TURMOIL

INDUSTRIAL FLUID CHILLERS

PRECISE TEMPERATURE CONTROL FOR ALL PROCESS COOLING APPLICATIONS

INDEX

Precise Temperature Control

FOR ALL PROCESS COOLING APPLICATIONS

From 1/4 to 30HP & More

Manufacturing industrial liquid chillers in the US since 1989, Turmoil has set the standard for quality and reliability. We serve a variety of applications including machine tool cooling, medical equipment, food and beverage, plastics processing, and more.

We are completely familiar with the challenges of achieving precise temperature control while minimizing downtime in a harsh industrial environment. With capacities from 2,500 to 360,000 BTU/HR, Turmoil coolers are available for Closed-Loop, Open-Loop, In-Line, or Drop-In tank applications and are specifically designed to cool either water, water-based, light oil or synthetic coolants. Available with a long list of options and accessories, your chiller is designed to best serve your application.

Contact us today and learn what Turmoil can do for you!

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W: www.TurmoilCoolers.com

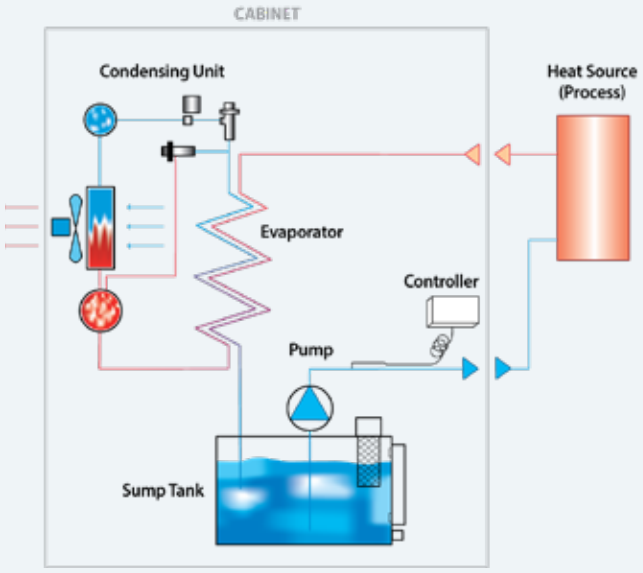
Applications

- Machine Tools
  - Coolants
  - Coolant Filtration Systems
  - Cutting Oils
  - EDM
  - Grinding Fluids
  - Headstocks
  - High-Speed Spindles
  - Hydraulic Systems
  - Hydrostatic Bearings
  - Lasers
  - Linear Motors
  - Plasma Cutting
  - Power Supplies
  - Welders
- X-Ray Equipment - NDT
- Induction Heaters
- Diffusion Pumps
- Jacketed Vessels
- Chill Rolls
- Heat Exchangers
- Injection Molding
- Medical Equipment
  - Linear Accelerators
  - Scanners
  - MRI
- Vapor Recovery
- Printing Equipment

R Chillers
CLOSED LOOP

Self-contained
recirculating chillers

The Closed-Loop System



Closed-Loop coolers recirculate coolant from a tank mounted in the cooler, through a sealed coolant loop and heat load (spindle) and back to the tank. The tank, pump, and evaporator are all in the cooler.

Coolant is added to the tank through a filler/breather port. The coolant level is always visible in the tank level gauge. When the pump is energized, it draws coolant from the tank and pumps it through the coolant loop. The coolant absorbs heat from the heat load and then dissipates it in the evaporator before returning to the tank. The temperature controller senses the temperature of the coolant leaving the tank and controls the refrigeration effect in the evaporator to provide coolant at the desired discharge temperature.

Water / Water-Based Coolants

OC Models for Water or Water-Based Coolants including de-ionized water (specific options required), water/glycol mixtures, and water-based synthetic coolants.

OC models are supplied with a durable stainless steel coolant tank with filler/breather port and coolant level gauge. Evaporators are stainless steel immersion coils (up to 1.5 HP) or stainless steel brazed plates. Piping and fittings are non-ferrous. Standard pumps are bronze, brass, or stainless steel.

Oil / Oil-Based Coolants

OCO Models for Oil or Oil-Based Coolants. All OCO models are supplied with stainless steel immersion or brazed plate evaporators selected specifically for oil based coolants and pumps all designed for years of reliability and dependabilty.

Applications

- High-Speed Spindles
- Lasers
- Power Supplies
- Diffusion Pumps
- Jacketed Vessels
- Chill Rolls
- Injection Molding
- Linear Motors
- Medical Equipment
- Welding
- Vacuum systems
- Heat Exchangers

R Chiller Options

Digital Temperature Controller (CTC)
Provides close temperature control (±0.5°F). Displays both set-point and coolant temperature.

Ambient Tracking Controller (ATC)
A dual input digital temperature controller allows the coolant temperature to track ambient temperature at a constant, adjustable differential. Displays both ambient and coolant temperature.

Optional Pumps (OP)
A variety of pumps are available to meet almost any flow and pressure requirement for both water and oil-based coolants.

Low Flow Interlock (LF)
Prevents damage to machine on loss of flow.

Temperature Fault Interlock (HT)
Indicates coolant temperature is out of range.

Low Level Interlock (LL)
Indicates coolant level is low.

Flow Meter/Switch (FSM)
Adjusts coolant flow to optimum setting.

In-Line Heater (ILH)
Warms up coolant to optimum operating temperature.

In-Line Filter (ILF)
Insures clean coolant.

Pure System (PS)
Coolant only comes in contact with stainless steel or plastic.

Non-Refrigerated Cooler (NRCW & NRCA)
Uses central chilled water or ambient air instead of refrigeration. Saves space and maintenance.

Water-Cooled Condenser (W)
For use with tower or city water. Removes heat from the work area while saving space and maintenance.

View our complete list of options on page 28-30

OCO-300R

OCO-100R

OCO-25R

R Chillers
CLOSED LOOP
Water Cooler Specifications

Model	Rated Cooling Capacity *			Comp.	Standard Pump Capacity **		Tank Capacity		Standard Voltage	Estimated Dimensions *** inches			Shipping Weight	
	BTU/ HR	WATTS	KCAL/ HR	HP	GPM	LPM	GAL	LTR		W	D	H	LB	KG
OC-25R	3000	880	625	1/4	1.6	6	2	7.5	V1, V3	12.5	21	16.5	130	60
OC-33R	4000	1170	825	1/3	1.6	6	2	7.5	V1, V3	15.75	20	27	157	80
OC-50R	6000	1760	1500	1/2	2.5	9	4	15	V1, V3	16	26	29	200	90
OC-75R	9000	2350	2000	3/4	4	15	4	15	V1, V3	16	26	29	200	90
OC-100R	12000	3520	3000	1	6	23	10	38	V2, V3	22	30	37	400	180
OC-150R	18000	5280	4500	1 1/2	8	30	10	38	V6, V8, V10	22	30	37	400	180
OC-200R	24000	7040	6000	2	8	30	14	54	V6, V8, V10	28	32	52	550	250
OC-300R	36000	10560	9000	3	12	45	20	75	V6, V8, V10	32	34	56	600	273
OC-400R	48000	14000	12000	4	16	60	32	120	V6, V8, V10	36	50	56	750	320
OC-500R	60000	17600	15000	5	20	75	32	120	V6, V8, V10	36	50	56	850	395
OC-750R	90000	26400	22500	7 1/2	30	112	48	180	V6, V8	36	60	66	1000	460
OC-1000R	120000	35200	30000	10	40	150	60	225	V6, V8	46	74	60	1200	550
OC-1500R	180000	52800	45000	15	60	225	100	375	V6, V8	46	87	78	1500	680
OC-2000R	240000	70400	60000	20	80	300	150	560	V6, V8	46	87	78	2500	1150
OC-2500R	300000	88000	75000	25	100	375	150	560	V6, V8	48	116	78	2500	1150
OC-3000R	360000	105600	90000	30	120	450	200	750	V6, V8	48	116	78	2800	1300

Standard Voltage	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 60°F (16°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

