

WEH

Minerals

**WARMAN® Centrifugal
Slurry Pumps**

SHW Submersible
Slurry Pump



The Warman® SHW submersible slurry pump offers exceptional wear life and reliability, with low ownership costs.

Built to last

The design process of the Warman® SHW pump makes extensive use of finite element stress analysis and state-of-the-art Computational Fluid Dynamics (CFD) modeling to achieve rugged, dependable solids handling capability at low cost.

The heavy duty, all-chrome wet end, powered by a motor designed and built by Weir Minerals for the most demanding applications, makes the Warman® SHW pump one of the most dependable, long-lasting submersible pumps in the industrial market.



Warman® SHW submersible pump in service at a gold mine.

The Warman® SHW pump has a special combination of features that make it the submersible slurry pump of choice.

Warman® SHW pump design features

Temperature sensor

Winding thermostats protect the motor by sending a signal to a relay supplied to the customer that can be used for sounding an alarm or shutting down the unit if internal temperatures exceed safe operating limits.

Moisture detector

A twin electrode system provides double protection by detecting moisture intrusion in both the motor housing and the mechanical seal chamber.

Mechanical seal

The Warman® SHW pump incorporates a balanced double-seal arrangement in which both sets of seal springs are enclosed in the oil reservoir. Silicon carbide seal faces are subjected to submergence pressure only which greatly extend wear life of the pump. Heavy-duty thrust bearings and shaft are designed to eliminate shaft deflection problems in high density applications.

Heavy-duty water end

Standard high chrome iron construction coupled with heavy section thickness provides the ultimate in protection against abrasive wear in heavy slurries.

Easy maintenance access

T-bolt construction allows rapid disassembly of the pump end for maintenance access. The heavy-duty impeller is not screwed on, but keyed to the shaft for easy removal and provides protection against movement during reverse rotation.

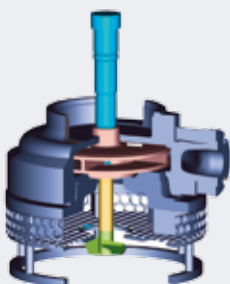
Optional agitator

A robust agitator can be fitted to the impeller eye.

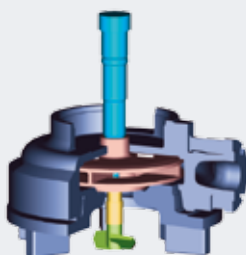
Agitator options

Agitator design option A allows removal of fine solids.

