

Nuclear

Nuclear Series



*THE WORLD'S MOST EXPERIENCED
SUPPLIER OF CANNED PUMPS
TO THE NUCLEAR INDUSTRY*



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Description

Chempump provides a wide range of capabilities for the Nuclear Power Industry in both product scope and compliance. The products available for direct replacement in both routine maintenance and life extension projects include:

- Chempump Canned Motor Pumps
- Chem/Meter Metering Pumps
- Re-engineered Products
- Nuclear Material Supply
- Nuclear Fabrication

Each of these products is available under a variety of Quality Assurance programs:

- Commercial products
- Commercial products with mutually agreed upon quality program upgrades
- Safety and non-safety applications
- Motors available for Class 1E Service
- Regulatory Guide 1.143
- Nuclear products with ASME “N”, “NPT” and “NS” Stamps
- NUPIC Audited
- 10 CFR Part 21
- Utility-specific requirements for upgrading and/or commercial grade dedication

In addition to direct replacement, our products are also available for replacement of existing equipment where other manufacturers may have allowed their “N” Stamp certification to lapse. Chempump sealless and leakproof Canned Motor Pumps are particularly applicable to replacement of other end suction pumps and elimination of troublesome packing or mechanical seal leaks.

Because of its leakproof design, Chempump offers economies in two important areas. Installation costs are extremely low since special foundations, leveling and alignment are not required. What’s more, the maintenance procedures and costs usually associated with centrifugal pumps are virtually eliminated. Chempumps completely eliminate periodic lubrication, stuffing box and seal maintenance, housekeeping expenses due to leakage, and costs due to loss of fluid.



ASME Section III, Class 3 centrifugal pump, 150 PSI design typical for water, heavy water and boric acid applications, G Series, Model GB, size 1x.75x6.5

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Design Advantages

- **NUCLEAR STAMPS** – A.S.M.E. Nuclear “N”, “NPT” and “NS” Stamps for Section III, Division 1, Classes 1, 2, & 3 pumps and parts maintained since 1971.
- **COMPLIANCE** – Chempump is compliant with NCA-4000 and CSA-Z299.3 programs, along with Naval Nuclear capabilities based on MIL-I-45208.
- **LONGER BEARING LIFE** – Chempump’s bearing design provides extra large radial bearing surfaces as standard with a total of ten bearing materials available. Chempumps can be supplied with long life bearings to suit practically any fluid.
- **HARDENED ROTOR JOURNALS** – Six types of corrosion resistant and wear resistant hardened journals are available on all Chempumps. This feature can increase journal life many times that of other journals. Type M-3 hard facing was developed and has substantially increased journal life for boric acid applications.
- **AUTOMATIC THRUST BALANCE** – This exclusive Chempump feature equalizes hydraulic pressures across the rotor and impeller, thereby eliminating axial thrust and axial bearing wear. No thrust bearings are required as a result of this feature.

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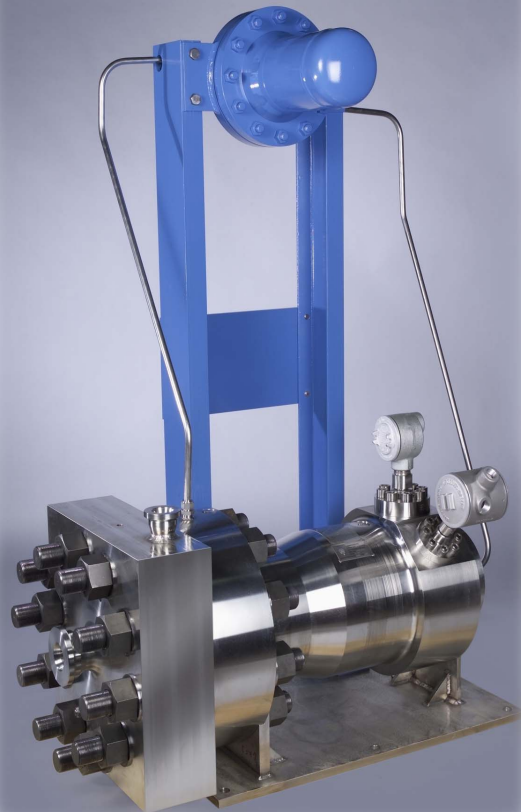
Operation

ASME Section III, Class 3 centrifugal pump, 150 PSI design typical for water, heavy water and boric acid applications, G Series, Model GVBS, size 3x1.5x6



Chempump has only one moving part, a combined rotor and impeller assembly, which is driven by the rotating magnetic field of an induction motor. A small portion of the pumped fluid is allowed to re-circulate through the motor section thus cooling the motor and lubricating the bearings. The re-circulating fluid passes through a filter fitted in the discharge neck of the pump casing, through the circulation tube, to the rear of the pump. It then moves into the rotor cavity, where it is isolated from the motor windings by a corrosion-resistant, non-metallic alloy liner across the bearings, and back into the main discharge flow.

