



We stand behind the brand.

For machine tools·semiconductor-manufacturing equipment·industrial machine

Automatic liquid temperature regulator General catalog



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OILMATIC
AUTOMATIC LIQUID TEMP. REGULATOR

MOLD MATIC
AUTOMATIC MOLD TEMP. REGULATOR

PURE MATIC
Automatic WATER Temp. Regulator

ICE MATIC
SUPER LOW TEMP. REGULATOR

Mission



We stand behind the brand.

Our customers are all established enterprises that require extremely high precision and production efficiency, including manufacturers of "industrial goods" like machine tools and semiconductor equipment and superior "production sites" that utilize facilities to manufacture components and products. Our mission and management policy is to stand behind these brands as an indispensable back-seat player by helping to automatize production and enhance the performance of various machine tools and "industrial goods". We also aim to also be a "brand" to suit these "brands" by standing behind them with our products and services. We take pride in our work and we are constantly striving to perfect our management policy by responding to changes in both domestic and international markets. We continue to challenge ourselves and embody the pioneer spirit.

OIL MATIC's evolution



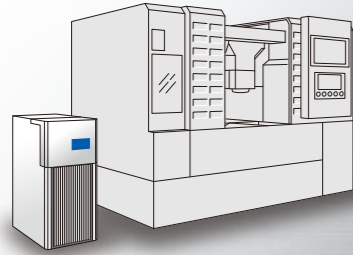
Product map



Application

OILMATIC's advanced liquid temperature control technologies respond to needs from diverse work fields. OILMATIC contributes to stable system operation and improvement in quality and work efficiency.

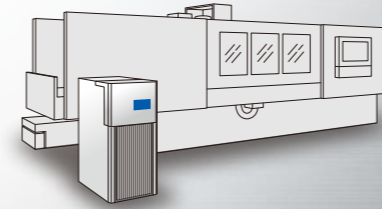
Machining center



Main bearing and spindle drive motors (including built-in motors) heat up very quickly. Therefore, OILMATIC is used to cool the spindle indirectly by distributing cooling liquid through a cooling jacket (heat exchange point). In many cases OILMATIC is used for "jet lubrication" lubrication and cooling, "under race lubrication," and "shaft center cooling," in which the inside of the spindle is cooled directly. Additionally, "Coolant cooling" is used to control temperatures and hold cutting fluid temperature steady, "Hollow ball screw cooling" is used to cool precise positioning drive and linear motors (DD rotating motor), and "Hydraulic fluid cooling" and "body cooling" are used to minimize changes in body form.



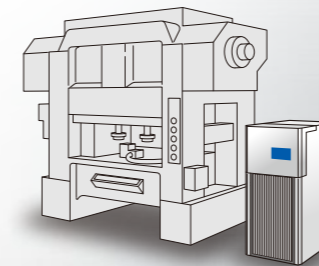
NC grinding machine



The main heat generating parts commonly include a chuck head (to hold work pieces or tools), a spindle for grinding, stone spindle head, and a motor to drive "indirect cooling" by running refrigerant liquid into the jacket. OILMATIC is necessary to accurately control the temperature of hydrostatic actuation when oil hydrostatic bearings are used in a chuck head or a wheel-spindle head or for oil hydrostatic guides in table feeding mechanisms. It may also be used for "coolant cooling" to hold cutting fluid temperature steady.



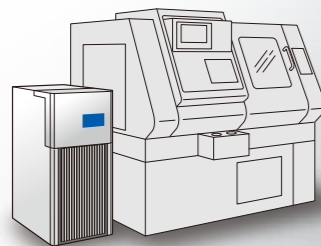
Pressing machine



Cooling lubricating oil, which is often used to lubricate sliding parts of cam-crank mechanisms or bearings, is important for pressing machines (especially for high-speed precision pressing machines) because it is necessary to accurately maintain the bottom portion of the machine at dead center. It is often necessary to heat the machine during startup (rise time) because the temperature of the unit should be stabilized as soon as possible.



NC Lathe



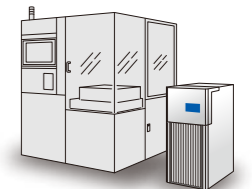
It is common to cool some heat generating components like chuck heads (for holding a workpiece or tool) or spindle bearings in turret lathes and drive motors indirectly by running refrigerant liquid into a jacket for cooling. Also, OILMATIC is used to cool coolant and hold cutting fluid temperatures steady.



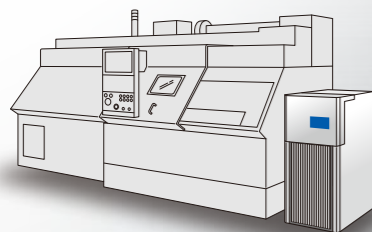
Semiconductor manufacturing equipment

Semiconductor manufacturing equipment components that require temperature control vary with specific manufacturing processes. The following are major components that require temperature control.

- Slicer : For cooling grinding wheel spindle head, slicing wafers, and cooling machining fluid (pure water)
- Multi-wire saw : For cooling multi-wire saw drive head, slicing wafers, and cooling machining fluid (slurry)
- Grinder for wafers : For cooling grinding wheel spindle head, finishing wafer surfaces, and cooling machining fluid
- Polishing lathe and lap : For cooling rotary table
- Thin film manufacturing equipment : For controlling temperature of plasma electrode chambers, PVD equipment, CVD equipment, dry etching equipment, etc.
- Exposure equipment : For ultra-precise control temperature control of wafer drive stages and drive motors
- Prober : For controlling temperature of fixed chuck for wafers
- Dicer : For cooling grinding wheel spindle head, dicing wafers, and cooling machining fluid (pure water)
- Laser dicer..... : For cooling laser oscillator
- Tester : For controlling temperature of fixed chuck for wafers



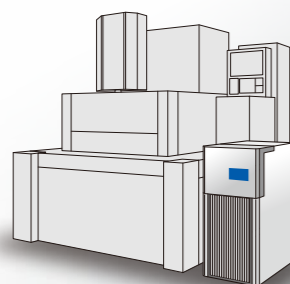
Combined processing machine



Heat generating parts in a combined processing machine include the main spindle head (chuck head), sub-spindle head for milling, turret and so on. When there are multiple heat generating parts, the standard method is to cool each part indirectly by running refrigerant into several separate jackets (heat exchange points), which are installed on each part when using the OILMATIC. It is also used for "coolant cooling" to hold cutting fluid temperature steady, "hollow ball screw cooling" using multi-axis precise positioning drive, linear motor (DD rotating motor) cooling, "hydraulic oil cooling," and "body cooling" to minimize machine warpage.



Electric discharge machine



There are two types of electric discharge machines, die-sinking electrical discharge machines (EDM) and wire electric discharge machines (WEDM). It is essential to increase work accuracy for these machines, therefore OILMATIC is used to cool working fluid in a tank (working vessel). In addition, OILMATIC is also to cool liquid for jet flow lines.



Physical, chemical and medical equipment

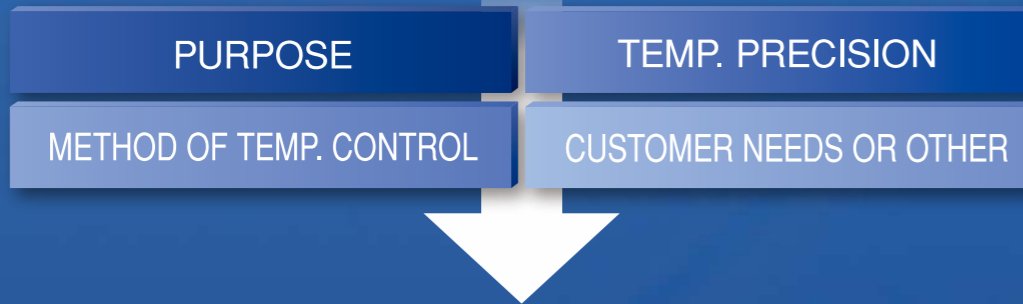
Examples of temperature control in physical, chemical, and medical equipment: For cooling tubes (X-ray oscillating sources) in X-ray analysis equipment and medical equipment, and cooling laser oscillators in analysis equipment and medical equipment



Molding machine

Molds play an important role in the final molded product's quality. Controlling the temperature within the mold can help reduce costs, accelerate the molding cycle, and improve product quality. OILMATIC plays an active role in injection molding, blow molding, and vacuum pressure molding.





Made to order for various purposes

We develop/plan/produce special products according to your specifications (OEM). This may include specific temperature controlled areas or accurate temperature control to enhance performance of industrial machines like machine tools or semiconductor producing equipment. Please feel free to inquire about example applications and past projects.

Sales

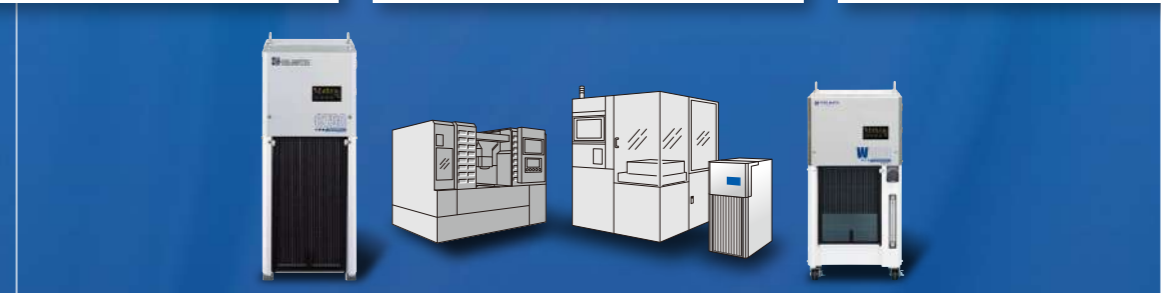
Our sales team provides reasonable proposals based on their vast experience in various fields. They handle heat-related problems faced by machine tool manufacturers', semiconductor-manufacturing equipment manufacturers' and industrial machine manufacturers, and they can propose optimal specifications for these customers. We have sales representatives in each region to respond promptly to our customers' needs. These representatives also serve to present the latest trends in liquid temperature control technologies and other information to our customers.

Development

This division forms the core of our high-level product development. They implement the planning for control technologies used in various temperature regulators, including OIL MATIC. Also, this division collaborates with universities and research institutes to collect information on advanced technologies and incorporate feedback into new products. This division also serves as a data bank of our unique technologies, conducting mutual self-verification of our accumulated advanced technologies and submitting papers to academic journals.

Design

After the sales division identifies the customers' needs for temperature range accuracy, control methods, etc. the design team focuses on applying design techniques to take the customers beyond drawings. After verifying the preliminary drawings in conjunction with the Product Development Office, they create "specifications" tailored to individual customers. They draw upon a repository of several thousands of specifications and their accumulated knowledge and know-how to create the best specifications for our customers.