R Chillers

CLOSED LOOP

Oil Cooler Specifications

	Rated Cooling Capacity *			Comp.	Standard Pump Capacity **		Tank Capacity		Standard Voltage	Estimated Dimensions *** inches			Shipping Weight	
MODEL	BTU/ HR	WATTS	KCAL/ HR	HP	GPM	LPM	GAL	LTR		W	D	H	LB	KG
OCO-25R	3000	880	625	1/4	1.5	5.6	4.5	17	V1, V3	16.5	18	37	150	68
OCO-33R	4000	1170	825	1/3	1.5	5.6	4.5	17	V1, V3	16.5	18	36	150	68
OCO-50R	6000	1760	1500	1/2	2.5	9.5	4.5	17	V1, V3	18.5	24	40	200	90
OCO-75R	9000	2350	2000	3/4	5	19	4.5	17	V1, V3	18.5	24	40	200	90
OCO-100R	12000	3520	3000	1	8	30	12	45	V2, V3	22	30	37	300	135
OCO-150R	18000	5280	4500	1 1/2	8	30	12	45	V6, V8, V10	22	30	37	350	160
OCO-200R	24000	7040	6000	2	12	45	16	60	V6, V8, V10	28	32	52	550	250
OCO-300R	36000	10560	9000	3	18	68	20	75	V6, V8, V10	32	34	56	600	273
OCO-400R	48000	14000	12000	4	24	90	32	120	V6, V8, V10	36	50	56	750	320
OCO-500R	60000	17600	15000	5	30	112	32	120	V6, V8, V10	36	50	56	850	395
OCO-750R	90000	26400	22500	7 1/2	40	150	48	180	V6, V8	36	60	66	1000	460
OCO-1000R	120000	35200	30000	10	50	190	60	225	V6, V8	46	74	60	1200	550
OCO-1500R	180000	52800	45000	15	75	280	100	375	V6, V8	46	87	78	1500	680
OCO-2000R	240000	70400	60000	20	100	375	150	560	V6, V8	46	87	78	2500	1150
OCO-2500R	300000	88000	75000	25	125	470	150	560	V6, V8	48	116	78	2500	1150
OCO-3000R	360000	105600	90000	30	150	560	200	750	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 80°F (28°C) in a 90°F(32°C) ambient.

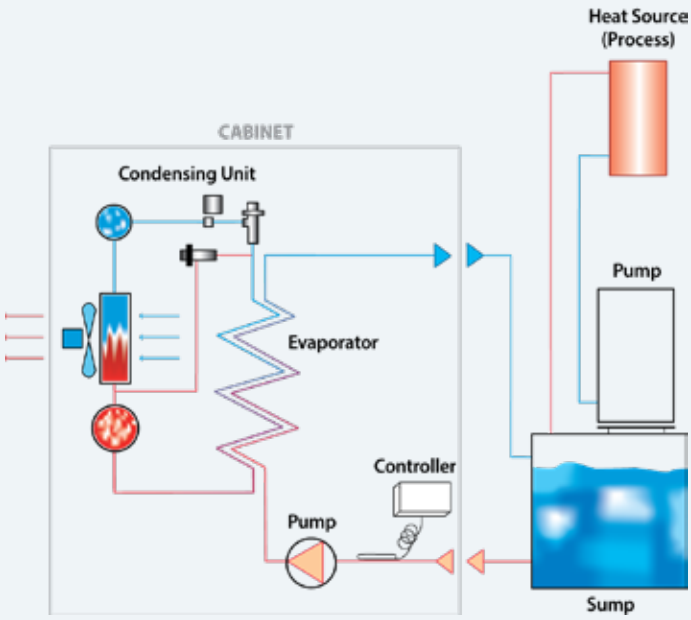
** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

RO Chillers
OPEN LOOP

Recirculate Fluid from a Remote Tank

The Open-Loop System



Open-Loop coolers recirculate fluid from a remote tank, through the cooler and back to the tank. The cooler works to maintain a constant fluid temperature in the tank. The pump and evaporator are in the cooler. The tank is remote.

When the pump is energized it draws fluid from the remote tank and pumps it through the evaporator in the cooler and back to the tank. The temperature controller senses the temperature of the fluid entering the cooler and controls the refrigeration effect in the evaporator to provide the desired fluid temperature in the tank. The cooler should be installed as near as possible to the tank.

Water / Water-Based Coolants

OC Models for Water or Water-Based Coolants including de-ionized water, water/glycol mixtures, and water-based synthetic coolants. Evaporators are brazed, stainless steel plates. Piping and fittings are non-ferrous. Self-priming, bronze, centrifugal pumps are standard. Coolant recirculating through the cooler must be clean, otherwise specify optional In-Line Filter (ILF).

Oil / Oil-Based Coolants

Evaporators are brazed, enhanced stainless steel plates. Piping and fittings are copper, bronze, steel, or hose. Self-priming, cast-iron gear pumps are standard. Oil recirculating through the cooler must be clean, otherwise specify optional In-Line Filter (ILF).

Applications

- Coolant Sumps
- Filtration Tanks
- Hydraulic Tanks
- EDM
- Process Tanks
- Quench Tanks
- Headstocks
- Gear Boxes
- Fish Tanks

RO Chiller Options

Digital Temperature Controller (CTC)
Provides close temperature control (±0.5°F). Displays both set-point and coolant temperature.

Ambient Tracking Controller (ATC)
A dual input digital temperature controller allows the coolant temperature to track ambient temperature at a constant, adjustable differential. Displays both ambient and coolant temperature.

Optional Pumps (OP)
A variety of pumps are available to meet almost any flow and pressure requirement for both water and oil-based coolants.

Low Flow Interlock (LF)
Prevents damage to machine on loss of flow.

Temperature Fault Interlock (HT)
Indicates coolant temperature is out of range.

In-Line Heater (ILH)
Warms up coolant to optimum operating temperature.

In-Line Filter (ILF)
Insures clean coolant.

Pure System (PS)
Coolant only comes in contact with stainless steel or plastic.

Non-Copper (NC)
Oil only comes in contact with iron or stainless steel.

Non-Refrigerated Cooler (NRCW & NRCA)
Uses central chilled water or ambient air instead of refrigeration. Saves space and maintenance.

Water-Cooled Condenser (W)
For use with tower or city water. Removes heat from the work area while saving space and maintenance.

View our complete list of options on page 28-30

OC-1000RO

OC-150RO-ILF

OC-33RO

RO Chillers

OPEN LOOP

Water Cooler Specifications

	Rated Cooling Capacity *			Comp.	Standard Pump Capacity **		Standard Voltage	Estimated Dimensions *** inches			Shipping Weight	
MODEL	BTU/HR	WATTS	KCAL/HR	HP	GPM	LPM		W	D	H	LB	KG
OC-25RO	3000	880	625	1/4	1.6	6	V1, V3	16.5	18	30	150	68
OC-33RO	4000	1170	825	1/3	1.6	6	V1, V3	16.5	22	30	150	68
OC-50RO	6000	1760	1500	1/2	2.5	9	V1, V3	19.5	24	34	200	90
OC-75RO	9000	2350	2000	3/4	4	15	V1, V3	19.5	24	34	200	90
OC-100RO	12000	3520	3000	1	6	23	V2, V3	22	30	38	300	135
OC-150RO	18000	5280	4500	1 1/2	8	30	V6, V8, V10	22	30	38	350	160
OC-200RO	24000	7040	6000	2	8	30	V6, V8, V10	32	38	48	550	250
OC-300RO	36000	10560	9000	3	12	45	V6, V8, V10	32	36	56	600	273
OC-400RO	48000	14000	12000	4	16	60	V6, V8, V10	36	50	56	750	320
OC-500RO	60000	17600	15000	5	20	75	V6, V8, V10	36	50	56	850	395
OC-750RO	90000	26400	22500	7 1/2	30	112	V6, V8	36	50	66	1000	460
OC-1000RO	120000	35200	30000	10	40	150	V6, V8	46	74	56	1200	550
OC-1500RO	180000	52800	45000	15	60	225	V6, V8	46	87	78	1500	680
OC-2000RO	240000	70400	60000	20	80	300	V6, V8	46	87	78	2500	1150
OC-2500RO	300000	88000	75000	25	100	375	V6, V8	48	116	78	2500	1150
OC-3000RO	360000	105600	90000	30	120	450	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 60°F (16°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

