Process Chiller **Product Guide**

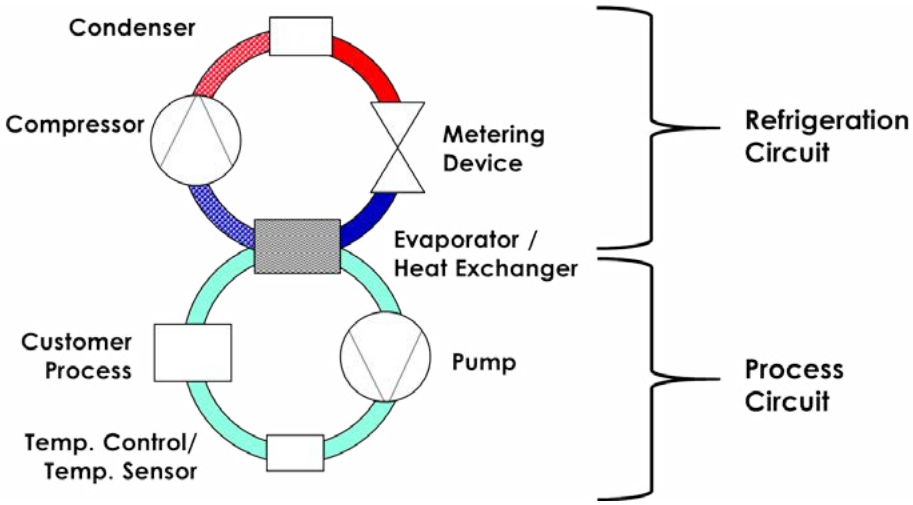
ISO 9001:2008

www.koolantkoolers.com

KOOLANT KOOLERS
By Dimplex Thermal Solutions

Industrial Processes Generate Heat.

Most processes today utilize a process fluid to cool the equipment by moving heat away from the operation. An **INDUSTRIAL CHILLER** is a cooling system designed to remove heat from that process fluid, transfer the heat to another medium (ambient air or water), and return cool fluid to the process to begin the cycle again.



Process Cooling & Refrigeration

Process Cooling Chillers vs. Air Conditioning Chillers

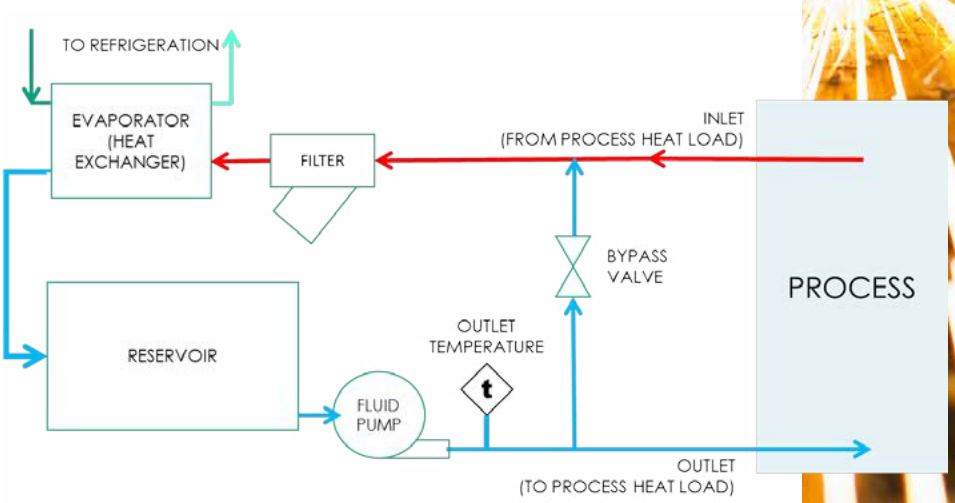
Industrial process chillers operate with varying temperatures, fluids and flow rates, utilizing multiple pumps and circuits.

Air conditioning chillers, on the other hand, are designed to run one fluid type, at one temperature, and one flow rate.

Refrigeration Circuit

Process chillers use a refrigerant to relocate the heat generated by a process. Cold refrigerant in the refrigeration circuit comes in close proximity to the process circuit and absorbs the heat from the warmer process fluid. It then carries the heat away and rejects it from the system. The main components used on the refrigerant side of the chiller are the compressor, condenser, metering device and evaporator.

