WARRENDER, LTD.

Seal-less Mag-Drive Pumps

From Stock or Built-to-Spec™

Chemical, Oil & Gas, OEM Systems Process Pumps

Providing environmentally safe seal-less magnetic pumps of the highest quality for over 30 years

Our company goals are to provide the solutions that protect our surroundings, raise the environmental awareness, and promote the growth of the community.

Zero Emissions Field Repairable Standardized Motors

Services

API & CPI Processes

- Chemical Processing
- Petrochemicals
- Petroleum By-Products
- Hydrocarbons
- Liquefied Gases

Thermal Transfer Systems

- High-temp Synthetic Oils
- Low-temp Synthetic Oils
- Super Heated Water

Refrigeration Systems

- Ammonia, CO2
- Fluorocarbon Refrigerants

Pharmaceutical Processes

- Preparation of process intermediates
- Coupling and esterification
- Separation, washing and stripping

WARRENDER SEAL-LESS MAG-DRIVE PUMPS

Seal-less Pumps - Standard Motors™

Warrender mag-drive seal-less pumps meet EPA zero emissions regulations with versatile magnetic coupling technology. Minimal heat loads, field serviceability and lower installation costs are significant process advantages. Solve your most challenging pumping problems with reliable and cost effective solutions.

Zero Emissions and Maximum Safety

Benefit from a process free of leakage, contamination or toxic releases while avoiding constant monitoring and potential environmental fines. Eliminate all toxic and dangerous chemical releases including volatile and toxic liquids that can react with atmospheric contact.

Advanced Technology and the Highest Quality for Long Pump Life

WARRENDER pump designs are built to the highest quality standards to protect your process, preventing costly maintenance and lost production time.

- Robust, high thickness pump casings
- High efficiency impellers with low NPSH requirements
- High strength, rare earth magnetic couplings suitable for extreme temperatures
- Heavy duty rear casings
- Rugged internal bearing system withstands process upsets

Performances to the Extreme

- Flows from 0.1 to 1500 gpm
- Pressures up to 2200 psig
- Heads to 1000 feet
- Temperatures from -139°F to +600°F
- Pump liquefied gases or liquids with low NPSH
- Compatible with VFD control systems

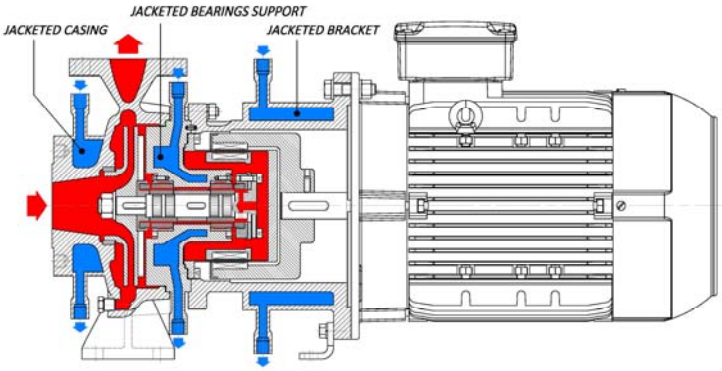
Hydrodynamically Balanced Impeller

Series WMCA
ISO-2858 / API-685
Process Centrifugal
(medium to high flows)

Compressor Circulation Pumps: Low Heat Load Seal-less Centrifugal

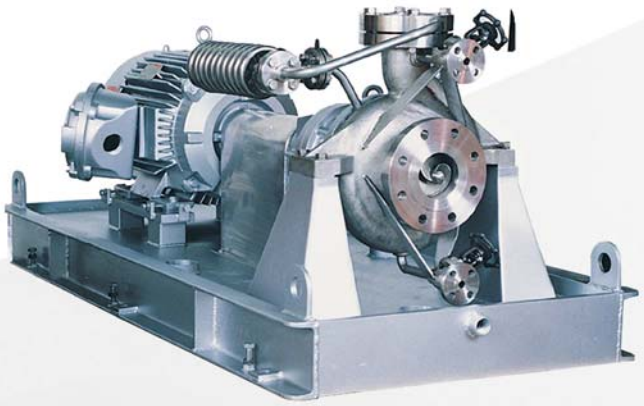
Series WMCA- ISO-2858 mag-drive centrifugal pumps are engineered for long-life, zero emissions pumping in the most arduous process conditions. Low heat induction avoids costly down-time and repairs due to flashing, in chemical, hydrocarbon, ammonia and CO2 systems.