RO Chillers

OPEN LOOP

Oil Cooler Specifications

	Rated Cooling Capacity *			Comp.	Standard Pump Capacity **		Standard Voltage	Estimated Dimensions *** inches			Shipping Weight	
MODEL	BTU/HR	WATTS	KCAL/HR	HP	GPM	LPM		W	D	H	LB	KG
OCO-25RO	3000	880	625	1/4	1.5	5.6	V1, V3	16.5	18	30	150	68
OCO-33RO	4000	1170	825	1/3	1.5	5.6	V1, V3	16.5	22	30	150	68
OCO-50RO	6000	1760	1500	1/2	2.5	9.5	V1, V3	19.5	24	34	200	90
OCO-75RO	9000	2350	2000	3/4	5	19	V1, V3	19.5	24	34	200	90
OCO-100RO	12000	3520	3000	1	8	30	V2, V3	22	30	38	300	135
OCO-150RO	18000	5280	4500	1 1/2	8	30	V6, V8, V10	22	30	38	350	160
OCO-200RO	24000	7040	6000	2	12	45	V6, V8, V10	32	38	48	550	250
OCO-300RO	36000	10560	9000	3	18	68	V6, V8, V10	32	36	56	600	273
OCO-400RO	48000	14000	12000	4	24	90	V6, V8, V10	36	50	56	750	320
OCO-500RO	60000	17600	15000	5	30	112	V6, V8, V10	36	50	56	850	395
OCO-750RO	90000	26400	22500	7 1/2	40	150	V6, V8	36	60	66	1000	460
OCO-1000RO	120000	35200	30000	10	50	190	V6, V8	46	74	56	1200	550
OCO-1500RO	180000	52800	45000	15	75	280	V6, V8	46	87	78	1500	680
OCO-2000RO	240000	70400	60000	20	100	375	V6, V8	46	87	78	2500	1150
OCO-2500RO	300000	88000	75000	25	125	470	V6, V8	48	116	78	2500	1150
OCO-3000RO	360000	105600	90000	30	150	560	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 80°F (28°C) in a 90°F(32°C) ambient.

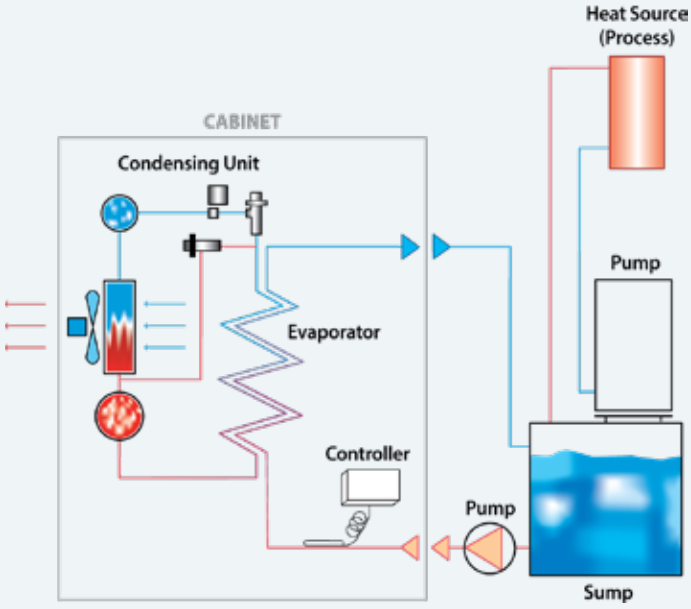
** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

IL Chillers
IN-LINE

Pump fluids through the In-Line Cooler

The In-Line System



In-line coolers are often used in applications where it is advantageous to have the pump mounted on or near the tank to recirculate fluid through the cooler and back to the tank. This type of installation is necessary when the cooler is installed too far above or away from the tank to allow for the use of an Open-Loop cooler.

In-Line coolers cool fluid that is passing through under pressure. Only the evaporator is in the cooler. Both the pump and tank are remote. The temperature controller senses the temperature of the fluid entering the cooler and cycles the refrigeration effect to maintain the desired fluid temperature in the tank.

Water / Water-Based Coolants

OC Models for Water or Water-Based Coolants including de-ionized water, water/glycol mixtures, and water-based synthetic coolants. Evaporators are brazed stainless steel plates rated for 350 PSI working pressure. Piping and fittings are non-ferrous. A Low Flow switch automatically shuts down refrigeration on loss of coolant flow. Coolant passing through cooler must be clean, otherwise specify optional In-Line Filter (ILF) or Cleanable Evaporator (CEV).

Oil / Oil-Based Coolants

Evaporators are brazed, enhanced stainless steel plates rated for 350 PSI working pressure. Piping and fittings are copper, bronze, steel or hose. A Low Flow switch automatically shuts down refrigeration on loss of oil flow.

Applications

- Coolant Systems
- Filtration Systems
- Hydraulic Systems
- EDM
- Cold Spray
- Batch Cooling
- Film Developing
- Ingredient Water
- Food Processing

IL Chiller Options

Digital Temperature Controller (CTC)
Provides close temperature control (±0.5°F). Displays both set-point and coolant temperature.

Ambient Tracking Controller (ATC)
A dual input digital temperature controller allows the coolant temperature to track ambient temperature at a constant, adjustable differential. Displays both ambient and coolant temperature.

Temperature Fault Interlock (HT)
Indicates coolant temperature is out of range.

Flow Meter/Switch (FSM)
Adjusts coolant flow to optimum setting.

In-Line Heater (ILH)
Warms up coolant to optimum operating temperature.

In-Line Filter (ILF)
Insures clean coolant.

Cleanable Evaporator (CEV)
Required for dirty or potentially dirty fluids.

Non-Copper (NC)
Oil only comes in contact with iron or stainless steel.

Water-Cooled Condenser (W)
For use with tower or city water. Removes heat from the work area while saving space and maintenance.

View our complete list of options on page 28-30

OC-1500IL

OC-300IL

OC-50IL

IL Chillers

IN-LINE

Water Cooler Specifications

	Rated Cooling Capacity *			Comp.	Minimum Flow**		Standard Voltage	Estimated Dimensions *** inches			Estimated Shipping Weight	
MODEL	BTU/HR	WATTS	KCAL/HR	HP	GPM	LPM		W	D	H	LB	KG
OC-25 IL	3000	880	625	1/4	1	3.8	V1, V3	16.5	18	24	100	45
OC-33 IL	4000	1170	825	1/3	1	3.8	V1, V3	16.5	18	24	100	45
OC-50 IL	6000	1760	1500	1/2	1.5	5.7	V1, V3	19.5	24	34	150	68
OC-75 IL	9000	2350	2000	3/4	2	7.5	V1, V3	19.5	24	34	150	68
OC-100 IL	12000	3520	3000	1	3	11	V2, V3	28	30	26	300	135
OC-150 IL	18000	5280	4500	1 1/2	4.5	17	V6, V8, V10	28	30	26	350	160
OC-200 IL	24000	7040	6000	2	6	23	V6, V8, V10	32	38	25	550	250
OC-300 IL	36000	10560	9000	3	9	34	V6, V8, V10	36	36	34	600	273
OC-400 IL	48000	14000	12000	4	12	45	V6, V8, V10	36	50	34	750	320
OC-500 IL	60000	17600	15000	5	15	56	V6, V8, V10	36	50	34	850	395
OC-750 IL	90000	26400	22500	7 1/2	25	95	V6, V8	36	50	60	1000	460
OC-1000 IL	120000	35200	30000	10	30	112	V6, V8	36	50	60	1200	550
OC-1500 IL	180000	52800	45000	15	45	170	V6, V8	46	87	78	1500	680
OC-2000 IL	240000	70400	60000	20	60	225	V6, V8	46	87	78	2500	1150
OC-2500 IL	300000	88000	75000	25	75	280	V6, V8	48	116	78	2500	1150
OC-3000 IL	360000	105600	90000	30	90	340	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 60°F (16°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