Plumbing Circuit



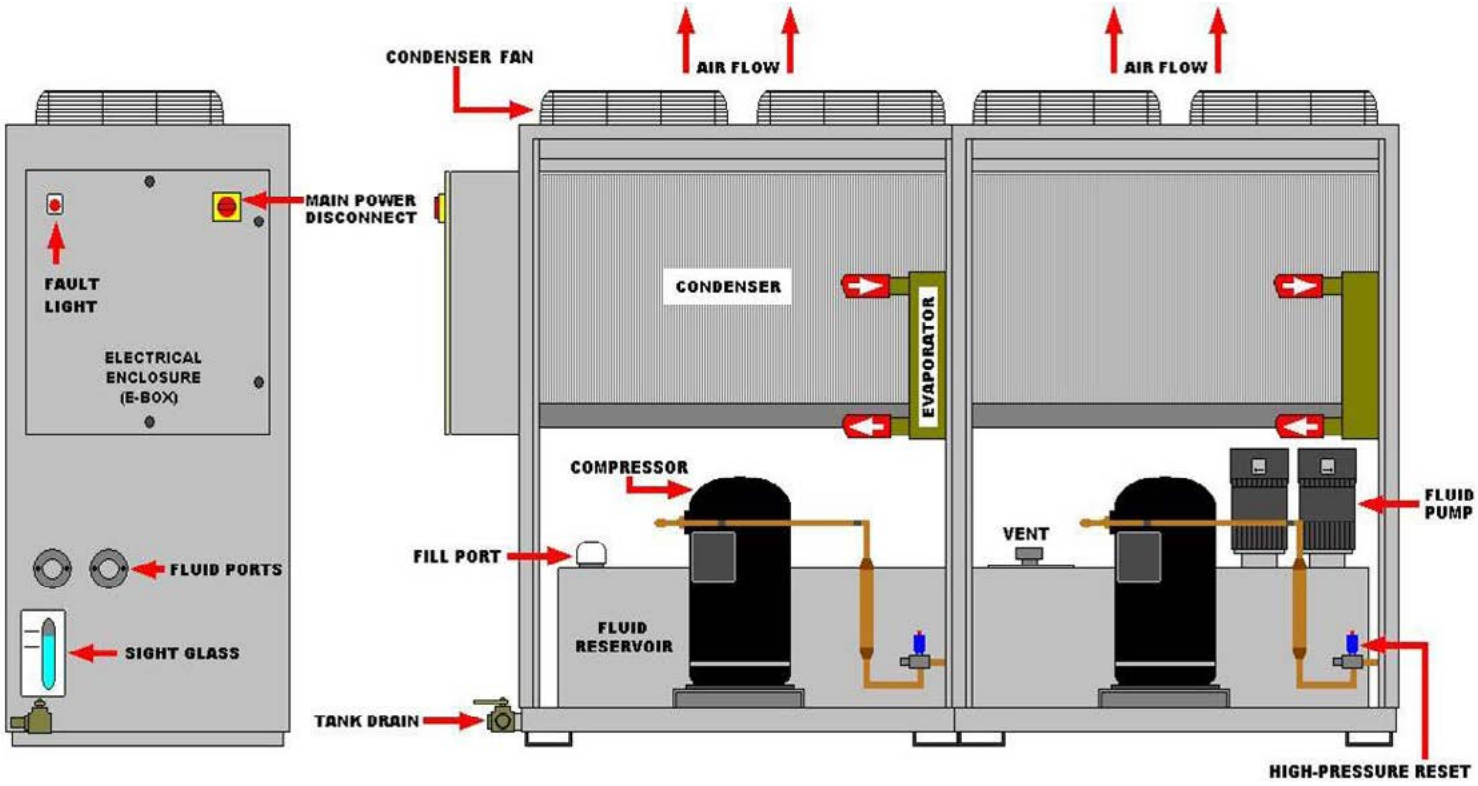
Helpful Terminology:

Dedicated chillers *are stationary, located next to the dedicated process it is cooling.*

