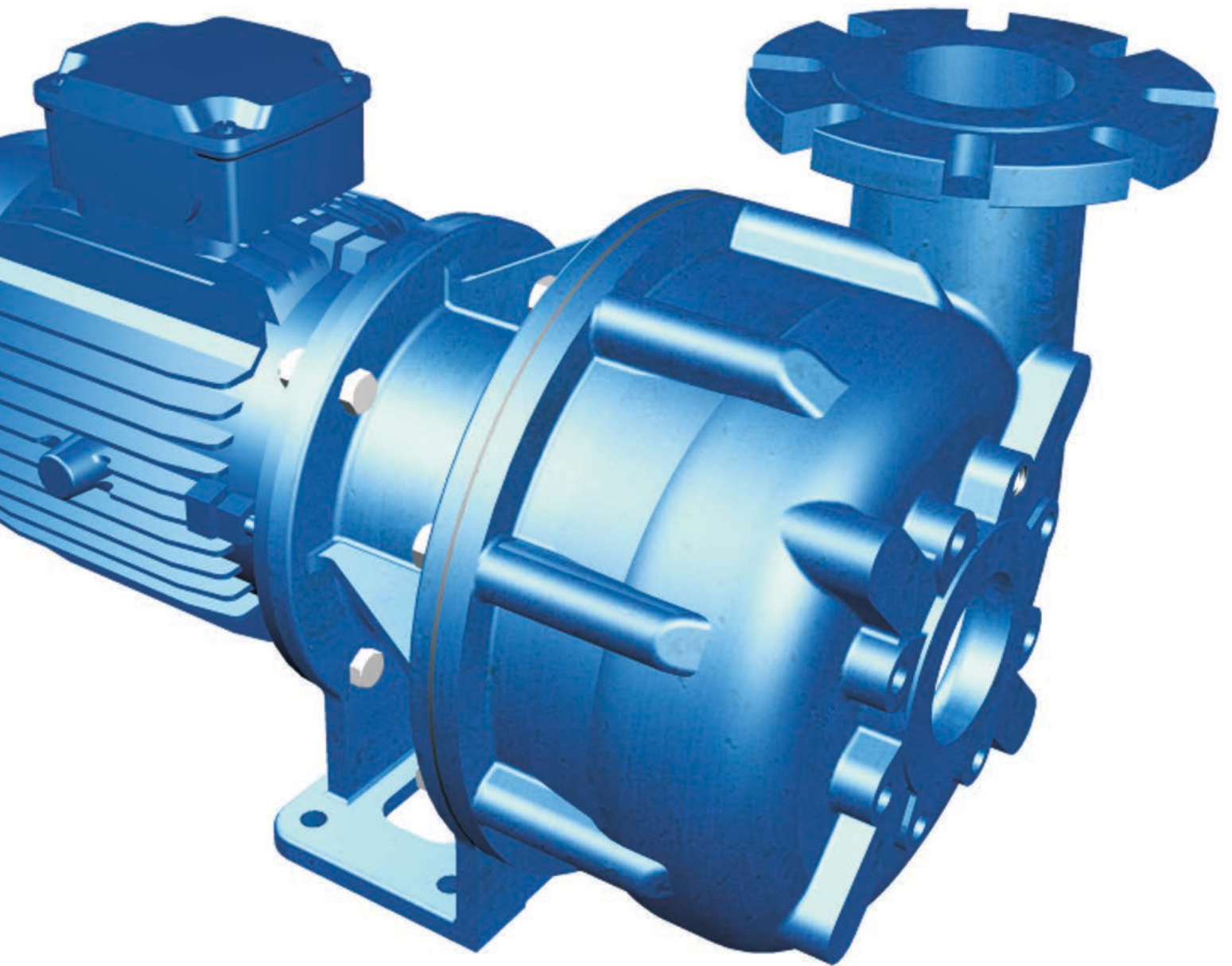


**WEIR**

**Minerals**

**WARMAN®  
Recessed Impeller Pumps**

WRR® Pump range



# Reliability without compromise

The design of the Warman® WRR® recessed impeller pump range is based upon vortex technology which derives from the whirlpool principle. The impeller develops a swirling vortex, which extends into the suction pipe, drawing solid particles into the liquid stream. Particles are drawn into the pump and due to the centrifugal force created by the vortex action, most are discharged within a single revolution.