ISO 8x6x13 High Capacity Refrigeration System @ -50° F



WMCA Features

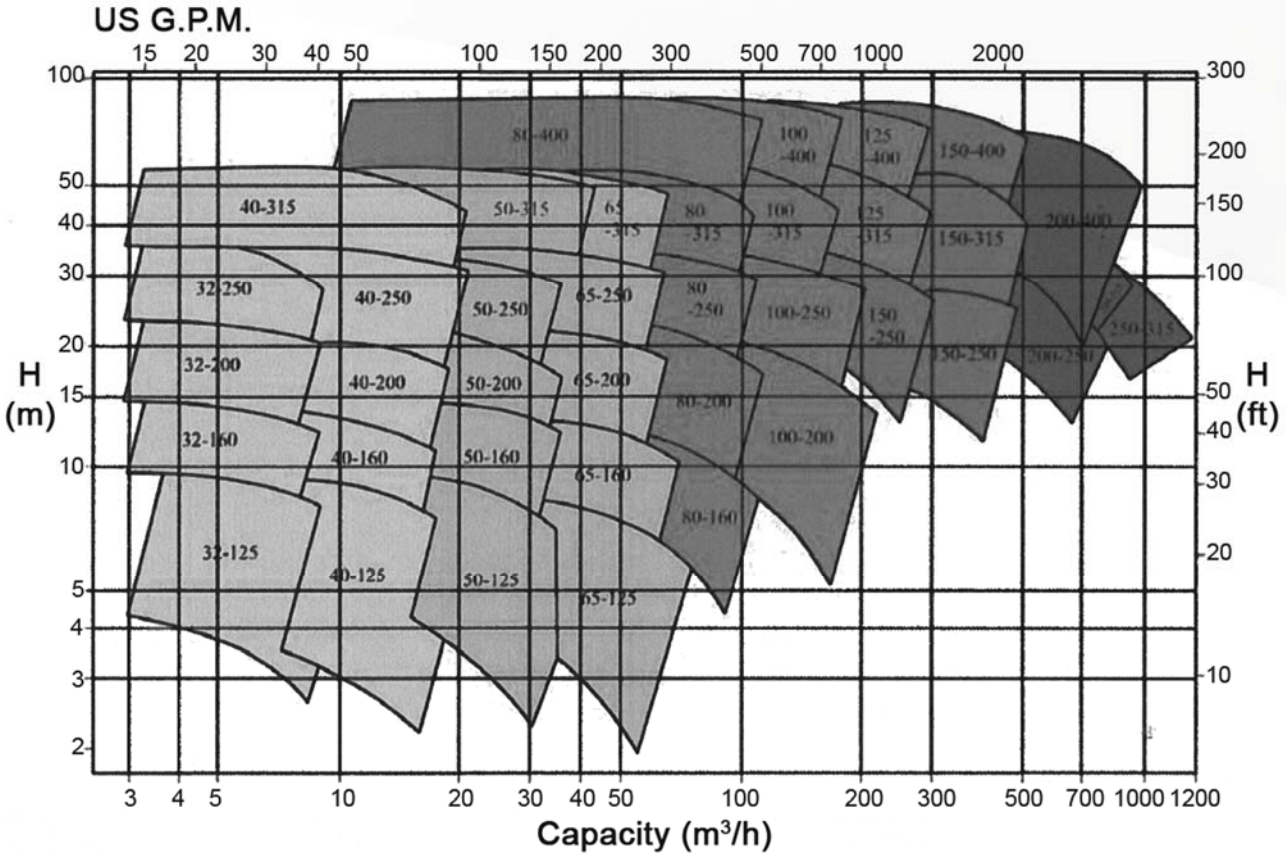
- Low heat load avoids flashing
- Seal-less design free of mechanical seal maintenance
- Magnetic coupling design for process & inventory flexibility
- Standard NEMA motors meet UL and EXP requirements