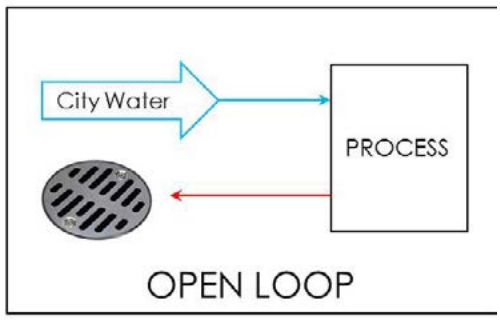
Central chillers *are systems that can cool several processes throughout a plant at the same time.*

Portable Chillers *are liquid cooling systems on casters that can be relocated from one application to another with relative ease. It can be used to cool one or more heat generating devices.*

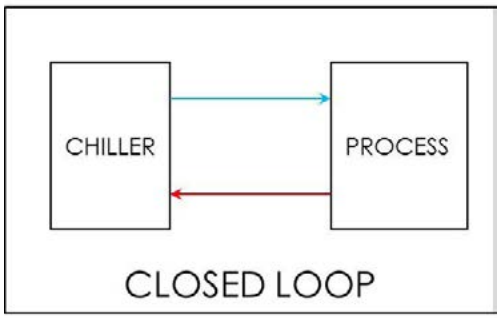
Chiller Layout & Components



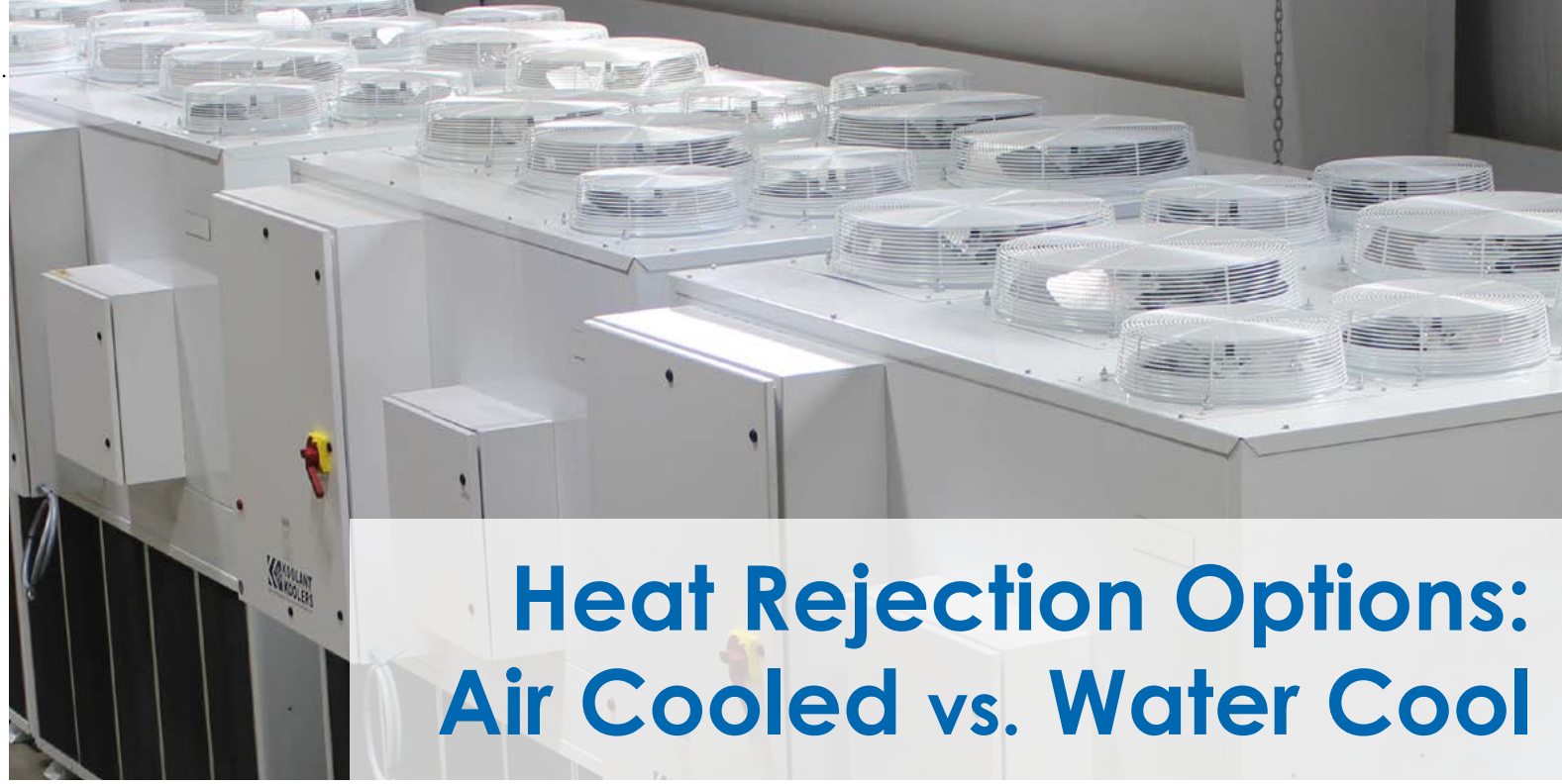
Closed Loop Saves Money



Open loop systems use cooling water to pass through a heat exchanger or directly cool and then dump the cooling water.



Closed loop systems use a chiller to cool the same fluid in a continuous loop. This saves the cost of dumping water down the drain.



Heat Rejection Options: Air Cooled vs. Water Cool

Air Cooled Chillers

Air Cooled chillers provide a refrigerant which absorbs heat from process fluid and the condenser ultimately discharges the heat to the surrounding air. Air cooled chillers have either horizontal or vertical discharge indicated by the location of their fans. Though they require a location where heat can be rejected to air, they also require less space and less maintenance than water-cooled units and eliminate the need for a cooling tower or condenser water pump. They generally consume approximately 10% more power than a water-cooled unit as a wet surface transfers heat more efficiently than a dry surface.

Water Cooled Chillers

Water-cooled chillers absorb heat from process fluid and transfer it to a separate fluid source such as a cooling tower. They are generally used for large capacity applications, where rejecting process heat to the air can be a problem. They are also considered when a cooling tower is already in place, or where the customer requires optimum efficiency of power consumption. Water-cooled chillers require condenser water treatment to eliminate mineral buildup. Mineral deposits create poor heat transfer situations that reduce the efficiency of the unit.

Protecting Production

Equipment Protection

The best reason to purchase a chiller is the protection it provides your valuable processing equipment. A chiller commonly represents a small fraction of the cost of the processing equipment, yet it provides solid protection of your investment for many years.

Increase Productivity