IL Chillers

IN-LINE

Oil Cooler Specifications

	Rated Cooling Capacity *			Comp.	Minimum Flow**		Standard Voltage	Estimated Dimensions *** inches			Estimated Shipping Weight	
MODEL	BTU/HR	WATTS	KCAL/HR	HP	GPM	LPM		W	D	H	LB	KG
OCO-25 IL	3000	880	625	1/4	2	7.5	V1, V3	16.5	18	24	150	68
OCO-33 IL	4000	1170	825	1/3	2	7.5	V1, V3	16.5	18	24	150	68
OCO-50 IL	6000	1760	1500	1/2	3	11	V1, V3	19.5	24	34	200	90
OCO-75 IL	9000	2350	2000	3/4	4	15	V1, V3	19.5	24	34	200	90
OCO-100 IL	12000	3520	3000	1	6	23	V2, V3	28	30	26	300	135
OCO-150 IL	18000	5280	4500	1 1/2	9	34	V6, V8, V10	28	30	26	350	160
OCO-200 IL	24000	7040	6000	2	12	45	V6, V8, V10	32	38	25	550	250
OCO-300 IL	36000	10560	9000	3	18	68	V6, V8, V10	36	36	34	600	273
OCO-400 IL	48000	14000	12000	4	24	90	V6, V8, V10	36	50	34	750	320
OCO-500 IL	60000	17600	15000	5	30	112	V6, V8, V10	36	50	34	850	395
OCO-750 IL	90000	26400	22500	7 1/2	40	190	V6, V8	36	50	60	1000	460
OCO-1000 IL	120000	35200	30000	10	50	225	V6, V8	36	50	60	1200	550
OCO-1500 IL	180000	52800	45000	15	75	340	V6, V8	46	87	78	1500	680
OCO-2000 IL	240000	70400	60000	20	100	450	V6, V8	46	87	78	2500	1150
OCO-2500 IL	300000	88000	75000	25	125	560	V6, V8	48	116	78	2500	1150
OCO-3000 IL	360000	105600	90000	30	150	560	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 80°F (28°C) in a 90°F(32°C) ambient.

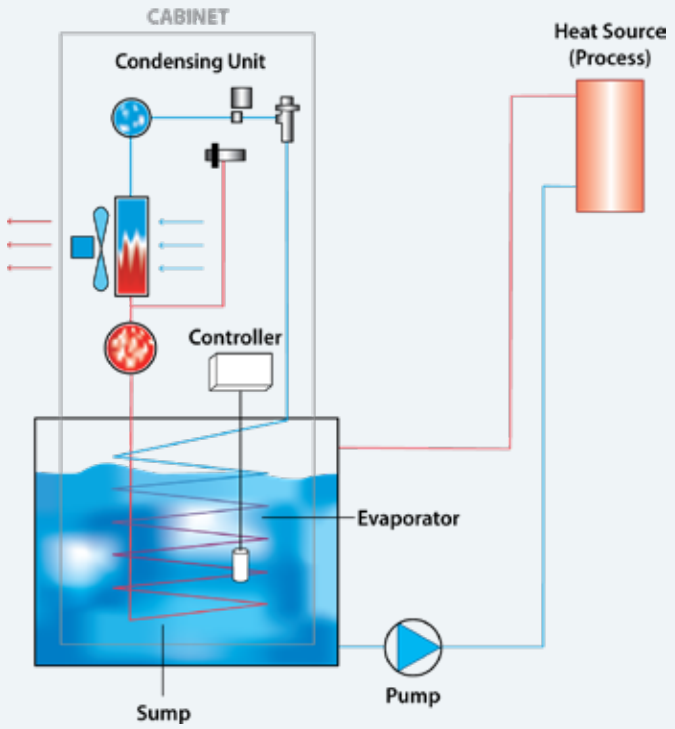
** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

DI Chillers
DROP-IN

Space Saving Design to Cool Fluids in a Tank

The Drop-In System



Drop-In coolers save floor space and are ideal for installation on tanks where the coolant is too dirty to pump through a heat exchanger. The cooler can readily be lifted out for tank cleaning or inspection.

Drop-In coolers are designed to be mounted on top of a tank to cool the fluid that is passing through it. The stainless steel immersion coil type evaporator is submerged into the fluid in the tank. An optional agitation pump continuously moves the fluid around the evaporator coils ensuring proper heat transfer. The temperature controller senses the fluid temperature and controls the refrigeration effect to maintain the fluid in the tank at the desired temperature.

Water / Water-Based Coolants

OC Models for Water or Water-Based Coolants including de-ionized water, water/glycol mixtures, and water-based synthetic coolants. Ideal for dirty coolants. Evaporators are seamless, stainless steel, immersion coils. Coil dimensions can be modified to fit tank. Agitation pumps are provided as standard on larger models (1HP and above).

Light Oil / Oil-Based Coolants

Not suitable for all oils or installations (check with Turmoil). Minimum set-point temperature: 80°F (27°C). Evaporators are seamless, stainless steel, immersion coils. Coil dimensions can be modified to fit tank. Agitation pumps are standard on larger models (1HP and above).

Applications

- Coolant Tanks
- Filtration Tanks
- Settling Tanks
- EDM
- Quench Tanks
- Fish Tanks

DI Chiller Options

Digital Temperature Controller (CTC)
Provides close temperature control (±0.5°F). Displays both set-point and coolant temperature.

Ambient Tracking Controller (ATC)
A dual input digital temperature controller allows the coolant temperature to track ambient temperature at a constant, adjustable differential. Displays both ambient and coolant temperature.

Temperature Fault Interlock (HT)
Indicates coolant temperature is out of range.

Low Level Interlock (LL)
Indicates coolant level is low.

In-Line Heater (ILH)
Warms up coolant to optimum operating temperature.

Special Dimensions
Cabinets and/or coils sized to the application. Coils can be modified to fit specific tanks.

Remote Controls
Available for applications where the cooler is installed out of reach, such as on top of a large coolant filtration system.

No Agitation Pump (RAP)
For applications where there is sufficient coolant flow through the coils for proper heat exchange.

Water-Cooled Condenser (W)
For use with tower or city water. Removes heat from the work area while saving space and maintenance.

View our complete list of options on page 28-30

OC-750DI

OC-300DI

OC-33DI

DI Chillers

DROP-IN

Water Cooler Specifications

Model	Rated Cooling Capacity*			Comp.	Circ. Pump	Standard Voltage	Cabinet Dimensions ** inches			Coil Dimensions ** inches			Coil Dimensions ** centimeters			Estimated Shipping Weight	
	BTU/HR	WATTS	KCAL/HR	HP	HP		W	D	H	W	L	H	W	L	H	LB	KG
OC-25 DI	3000	880	625	1/4	N/A	V1, V3	16.5	16	18	12	14	12	30	35	30	100	45
OC-33 DI	4000	1170	825	1/3	N/A	V1, V3	16.5	22	18	12	14	12	30	35	30	100	45
OC-50 DI	6000	1760	1500	1/2	N/A	V1, V3	16.5	25	22	14	16	12	35	41	30	180	82
OC-75 DI	9000	2350	2000	3/4	N/A	V1, V3	16.5	25	22	22	22	16	56	56	41	200	90
OC-100 DI	12000	3520	3000	1	1/6	V2, V3	26	26	20	22	22	16	56	56	41	300	135
OC-150 DI	18000	5280	4500	1 1/2	1/6	V6, V8, V10	28	28	20	24	24	16	61	61	41	480	205
OC-200 DI	24000	7040	6000	2	1/4	V6, V8, V10	28	28	28	24	24	16	61	61	41	550	250
OC-300 DI	36000	10560	9000	3	1/4	V6, V8, V10	32	32	32	28	28	16	71	71	41	1000	460
OC-400 DI	48000	14000	12000	4	1/4	V6, V8, V10	36	50	32	33	38	20	84	97	51	750	320
OC-500 DI	60000	17600	15000	5	1/4	V6, V8, V10	36	50	32	33	38	20	84	97	51	850	395
OC-750 DI	90000	26400	22500	7 1/2	(2) 1/4	V6, V8	36	50	42	33	57	20	84	145	51	1000	460
OC-1000 DI	120000	35200	30000	10	(2) 1/4	V6, V8	46	74	54	38	62	20	97	158	51	1200	550

Standard Voltage	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 60°F (16°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rate will be affected by fluid and pressure.
*** Options may affect dimensions.