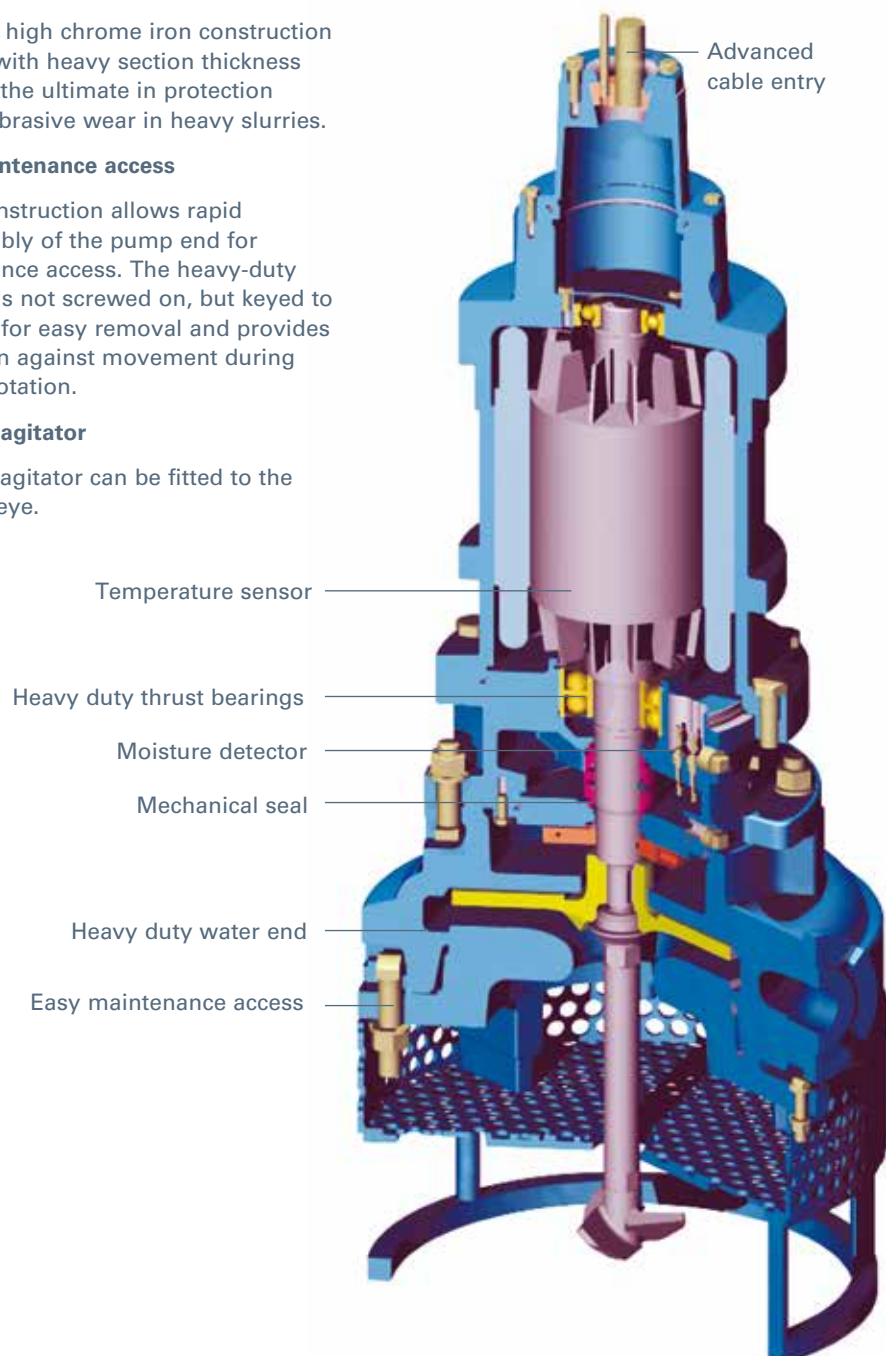
Agitator design option B aggressively agitates larger solids from the sump floor.



Agitator option A



Agitator option B



Optional features allow our customers to tailor the Warman® SHW pump to specific applications, resulting in the ultimate heavy duty performance.

Optional features

- Cooling jacket allows for continuous pump operation with the motor un-submerged
- Suction saver prevents clogging in sumps where tramp material or very large solids are present
- Quick disconnect guides the Warman® SHW pump into the sump with automatic connection to discharge piping
- Discharge elbow in high chrome iron with heavy wall thickness allows for longer life in heavy slurries
- Sparger ring allows for improved removal of larger solids by spraying high pressure liquid back into the sump
- Side bracket allows for easier installation on-site and provides consistent positioning of the pump in your sump

Optional features diagram



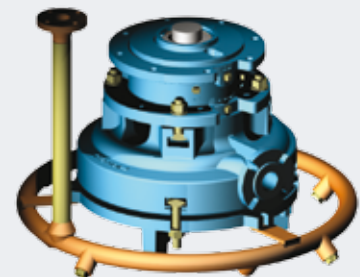
Cooling jacket



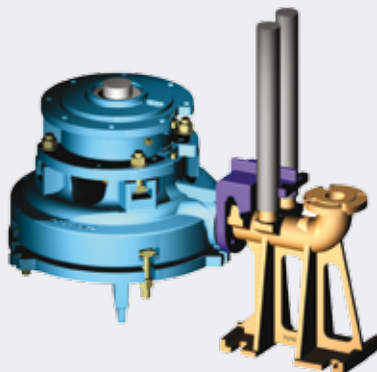
Suction saver



Discharge elbow



Sparger ring



Quick disconnect



Side bracket

**Compare weight, compare features, compare performance
— the Warman® SHW pump is a cost effective solution for
your slurry pumping requirements.**

Materials of construction

Part	Material	Specification
Casing	A05 Chrome	ASTM A532, Class III, Type A
Impeller	28 HC	ASTM A532, Class III, Type A
Impeller nut	450 HT	ASTM A564, Hardened
Shaft	416 SS	ASTM A582, Type 416
Fasteners	316 SS	ASTM A193, Grade 8BM
Motor housing	Cast Iron	ASTM A48, Class 30
Agitator (opt)	A05 Chrome	ASTM A532, Class III, Type A
Shaft extension (opt)	17-4 PH	ASTM A564