Manufacturing

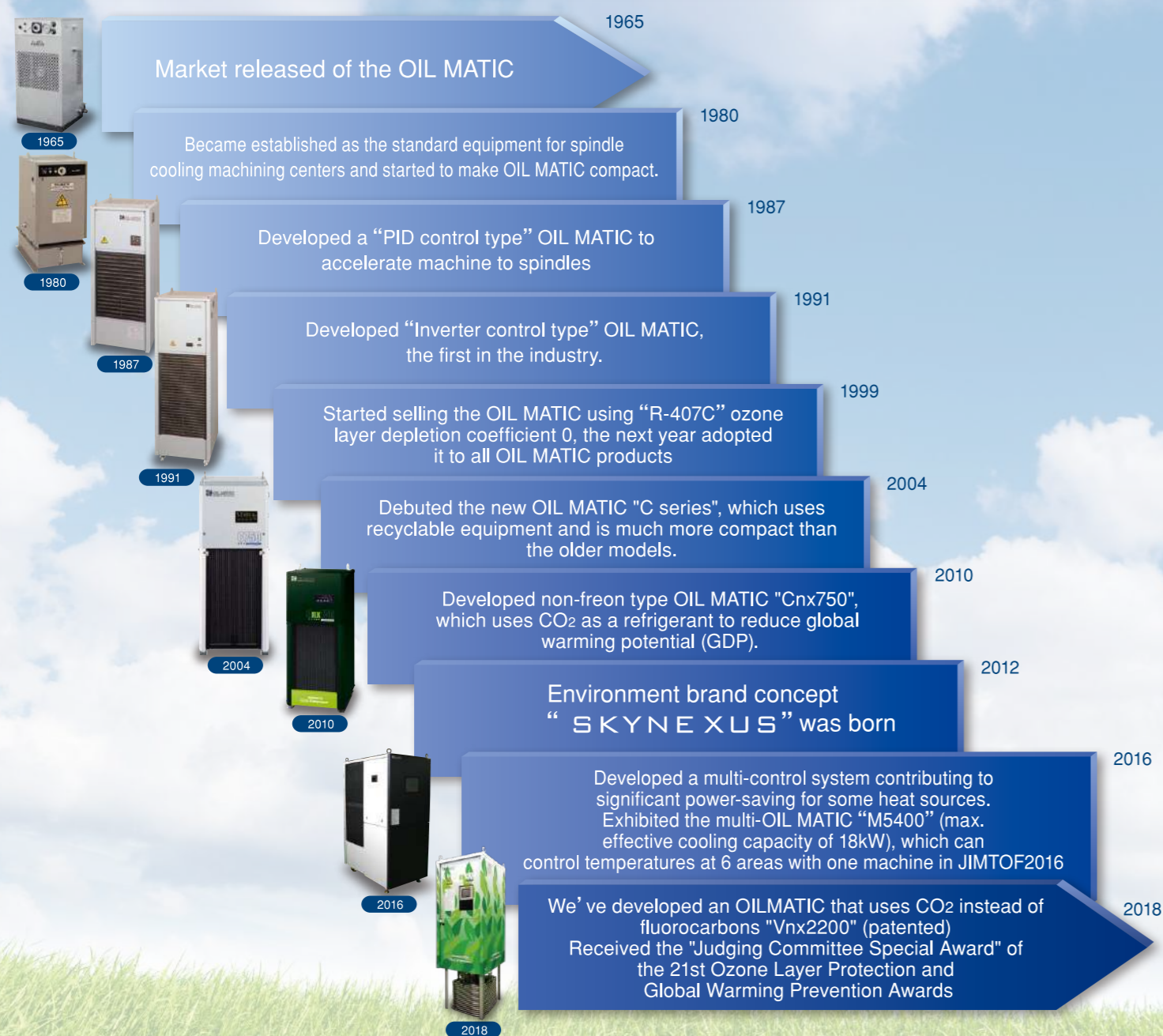
This division produces products with diverse specifications and short lead times. A huge number and variety of parts are used for temperature regulators such as diverse OIL MATIC models tailored to each customer. This section procures these parts according to a production plan by using a self-designed automatic ordering system and an inventory control system. In terms of manufacturing, the "technical cores" of fabrication work, such as brazing refrigerant pipes and laying liquid pipe, are meticulously transmitted through educational courses conducted under the Quality Management System and through a variety of project activities to ensure high-quality manufacturing.

After-service

This division handles everything from maintenance and parts supply to quality improvement. Since temperature regulators are used for "production goods such as machine tools and industrial machines that are used long term," OIL MATIC is basically designed to facilitate replacement and repair of the entire stand-alone OIL MATIC machine or of individual components. In case of failure, our service department or our business partners will work to determine the cause, implement countermeasures, and control failure data quantitatively.

SKYNEXUS CONCEPT SKYNEXUS CONCEPT

We have been continuing to progress and solve problems due to "heat" produced by various machine tools and industrial machines since the first OIL MATIC was developed in 1965. "Reducing greenhouse gas emissions" and "Energy saving" are global issues. Environmental problems, such as global warming and dwindling natural resources, have been growing more serious of late, and we have been promoting the development of ecological energy-saving technologies because we believe that controlling liquid temperature with OIL MATIC can help to reduce "environmental loading". We adopted a zero-ozone layer depletion coefficient "alternative Freon" for our OIL MATIC and introduced pioneering energy-saving inverter controlling technology. We introduced the environment brand concept "SKYNEXUS" in 2012 as a compilation of developments approaching the next generation. We offer "OIL MATIC for the next generation" for the mother machine like correspondence of saving-energy or saving-electric power type, as a concept model of "SKYNEXUS" (including models under development). We will develop products aimed reducing "environmental loading reduction" in the future based on our cultivated skills and know-how.



Dedicated fluorocarbon (CFC, HCFC)



Ozone depletion effect Yes



Greenhouse effect Large

Discontinued products - not possible to provide repairs and after-sales support

HCFC-12, 22

KTC, KTCG, KTV, ML **, MR ** series

Note) Products that do not have model numbers ending in "N"
Example: KTC-15B-A8, KTV-7.5C-B6, MLSA-07, etc.

Alternatives

Alternative Freon (HFC)



Ozone depletion effect None



Greenhouse effect Large

Current product

HFC-407C (GWP:1770)
HFC-410A (GWP:2090)

C, CL, V, W series
Note) Does not have "N" at the end of the model number.

KTC, KTCG, KTV,
ML **, MR ** series

Note) The current KTC G series has been discontinued and remodeled to the MLCC series.
Note) Products with model numbers ending in "N"
Example: KTC-15B-A8-N, KTV-7.5C-B6-N
MLSA-07A-N ··· etc.

Next-generation refrigerants that do not contain fluorocarbons (lower GWP)



Ozone depletion effect None



Greenhouse effect Small

Under development to bring to market

CO₂ (GWP:1)
HFO-1234yf (GWP:1)
HFC-449C (GWP:1251) ···etc

Developed world	
Base year	2011-2013
Standard value (CO ₂ conversion)	Average amount of HFCs for each year + 15% of standard amount of HCFCs
Reduction schedule	2019..... - 10%
	2024..... - 40%
	2029..... - 70%
	2034..... - 80%
	2036..... - 85%

OIL MATIC PURE MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

① ② ③ ④
C 750 D-L

① Series (model) name	Cμ: For ultraprecise temperature controls, forced circulation-type inverter PID control model C : Forced circulation-type inverter PID control model V : Forced vortex-type inverter PID control model CL: Forced circulation-type gas bypass W : Forced water circulation-type inverter PID control model
② Nominal chiller capacity	300:0.3 [kW] ※0.5 [kw] for C, V, W series 750:0.75 [kW] 1100:1.1 [kW] ※Only CL series 1500:1.5 [kW] 2200:2.2 [kW] 3800:3.75 [kW] ※Only C series
③ Model change codes	A~Z
④ Specification codes for individual options	No codes : No individual options -L : With tank -H : With heater -C : Complies with CE or other marking

OIL MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

① ② ③ ④ ⑤ ⑥ ⑦
M L H A-07 D-H-N

① Performance	L: Standard P: High precision R: High precision and high responsiveness
② Application	S: Cooling main spindle H: Temperature control of operating oil L: Temperature control of lubricant oil
③ Type	A, C: Without tank B, D: With tank
④ Nominal chiller capacity	3:0.3 [kW] 5:0.5 [kW] 7.5:0.75 [kW] 11:1.1 [kW] 15:1.5 [kW] 22:2.2 [kW] 38:3.75 [kW]
⑤ Model change code	A~Z
⑥ With or without heater	No codes: Without heater -H: With heater
⑦ Refrigerant type	-N:R-407C

OIL MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

① ② ③ ④ ⑤ ⑥ ⑦
KT V-7.5 D-HR1-N

① Heat exchange method	V: Forced-circulation type C: Forced vortex type (This is an old model. MLS* series are the present model)
② Nominal chiller capacity	3:0.3 [kW] 5:0.5 [kW] 7.5:0.75 [kW] 11:1.1 [kW] 15:1.5 [kW] 22:2.2 [kW] 38:3.75 [kW]
③ Model change codes	A~Z
④ Specification codes for individual options	H: With heater or others
⑤ Control method	R: Room temperature base follow-up mode / Constant mode
⑥ Minor model change number	
⑦ Refrigerant type	-N:R-407C

MOLD MATIC

AUTOMATIC MOLD TEMP. REGULATOR

① ② ③ ④ ⑤ ⑥ ⑦
KM A S-RH 7.5 B-90 1

① Heat medium type	A: Water O: Oil
② Number of medium circuits	S: One circuit D: Two circuits
③ Warming / cooling method	R: Refrigerator F: Air-cooled condenser C: Water-cooled condenser H: Heater
④ Warming / Cooling capacity	With R: Nominal chiller capacity 7.5:0.75 [kW] 11:1.1 [kW] 15:1.5 [kW] 22:2.2 [kW] 38:3.75 [kW] Without R: Heater capacity (kW)
⑤ Model change code	A~Z
⑥ Temperature limits for heat medium (°C)	40, 90, 150, 200
⑦ Minor model change number	

Control system

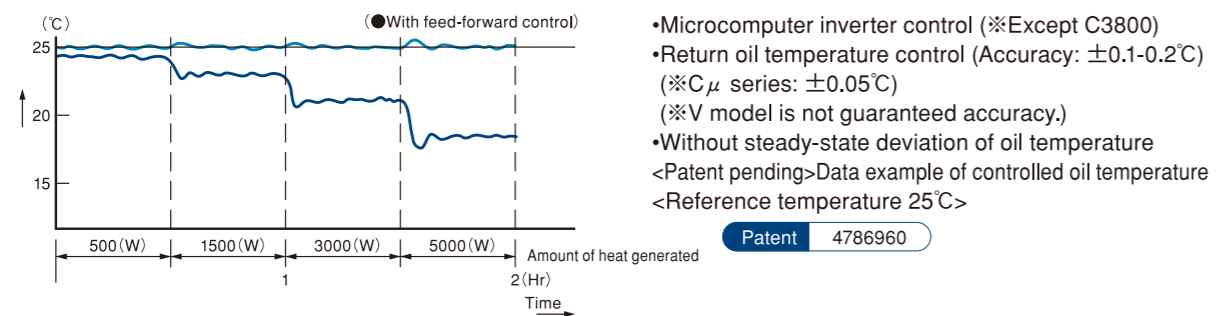
Inverter control method

INVERTER

$\pm 0.1 \sim 0.2^{\circ}\text{C}$

Inverter control method
INVERTER

Kanto Seiki's unique control method (patented), the inverter control method, uses a combination of inverter chiller for "variable frequency control", pulse expansion valve for "refrigerant flow control", and gas bypass expansion valve for "cooling capacity switching control". This method controls liquid temperature precisely by changing the cooling capacity in a linear progression according to the amount of heat generated by a machine. This allows it to match the heat load, even if it fluctuates from low to maximum load. This method makes it possible to utilize conventional inverter control.



OIL MATIC
AUTOMATIC LIQUID TEMP. REGULATOR
Series C μ /C/V/MR



PURE MATIC
Automatic WATER Temp. Regulator
Series W



MOLD MATIC
AUTOMATIC MOLD TEMP. REGULATOR
Series KMAS-R
(※Special specifications)

Gas bypass PID control method G/B PID

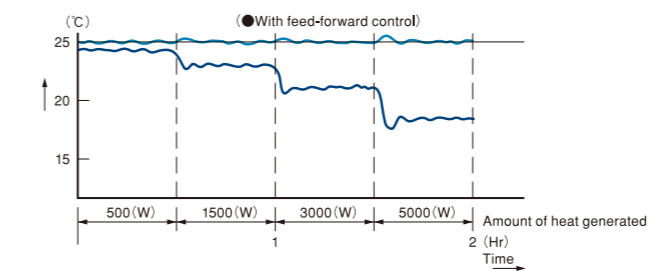
G/B PID

$\pm 0.1 \sim 0.2^{\circ}\text{C}$

Gas bypass PID control method
G/B PID

The gas bypass PID control (patent pending) is a non-inverter method that controls liquid temperature precisely within a wide range of loads from low to maximum by "variably controlling the cooling capacity with bypass flow control of refrigerant hot gas". It uses a gas bypass pulse valve to change the cooling capacity in a linear progression to match heat load according to the amount of heat generated.