A thick walled casting, constructed in materials suited to specific applications ensures that the Warman® WRR® pump range offers superior strength and reliability. The Warman® WRR® pump range is designed to transfer fluids containing large particles (abrasive, fibrous or delicate) for your toughest applications, while minimising abrasion and risk of clogging.

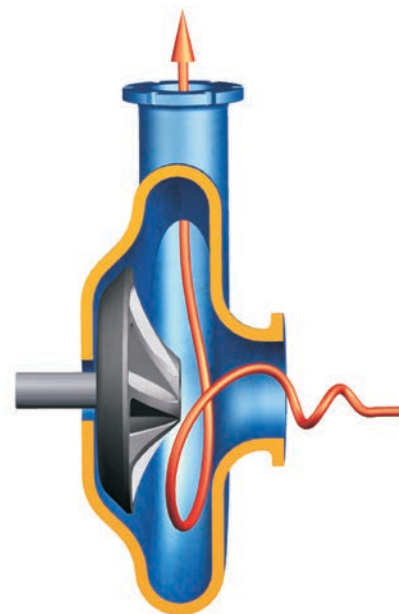
## Characteristics and advantages of Warman® WRR® pump range

**Large clearance:** The fully recessed impeller can pump suction size particles and/or very long fibrous elements with minimal risk of clogging.

**Preserved characteristics:** The hydraulic part of the WRR® pump range contains no wear rings and requires no adjustment.

**High resistance to abrasion:** Vortex technology minimises contact between the pumped particles and the hydraulic components, generous material thickness is applied at known wear areas of the wet end and all wet end components are available in High Chrome Cast Iron.

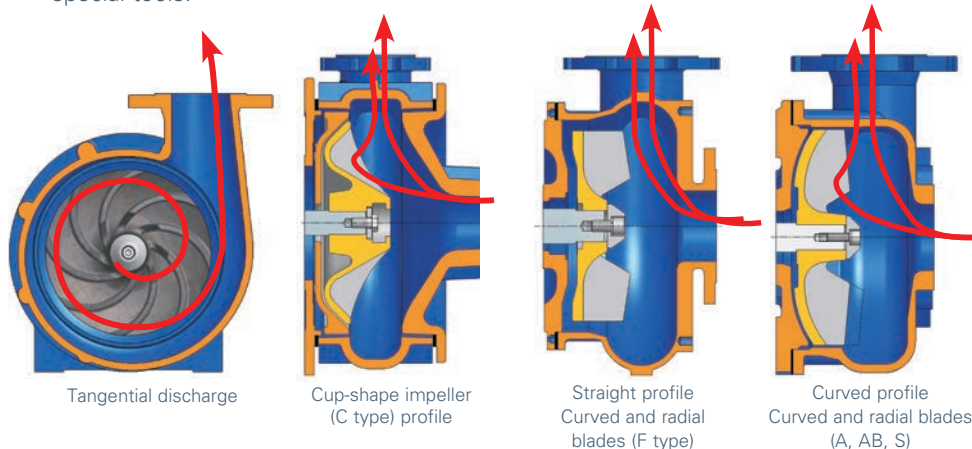
**Easy maintenance:** The Warman® WRR® pump range design is simple, strong and constructed with few parts. This means that adjustments are simple and do not require no skilled labour or special tools.



**Warman® WRR® pump range hydraulic system design:** The curved back impeller has the effect of diverting the product away from the pump casing thus considerably reducing wear.

This design, is key to the unrivalled performance and near clog-free operation of the pump.