Applications

- Mine dewatering
- Red mud recovery
- Clarifier sludge
- Coke quench
- Mill scale
- Seawater/sand slurry
- Clean-up sumps
- Lime slurry
- Skimming pit
- Coal pile runoff
- Kaolin clay
- Thickener drain
- Fly ash sump
- Bottom ash overflow
- Pond water return
- Black liquor
- Red mud decanting
- Boiler blowdown
- Magnetite recovery
- Coal fines recovery
- Precipitator slurry
- Chlorinated thickener



210 Motor frame dimensions

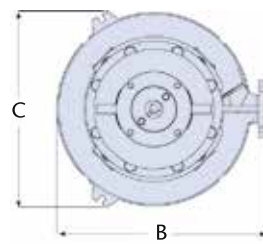
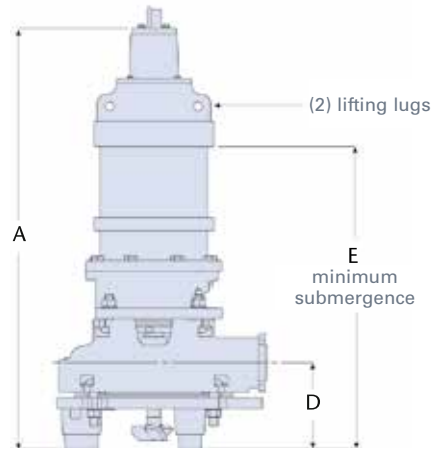
Pump	A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	weight lbs/kg
50-250	38.5/978	22.2/565	20.5/520	7.5/191	24.6/625	850/386
75-250	38.9/988	24.2/615	22.4/570	7.9/201	25.0/635	985/447

250 Motor frame dimensions

Pump	A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	weight lbs/kg
50-350	47.3/1200	25.0/635	22.1/562	9.6/245	32.6/829	1400/635
75-350	47.3/1200	25.6/650	22.1/562	9.6/241	32.6/829	1450/658
100-350	48.3/1225	26.9/683	22.2/565	10.5/266	33.6/854	1500/680
100-375	48.7/1235	27.3/693	24.1/613	10.9/276	34.1/866	1600/726

280 Motor frame dimensions

Pump	A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	weight lbs/kg
50-350	55.9/1419	25.0/635	22.1/562	9.6/245	39.6/1006	1800/817
75-350	55.7/1416	25.6/650	22.1/562	9.5/241	39.5/1004	1850/840
100-350	56.7/1441	26.8/680	22.2/565	10.5/266	40.5/1029	1900/861
100-375	57.1/1451	27.3/693	24.1/613	10.9/276	40.9/1038	2000/907
150-375	62.2/1580	35.4/898	28.3/720	15.6/395	46.1/1170	2200/998
150-450	61.0/1550	35.7/906	29.6/753	14.7/373	44.7/1136	2500/1134



360 Motor frame dimensions

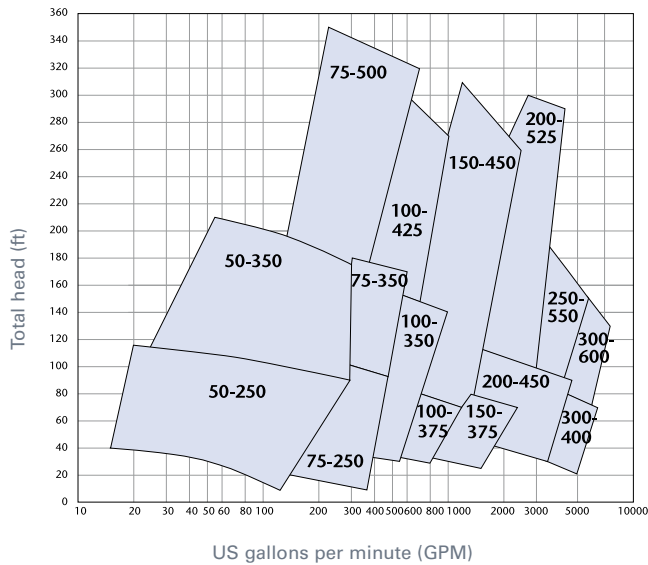
Pump	A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	weight lbs/kg
75-500	82.5/2095	32.8/835	28.0/712	10.4/265	48.5/1232	3500/1588
100-425	76.1/1933	34.0/864	25.6/651	11.9/303	49.4/1255	3530/1602
150-450	79.3/2016	35.6/906	29.6/753	14.7/373	52.5/1336	3625/1645
200-450	82.9/2106	39.8/1010	31.2/791	15.8/402	56.2/1427	3760/1706
200-525	81.5/2071	40.8/1036	33.5/852	15.5/394	54.8/1393	3922/1779
250-550	83.9/2132	48.2/1223	38.9/990	16.6/422	57.2/1452	4655/2112
300-400	84.6/2149	49.1/1248	35.7/907	16.9/430	58.5/1488	4137/1877