DI Chillers

DROP-IN

Oil Cooler Specifications

	Rated Cooling Capacity*			Comp.	Circ. Pump	Standard Voltage	Cabinet Dimensions** inches			Coil Dimensions** inches			Coil Dimensions** centimeters			Estimated Shipping Weight	
MODEL	BTU/ HR	WATTS	KCAL/ HR	HP	HP		W	D	H	W	L	H	W	L	H	LB	KG
OCO-50 DI	5000	1760	1500	1/2	1/6	V1, V3	16.5	25	22	22	22	16	56	56	41	200	90
OCO-75 DI	8060	2350	2000	3/4	1/6	V1, V3	16.5	25	22	22	22	16	56	56	41	250	115
OCO-100 DI	12000	3520	3000	1	1/6	V2, V3	28	28	20	26	26	16	66	66	41	300	135
OCO-150 DI	18000	5280	4500	1 1/2	1/6	V6, V8,V10	28	28	20	26	26	16	66	66	41	500	230
OCO-200 DI	24000	7040	6000	2	1/4	V6, V8, V10	28	28	28	30	30	16	76	76	41	650	300
OCO-300 DI	36000	10560	9000	3	1/4	V6, V8, V10	32	32	32	30	30	16	76	76	41	750	320
OCO-500 DI	60000	17600	15000	5	(2) 1/4	V6, V8, V10	36	50	42	32	62	20	81	158	51	900	414
OCO-750 DI	90000	26400	22500	7 1/2	(2) 1/4	V6, V8, V10	36	50	42	32	62	20	81	158	51	1000	460
OCO-1000 DI	120000	35200	30000	10	(2) 1/4	V6, V8	46	74	54	42	70	20	107	178	51	1400	694

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

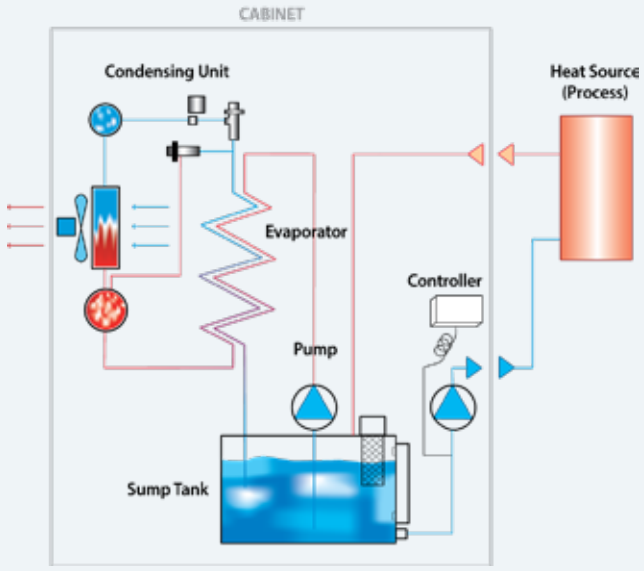
* Capacities based on cooling water to 80°F (28°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rate will be affected by fluid and pressure.
*** Options may affect dimensions.

PT Chillers
PROCESS TANK

Two Loop Chiller for Process Applications

The Process Tank System



The PT Model Chiller Uses Two pumps with one process tank. One pump circulates coolant through the evaporator to maintain a constant tank temperature, while a second pump circulates coolant from the process tank (on-board chiller) through the process and then back to the process tank.

PT Chiller Options

Digital Temperature Controller (CTC)
Provides close temperature control (±0.5°F). Displays both set-point and coolant temperature.

Ambient Tracking Controller (ATC)
A dual input digital temperature controller allows the coolant temperature to track ambient temperature at a constant, adjustable differential. Displays both ambient and coolant temperature.

Optional Pumps (OP)
A variety of pumps are available to meet almost any flow and pressure requirement for both water and oil-based coolants.

Low Flow Interlock (LF)
Prevents damage to machine on loss of flow.

Temperature Fault Interlock (HT)
Indicates coolant temperature is out of range.

In-Line Heater (ILH)
Warms up coolant to optimum operating temperature.

In-Line Filter (ILF)
Insures clean coolant.

Pure System (PS)
Coolant only comes in contact with stainless steel or plastic.

Non-Refrigerated Cooler (NRCW & NRCA)
Uses central chilled water or ambient air instead of refrigeration. Saves space and maintenance.

Water-Cooled Condenser (W)
For use with tower or city water. Removes heat from the work area while saving space and maintenance.

View our complete list of options on page 28-30

PT Chillers

PROCESS TANK

Water Cooler Specifications

	Rated Cooling Capacity *			Comp.	Standard Pump Capacity **		Tank Capacity		Standard Voltage	Estimated Dimensions *** inches			Estimated Shipping Weight	
MODEL	BTU/ HR	WATTS	KCAL/ HR	HP	GPM	LPM	GAL	LTR		W	D	H	LB	KG
OC-25PT	3000	880	625	1/4	1.6	6	--	--	V1, V3	12.5	21	16.5	130	60
OC-33PT	4000	1170	825	1/3	1.6	6	--	--	V1, V3	15.75	20	27	157	80
OC-50PT	6000	1760	1500	1/2	2.5	9	--	--	V1, V3	16	26	29	200	90
OC-75PT	9000	2350	2000	3/4	4	15	--	--	V1, V3	16	26	29	200	90
OC-100PT	12000	3520	3000	1	6	23	--	--	V2, V3	22	30	35	400	180
OC-150PT	18000	5280	4500	1 1/2	8	30	--	--	V6, V8, V10	22	30	35	400	180
OC-200PT	24000	7040	6000	2	8	30	--	--	V6, V8, V10	28	32	45	550	250
OC-300PT	36000	10560	9000	3	12	45	--	--	V6, V8, V10	32	36	56	600	273
OC-400PT	48000	14000	12000	4	16	60	--	--	V6, V8, V10	36	50	56	750	320
OC-500PT	60000	17600	15000	5	20	75	--	--	V6, V8, V10	36	50	56	850	395
OC-750PT	90000	26400	22500	7 1/2	30	112	--	--	V6, V8	36	60	66	1000	460
OC-1000PT	120000	35200	30000	10	40	150	--	--	V6, V8	46	74	60	1200	550
OC-1500PT	180000	52800	45000	15	60	225	--	--	V6, V8	46	87	78	1500	680
OC-2000PT	240000	70400	60000	20	80	300	--	--	V6, V8	46	87	78	2500	1150
OC-2500PT	300000	88000	75000	25	100	375	--	--	V6, V8	48	116	78	2500	1150
OC-3000PT	360000	105600	90000	30	120	450	--	--	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

* Capacities based on cooling water to 60°F (16°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

PT Chillers

PROCESS TANK

Oil Cooler Specifications

	Rated Cooling Capacity *			Comp.	Standard Pump Capacity **		Tank Capacity		Standard Voltage	Estimated Dimensions *** inches			Estimated Shipping Weight	
MODEL	BTU/HR	WATTS	KCAL/HR	HP	GPM	LPM	GAL	LTR		W	D	H	LB	KG
OCO-25PT	3000	880	625	1/4	1.5	5.6	--	--	V1, V3	16.5	18	39	150	68
OCO-33PT	4000	1170	825	1/3	1.5	5.6	--	--	V1, V3	16.5	18	39	150	68
OCO-50PT	6000	1760	1500	1/2	2.5	9.5	--	--	V1, V3	18.5	24	40	200	90
OCO-75PT	9000	2350	2000	3/4	5	19	--	--	V1, V3	18.5	24	40	200	90
OCO-100PT	12000	3520	3000	1	8	30	--	--	V2, V3	22	30	46	300	135
OCO-150PT	18000	5280	4500	1 1/2	8	30	--	--	V6, V8, V10	22	30	46	350	160
OCO-200PT	24000	7040	6000	2	12	45	--	--	V6, V8, V10	28	32	50	550	250
OCO-300PT	36000	10560	9000	3	18	68	--	--	V6, V8, V10	32	36	56	600	273
OCO-400PT	48000	14000	12000	4	24	90	--	--	V6, V8, V10	36	50	56	750	320
OCO-500PT	60000	17600	15000	5	30	112	--	--	V6, V8, V10	36	50	56	850	395
OCO-750PT	90000	26400	22500	7 1/2	40	150	--	--	V6, V8	36	60	66	1000	460
OCO-1000PT	120000	35200	30000	10	50	190	--	--	V6, V8	46	74	60	1200	550
OCO-1500PT	180000	52800	45000	15	75	280	--	--	V6, V8	46	87	78	1500	680
OCO-2000PT	240000	70400	60000	20	100	375	--	--	V6, V8	46	87	78	2500	1150
OCO-2500PT	300000	88000	75000	25	125	470	--	--	V6, V8	48	116	78	2500	1150
OCO-3000PT	360000	105600	90000	30	150	560	--	--	V6, V8	48	116	78	2800	1300