- Gas bypass PID control
 - Return oil temperature control (accuracy: $\pm 0.1-0.2^{\circ}\text{C}$)
 - Without steady-state deviation of oil temperature <Patent pending> Data example of controlled oil temperature <reference temperature 25°C>
- Patent 5020664 (CL1100: Dual bypass valve control method)



OIL MATIC
AUTOMATIC LIQUID TEMP. REGULATOR
Series CL

ON-OFF control method

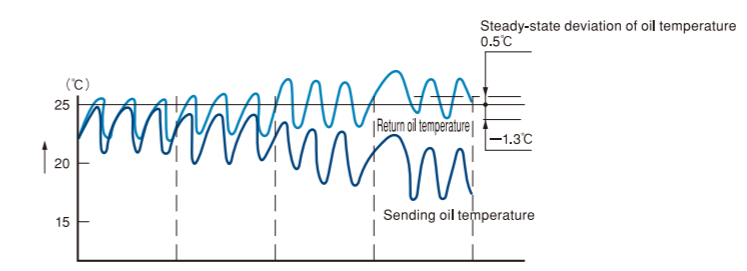
ON / OFF

$\pm 1.5 \sim 2^{\circ}\text{C}$

ON/OFF control method
ON/OFF

The chiller ON-OFF (2-position) control is a method of controlling temperature by turning on or off a chiller according to the temperature deviation between the temperature detected by a liquid temperature sensor and the preset temperature. This method is often used since the control method and components are simple.

- Chiller ON-OFF control
 - Return oil temperature control (accuracy: $\pm 1.5-2^{\circ}\text{C}$) (KTV model is not guaranteed accuracy)
 - With steady-state deviation of oil temperature
- Data example of controlled oil temperature <reference temperature 25°C>



OIL MATIC
AUTOMATIC LIQUID TEMP. REGULATOR
Series ML/KTV/KTC

Series MLSA/MLHA/MLSB

Circulation (closed) type

For main spindle, operating oil and lubricant oil



±1.5~2°C

ON/OFF control method ON/OFF

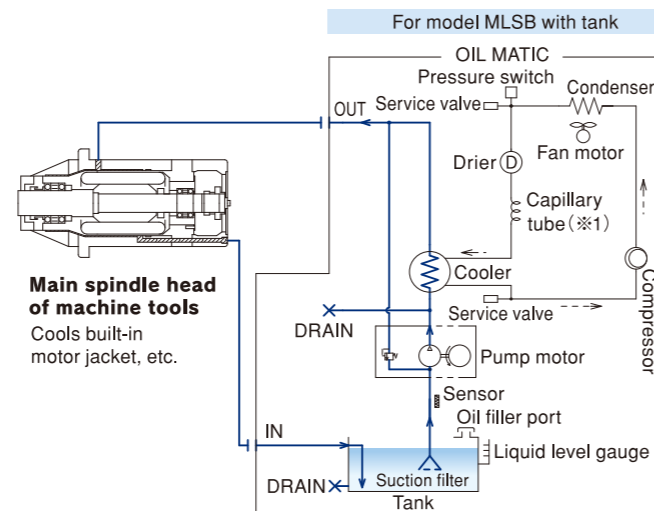
- Cools main spindle
- Cools operating oil
- Cools lubricant oil
- Cools linear motor
- Cools ball screws
- Cools machine body

Options implemented

- With casters
- With heater
- Tropical (passing) treatment
- Water-cooled condenser specifications
- 規格対応 (Standard compliant)

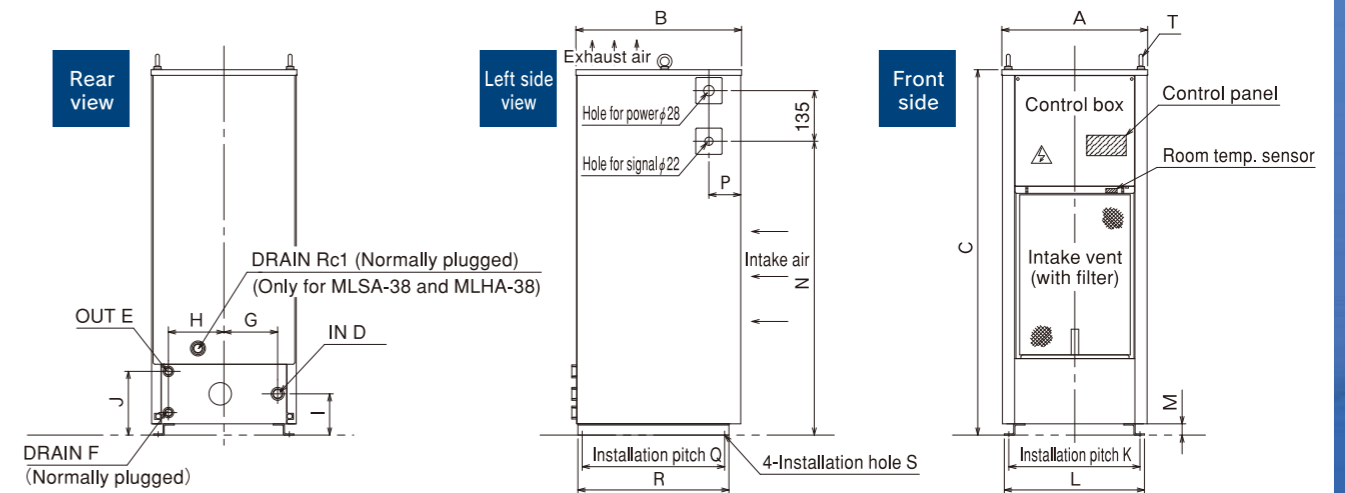
※ For other special specifications please contact our sales representatives.

Circuit diagram

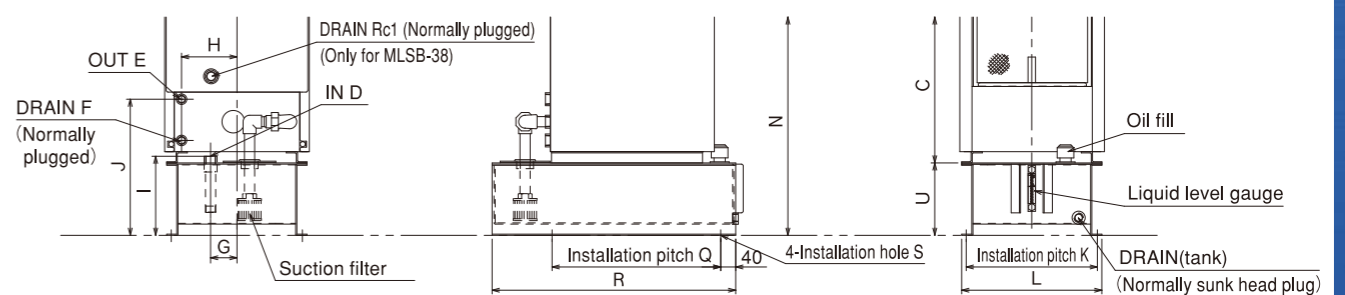


※OILMATIC models larger than ML**15 have an expansion valve instead of a capillary tube.

Series MLSA・MLHA Dimensions



Series MLSB Dimensions



Model	MLHA-03 MLSA-03 MLSB-03	MLHA-05 MLSA-05 MLSB-05	MLHA-07 MLSA-07 MLSB-07	MLHA-11 MLSA-11 MLSB-11	MLHA-15 MLSA-15 MLSB-15	MLHA-22 MLSA-22 MLSB-22	MLHA-38 MLSA-38 MLSB-38	
Effective cooling capacity(50/60Hz)[W] ※1	1160/1390	1450/1740	2900/3480	3720/4460	4830/5810	7260/8720	12200/14650	
Nominal chiller capacity[W]	400	500	750	1100	1500	2200	3750	
Refrigerant used	R-407C							
Refrigerant capacity[g]	530	620	880	1300	1670	2700	4200	
Solution-sending pump	Flow rate(50/60Hz)[L/min]	12/14.4		24/28.8		30/36	39/46.8	58.5/70.2
	Total relief pressure[MPa]	0.5		0.2		0.3		
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph							
Maximum operating current[A]	4	5	8	12	15	22	34	
Temperature setting range	Follow-up type...reference temperature-9.9~9.9°C Constant type...5~45°C							
Range of ambient temperature[°C]	5~45							
Range of liquid temperature[°C]	5~45							
Fluid to use	Mineral operation oil, lubricant oil, heat medium oil, etc.							
Tank capacity[L] ※2	15	24	32	37	70	105		
Heating capacity (kW) ※3	1		2		3	4		
Weight[kg] (MLHA,MLSA type)	50	70	110	120	185	300		
Weight[kg] (MLSB type)	70	90	135	150	275	400		

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.

※2 Only for MLSB-type specification (with tank).

※3 Only for specifications with heater.

※ Specifications may be improved and are subject to change without notice.

Size list	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	U
MLSA-03 MLHA-03	360	420	815	Rc1/2			130	130	100	160	320	344	30	625	105	350	382	φ10	2-M10 Eye bolt	-
60							180		325	-			790	400		580	165			
130							100		160	30			725	350		382	-			
MLSA-05 MLHA-05	390	440	915	Rc1/2			143	148	110	170	350	374	30	785	85	380	403	φ10	2-M10 Eye bolt	-
60							180		325	-			890	400		580	165			
70							210		370	-			985	450		650	200			
MLSA-07 MLHA-07	435	520	1215	Rc3/4			160	110	125	190	380	418	40	1025	95	440	470	φ12	2-M12 Eye bolt	-
100							215		390	390	416	-	1225	550		726	φ12			200
195							130		190	448	486	40	1060	470		500	φ14			-
MLSA-15 MLHA-15	605	575	1480	Rc3/4			100	160	210	390	460	-	1260	95	550	756	φ12	φ14	4-M12 Eye bolt	200
215							200		130	225	546	584	40		1265	500	530			-
150							260		470	560	586	-	1515		575	800	φ14			250
MLSA-22 MLHA-22	735	725	1740	Rc1 1/4			280	190	150	225	676	714	40	1525	95	650	680	φ14	4-M12 Eye bolt	-
150							260		470	690	716	-	1770	765		950	245			

Series Cμ

Circulation (closed) type
For main spindle, operating oil and lubricant oil



±0.05°C

ULTRA HIGH PRECISION

High precision temperature control for fine processing machines or static pressure