## Warman® WRR® pump range hydraulic system design

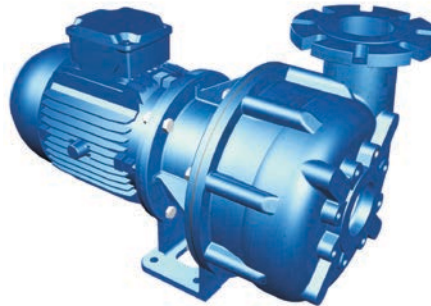


# A range - Close coupled pumps

## Light applications

### Standard Construction

- Direct drive close-coupled pump
- IE3 premium efficiency (from 7.5kW motor)
- Cast iron
- Vortex impeller (recessed)
- Ø40 - 150 mm free passage
- Horizontal mounting
- Single mechanical seal
- PN10 flange connection
- Sound pressure level under 80 dB(A)
- Service pressure 4,5 bars



Horizontal mounting



Vertical bracket-support mounting

### Main applications

- Milk of lime
- Grit / sandy water
- Municipal waste water
- Pickling bath
- Animal fat
- Vegetable wash water
- Digester sludge
- Organic sludge
- Water containing phosphate
- Chemical effluents



1



2

1. Warman® WRR® AB80 type pump, Sewage sludge anaerobic digester

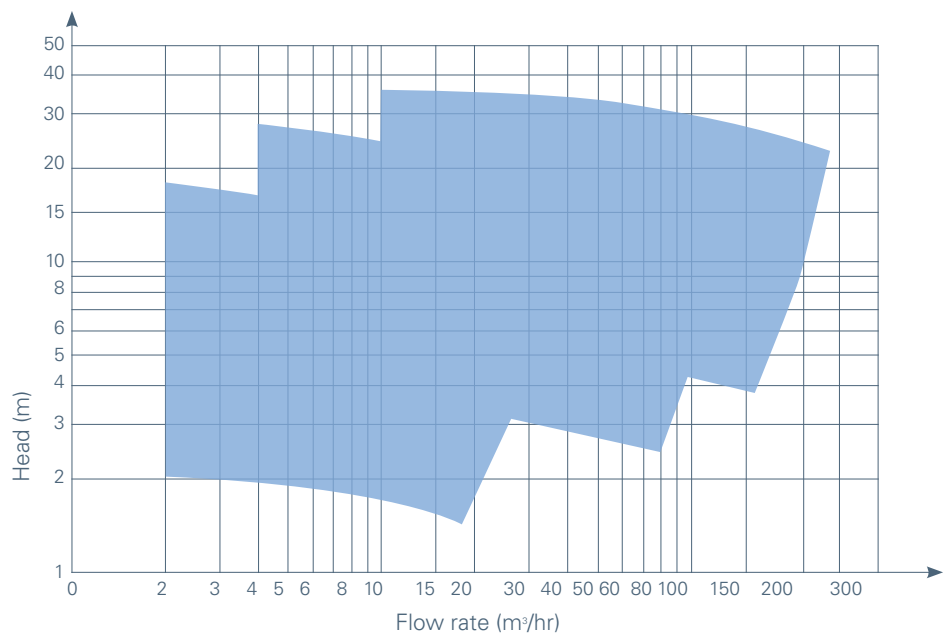
2. Warman® WRR® AB80 type pump for sewage works in Budapest, Hungary

### Options

- Abrasion resistant material Hardness 400 or 500HB
- 316L Stainless steel corrosion resistant material
- Atex zone 1 & 2
- Vertical installation with bracket and elbow

### General Curves - Warman® WRR® A range pump

Max. flow rate : 225 m³/hr - Head max : 35 m



# F-DL range - Horizontal pumps

## Intermediate applications

### Standard Construction

- Direct drive close-coupled pump
- IE3 premium efficiency (from 7.5kW motor)
- Cast iron
- Vortex impeller (recessed)
- Ø40 - 150 mm free passage
- Horizontal installation
- Single mechanical seal
- PN10 flange connection
- Sound pressure level under 80 dB(A)
- Service pressure 4,5 bars



