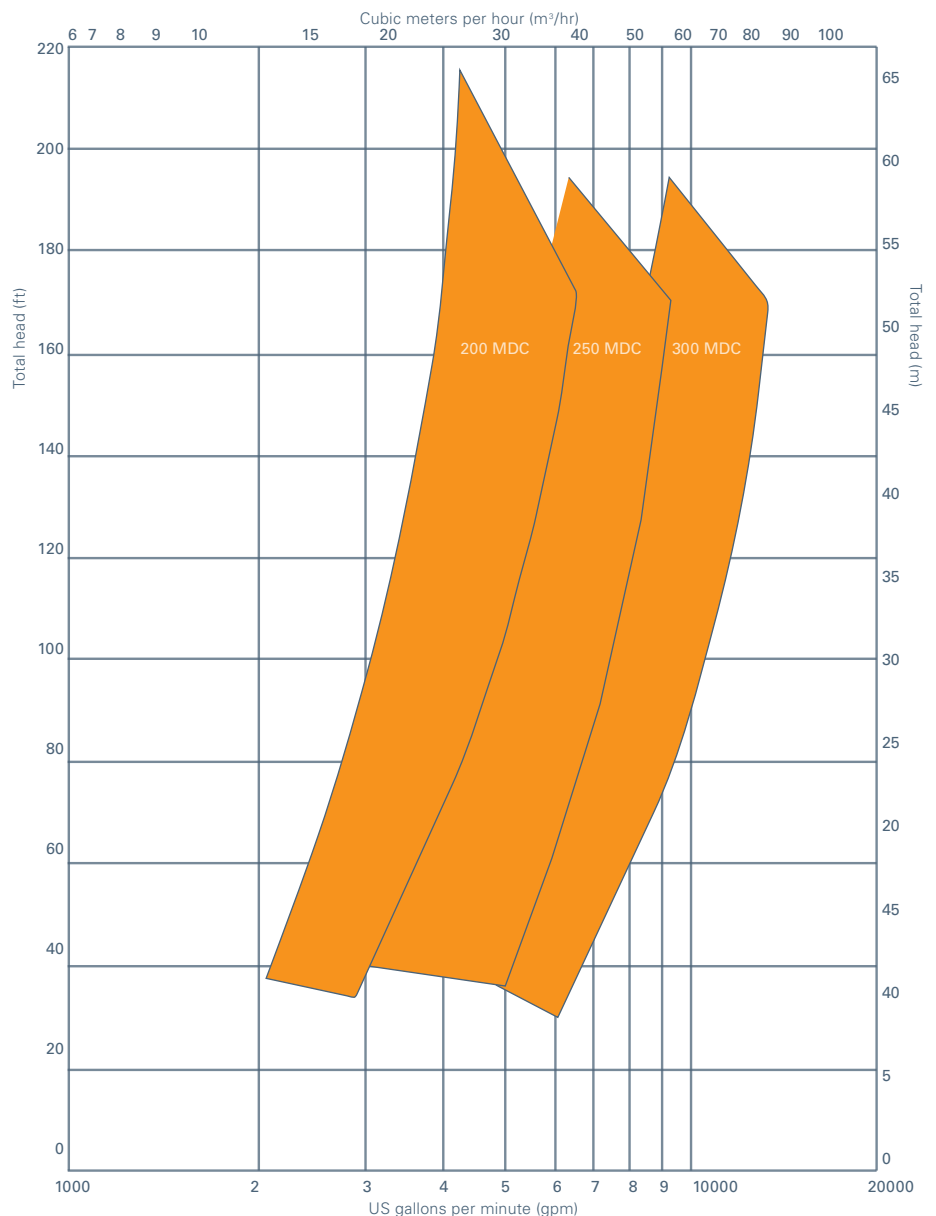
Designed for your most difficult coal processing applications

The new Warman® MDC pump, constructed of Ultrachrome® wear resistant metal, is designed for heavy duty slurry applications containing very large solid particles.

The unlined MDC pump wet end mounts directly on the Warman® mechanical end to simplify field upgrades. Shaft sealing options include a standard packed gland and centrifugal seal designed with a large diameter expeller to provide waterless sealing for a wide range of operating conditions.

Warman® MDC pumps – quick selection guide

Approximate clear water performance - to be used for preliminary selection only.



Note: * Product specifications are subject to regional variations.



Minerals

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