The speed and accuracy of production will increase as you maintain a constant and proper cooling temperature in the equipment. A chiller will reduce the number of rejected parts while increasing the number of parts produced per hour.

Where there is a need to remove heat, there is a chiller. Industrial applications include:

- Resistance Welding
- Laser
- Hydraulics
- EDM
- Machine Tool & Spindle
- Induction Heating
- Water Jet
- Medical Imaging
- Energy Storage
- Battery Manufacturing
- Solar and Wind Power
- Semi-conductors
- Food Processing

When Downtime is NOT an Option

When running critical processes or equipment — whether etching with an EDM machine, diagnosing a patient with an MR, or providing cooling to a data center that will cost several thousands of dollars if data is lost — the best solution is to use a Redundant Modular Chiller. Specifically engineered for reliability, these chillers are designed with duplicate circuits that can be customized to the load capacity.

Redundant Modular Chillers offer several long-term benefits that will offset the initial cost. In systems with varying heat loads, a redundant chiller is ideal as it will only use as much as the system requires scaling the heat load to make it very energy efficient. Using the individual modules only when the load requires it ensures a longer life of expensive components. If expansion is planned, a modular chiller is more cost efficient to add modules instead of purchasing a duplicate chiller unit. It can even allow isolation of individual circuits for maintenance under full operation. Redundancy adds enough capacity to have a reserve when necessary.

Our redundant designs have documented uptime higher than 99% with exceptionally tight tolerance.

Choosing the right chiller can reduce downtime and ensure:

No loss of productivity
Tight tolerance
Parts consistency
Reduced scrap
Longer tool life
Water savings

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Custom or Standard?

Koolant Koolers maintains pre-engineered product that can be utilized in most applications. Each design has a set of mainline characteristics along with several options and variations. Bypassing the design stage, they are available with expedited lead times.

Known for our customer capabilities and design expertise, Koolant Koolers engineers stand ready to design any product which may fall outside the scope of our standard product.