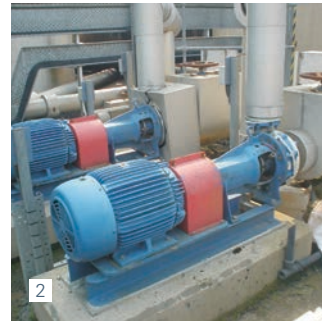
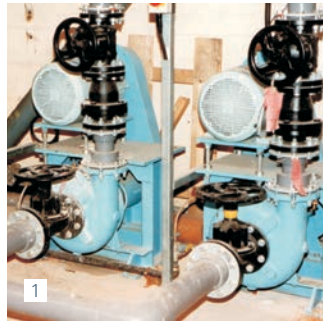
WRR® pump with bare-shaft end



Pulley / belt drive mounting

### Main applications

- Toxic industrial waste
- Mine dilution water
- Brewing water
- Oily water
- Municipal waste water
- Pickling bath
- Animal fat
- Vegetable wash water



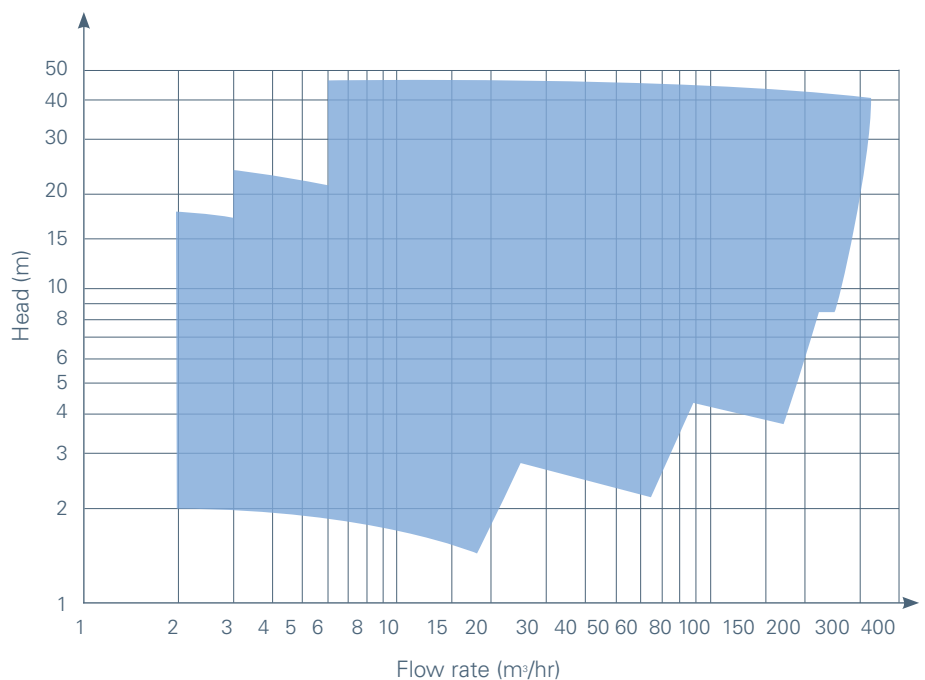
1. Installation of Warman® WRR® F3-4 type pumps in a sewage-treatment plant
2. Installation of Warman® WRR® F4 type pumps in a chicken processing plant

### Options

- Abrasion resistant material Hardness 400 or 500HB
- 316L Stainless steel corrosion resistant material
- Atex zone 1 & 2
- Vertical installation with bracket and elbow