STANDARD VOLTAGE	
V0	100/50/1
V1	115/60/1
V2	200/50/1
V3	208-230/60/1
V4	208-230/60/1, 200/50/1
V5	200-240/50/3
V6	208-230/60/3
V7	380-420/50/3, 460/60/3
V8	460/60/3
V9	575/60/3
V10	200-240/50/3, 208-230/60/3
VC	Custom Voltage Contact our engineers for more information

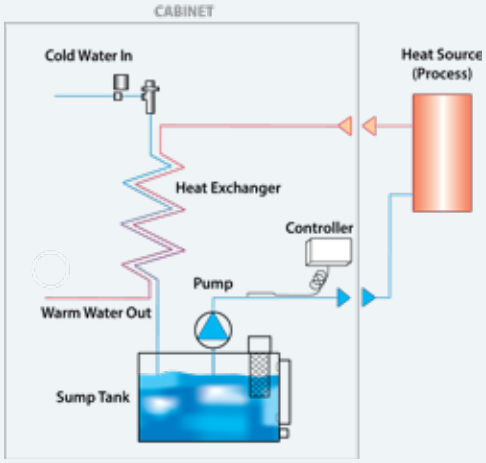
* Capacities based on cooling water to 60°F (16°C) in a 90°F(32°C) ambient.

** For Reference only. Flow rates will be affected by fluid and pressure.

*** Options may affect dimensions.

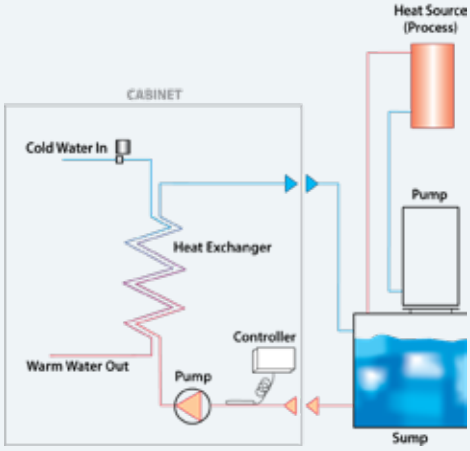
NRC Chillers
NON-REFRIGERATED
Water-Cooled

NRCW Closed-Loop System



Closed-Loop coolers recirculate coolant from a tank mounted in the cooler, through a sealed coolant loop and heat load (spindle) and back to the tank. The tank, pump, and evaporator are all in the cooler.

NRCW Open-Loop System



Open-Loop coolers recirculate fluid from a remote tank, through the cooler and back to the tank. The cooler works to maintain a constant fluid temperature in the tank. The pump and evaporator are in the cooler. The tank is remote. Chilled water must be at least 10°F (6°C) colder than the lowest desired coolant temperature and have adequate flow and pressure for the application. Consult Turmoil for requirements.

Water-Cooled NRCW Chillers

Use central chilled water, instead of refrigeration, to provide close temperature control of recirculating coolants or oils.

Any R-Closed-Loop or RO-Open-Loop cooler can be supplied with the NRCW option that replaces the standard refrigeration system with a water-to-coolant or water-to-oil heat exchanger. If chilled water is available at the installation, significant savings can be achieved in both initial and operating cost by using this chilled water to control the temperature of coolants being recirculated to your process.

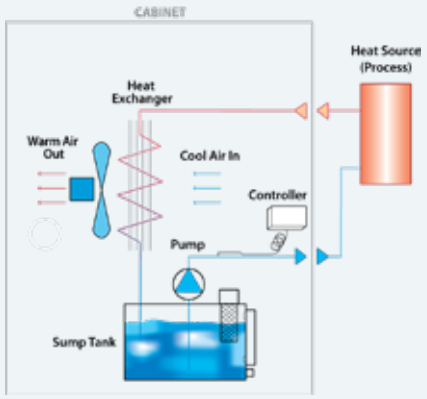
On all units, a digital temperature controller operates an electronic mixing valve to control the flow of chilled water through the heat exchanger to provide close temperature control of recirculating fluids. There are significantly fewer moving parts to maintain. Heat from the process is removed as warm water to a central location where it can be used or dissipated efficiently.

NRC Chillers

NON-REFRIGERATED

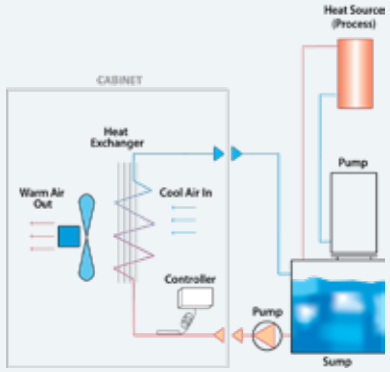
Air-Cooled

NRCA Closed-Loop System



Closed-Loop coolers recirculate coolant from a tank mounted in the cooler, through a sealed coolant loop and heat load (spindle) and back to the tank. The tank, pump, and evaporator are all in the cooler.

NRCA Open-Loop System



Open-Loop coolers recirculate fluid from a remote tank, through the cooler and back to the tank. The cooler works to maintain a constant fluid temperature in the tank. The pump and evaporator are in the cooler. The tank is remote. Chilled water must be at least 10°F (6°C) colder than the lowest desired coolant temperature and have adequate flow and pressure for the application. Consult Turmoil for requirements.

Air-Cooled NRCA Chillers

Use ambient air, instead of refrigeration, to provide close temp-erature control of recirculating coolants or oils.

Many R-Closed-Loop or RO-Open-Loop coolers can be supplied with the NRCA option that replaces the standard refrigeration system with an air-to-coolant or air-to-oil heat exchanger. Significant savings can be achieved in both initial and operating cost by using ambient air to control the temperature of coolants being recirculated to your process.

Ambient air must be at least 15°F (9°C) cooler than the lowest desired coolant temperature. Desired coolant temperatures must usually be above 110°F (44°C). A digital temperature controller cycles a fan moving air across a fin coil heat exchanger to provide close temperature control of recirculating fluids. All models are supplied with cleanable aluminum air intake filters.

OCO-150 RO-NRCA
Open-Loop
Oil Chiller

OC-100 R-NRCA
Closed-Loop
Coolant Cooler

ENGINEERING YOUR CHILLER

Determining the Heat Load

The heat load is the amount of heat to be removed from the coolant as it passes through the chiller. In order to size a cooler, this heat load must be accurately determined. This can be done in several ways:

Measure Flow & Temperature Change

The most accurate way to determine heat load is to measure the flow of the coolant. (This can be done by timing how long it takes to fill a five-gallon bucket.) Measure the change in temperature (Δ T) of the coolant as it enters and leaves the heat source. Calculate the heat load as follows:

Flow Rate (gal/hr) x Coolant Weight (lbs/gal) x Specific Heat of Coolant x Δ TºF = BTU/HR

Measure the Change in Temperature of the Coolant in the Sump

If there is a sump on your machine tool, measure the temperature of the coolant in the sump before machine startup. Then measure the temperature of that same coolant at 30-minute intervals for three hours after start-up while the machine is operating at full capacity. Determine the total volume of coolant in the sump and coolant loop. Take the hour interval with the greatest temperature change and plug the numbers into the following formula:

Gallons of Coolant x Coolant Weight (lbs/gal) x Specific Heat of Coolant x Δ TºF/HR = BTU/HR

Size the Cooler by the Motor Horsepower

The coolant is heated either directly or indirectly by a motor or motors. Theoretically, if you know the motor horsepower you can easily determine the heat load. But, it is not always so simple. Duty cycle, motor efficiency, and ambient heat loss or gain can have a great effect on the heat load. However, if the motor horsepower is known and its operation is fairly steady at maximum output:

1 HP = 746 WATTS= 2545 BTU/HR

ENGINEERING YOUR CHILLER (Continued)

Determining Application

It is very important to determine the type of cooler that is required. All applications involve a fluid passing through an evaporator (heat exchanger), but how does the coolant get there?

