

WARMAN®
Centrifugal Slurry Pumps

Slurry
Equipment
Solutions



SP & SPR Heavy Duty Sump Pump



Weir Minerals are specialists in delivering and supporting Slurry Equipment Solutions including pumps, hydrocyclones, valves and wear resistant linings for global mining and mineral processing, the power sector, and general industry.

We use our specialist slurry knowledge and experience from around the world to deliver reliable product and service solutions.

Our global network ensures that we are close to our customer wherever they base their local operations.

We strive to understand the customer's needs and to reduce their total cost of equipment ownership.

We aim to lead the market in application expertise, service-support and product development.

The strength of Weir Minerals products lies in the superiority of our hydraulic designs and wear and corrosion resistant materials.

Weir Minerals has invested heavily in an ongoing programme of research and development which focuses on the areas of hydraulic design, materials technology and shaft sealing.

The Warman SP/SPR heavy duty cantilever sump pump is designed for applications requiring greater reliability and durability than conventional vertical process pumps can offer.

The heavy duty cantilever design makes the Warman SP/SPR sump pump ideally suited for heavy continuous handling of abrasive and corrosive liquids and slurries whilst submerged in sumps or pits.

Warman SP/SPR sump pumps offer you:

- **Reliability**
- by design.
- **Low Spares costs**
- from longer wear life.
- **Lower Energy costs**
- from maintained efficiency.
- **After Sales Support**
- second to none.

World class manufacturing

Underlying our product capability is our introduction of the latest CAD CAM techniques and the implementation of lean manufacturing principles, keeping Weir Minerals at the forefront of manufacturing technology, delivering direct customer benefits.

Weir Minerals products are manufactured on all five continents by member companies of the Weir Minerals Division and Licensees in strategic locations around the world.

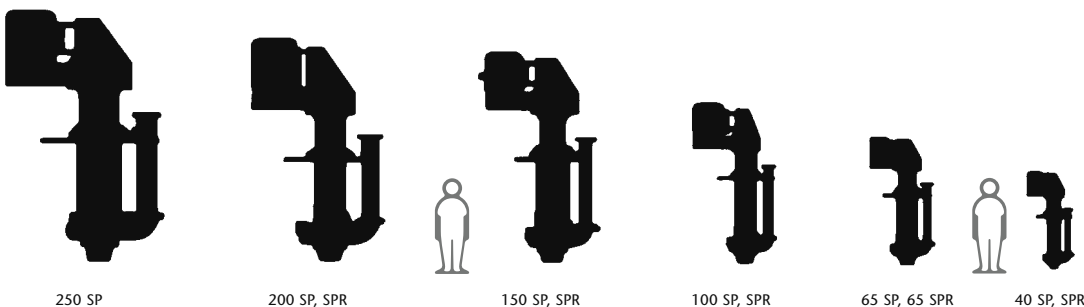
Worldwide sales and service

Weir Minerals has the geographical presence to service all the major minerals markets around the world.

In Europe and the Middle East, Weir Minerals sales offices are located in Belgium, the Czech Republic, Finland, France, Germany, Hungary, Italy, Poland, Russia, Romania, Sweden, the U.A.E. , the UK and in the Ukraine. Supported by a comprehensive network of agents and representatives they provide professional, qualified technical assistance and service.

Meeting international standards

The quality management systems of Weir Minerals Europe Limited in the UK are accredited to BS EN ISO 9001:2000 and our Environmental Management Systems are accredited to BS EN ISO 14001:1996.



Weir Minerals customers range from the world's largest mining and minerals multinationals to single pumpset operators.

The rugged Warman SP/SPR Heavy Duty Sump Pumps are available in a wide range of popular sizes to suit most pumping applications. Thousands of these pumps are proving their reliability and efficiency worldwide in:

- **Minerals processing**
- **Coal preparation**
- **Chemical processing**
- **Effluent handling**
- **Sand and gravel**

and almost every other tank, pit or hole-in-the-ground slurry handling situation.

The Warman SP/SPR design with either hard metal (SP) or elastomer covered (SPR) components makes it ideal for:

- **Abrasive and/or corrosive slurries**
- **Large particle sizes**
- **High density slurries**
- **Continuous or "snore" operation**
- **Heavy duties demanding cantilever shafts**



left: One of six Warman 150SVSP pumps handling waste water from a brown coal mine in the Czech Republic. below/centre: Warman 100RVSP on a hydrocyclone feed duty in Italy, pumping with only the bottom inlet submerged.