### General curves - Warman® WRR® F range pump

Max. flow rate: 320 m³/hr - Head max: 45m



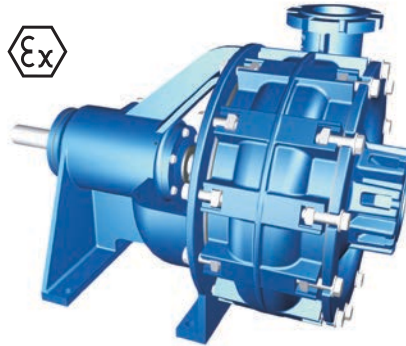


# C range - Horizontal pumps

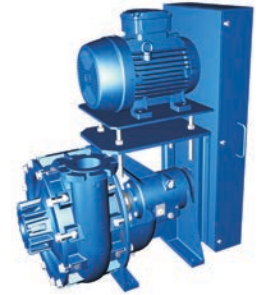
## Strict applications

### Standard Construction

- Bearing frame pump (lifetime 100 000 hrs)
- Cup shaped impeller (recessed)
- Ø50 - 250mm free passage
- Horizontal installation
- PTFE gland packing
- PN10 flange connection
- Sound pressure level under 80 dB(A)
- Service pressure 4 bars (option 6 bars)
- Service temperature 100 °C
- IE3 premium efficiency (from 7.5kW motor)



WRR® pump with naked shaft end



Pulley / belt drive mounting

### Main applications

- Grit removal
- Slaughterhouse
- Feathers
- Water containing coal particles
- Sugar Beet slices
- Phosphate pulps
- Activated Carbon slurry
- Municipal waste water
- Animal fats

1. Warman® WRR® C type pump with priming system on grit-removal bridge



2. Warman® WRR® C type pump, waste sand application

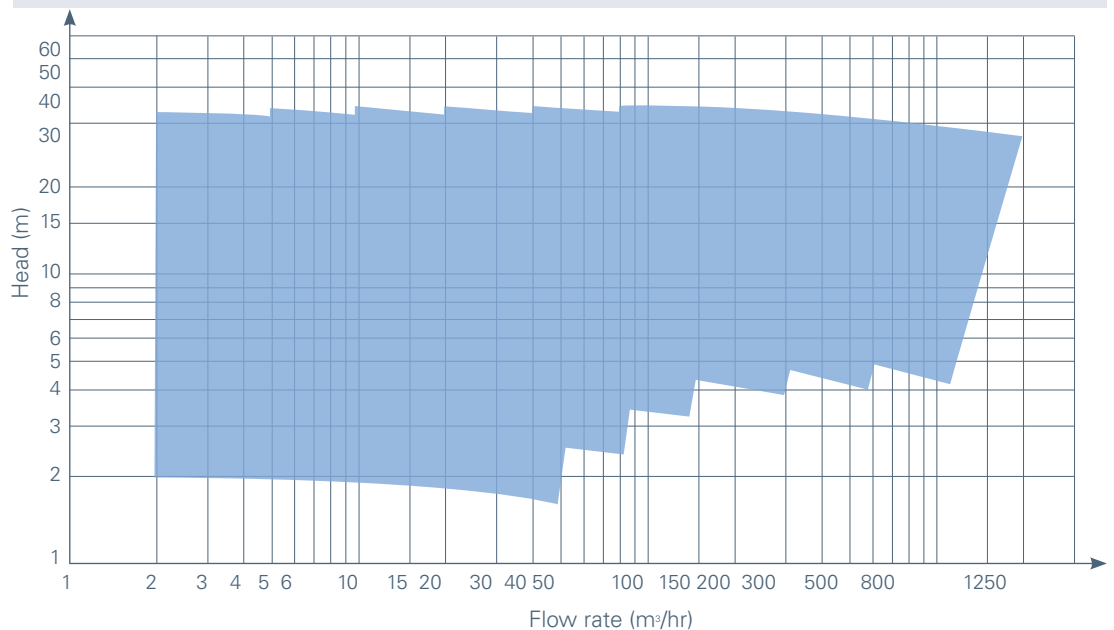


### Options

- Abrasion resistant material Hardness 600 - 650HB
- Other materials on request
- Single or double mechanical seal
- Pressurisation unit
- Stainless steel 316L shaft
- Stainless steel shaft sleeve 316L
- Base frame (DC or Belt pulley)