Closed-Loop coolers recirculate coolant from a tank mounted in the cooler, through the heat load and back to the tank. The tank, pump, and evaporator are all in the cooler.

Open-Loop coolers recirculate coolant from a remote tank, through the cooler and back to the tank. The pump and evaporator are in the cabinet. The tank is remote.

In-Line coolers cool fluid that is passing through the cooler under pressure. Only the evaporator is in the cooler. The pump and tank are remote.

Drop-In coolers are mounted on top of the coolant tank with the stainless steel evaporator coils submerged in the coolant.

Determining Coolant

Because water and oil have such different heat transfer characteristics, it is very important that the type of coolant being used is determined. If in doubt, specify an OCO cooler.

Water-Based Coolants are fluids that contain not more than 5% oil. These coolants may contain additives such as rust inhibitors, algicides, and/or up to 30% glycol.

Oil-Based Coolants are fluids that contain more than 5% oil. Soluble oils, semi-synthetic fluids, hydraulic oils, cutting oils, and spindle oils are typical.

Clean Coolants are fluids that do not contain particles that could clog the pump or evaporator. The coolant is usually sealed from contamination or filtered to remove damaging particles.

Dirty Coolants contain or potentially can contain particles such as fines or chips that could clog the pump or evaporator. An In-Line filter or cleanable evaporator is often required.

Rules of Thumb

Specific Heat of Water-Based Coolants: 1 BTU/lb/ºF

Specific Heat of Oil-Based Coolants: 0.5 BTU/lb/ºF

Weight of Water-Based Coolants: 8.3 lbs/gal

Weight of Oil-Based Coolants: 7.8 lbs/gal

Watts x 3.413 = BTU/Hr

Kcal/Hr x 3.968 = BTU/Hr

1 cubic foot = 7.5 gallons

Liters x 0.2542 = Gallons

Bar x 14.5 = PSI

Feet of water x 0.434 = PSI

OPTIONS & ACCESSORIES

Condensers

HA - High Ambient Condenser
Oversized condenser for operating in ambients up to 110ºF.

FCC - Fan Cyle Control
Low ambient to +40°F.

LA - Low Ambient
Heated receiver & fan cycling -20°F.

W - Water-Cooled Condenser
Eliminates heat dissipation to ambient. Supplied with condenser water-regulating valve for hookup to city (65ºF) or tower (85ºF) water.

AR - Remote Air-Cooled Condenser
Shipped separately from cooler. Eliminates heat dissipation to surrounding ambient. Remote installation by others.

NRCA & NRCW - Non-Refrigerated Cooler
Uses central chilled water or ambient air instead of refrigeration. Saves space and maintenance. Chilled water must be at least 10ºF (6ºC) colder than lowest desired coolant temperature.

WP - WeatherProof
Construction for outdoor installation. Takes the heat outside by mounting the complete cooler outdoors.

Piping & Evaporators

PS - Pure System
For de-ionized water applications. Coolant only comes in contact with stainless steel or plastic. Evaporator is all stainless steel coil or nickel brazed stainless steel plates.

GE - Glycol Evaporator
No capacity loss up to 45% PG.

Piping & Evaporators (continued)

CEV - Cleanable Evaporator
Has removable end plates for in-place cleaning without disturbing plumbing or refrigeration lines. Only available for use with water-based coolants.

CHXW - Cleanable Heat Exchanger Water
For OC-RO-IL chiller models.

CHXO - Cleanable Heat Exchanger Oil
For OCO-RO-IL chiller models.

AN - Alfa-Nova Evap
No-Copper Applications

DOC - “Diala Oil Connections”
Special sealant for pipe connections.

REC - “Remote Evap. Coil”
BMP x 3% (BMP = Base Model Price).

CIP - “Custom Insulation Package”
3/4” on all piping & components.

HXO - “Secondary Heat Exchanger”
“IL” models only. Adds Brazed Plate secondary HX with internal recirculation pump and tank to isolate process from evaporator (POA)

50YS - “50 Micron “Y” Strainer”
In lieu of standard (Fischer USA).

50TS - “50 Micron “T” Strainer”
In lieu of standard.

OPTIONS & ACCESSORIES (Continued)

Interlock Contacts

RAP - Remove Agitation Pump
For “DI” models only.

OP - Optional Pump
For any requirement. Pump oil or waterbased coolants at desired flow and pressure.

ILF - In-Line_Filter On Discharge
R Models Only. Suggested for installations with dirty or potentially dirty coolant to protect the evaporator from clogging. Supplied with a flow switch and a change filter warning light. A variety of filters and filter elements are available.

ILFFS -
In-Line-Filter w/Flow Switch & LF Interlock
RO/IL Models.

ILH - In-Line Heater
Warms up coolant to optimum operating temperature to prevent cold starts or to provide closer temperature control.

THWT - Tank Heater with Thermostat

SPP - Self Priming Pump

RC - Rubber Casters
Stndrd 20-150 “R” Models.

RC - Rubber Casters
Add to models not inc.

PG - Pressure Gauge
Available for Discharge and/or Input.

Pumps & Accessories

DT - Dial Thermometer
Available for Discharge and/or Input.

FM - Flow Meter
Provides accurate indication of coolant flow.

12PFHK - 1/2” X 30’ Process Fluid Hose Kit

2PFHK - 2” Process Fluid Hose Kit

RHK - 8-10’ Refrigeration Hose Kit
3/4 & 1/2” one ea.

114PFHK15 -
1-1/4” X 15’ Process fluid hose kit with MPT connectors.

TEFC - Totally Enclosed Fan Cooled Motor

In-Line Filter (ILF) mounted on cooler cabinet protects evaporator from clogging.

OPTIONS & ACCESSORIES (Continued)

Temperature Controllers

CTC - Digital Temperature Controller
For close temperature control within ±0.5º of set-point. Large display indicates both setpoint and coolant temperature.

ATC - Ambient Tracking Controller
A dual-input, digital controller that allows the cooler to track the ambient (or machine bed) at a constant, adjustable differential. The controller displays both ambient and coolant temperatures.

ATC/CTC - Combination ATC and CTC Controller
Allows operator to quickly switch between ambient tracking mode (ATC) and set-point mode (CTC).

Interlock Contacts

LF/FS - Low Flow Switch
Standard IL models.

LL - Low Level Switch
A level switch is installed in the tank and wired to the terminal strip for remote low coolant level indication.

HT - Temperature Fault
Contacts are provided to indicate that the coolant temperature is out of range.

FSM - Flow Switch/Meter
Is provided with a needle valve that permits visual flow rate adjustment and adjustable low flow interlock setting.

LP - Low Coolant Pressure Switch
A pressure switch is installed in the discharge and wired to the terminal strip for remote low pump pressure indication.

RF - Refrigerant Fault
Contacts are provided to indicate that the refrigeration pressures are too high or too low.

PO - Pump On
Contacts are provided to indicate that the recirculating pump is on.

RE - On/Off/Remote Selector Switch
Contacts are provided to permit the start/stop of the cooler from a remote location.

RS - Computer Interface
Interface RS-232 or RS-485 (20-75 NEED CTC).

OPTIONS & ACCESSORIES (Continued)

Interlock Contacts

LF/FS - Low Flow Switch
Standard IL models.

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Interface RS-232 or RS-485 (20-75 NEED CTC).

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For “DI” models only.

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R Models Only. Suggested for installations with dirty or potentially dirty coolant to protect the evaporator from clogging. Supplied with a flow switch and a change filter warning light. A variety of filters and filter elements are available.