Warman SP/SPR Heavy Duty Sump Pumps are available in various standard lengths to suit common sump depths, for very deep sumps or where high shaft speeds limit the length of the pump, a suction extension pipe can be fitted to the bottom inlet to extend the depth of the pump by up to 2 metres.

Pumping is maintained even when the top inlet is not submerged, thus enabling the level of liquid to be lowered right down to the bottom inlet or the bottom of any suction extension pipe.

To suit special requirements other Warman pump wet ends can be fitted to the standard Warman SP pump dry end.

top: Warman 65QSVP on a moving gantry in a Slag Sand Preparation Plant in Germany. below: Warman 100RVSP pump in a FGD plant in Poland.



Less wear, less corrosion

Wetted components are available in a wide range of alloys and elastomers, from which Weir Minerals selects the optimum combination of materials for maximum resistance to wear in virtually any industrial application, including those demanding both abrasion and corrosion resistance and where larger particles or high density slurries are encountered.

- Abrasion resistant A05 Ultrachrome® alloy.
- Abrasion/corrosion-resistant A49 Ultrachrome® alloy.
- Corrosion-resistant stainless steels.
- Natural and synthetic elastomers.

No submerged bearing failures

The robust cantilever shaft avoids the need for lower submerged bearings - which are often the source of premature bearing failure.

- Heavy duty roller bearings, above mountingplate.
- No submerged bearings.
- Labyrinth/flinger bearing protection.
- Rigid, large diameter shaft.

No shaft sealing problems

The vertical cantilever design requires no shaft seal.

No priming required

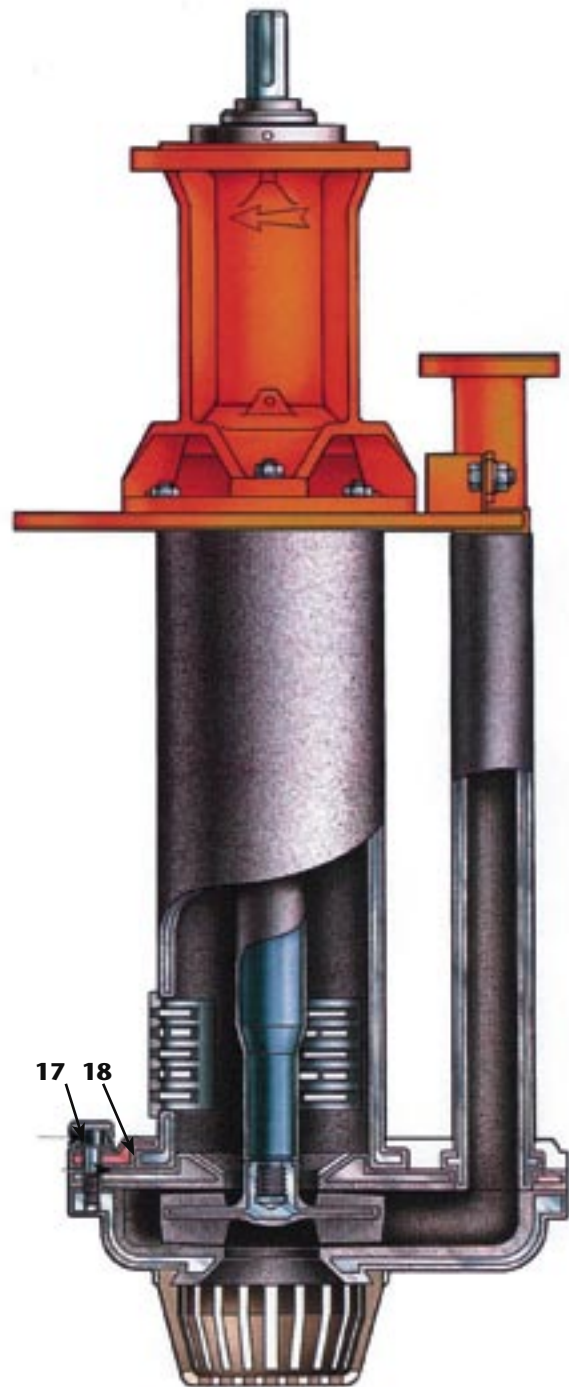
The top and bottom inlet design is ideally suited for "snore" conditions.