Cools main spindle

Cools operating oil

Cools lubricant oil

Cools linear motor

Cools ball screws

Cools machine body

Options implemented

With tank

With casters

With heater

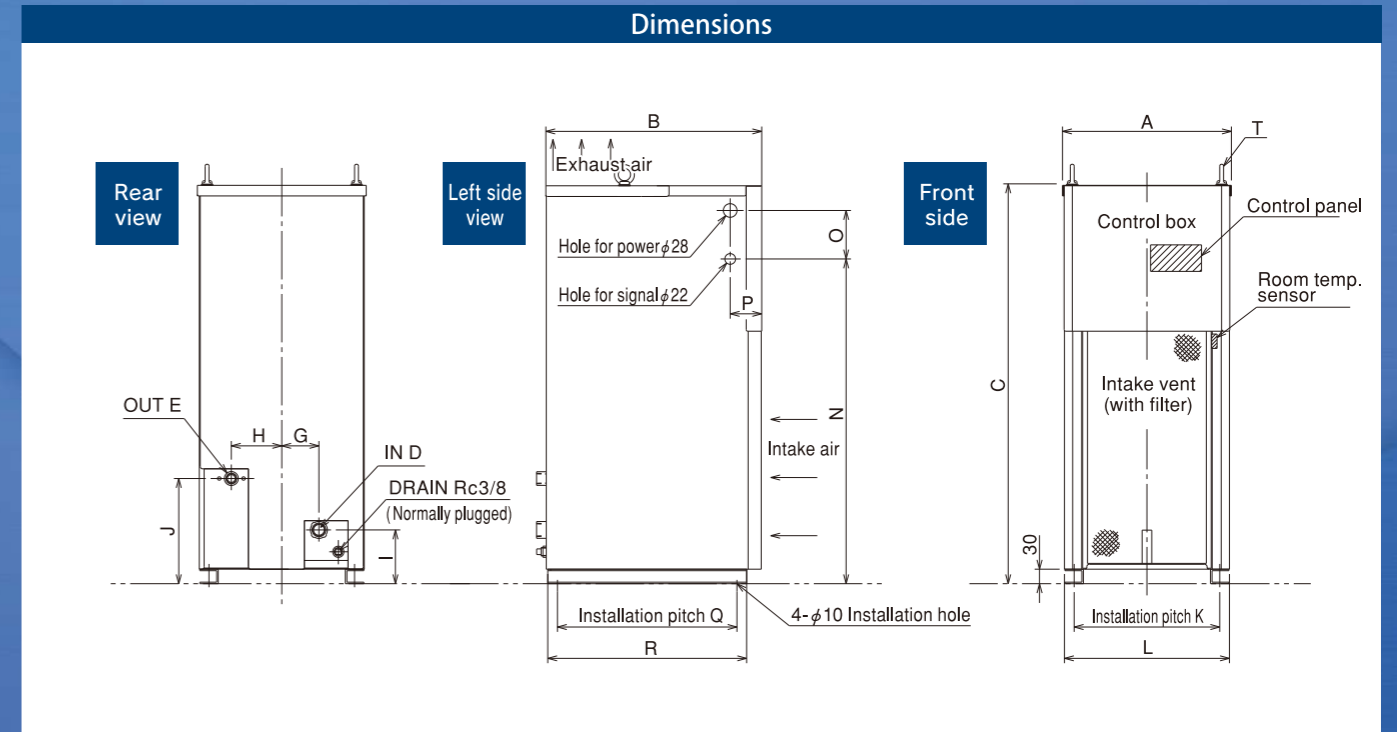
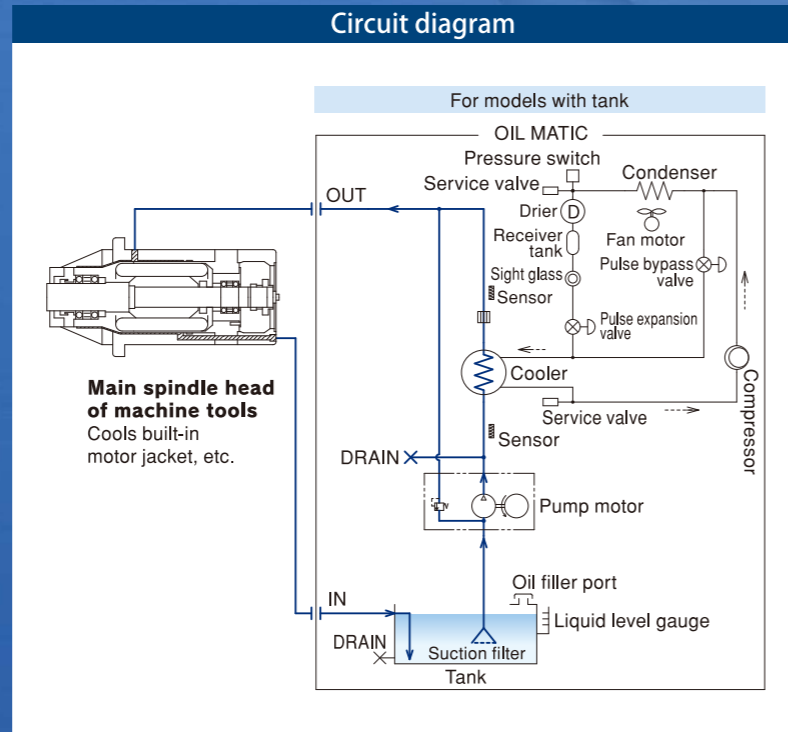
Tropical (passing) treatment

Water-cooled condenser specifications

規格対応

Standard compliant

※For other special specifications please contact our sales representatives.



Model	Cμ300	Cμ750	Cμ1500	Cμ2200
Effective cooling capacity (50/60Hz)[W] ※1	0~2000	0~4000	0~6000	0~8000
Nominal chiller capacity[W]	500	750	1500	2200
Refrigerant used	R-407C			
Refrigerant capacity [g]	440	630	800	1200
Solution-sending pump Flow rate (50/60Hz)[L/min]	12/14.4	24/28.8	30/36	39/46.8
Power source	AC200V 50/60Hz、AC220V 60Hz 3Ph			
Maximum operating current[A]	6	11	14	22
Nominal operating current[A]	5	8	11	19
Temperature setting range	Follow-up type ...reference temperature-9.9~9.9°C Constant type...5~45°C			
Range of ambient temperature[°C]	5~45			
Range of liquid temperature[°C]	5~45			
Fluid to use	Mineral operation oil, lubricant oil, heat medium oil, etc.			
Heating capacity (kW) ※2	0.5	1	2	3
Weight[kg]	60	75	95	135

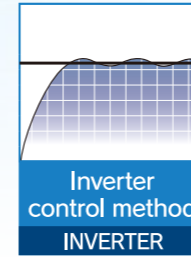
Size list	A	B	C	D	E	G	H	I	J	K	L	N	O	Q	R	T
Cμ300	350	450	675	Rc1/2		75	105		220	300	340	520	100	370	410	2-M10 eye-bolt
Cμ750			825	Rc3/4	Rc1/2		105	110								
Cμ1500	410	550	975	Rc3/4		85	135	130	240	360	400	740	180	470	510	2-M12 eye-bolt
Cμ2200				1015	Rc1 1/4											

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.
 ※2 Only for specifications with heater.
 ※ Specifications may be improved and are subject to change without notice.

Series V

Open type

For grinding fluid, cutting fluid and others

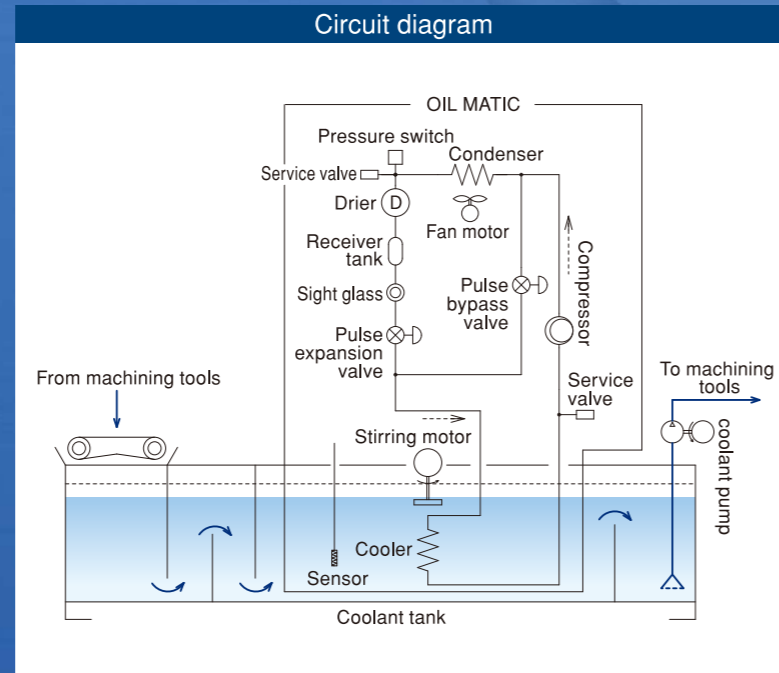


- Cools grinding fluid
- Cools cutting fluid
- Other

Options implemented

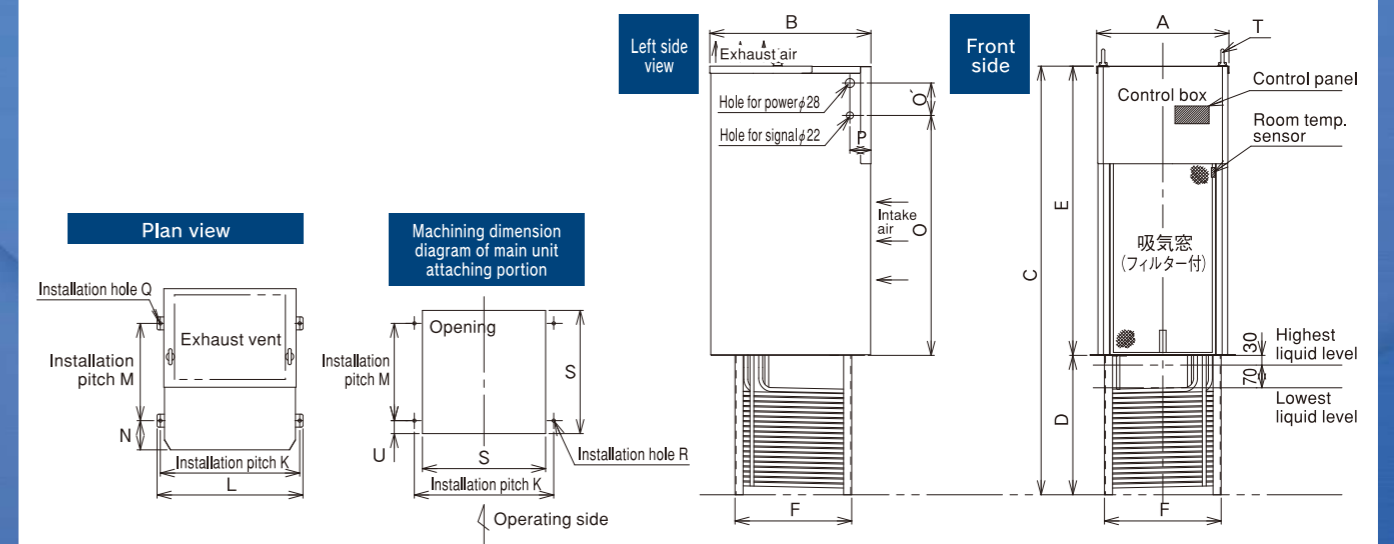
- With heater
- Tropical (passing) treatment
- Water-cooled condenser specifications
- 規格対応 (Standard compliant)

※ For other special specifications please contact our sales representatives.