### General Curves - Warman® WRR® C range pump

Max. flow rate: 1250 m³/hr - Head max: 35m\*



\*or optional 50m on request

# S range - Submersible pumps

## Light applications

### Standard Construction

- Cast iron
- Vortex impeller (recessed)
- Ø40 - 100 mm free passage
- Free standing or guide rail mounted
- Double mechanical seal in an oil bath
- 50/60Hz, IP68 submersible electric motor
- Starting method Direct On Line
- 10m power supply cable and 5m lift chain



Portable version with agitator



Base elbow mounting

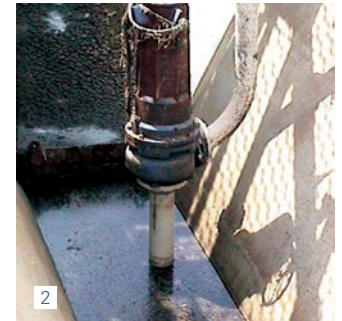
### Main applications

- Untreated sewage
- Lift stations
- Agri-food wash water
- Slaughterhouse
- Municipal waste water
- Water containing cement
- Water containing sand/grit

1. Warman® WRR® SL100 pump in chicken slaughterhouse



2. Warman® WRR® S80 pump in sand application

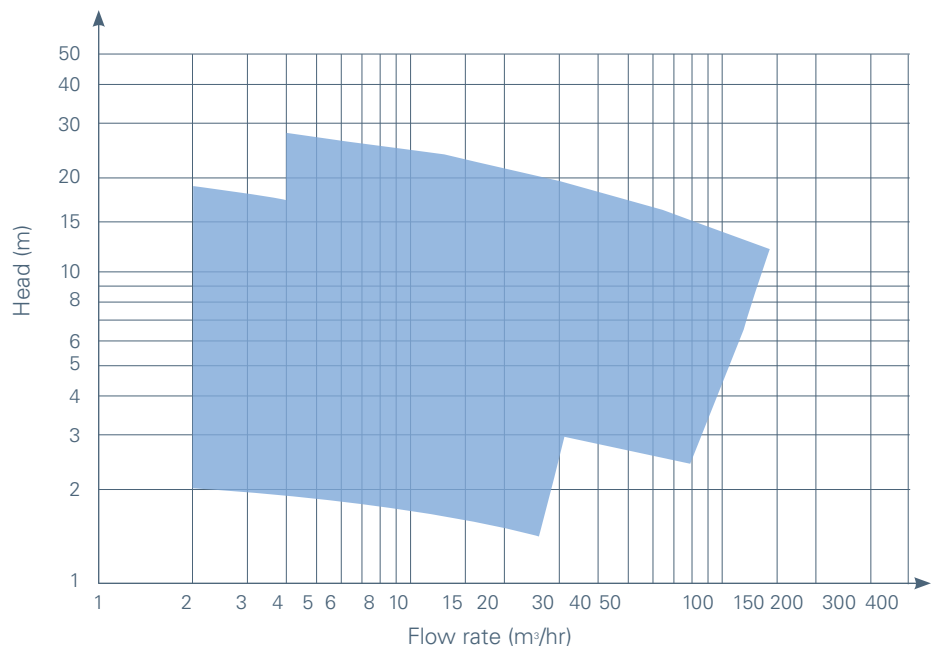


### Options

- Abrasion resistant material Hardness 400 or 500HB
- Impeller mounted agitator
- Stainless steel shaft 316L
- Seal housing moisture detector
- Bimetal switch PTF ; PTC probes
- Starting method star-delta (Y/D)
- IP68 immersible (possible in dry installation)
- Stainless steel jacket armed for 9m cable