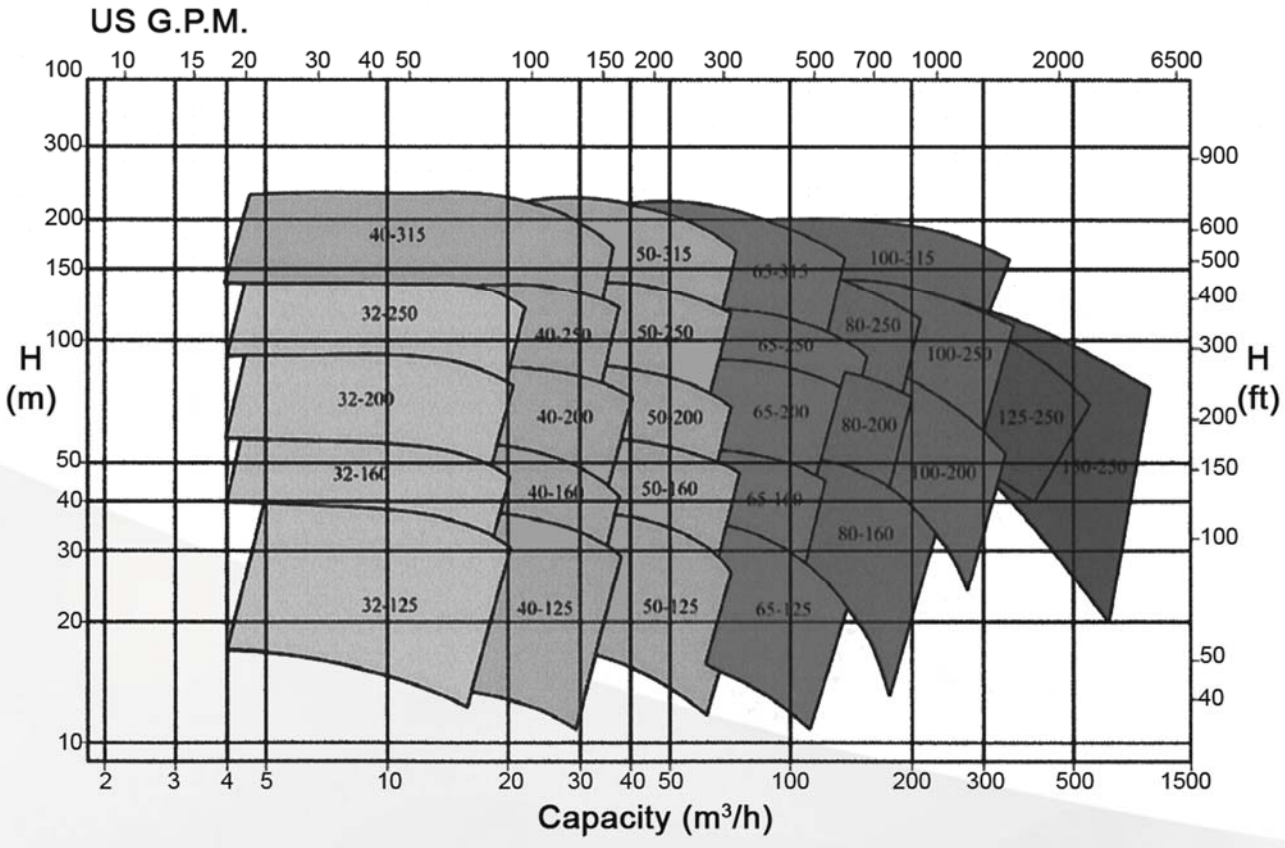
WMCA Performance Range

- Flows from 8 to 4500 gpm **(2-1000 m3/h)**
- Heads to 650 feet **(200 m)**
- System Pressures to 1,450 psig **(100 bar)**
- Temperatures from -139 to +600°F **(-95 to +315C)**

Composite Curves 1800 RPM (60Hz)



Composite Curves 3600 RPM (60Hz)



Epoxy primer and polyacrylic enamel water based paint system for a corrosion resistant coating, yet environmentally friendly.