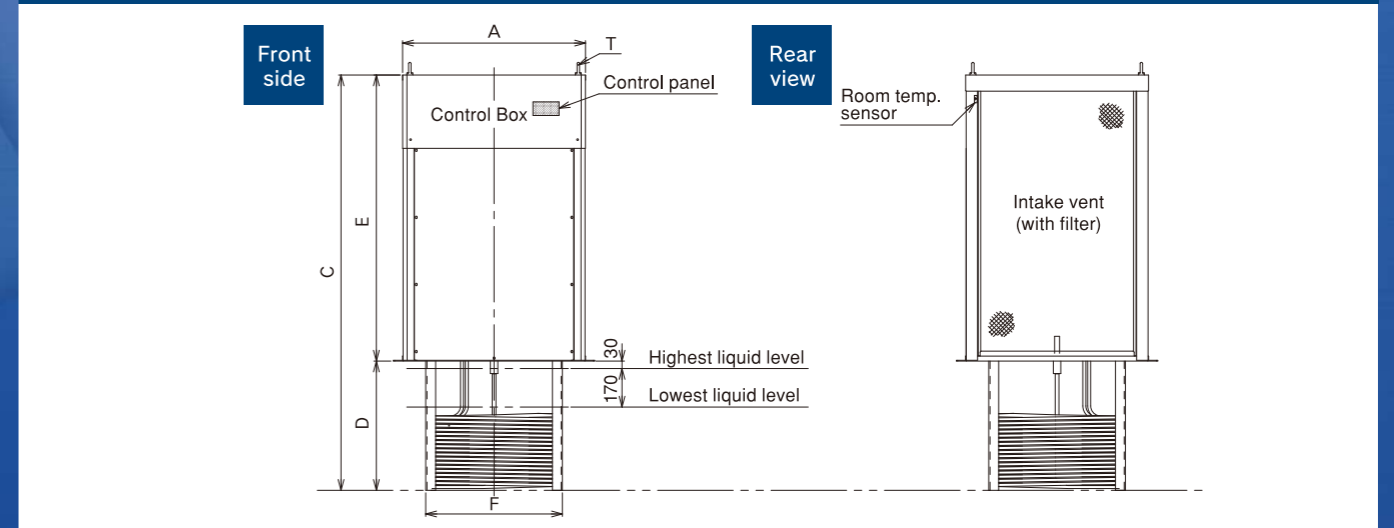


Model V300-V2200 Dimensions

Dimension M does not apply to models V300 and V750, since they have only one installation hole on each side. Instead, dimension N applies to these models.



Model V3800 Dimensions



Model	V300	V750	V1500	V2200	V3800
Effective cooling capacity[W] ※1	0~1600	0~4000	0~6000	0~8000	12200/14650
Nominal chiller capacity[W]	500	750	1500	2200	3750
Refrigerant used	R-407C				
Refrigerant capacity[g]	500	660	880	1380	****
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph				
Maximum operating current[A]	6	9	12	20	30
Nominal operating current[A]	4	8		18	—
Temperature setting range	Follow-up type ...reference temperature-9.9~9.9°C Constant type...5~45°C				
Range of ambient temperature[°C]	5~45				
Range of liquid temperature[°C]	5~45				
Fluid to use	Coolant liquid, water, etc.				
Heating capacity (kW) ※2	0.5	1	2	3	4
Weight[kg]	40	55	70	95	200

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.
 ※2 Only for specifications with heater.
 ※ Specifications may be improved and are subject to change without notice.

Size list	A	B	C	D	E	F	K	L	M	N	O	O'	P	Q	R	S	T	U
V300	350	370	950	300	650	260	380	400	—	200	500	100	65	2-φ10	2-M8 or φ10	280	2-M10 Eyebolt	140
V750		440	1155	360	795	290				235	640					310		155
V1500	410	500	1325	430	895	360	430	450	300	90	740	100	65	4-φ10	4-M8 or φ10	380	2-M12 Eyebolt	40
V2200	525	620	1415		985	460	540	560	400	110	830					480		
V3800	736	750	1670	520	1150	550	780	810	500	135	945	130	105	4-φ12	—	560	4-M12 Eyebolt	30

Series KTV

Open type
For grinding fluid, cutting fluid and others

ON/OFF control method
ON/OFF

Cools grinding fluid

Cools cutting fluid

Other

Options implemented

With heater

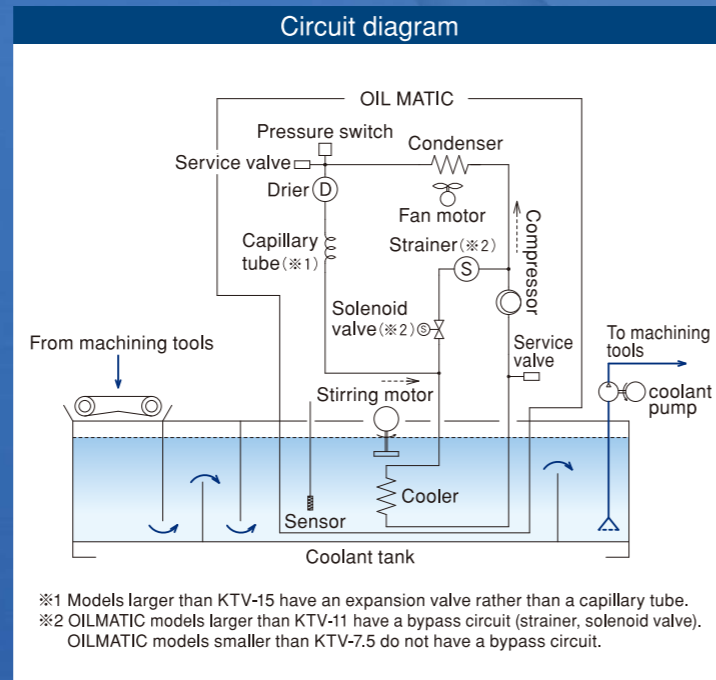
Tropical (passing) treatment

Water-cooled condenser specifications

規格対応

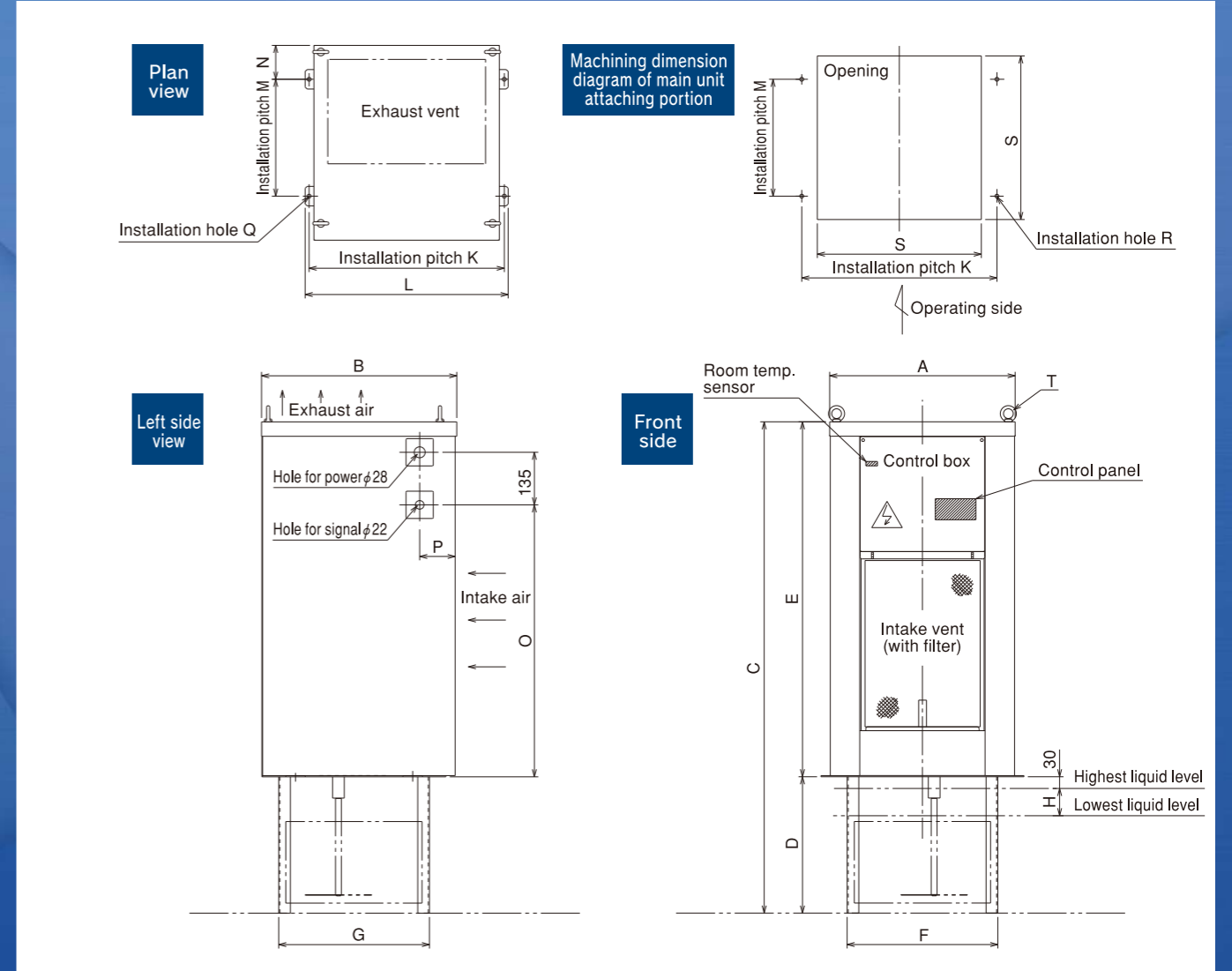
Standard compliant

*For other special specifications please contact our sales representatives.



Dimensions

Dimension M does not apply to models KTV-3, since they have only one installation hole on each side. Instead, dimension N applies to this model.



Model	KTV-3	KTV-5	KTV-7.5	KTV-11	KTV-15	KTV-22	KTV-38 Note:
Effective cooling capacity[W](50/60Hz) ※1	1160/1390	1450/1740	2900/3480	3720/4460	4830/5810	7260/8720	12200/14650
Nominal chiller capacity[W]	400	500	750	1100	1500	2200	3750
Refrigerant used	R-407C						
Refrigerant capacity[g]	620	740	1020	1440	1900	3400	4500
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph						
Maximum operating current[A]	3	5	8	10	13	16	30
Temperature regulator Setting range	Follow-up type ...reference temperature-9.9~9.9°C						
	Constant type...5~45°C						
Range of ambient temperature[°C]	5~45						
Range of liquid temperature[°C]	5~45						
Fluid to use	Coolant liquid, water, etc.						
Heating capacity (kW) ※2	0.5	1	2	4			
Weight[kg]	55	60	80	100	130	160	230

Size list	A	B	C	D	E	F	G	H	K	L	M	N	O	P	Q	R	S	T
KTV-3	355	380	950	300	650	290			380	400	-	185	460	90	2-φ10	2-M8 or φ10	300	2-M10 Eyebolt
KTV-5	410	425	1130		780	307	327		430	450	250	80	575	100			340	
KTV-7.5	475	500	1260	350	910	386		70	500	520	300	87	700	90			420	4-M10 Eyebolt
KTV-11	510	525	1360		1010	460			530	554			785	85	4-φ10	4-M8 or φ10	470	
KTV-15	545	565	1460	420	1040	490			590	614	340	105	825				500	
KTV-22	605	625	1615		1195				650	675	400		980					
KTV-38	735	725	1968	520	1448		550	170	780	810	500	104	1240	95			560	4-M12 Eyebolt

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.
 ※2 Only for specifications with heater.
 ※ Specifications may be improved and are subject to change without notice.
 Note: Model KTV-38 uses limited fluid. Please contact us for details.