### General curves - Warman® WRR® S range pump

Max. flow rate: 150 m<sup>3</sup>/hr - Head max: 30m



# WP range - Vertical pumps without bearings

Light to heavy applications

## Standard Construction

- A - F - MC Hydraulic ranges
- Cast iron (A-F types) - HCl 650HB (MC type)
- IE3 premium efficiency (from 7.5kW motor)
- Vortex impeller (recessed)
- Ø40 - 250mm free passage
- Length suction to under side sole plate between 400mm and 2000mm depending on the model
- PN10 flange connection
- Sound pressure level under 80 dB(A)



Short version with small base pad



Suction extension tube



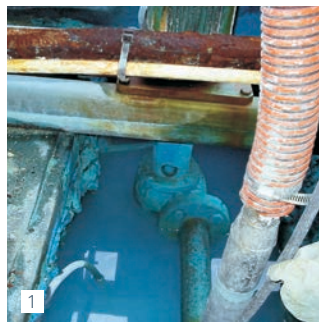
Long version with large base pad and back flow tube

## Main applications

- Wash water
- Industrial wastes
- Water containing feathers
- Water containing concrete
- Carbon residues
- Solvents
- Water containing sulphide
- Greases
- Sludge
- Fish scales and oils
- Refinery waste water
- Sulphide

1. Warman® WRR® WP type pump for water containing copper residue

2. Warman® WRR® stainless steel WP50 pump on a rib for chemical waste

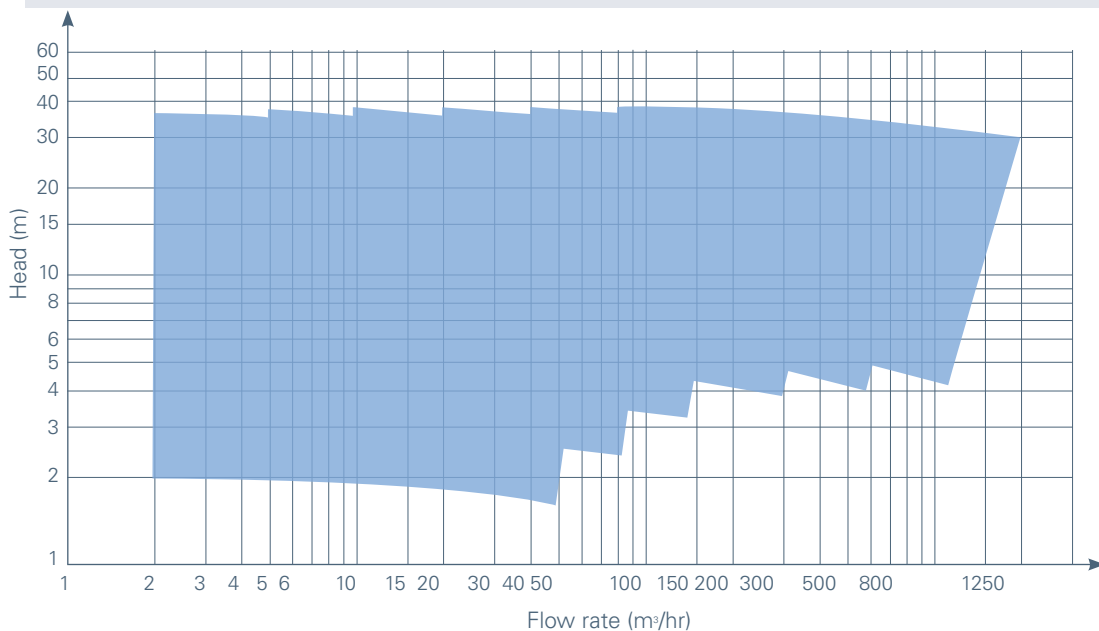


## Options

- Abrasion resistant material Hardness 400 or 500HB (A and F types)
- 316L Stainless steel corrosion resistant material
- Atex zone 1 & 2
- Small profile base without discharge pipe
- Suction extension tube up to 3 meters
- Dry pit installation

### General curves - Warman® WRR® WP range pump

Max. flow rate: 1250 m³/hr - Head max: 35m\*



\*or optional 50m on request



## Minerals

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