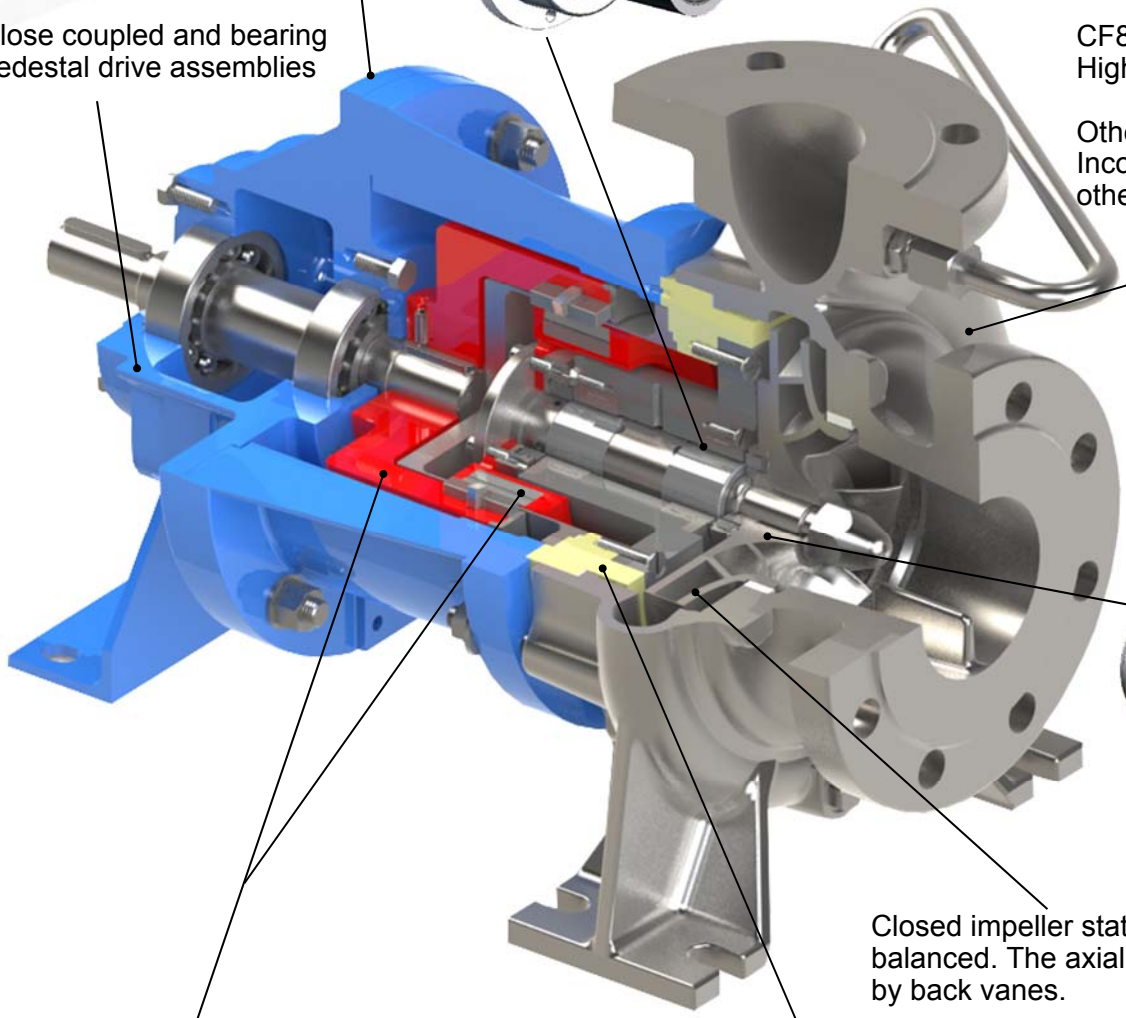
Field assembling of the product lubricated bearing arrangement does not require special tools.
The bearing materials available in three different materials to provide the best solution for each application: Silicon Carbide (SSIC), Tungsten Carbide (TC), and Carbon

The use of tolerance rings reduces the sleeve and thrust bearing loads to guarantee many years of maintenance-free operation.