Series MRCC/MLCC

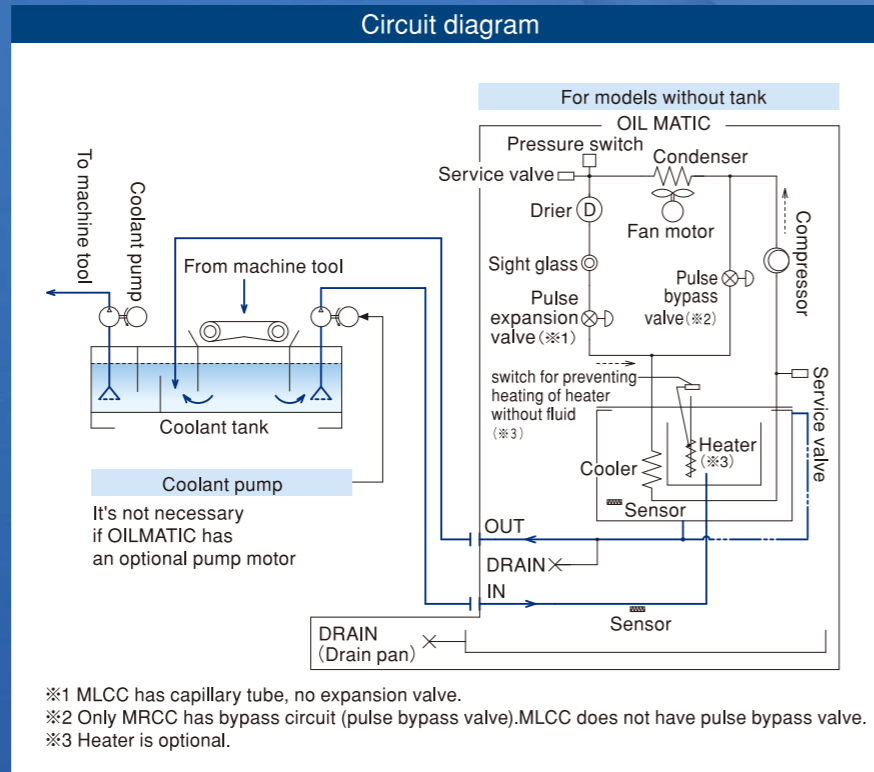
Circulation (closed) type
For grinding fluid, cutting fluid



MRCC-07-N
(キャスター付仕様)

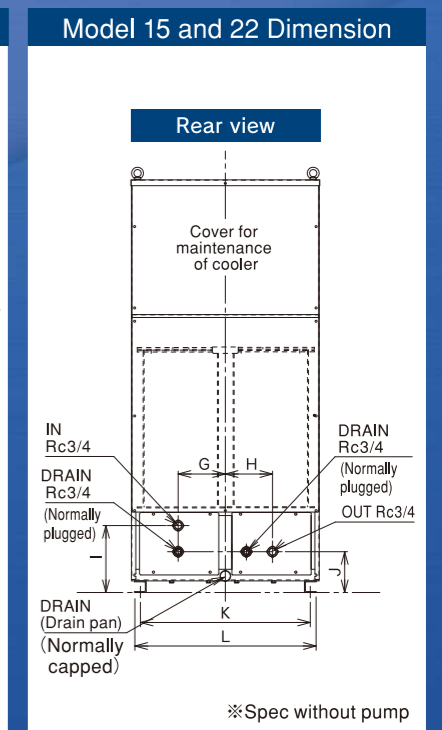
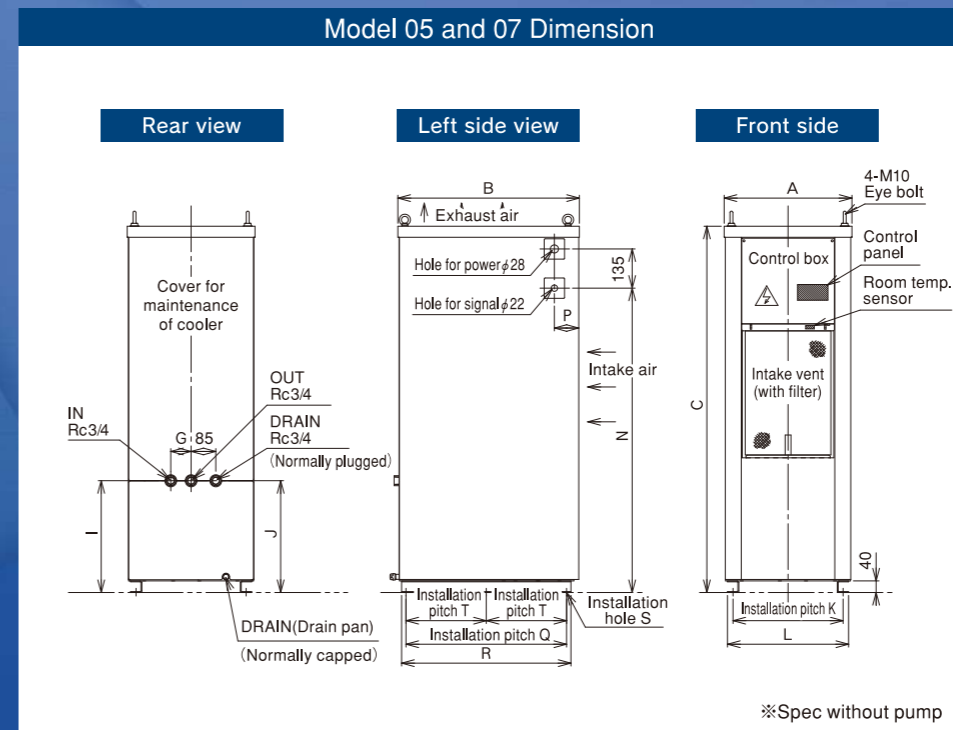
MRCCシリーズ ±0.1~0.2℃	MLCCシリーズ ±1.5~2℃	Cools grinding fluid	Cools cutting fluid
Inverter control method INVERTER	ON/OFF control method ON/OFF	Options implemented	規格対応
		With coolant pump	With casters
		With heater	熱帯 (Tropical (passing) treatment)
		Water-cooled condenser specifications	標準適合 (Standard compliant)

※For other special specifications please contact our sales representatives.



Structural drawing of cooler

The structure of these models facilitates regular cooler maintenance to ensure stable cooling capacity over the long term.



Model	Series MRCC specifications			Series MLCC specifications		
	MRCC-07	MRCC-15	MRCC-22	MLCC-05	MLCC-07	MLCC-15
Effective cooling capacity[W](50/60Hz) ※1	0~4000	0~6000	0~8000	1450/1740	2900/3480	4830/5810
Nominal chiller capacity[W]	750	1500	2200	500	750	1500
Refrigerant used	R-407C			R-407C		
Refrigerant capacity[g]	1160	2150	1470	860	1220	2200
Amount of minimum liquid circulation[L/min]	15	25	32	5	20	
Pressure resistance[MPa]	0.2			0.2		
Power source	AC200V 50/60Hz、AC220V 60Hz 3Ph			AC200V 50/60Hz、AC220V 60Hz 3Ph		
Maximum operating current[A]	8	12	20	5	12	
Nominal operating current[A]	6	9	16	—	—	—
Temperature regulator Setting range	Follow-up type ...reference temperature-9.9~9.9℃ Constant type...5~45℃			Follow-up type ...reference temperature-9.9~9.9℃ Constant type...5~45℃		
Range of ambient temperature[℃]	5~45			5~45	5~40	5~45
Range of liquid temperature[℃]	5~45			5~45		
Fluid to use	Coolant liquid, etc.			Coolant liquid, etc.		
Heating capacity (kW) ※2	1	2	3	1	2	
Weight[kg]	110	180	180	100	110	195

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.
 ※2 Only for specifications with heater.
 ※ Specifications may be improved and are subject to change without notice.

Size list	A	B	C	G	H	I	J	K	L	N	P	Q	R	S	T
MLCC-05	410		1205				378	348	386	985	95				
MRCC-07 MLCC-07	440	625	1260	70	—		385	380	418	1045	85	553	583	4-φ14	—
MRCC-15 MLCC-15 MRCC-22	650	800	1423	162.5		230	140	585	625	1205		710	740	6-φ14	355

M series

Multi-control OILMATIC that makes it possible to individually control "2 systems" with "1 unit" in order to handle multi-axis composite machine tools



- System 1: Cools main spindle, Cools operating oil, Cools lubricant oil, Cools linear motor, Cools ball screws, Cools machine body

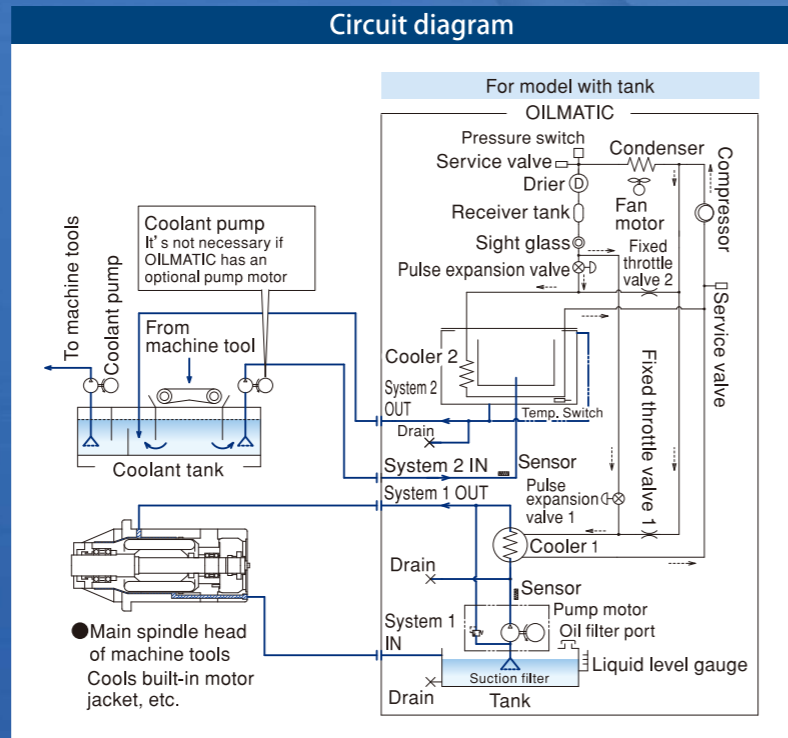
- System 2: Cools grinding fluid, Cools cutting fluid

±0.2°C
Inverter control method
INVERTER

Options implemented

- With casters
- With heater
- Tropical (passing) treatment
- Water-cooled condenser specifications
- 規格対応 (Standard compliant)

※For other special specifications please contact our sales representatives.



Multi-temperature control

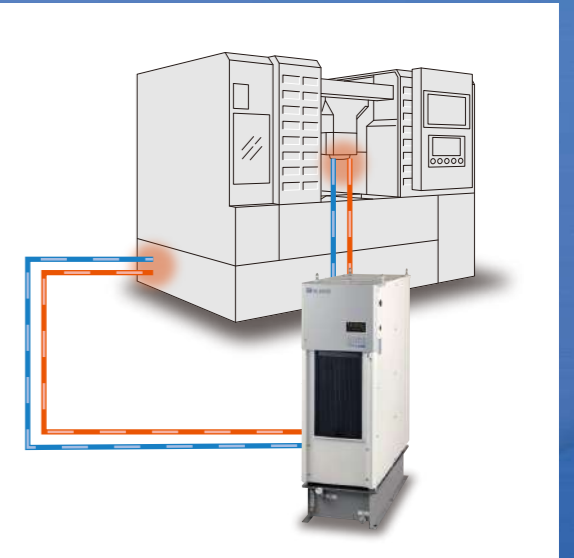


One unit supports precise temperature control of different liquids such as "oil (spindle cooling)" and "water (water-soluble cutting fluid)."

Contributes to multi-axis / composite machine tools.