Less risk of blocking

The screened inlets and large impeller passages reduce the risk of blockages.

Zero ancillary water costs

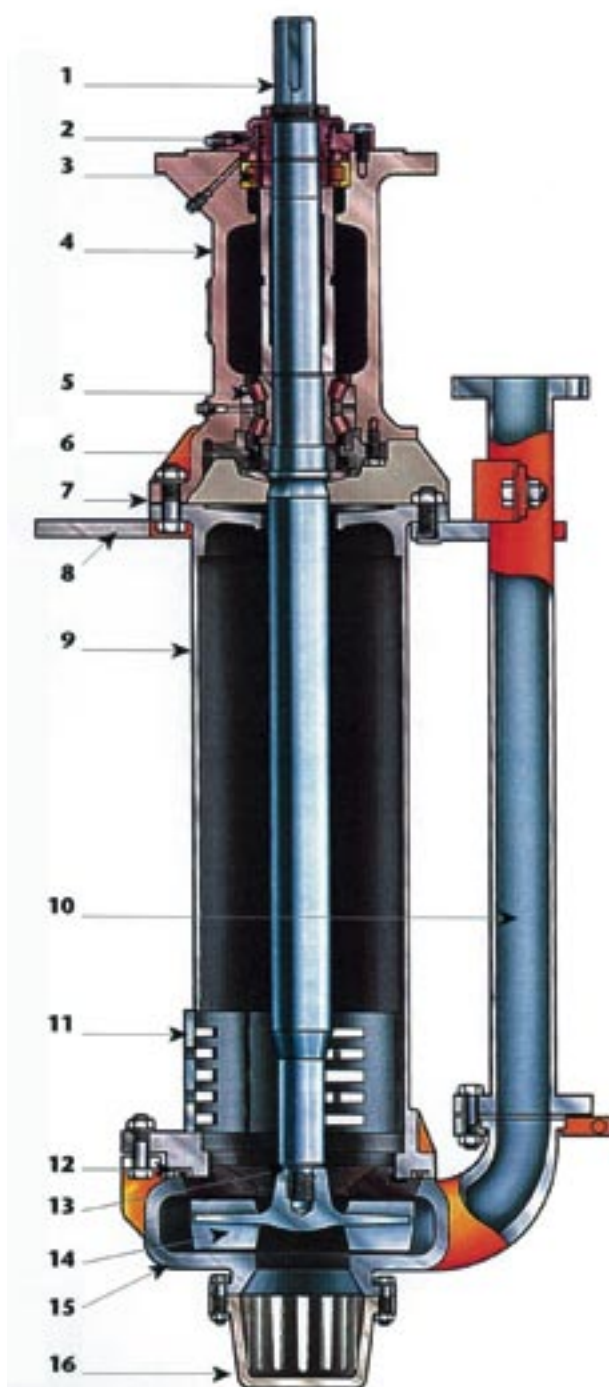
The vertical cantilever design with no gland or submerged bearings avoids the need for expensive gland or bearing flushing water.



Type "SPR"