Koolant Koolers Chillers

- J SERIES - STANDARD DESIGN - PORTABLE CLOSED LOOP
- S SERIES - STANDARD DESIGN - STATIONARY CLOSED LOOP
- W SERIES - STANDARD BASE WITH CUSTOMIZABLE OPTIONS - CLOSED LOOP
- P SERIES - PRESSURIZED CLOSED LOOP - STAGED FOR GROWTH
- A SERIES - INLINE TANKLESS - MULTIPLE FLUIDS
- D SERIES - DROP IN
- F SERIES - FAN COOLED
- HEAT EXCHANGER PACKAGES

Model	System Type	Size	Evaporator	Air Discharge	Condenser	Tank	Fluid Type(s)
J Closed Loop	Closed Loop	1/8 - 2 Ton	Brazed Plate	Horizontal	Air Cooled	Sealed Non-Pressured	Water or Water Glycol
S Closed Loop	Closed Loop	3 - 20 Ton	Brazed Plate	Vertical	Air Cooled	Sealed Non-Pressured	Water or Water Glycol
W Closed Loop	Closed Loop	1/8 - 60 Ton	Brazed Plate	Vertical	Air Cooled, Water Cooled or Remote	Sealed Non-Pressured	Water or Water Glycol
P Closed Loop	Closed Loop	3 - 300 Ton	Brazed Plate	Vertical	Air Cooled or Water Cooled	Pressurized	Water or Water Glycol
A In-Line	In-Line	2 - 60 Ton	Brazed Plate, Shell and Tube or Cleanable	Vertical	Air Cooled		Oil, or Water/Soluble
D Drop-In	Drop-In	1 - 30 Ton	Submersed Stainless Steel Coil	Vertical	Air Cooled or Water Cooled		Oil, or Water/Soluble
F Fan-Cooled	Fan-Cooled	2 - 24 Ton	Radiator	Horizontal	Air Cooled		Typically: Oil but can be any
Hex Fluid-Fluid	Fluid-Fluid	n/a	Brazed Plate, Shell and Tube or Cleanable	n/a	n/a	n/a	Any

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The J Series

Features Include:

- Standardized portable models available with quick delivery
- 1/8 to 2 ton capacity
- Closed loop
- Air-cooled condenser
- Carel IR33 digital temperature controller
- Brazed plate evaporator
- Sealed, non-pressurized tank
- Water or water/glycol process fluids
- Stainless steel housing
- Indoor use only
- Voltage and flow options available

The W Series

Features Include:

- Predesigned base that is highly customizable
- 1/8 - 60 ton capacities
- Closed loop
- Aircooled, water cooled or remote condenser
- Digital controller with customizable programming
- Brazed plate evaporator
- Sealed, non-pressurized tank
- Water or water/glycol process fluids
- Powder coated RAL7035 cabinet (custom color shown)
- Available for indoor or outdoor use
- Voltage and flow options available

The S Series

Features Include:

- Standardized models for quick delivery
- 3 to 20 ton capacity
- Closed loop
- Air-cooled condenser
- Carel IR33 digital temperature controller
- Brazed plate evaporator
- Sealed. non-pressurized tank
- Water or water/glycol process fluids
- Powdercoated RAL7035 cabinet
- Available for indoor or outdoor use
- Voltage and flow options available

The P Series

Features Include:

- Highly customized systems designed to specification
- Self-contained 3-90 ton modules
- Designed for growth with limitless expandability
- Pressurized closed-loop system
- Air-cooled, water-cooled, or remote condensers (blower package available)
- Digital controller with customizable programming
- Brazed plate evaporators
- Sealed and pressurized tank
- Eliminates drain-back from overhead piping
- No possibility of algae or bacteria in tank
- Eliminates evaporation
- Water or water/glycol process fluids
- Available for indoor or outdoor use

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The A Series

Features Include:

- Predesigned base that is highly customizable
- 2 to 60 tons capacities
- In line cooling to circulate fluid and/or hold tank temp
- Air-cooled, water-cooled, or remote condenser (blower package available)
- Digital controller with customizable programming
- Brazed plate, cleanable, or shell and tube evaporator (varies w/ application)
- Water, water/glycol, water soluble or oil based process fluids
- Powder coated RAL 7035 cabinet
- Built with or without re-circulating pump