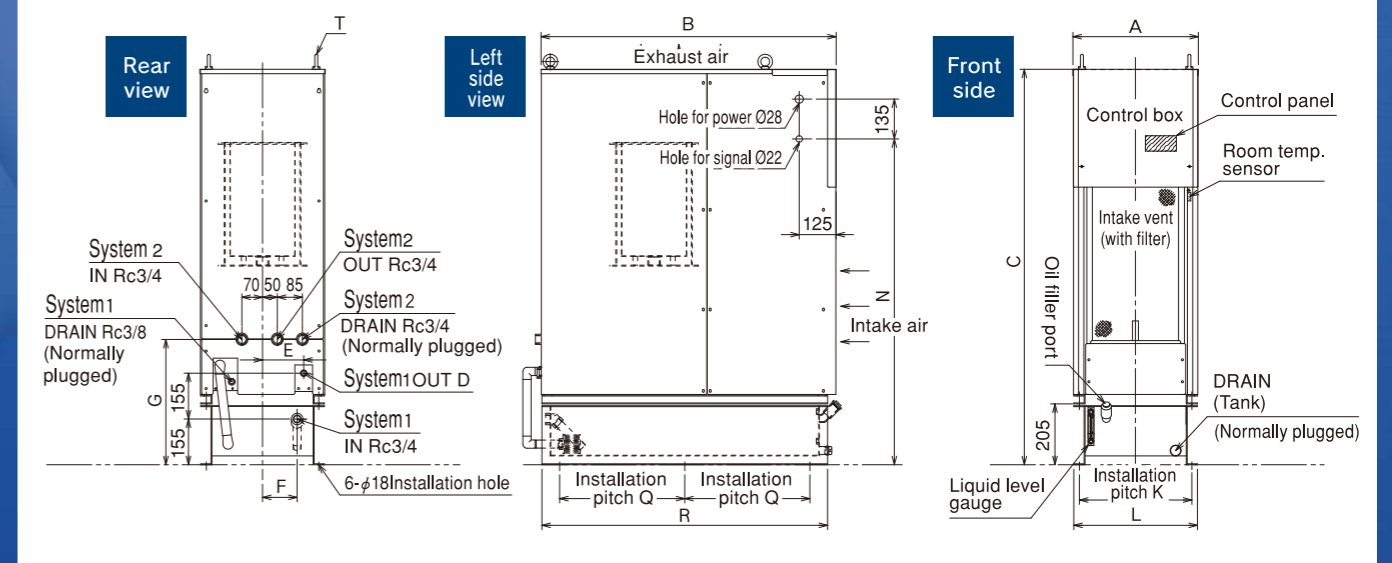
Temperature control accuracy ± 0.2°C.

Kanto Seiki uses its unique technology and accumulated know-how to develop combinations that are customized to match the demands of various different machines (custom-made specifications).



Model	M750	M1500	M2200
Effective cooling capacity[W] ※1	1500(System1)+1600(System2)=3100	2500(System1)+2500(System2)=5000	4500(System1)+2500(System2)=7000
Nominal chiller capacity[W]	750	1500	2200
Refrigerant used	R-407C		
Refrigerant charge[g]	960	****	****
Minimum circulation volume (system 2)[L/min]	15	25	32
Pressure resistance (system 2)[MPa]	0.2		
Refrigerant charge (System 1)	Flow rate (50/60Hz) [L/min] Total relief pressure[MPa]	24/28.8 0.5	30/36 0.5
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph		
Maximum operating current [A]	9	11	22
Normal operating current[A]	7	****	****
Temperature setting range	Follow-up type...reference temperature-9.9~9.9°C Constant type...5~45°C		
Range of ambient temperature[°C]	5~45		
Range of liquid temperature[°C]	5~45		
Fluid to use	System 1	Mineral operation oil, lubricant oil, heat medium oil, etc.	
	System 2	Coolant liquid, etc.	
Tank capacity[L]	35	55	65
Weight[kg]	170	****	****

Dimensions



Size list	A	B	C	D	E	F	G	K	L	N	Q	R	T
M750	425	1000	1340	Rc1/2	140	117	425	381	419	1104	424	968	4-M10 Eyebolt
M1500	503	1122	1505	Rc3/4	180	155	595	459	497	1270	485	1090	4-M12 Eyebolt
M2200	553	1172	1600		205	180		509	547	1365	510	1140	

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.
※Specifications may be improved and are subject to change without notice.

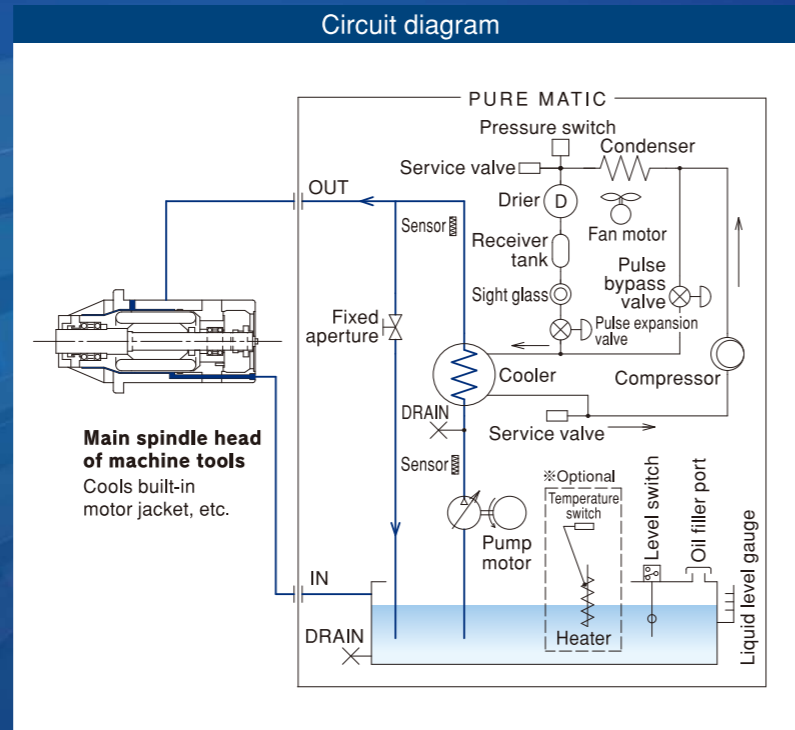
PURE MATIC

Automatic WATER Temp. Regulator

Series W

Circulation (closed) type

For controlling water temperatures of machine tools or other industrial machines like laser processing machines and electric discharge machines



±0.1~0.2°C

Inverter control method
INVERTER

Cools Semiconductor manufacturing equipment

Cools linear motor

Cools Other various industrial machines

Options implemented

With heater

Tropical (passing) treatment

Water-cooled condenser specifications

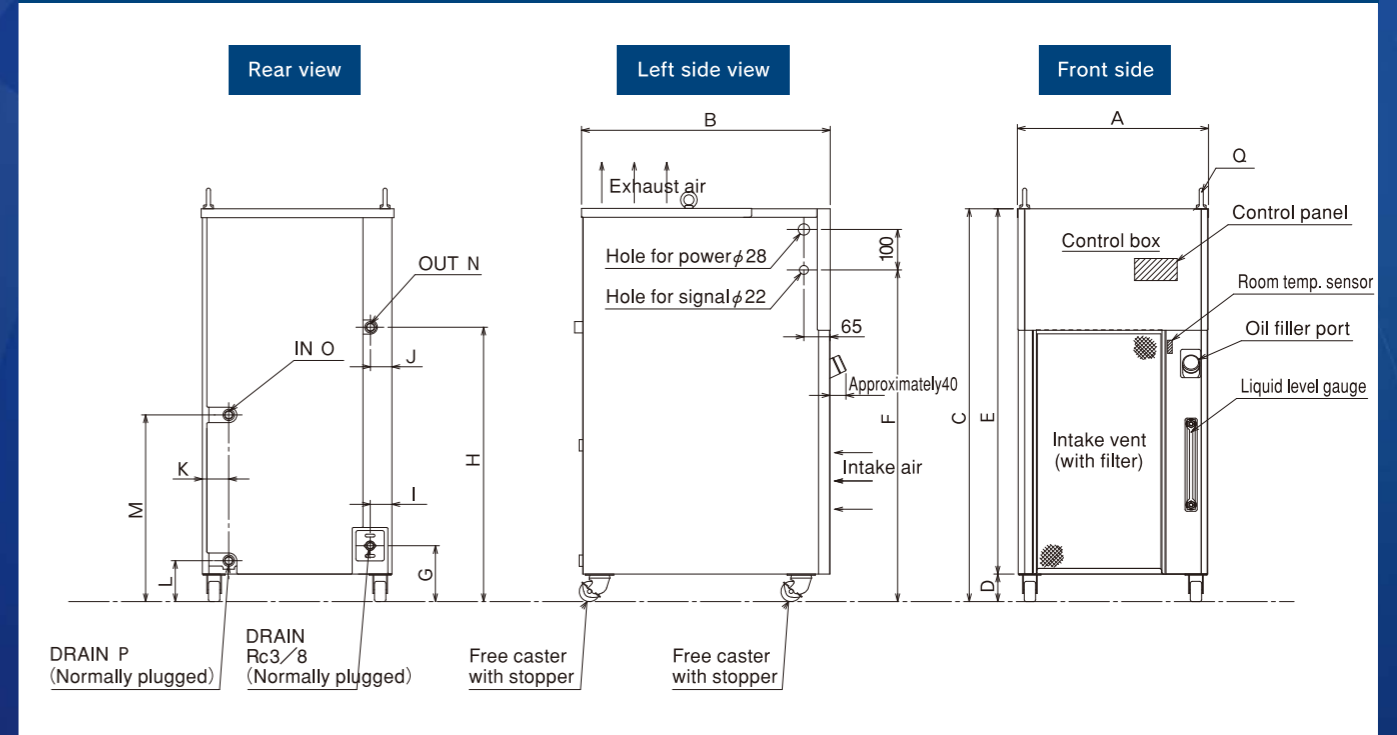
規格対応

Standard compliant

※For other special specifications please contact our sales representatives.

This is an automatic liquid temperature regulator that uses water or pure water rather than oil as a heat medium. It is used for semiconductor manufacturing equipment, medical equipment, linear motors, and other industrial machines. It controls temperatures with extremely high accuracy to optimize the performance of industrial machines.

Dimensions



Model	W300	W750	W1500	W2200
Effective cooling capacity (50/60Hz) [W] ※1	0~1800	0~3700	0~5800	0~8000
Nominal chiller capacity [W]	500	750	1500	2200
Refrigerant used	R-407C			
Refrigerant capacity [g]	520	740	840	1000
Solution-sending pump type	Flow rate [L/min] (50Hz)	17 (全揚程26m)		42 (total head 39m)
	Flow rate [L/min] (60Hz)	50 (全揚程27m)		67 (total head 39m)
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph			
Maximum operating current [A]	9	16	18	26
Maximum operating current [A] ※2			19	
Nominal operating current [A]	6	9	11	19
Nominal operating current [A] ※2			16	20
Temperature Setting range	Follow-up type ...reference temperature-9.9~9.9°C Constant type...5~45°C			
Range of ambient temperature [°C]	5~45			
Range of liquid temperature [°C]	5~45			
Fluid to use	Water			
Tank capacity [L]	13		16	27
Heating capacity (kW) ※2	1		2	3
Weight [kg]	80	90	100	140

Size list	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
W300	400	510	790	65	725	639	110	306	43	83	64	95	380	Rc1/2	Rc1/2	Rc1/2	2-M12 Eye bolt
W750		570	860		795	705	128	173	51	Rc1/2		Rc1/2		Rc1/2	2-M12 Eye bolt		
W1500	472	614	970	68	902	819	138	678	54	53	65	101	461	Rc1/2	Rc1/2	Rc1/2	2-M12 Eye bolt
W2200	591	714	1055		987	904		734	59		60	105	458	Rc3/4	Rc3/4	Rc3/4	4-M12 Eye bolt

※1 Effective cooling capacity indicates the maximum values within the range of use when oil ISO VG2 or equivalent is used.
 ※2 Only for specifications with heater.
 ※ Specifications may be improved and are subject to change without notice.