Wetted parts 100% elastomer protected
for corrosive/abrasive duty

The Warman SP/SPR Heavy Duty Cantilever Sump Pump

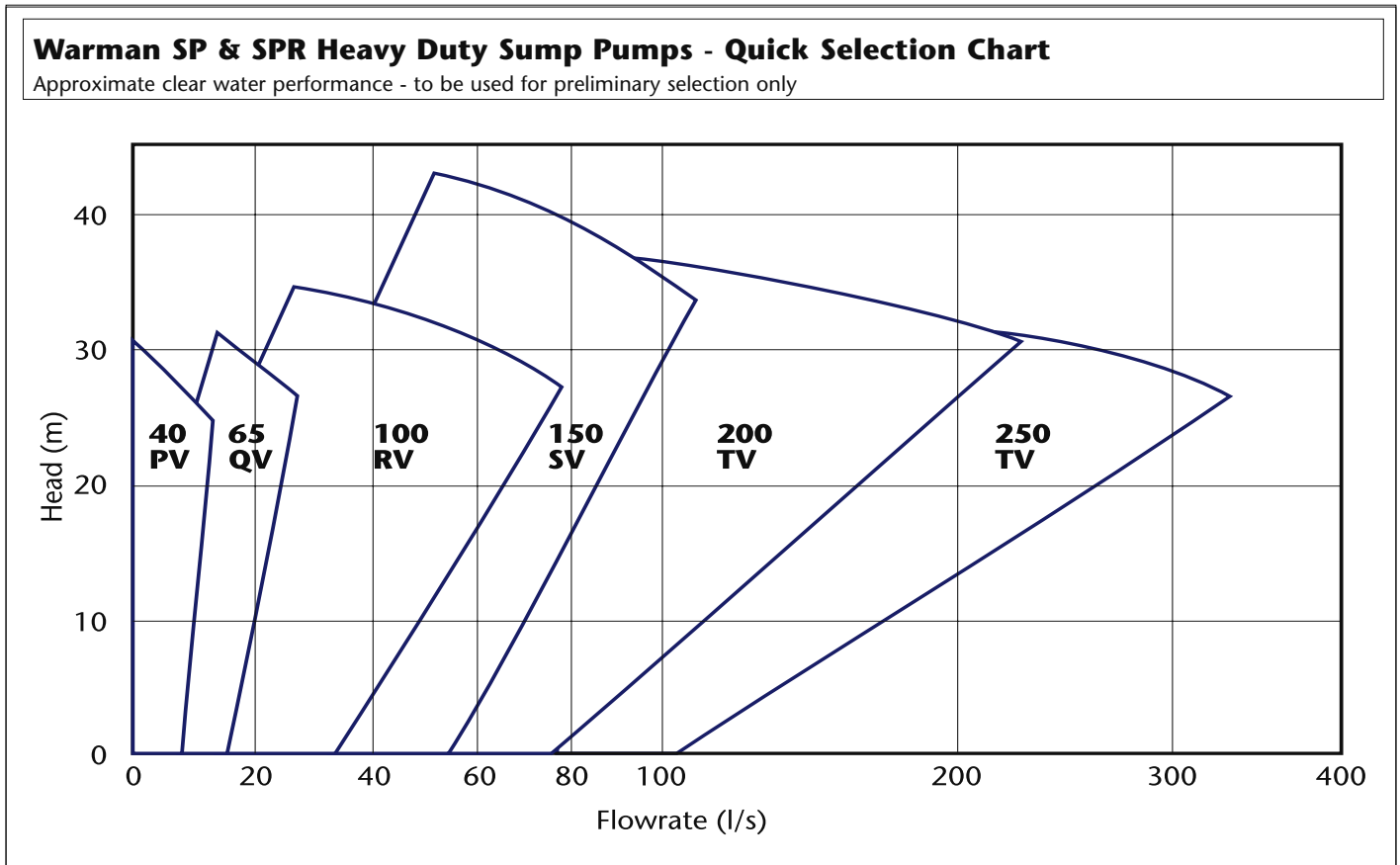


Type "SP"

All metal for abrasive duty

- 1. Shaft**
SP - Steel
SPR - Elastomer covered steel
- 2. Upper Bearing Seal**
Labyrinth, piston rings and grease purge
- 3. Upper Bearing**
Heavy duty grease lubricated parallel roller
- 4. Bearing Housing**
Robust heavy duty, SG iron
- 5. Lower Bearings**
Heavy duty grease lubricated double taper roller
- 6. Lower Bearing Seal**
Lip Seal and Flinger
- 7. Shims**
Allow vertical adjustment of the impeller in the casing
- 8. Mounting Plate**
SP - Steel
SPR - Elastomer covered steel
- 9. Column**
SP - Steel
SPR - Elastomer covered steel
- 10. Discharge Pipe**
SP - Steel
SPR - Elastomer covered steel
- 11. Upper Strainer**
SP - Stainless Steel
SPR - Polyurethane
- 12. Back Liner Seal**
SP - Elastomer
- 13. Impeller Thread Seal**
SP - Elastomer
- 14. Impeller**
SP - UltraChrome®
SPR - Elastomer moulded metal
- 15. Casing**
SP - UltraChrome®
SPR - Elastomer moulded metal
- 16. Lower Strainer**
SP - Polyurethane
SPR - Elastomer moulded metal
- 17. Socket Head Protectors**
SPR - Elastomer moulded
- 18. Column Clamp**
SPR - Elastomer moulded metal