ILFFS -
In-Line-Filter w/Flow Switch & LF Interlock
RO/IL Models.

ILH - In-Line Heater
Warms up coolant to optimum operating temperature to prevent cold starts or to provide closer temperature control.

RC - Rubber Casters
Available on all models for complete mobility.

PG - Pressure Gauge
Available for Discharge and/or Input.

DT - Dial Thermometer
Available for Discharge and/or Input.

FM - Flow Meter
Provides accurate indication of coolant flow.

OPTIONS & ACCESSORIES (Continued)

Wiring & Safety

LD - Lever-Type Fused Disconnect
Installed on a NEMA-12 enclosure. Required by some electrical codes.

MC - Multi-Pin Connector
To quickly interface cooler with machine. Can be supplied for both power and interlock connections.

JIC - Automotive JIC Wiring
Coolers can be wired to meet specific automotive wiring specifications.

IEC - International Wiring
Coolers meet the standards of the International Electrotechnical Commission (IEC) for machine safety.

CE - Certificate of Compliance
Cooler to be provided with a CE tag and a Certificate of Compliance with CE Directives.

N4 - NEMA-4 Electrical Enclosure
Waterproof. OV Optional Voltages. Available on most models. Configures for almost any power supply, domestic or export.

Lever-Type Disconnect Switch (LD) available on all models.

Modifications

SP - Special Paint Color
Match the cooler to your machinery.

SS - All Stainless Steel Cabinet

MOD - Special Configuration
Special dimensions or component locations to fit the cooler into a particular space.

CIR - Multiple Circuits
Cool more than one circuit from each cooler. All models are available with multiple IN and OUT connections for balanced or unbalanced flow.

Modified (MOD) Coolers can be modified to fit special dimensions or configurations.

How to
ORDER YOUR CHILLER

Build your part number by selecting the coolant, capacity, type, and any additional options for your chiller. View our complete list of options and specifications on pages 34 – 37. Contact us for pricing.

Turmoil Manufacturing Co.
735 West Swanzey Rd
P.O. Box 583
West Swanzey, NH 03469 USA

T: 603-352-0053
F: 603-352-5424
E: chillerquotes@turmoilcoolers.com
W: www.TurmoilCoolers.com

Model Number

OC - 1000 - RO

Type
R - Closed-Loop
RO - Open-Loop
IL - In-Line
DI - Drop-In
PT - Process Tank

Capacity
Compressor HP x 100

Coolant
OC - Water-Based Fluids
OCO - Oil-Based Fluids

OPTIONS & ACCESSORIES

Voltage

Code	Description of Option	Standard on Models	N/A on Models
V0	100/50/1	20 - 75	100+
V1	115/60/1	20 - 75	100+
V2	200/50/1	20-150	200+
V3	230/60/1	20-150	200+
V4	208-230/60/1, 200/50/1		200+
V5	200-240/50/3	150-500	
V6	208-230/60/3	150-500	
V7	380-400/50/3, 460/60/3	150 - 12000	
V8	460/60/3	150 - 12000	
V9	575/60/3		
V10	200-240/50/3, 208-230/60/3		
VC	Custom Voltage		

Condensers

Code	Description of Option	Standard on Models	N/A on Models
HA	High Ambient Condenser good to 110°F		
FCC	Fan Cyle Control (Low ambient to +40°F)		
LA	Low Ambient (heated receiver & fan cycling -20°F)		
W	Water Cooled Condenser with Reg Valve		
AR	Remote Air Cooled Condenser		20 - 75
WP	Weather Proof for Outdoor Installation		
NRCA	Non Refrigerated Air Cooled		
NRCW	Non Refrigerated Water Cooled		

Temperature Controllers

Code	Description of Option	Standard on Models	N/A on Models
DT	Dial Themostat (Standard models 15-75)	15 - 75	100+
CTC	Digital Set Point Controller (“100” & up CTC stndrd)		
ATC	Ambient Tracking Controller (“100” & up In Lieu of CTC)		
BTC	Both CTC/ATC (Comb. Control) (“100” & up CTC stndrd)		
SPEC	Special Controller		20 - 75
LC	Less Controls (No Controller)		

Piping & Evaporator

Code	Description of Option	Standard on Models	N/A on Models
PS	Pure System-Stainless Steel and Plastic		
GE	Glycol Evaporator (no capacity loss up to 45% PG)		
CEV	Cleanable Evaporator - OC Coolers Only		
CHXW	Cleanable Heat Exchanger Water (OC-RO-IL)		
CHXO	Cleanable Heat Exchanger Oil (OCO-RO-IL)		
AN	Alfa-Nova Evap No-Copper Applications		
DOC	“Diala Oil Connections” Special sealant for pipe connections		
REC	"Remote Evap. Coil"		
CIP	"Custom Insulation Package" 3/4" on all piping & components		
HXO	“Secondary Heat Exchanger” “IL” models only. Adds Brazed Plate secondary HX with internal recirculation pump and tank to isolate process from evaporator		
50YS	“50 Micron “Y” Strainer” in lieu of standard (Fischer USA)		
50TS	“50 Micron “T” Strainer” in lieu of standard		

Pumps & Accessories

Code	Description of Option	Standard on Models	N/A on Models
RAP	Remove Agitation Pump (For “DI” models only)		20 - 75
OP	Optional Pump		
ILF	In-Line_Filter On Discharge (R Models Only)		
ILFFS	In-Line-Filter w/Flow Switch & LF Interlock (RO/IL)		
ILH	In-Line-Heater		
THWT	Tank Heater with Thermostat		
SPP	Self Priming Pump		
RC	Rubber Casters	20 - 150 “R”	
PG	Pressure Guage		
DT	Dial Thermometer		
FM	Flow Meter		
12PFHK	1/2” X 30’ Process Fluid Hose Kit		
2PFHK	2” Process Fluid Hose Kit		
RHK	8-10’ Refrigeration hose kit 3/4 & 1/2” one ea.		
114PFHK15	1-1/4" X 15' Process fluid hose kit with MPT connectors		
TEFC	Totally Enclosed Fan Cooled motor		

Wiring and Safety

Code	Description of Option	Standard on Models	N/A on Models
LD	Lever Disconnect Switch		20 - 75
JIC	Wiring to Automotive Specs		
IEC	International Wiring		
CE	CE- Wired to meet this standard		
N12	NEMA-12 Enclosure	100 - 300, 750 - 900, 2500 - 3000	
N4	NEMA-4 Enclosure (Waterproof)		
MC	Multi-Pin Connectors		
20ATS	20’ Air Temperature Sensor (For ATC & BTC)		
50ATS	50’ Air Temperature Sensor (For ATC & BTC)		
SW	Special Wiring (indicates electrical change)		
6PC	6' Power Cord with plug		
10PC	10’ Power Cord with plug		
12PC	12’ Power Cord with plug		
PDR	Pump Down Relay		
PTT	"Push to Test" lights		

Modifications

Code	Description of Option	Standard on Models	N/A on Models
REF	Non-Standard Refrigerant		
CIR(1-5)	Multiple Circuits		
SP	Special Paint		
SSC	Stainless Steel Cabinet		
CC	Custom Cabinet		
CT	Custom Tank		
L	Low Temperature Applications (Fluid Temps)		

Compressors & Accessories

Code	Description of Option	Standard on Models	N/A on Models
SC	Scroll Compressor in lieu of standard		
HGB	Hot Gas Bypass		
CU1	Compressor cylinder unloading (one bank per compressor)		
CU2	Compressor cylinder unloading (two banks per compressor)		
CSC	Compressor Suction Cooling (for high fluid return temps)		
OS	Oil Seperator		
CPD	Compressor Pump Down		
DS	Digital Scroll Compressor		20 - 250, 600

Miscellaneous

Code	Description of Option	Standard on Models	N/A on Models
WT	Witness Testing (Customer to witness actual chiller test)		
1YEW	1 Year Ext. Warr. (Extends Manufacturer's stndrd 1 yr.)		
PDS	Pressure Differential Switch		
FSU	Factory Start Up (1 tech & rnd trip/4 hrs trvl & 4 hrs at site)		
NRE	Non-Recurring Engineering fee		
MP&L	Miscellaneous Parts and Labor		