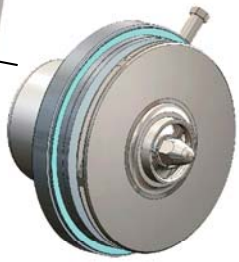
Close coupled and bearing pedestal drive assemblies

CF8M pump casing & impeller
High quality casting components

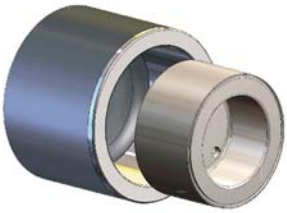
Other materials : Hastelloy C276, Incoloy825, Duplex, Titanium, or others available on request



REAR CARTRIDGE KIT
For quick retrofits



Closed impeller statically and dynamically balanced. The axial thrust loads are balanced by back vanes.



Confined casing gaskets prevent leakage to the atmosphere – optional materials available:

- PTFE
- Graphoil type
- Garlock type
- Gylon type
- Flexitallic type

High strength, synchronous magnetic couplings, are free of epoxy or potting materials, and fitted with samarium cobalt rare earth magnets. The high performance magnets can be operated at liquid temperatures up to 662 °F (350 °C) without external cooling. Power capability exceeds 700 HP / 520 kW.

Table of Sizes and Specifications (DIN / ISO2858)

MODEL ISO 2858	MODEL DIN 24256	Shaft Range	Suction Flange ANSI 150#	Discharge Flange ANSI 150#	Impeller Inches
WMCA 2x1.25x5	32-125	24 – 1st	2”	1 1/4”	5”
WMCA 2.5x2x5	50-125	24 – 1st	2 1/2”	2”	5”
WMCA 3x2.5x5	65-125	24 – 1st	3”	2 1/2”	5”
WMCA 4x3x5	n.a.	24 – 1st	4”	3”	5”
WMCA 2x1.25x6	32-160	24 – 1st	2”	1 1/4”	6”
WMCA 2.5x2x6	50-160	24 – 1st	2 1/2”	2”	6”
WMCA 3x2.5x6	65-160	24 – 1st	3”	2 1/2”	6”
WMCA 4x3x6	80-160	32 – 2nd	4”	3”	6”
WMCA 5x3x6	n.a.	32 – 2nd	5”	3”	6”
WMCA 2x1.25x8	32-200	24 – 1st	2”	1 1/4”	8”
WMCA 2.5x1.5x8	40-200	24 – 1st	2 1/2”	1 1/2”	8”
WMCA 3x2x8	50-200	24 – 1st	3”	2”	8”
WMCA 4x2.5x8	65-200	32 – 2nd	4”	2 1/2”	8”
WMCA 5x3x8	80-200	32 – 2nd	5”	3”	8”
WMCA 5x4x8	100-200	32 – 2nd	5”	4”	8”
WMCA 2x1.25x10	32-250	32 – 2nd	2”	1 1/4”	10”
WMCA 2.5x1.5x10	40-250	32 – 2nd	2 1/2”	1 1/2”	10”
WMCA 3x2x10	50-250	32 – 2nd	3”	2”	10”
WMCA 4x2.5x10	65-250	32 – 2nd	4”	2 1/2”	10”
WMCA 5x3x10	n.a.	32 – 2nd	5”	3”	10”
WMCA 2.5x1.5x13	40-315	32 – 2nd	2 1/2”	1 1/2”	13”
WMCA 3x2x13	50-315	32 – 2nd	3”	2”	13”

WMCA Conditions and Specifications

Max. Flow	**1000 gpm**
Max. Head	**650 Feet**
Max. Allowable Working Pressure	**40 BAR/ 600 PSI Standard**
Max. Allowable Working Pressure	**100 BAR/ 1500 PSI Built-to-Spec**
Specific Gravity	**0.15 - 2.0**
Max. Viscosity	**400 cP**
Liquid Temperature Range	**-139 °F to +600 °F**
Pump Material	**316SS, Incoloy 825, Hastelloy C, Duplex**
Motor Horsepower Range	**2 - 200 HP**

Centrifugal Flow Ratings

The accepted guideline for centrifugal pumps is 10% to the right of BEP (Best Efficiency Point) and 20% to the left. This ensures optimal hydraulic efficiencies and prevents runout and high head cavitation. Recirculation frictional heat of process liquid within centrifugal pumps operating below minimum stable flows can lead to high head cavitation from the energy that is imparted into the liquid.

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