Quick selection chart



Product Information Software

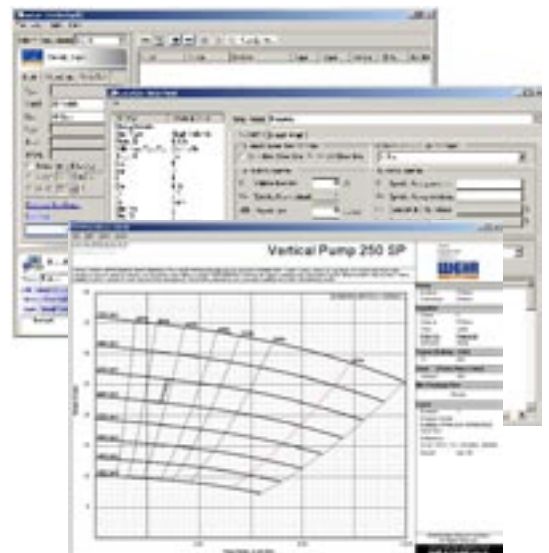
Weir Minerals product information software is available for download from the Weir Minerals website or on CD from your local sales office.

The Weir Minerals Catalogue wsCAT was developed by the Pump Technology Centre and is an integrated browser of two modules :

Pump performance curves, which are downloadable and unlocked by obtaining a key obtained via email from your local sales office, and

Technical reference which, due to file size, is only available on the CD version.

The technical reference information includes application data, drawings, engineering data, marketing data and operation and maintenance manuals.



Weir Minerals has the products and geographical presence to service all the major minerals markets around the world.



Market leading products

Weir Minerals has an advanced product range incorporating market leading brands covering virtually any application, in any environment.

The Weir Minerals brands :

WARMAN®

Centrifugal Slurry Pumps

GEHO®

PD Slurry Pumps

CAVEX®

Hydrocyclones

ISOGATE®

Slurry Valves

VULCO®

Wear Resistant Linings

Geographical footprint

Weir Minerals has the geographical presence to service all the major minerals markets around the world. This global supply capability provides a competitive advantage in this relatively fragmented market.

Weir Minerals has operations across:

- North America
- Europe
- South America
- Australasia
- Africa

Customer profile

Our customers range from the world's largest minerals and mining multinationals to single site coal producers.

Weir Minerals capability supports an array of customer specifications with products easily adaptable to meet specific process requirements.

We build close, long term partnerships through which we are able to help customers achieve process efficiencies.

Weir Minerals customers include:

- Alcoa
- Barrick
- Codelco
- De Beers
- Newmont
- WMC
- Anglo-American
- BHP-Billiton
- CVRD
- Grupo Mexico
- RTZ

We support customer operations worldwide with consistent products and local engineering expertise. As part of the Weir Group, we have the reach and resource to build close, long term relationships with all our customers, helping them to achieve ...

The Lowest Cost of Ownership

Top: Warman AH Heavy Duty Slurry Pumps in Finland.

Next: A Geho Piston Diaphragm slurry pump at Pacific Power.

Next: The IsoGate WS slurry gate valve ready for shipping to a customer in South America.

Next: A cluster of Cavex hydrocyclones used in an Australian gold mine.

Bottom: Vulco Trommel for a



WARMAN[®] Centrifugal Slurry Pumps
GEHO[®] Positive Displacement Slurry Pumps
CAVEX[®] Hydrocyclones
ISOGATE[®] Slurry Valves
VULCO[®] Wear Resistant Linings

For further information on any of these products or
Total Care product support services contact your
nearest sales office or visit:

www.weirminerals.com

European Sales Offices :

<i>Belgium (BeNeLux)</i>	<i>014 47 09 60</i>
<i>Czech Republic</i>	<i>05 435 18300</i>
<i>Dubai</i>	<i>04 883 8581</i>
<i>Finland</i>	<i>03 877 350</i>
<i>France</i>	<i>04 72 81 72 72</i>
<i>Germany</i>	<i>07062 95290</i>
<i>Hungary</i>	<i>034 314 794</i>
<i>Netherlands (Geho)</i>	<i>077 3895200</i>
<i>Italy</i>	<i>02 92 44 32.1</i>
<i>Poland</i>	<i>012 632 8469</i>
<i>Romania</i>	<i>0259 465 344</i>
<i>Russia</i>	<i>095 775 0867</i>
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