The F Series

Features Include:

- Standardized designs with customizable options
- 2 - 24 ton capacities available
- Fan cooled, radiator style evaporator
- Pump, tank and controls are optional
- Water, water/glycol, water soluble or oil based process fluids
- Powder coated RAL 7035 cabinet
- For cooling above ambient without critical temperature requirements
- Use in conjunction with chillers as economizers in winter months

The D Series

Features Include:

- Predesigned base that is highly customizable
- 1-30 ton capacities
- Drop in cooling - submersed stainless steel coil
- Air cooled or water cooled condenser
- Digital controller with customizable programming
- Water-soluble and oil based process fluids
- Agitator provided on oil applications (optional for water)
- Powder coated RAL 7035 cabinet

Heat Exchanger Packages

Features Include:

- Highly customizable and designed to specification
- Brazed plate, shell and tube,
  submersed coil, or plate and frame
  Isolation valves (supply and return piping)
- Pressure and temperature gauges (supply and return piping)
- Mounted on a skid/platform with a drip pan
- Primed or painted to customer specifications
- Recirculating pumps, process fluid reservoirs, and controls
  optional
- Process fluid is fed to HOT side via customer pump
- Plant water or dedicated chiller feeds the COLD side

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2625 Emerald Drive
Kalamazoo, MI 49001
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Phone: (269)349-6800

Service as a Partnership

Extended warranties

Maintenance plans

24 hour support

Spare parts kits

Start-up assistance

Engineering support

Factory trained technicians

We are involved in the life of your chiller from production to decommissioning.

Our approach to service is proactive, ensuring that every chiller provides optimal, efficient cooling performance today and in the future.

We offer packages that include commissioning services and preventative maintenance visit(s) and extend our industry-standard 18 month warranty.

We consider ourselves an experienced process partner and work with your maintenance staff to be sure they fully understand the care and best practices for the chiller. Proper maintenance ensures not only the life of our machines but the quality of your process output.

With next day parts available on hundreds of components, we stock the parts you need for regular maintenance or service replacement. Additionally we offer comprehensive parts kits which contain critical key components that you can pro-actively maintain onsite and avoid unneccessary downtime.

Through component sales, preventative site visits, stellar warranty support and 24 hr phone access we demonstrate a true partnership to bring you the best possible outcome.

For a detailed quote complete and fax to 269.349.1493 or scan/email to salesdept@dimplexthermal.com

Selecting a Chiller

With regard to performance and cost, your application is key in selecting the proper chiller. The performance must meet process requirements.

While Koolant Koolers has a wide selection of products available, we understand that we have not accounted for every situation. Please contact us and our experienced application engineers will design a system to match the needs of your process. The following questions are a sample of the information that will help us create the ideal solution.

1. What is the type of process or process equipment to be cooled?

2. Is there one large machine or several smaller machines to be cooled?

3. What is the desired supply temperature?

4. What is the heat load?

5. What are the lowest and highest possible ambient temperatures?

6. What is the total flow required by the process?

7. Is the flow to the process steady or varied?

8. What is the maximum fluid pressure required by the process?

9. What fluid is being cooled? (Water, Water/Glycol, Distilled, De-ionized water, Oil)?

LOAD

If known, _____BTU

If not, _____ inlet temperature F or C

_____ outlet temp F or C

_____ flow GPM or LPM

Ambient temperature _____ (lowest indoor) _____ highest [50-95 F]

☐ Fluid temperature _____

CONDENSER COOLING METHOD

- Air Cooled indoor
- Air Cooled outdoor
- Water Cooled indoor
- Split system [indoor/outdoor]

FLUID TO BE PROCESSED

• Water	[ALL]
• DI water _____ microsiems µS	[W]
• Water Glycol	[ALL]
• Oil _____ type? [_____SSU@100 F]	[A, D, W]

AVAILABLE ELECTRICAL

- 460/3/60
- 230/3/60
- 400/3/50
- 230/1/60
- 230/1/50
- 115V/1/60

TANK SELECTIONS

- Open to atmosphere
- Stainless Steel Tank
- Plastic Tank
- Closed Pressurized

CONTROLS

- Digital (base systems)
- Intelligent controls

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