440 Motor frame dimensions

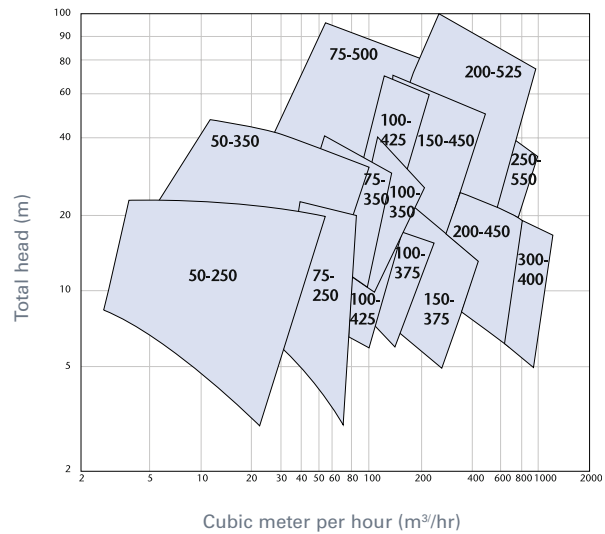
Pump	A in/mm	B in/mm	C in/mm	D in/mm	E in/mm	weight lbs/kg
150-450	103.5/2629	35.6/906	29.6/753	14.7/373	63.2/1605	7370/3343
200-450	104.5/2655	39.7/1010	31.2/791	15.8/402	64.2/1631	7500/3402
200-525	103.2/2621	40.8/1036	33.5/852	15.5/394	62.8/1595	7670/3480
250-550	106.5/2706	48.2/1223	38.9/990	16.6/422	65.5/1664	8400/3811
300-600	116.2/2951	51.7/1314	43.5/1105	19.2/489	75.8/1925	8700/3947

To be used for preliminary selection only.

Warman® SHW – 60Hz – 1200 & 1800 rpm



Warman® SHW – 50Hz – 1000 & 1500 rpm



The competitors' pumps lasted only two months, while the Warman® SHW submersible pump kept the sump clean and lasted more than a year

Applicaton:

Event pond

Slurry:

Sand, gravel, debris

Flow rate:

600 GPM (136 m³/hr)

Head:

127 ft (39 m)

Pump:

Warman® SHW 100-350

Pump materials:

Hi-chrome iron

Motor:

40 hp (30 kw)

1800 rpm

Features:

Agitator

Suction saver

Background

In the western United States on the Carlin Trend, are some of the most prolific gold mines and processing plants in the Western Hemisphere. Weir Minerals has been a leading supplier to these facilities for many years providing both processing and dewatering solutions.

Challenge

Operators of a gold processing plant in this region were having difficulty keeping their event pond at the roaster pumped out and clean of solids. They had tried several competitors' pumps but none were up to the task, typically wearing out and failing after approximately two months of operation. Due to these frequent failures the pond was not kept clean and solids were piling up. Looking for a better solution, the customer contacted Weir Minerals.

Event ponds are designed to handle storm water and spills. When an upset or spill occurs all solids must be washed down and it is collected in the event pond. This means significant amounts of sand, gravel, dirt, and other debris along with a mix of products is collected and must be pumped out and returned to the process.

Results

A Warman® SHW 100-350 pump model with an agitator was supplied for trial in the pond. The heavy duty chrome iron construction and agitator allowed the customer to pump out the solids and the SHW surpassed the competitors' pumps wear life. The pond was originally filled to 50% height on the liner, after installing the Warman® SHW pump, the mine maintenance team was able to completely clean the pond and keep it clean.

The trial was a success, the Warman® SHW provided over 6 times the life of the competitors' pumps and the customer purchased the SHW pump.



Warman® SHW pump in the event pond application.



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