- **THERMAL PROTECTION** – All Chempump motors are protected against excessive heat by a thermal cutout device. Should the motor reach a pre-set temperature limit, the pump will shut down automatically before permanent damage can occur.
- **SEISMIC DESIGN** – Chempumps can be constructed to withstand seismic loadings of sites throughout the world.
- **HIGH PRESSURE DESIGN** – By reinforcing the pressure boundary parts of the standard design, Chempumps can be provided to handle line pressures to 5000 PSI. High pressure Chempumps maintain all the advantages of leakproof design, compactness, high reliability, easy installation, and low maintenance.
- **HIGH PRESSURE LEAD CONNECTOR** – An exclusive Chempump accessory designed to prevent system fluid from leaking into the electrical conduit line in the event of malfunction.
- **SUBMERSIBLE DESIGN** – The standard Chempump design need only be modified for special electrical conduit piping and the use of corrosion resistant external parts for submerged service. This compact design eliminates unwieldy shaft extensions, need for shaft alignment, mechanical seals or stuffing boxes. The compactness of the Chempump design considerably reduces the effect of seismic shock.



ASME Section III, Class 1 radial vane pump, 3800 PSI @ 710° F design conditions for water, NC Series, Model NCRVT with heat exchanger

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Functions Served

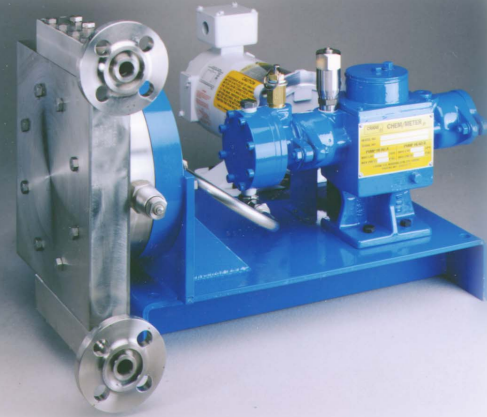
Accelerator Cooling
Booster
Boric Acid Transfer
Boron Injection Re-circulating
Chemical Drain Tank
Concentrate
Concentrates Tank Transfer
Condensate Transfer
Containment Floor Drain
Core Removal
Decay Heat Removal
Decontamination Pad
Deionizer Feed
Detergent Drain
Distillate
Emergency Diesel Fuel Transfer
Evaporator
Fines Wash Down Pump
Floor Drain Collector
Fuel Building Drain

Fueling Machine Head Fill
Fueling Machine Transfer
Gas Decay Drain Tank
Gas Stripper Feed
Heavy Water Upgrading
Hydrogen Entrainment Solution Drain
Isotope Circulation
Laundry Waste
Neutralization Transfer
Primary Drain Transfer
Reactor Coolant Drain
Reactor Flow Cavity
Reactor Make-Up Water
Re-circulating Drain Tank
Recycle Evaporator Feed
Sample Pump
Seal Water Feed and Drain
Spent Fuel Pit Skimmer
Spent Resin Sluice
Waste Applications

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Fluids Handled

Boric Acid
Boric Acid Wastes
Bromine Trifluoride
Demineralized Water
Diphenyl
Ethyl Alcohol
Ferric Hydroxide Solution
Heat Transfer Media
Heavy Water
Kerosene and Tributyl Phosphate
Nitric Acid
Primary Coolant
Reactor Coolant, Spent Regenerate
Sodium Nitrate
Sodium Sulfite
Water
Water – Radioactive
Water, Borated



ASME Section. III, Class 3 metering pump, 96 PSI @ 312° F
design conditions for heavy water, Chem/Meter 200 Series simplex

Front Page:
ASME Section III, Class 1 centrifugal pump, 1500 PSI design for
LISS sampling, G Series, Model GA