MATICCARE CONNECT

OILMATIC / PUREMATIC
(Oil temperature / liquid temperature automatic adjuster)
Monitoring application software

Allows users to centrally manage data from up to 4 OILMATIC and PUREMATIC devices attached to various machine tools and semiconductor manufacturing equipment.

- You can collect various information about the devices by connecting a USB-RS485 converter (general-purpose product).
- Up to 4 units can be monitored at the same time.
- Compatible with Windows 7/10(Home/Pro,32bit/64bit).

- 1 It can simultaneously record and display the various temperatures (master / slave / aircraft / room temperature), control mode, set value, and operation volume.
- 2 It is possible to start / stop and change the set value with various remote controls.
- 3 The time axis, manipulated variable scale, and temperature scale can be set arbitrarily.
- 4 It can store various types of monitored data (CSV format) (automatic storage is also supported).
- 5 It is possible to simultaneously manage the alarm history and check the records of operating status before and after the alarm.
- 6 It is possible to operate at fixed cooling capacity is possible (ability to assess feed-forward control)
- 7 Various parameters can be read / written.

Connection image



Monitor screen



Operating environment

Supported OS	Microsoft Windows 7 Home Premium/Professional (32bit/64bit) Microsoft Windows 10 Home/Pro (32bit/64bit)
CPU (recommended)	Intel Core i5 or more
Memory (recommended)	RAM:4.00GB or more
Hard disk (recommended)	HDD:500GB or more



MATICCARE

Fin Refresher

Cleaner for Air Cooled Condenser
Cleaning agent for OILMATIC condensers

What is Fin Refresher?

Most OILMATIC failures are caused by clogged capacitors, which causes the refrigeration cycle to malfunction, and increases the load on the refrigeration circuit components.

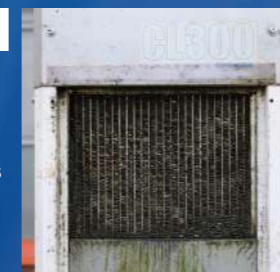
Cause of failure

Most OILMATIC failures are caused by clogged capacitors, which causes the refrigeration cycle to malfunction, and increases the load on the refrigeration circuit components.

- 1 Unique volatilization process removes stubborn oil residues adhering to aluminum fins.
- 2 Product is alkaline, but it does not corrode aluminum fins.
- 3 Regular maintenance restores and maintains the OILMATIC performance.
- 4 It can be used even during operation.

Before

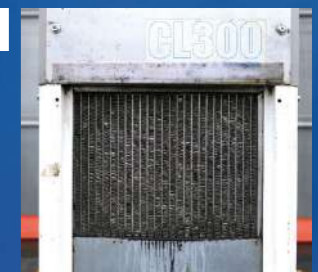
In this state the aluminum fins cannot fulfill their purpose. In addition, oil residues spread throughout the inside clogging the capacitor.



After cleaning with Fin Refresher

After

It was possible to remove most of the stubborn oil residues. The capacitor will not get further clogged, and cooling capacity will be maintained.



Maintenance method



Spray fin refresher is evenly on the aluminum fins.



Use a soft cloth to remove large residues.



Then scrape off the fine dirt with a brush.

Note

Please be sure to read and understand the SDS carefully before use. Check in advance to determine the impact it will have on the factory (environment, work, etc.). You shouldn't expect it to affect anything other than oil residues.

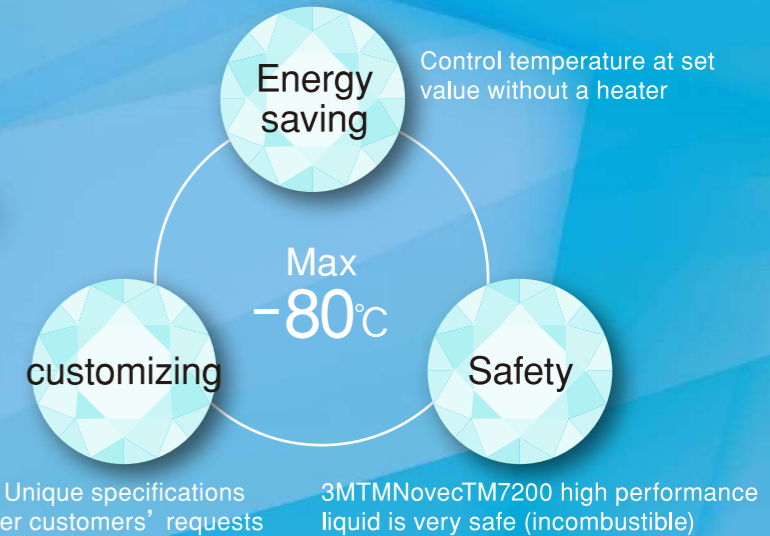
Water-cooled type OIL MATIC

ICE MATIC
SUPER LOW TEMP. REGULATOR

SWTB series

Super low temperature automatic regulator for semiconductor producing equipment or testing equipment.

Change the times
liquid nitrogen to ICEMATIC



<Air-cooled> OILMATIC

Problems with the factory environment

- High factory temperatures due to exhaust heat
- Increased load on air conditioning equipment

Processing environment issues

- Impact on processing accuracy due to elevated factory temperatures
- Increased initial cost of reviewing or purchasing air conditioning equipment

Solution

Water-cooled OILMATIC exhausts heat from machining tools into to water supplied from a cooling tower installed in the factory, rather than into the air. As a result, this lowers the ambient temperature of the entire factory, which reduces the load on air conditioners, leading to energy savings.

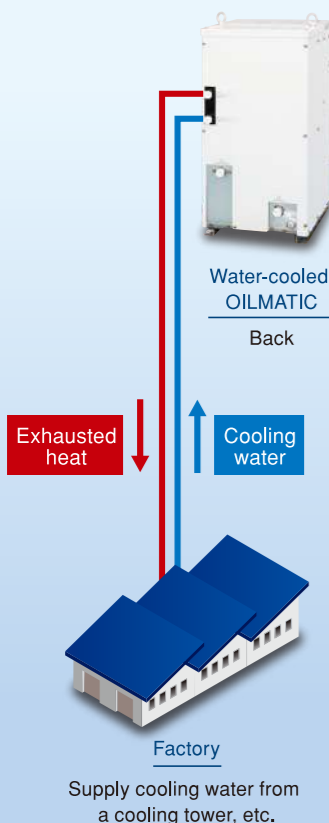
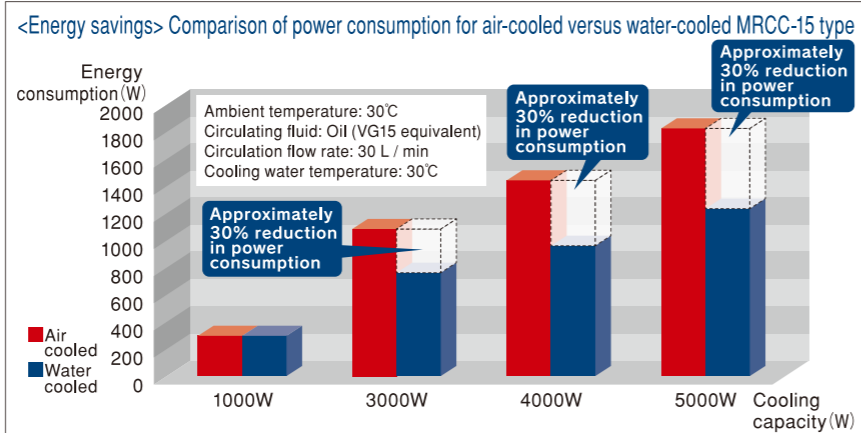
<Water-cooled> OILMATIC

Solves problems with the factory environment

- No increase in factory temperature due to exhaust heat
- Reduced load on air conditioning equipment

Solves problems with the processing environment

- Improved stabilization of processing accuracy
- Improved stabilization of cooling capacity



Benefits of not having an air intake

- No maintenance is required because there is no intake surface.
- No cooling failure due to dirt on the intake surface.
- Reduces operating costs by not requiring maintenance on the intake surface.

MODEL	Piping diameter for cooling water		Cooling water inlet temperature	Required cooling water flow rate L/min or more
	IN	OUT		
38	RC1	RC1	At 25 °C	30
			At 34 °C	60
22	RC3/4	RC3/4	At 25 °C	19
			At 34 °C	42
15 11	RC3/4	RC3/4	At 25 °C	13
			At 34 °C	30
7.5 5	RC1/2	RC1/2	At 25 °C	7.5
			At 34 °C	18
3	RC1/2	RC1/2	At 25 °C	6
			At 34 °C	12

Kanto Seiki's specific technology

CORE technology

Kanto Seiki has offered proprietary technology to support a variety of manufacturing machines for over 50 years. Our high speed high precision devices are capable of "controlling general problems due to heat including thermal displacement".

Temperature accuracy

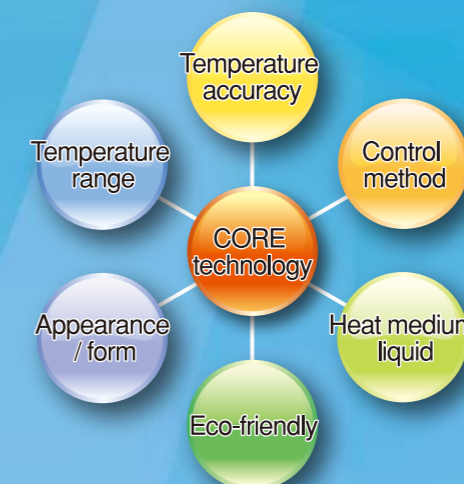
We have been accepting customer requests for temperature accuracy, and our patented technologies can control temperatures within $\pm 0.0005^{\circ}\text{C}$

Temperature range

Adjusts temperature to ideal ranges to deal with heat problems.

Appearance / form

We respond to customers' appearance and form requirements by employing space-saving installation methods.



Control method

We offer control methods to match specific heat mediums. (multi-system, high-speed FF control, etc.)

Heat medium liquid

We support your preferred heat mediums, including city water, pure water, fluorine-based inert liquids, chemicals, etc.

Eco-friendly

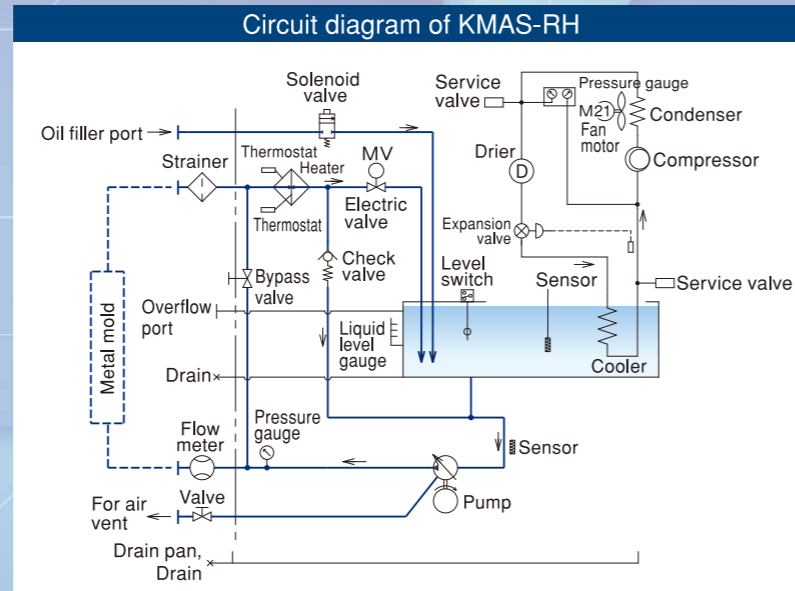
We made it possible to use low-GWP refrigerants to help prevent global warming.

KMAS-R/-RH series

Automatic mold temperature controller (For water)
Range of liquid temp. 5°C~40°C/5°C~90°C



KMAS-RH7.5B

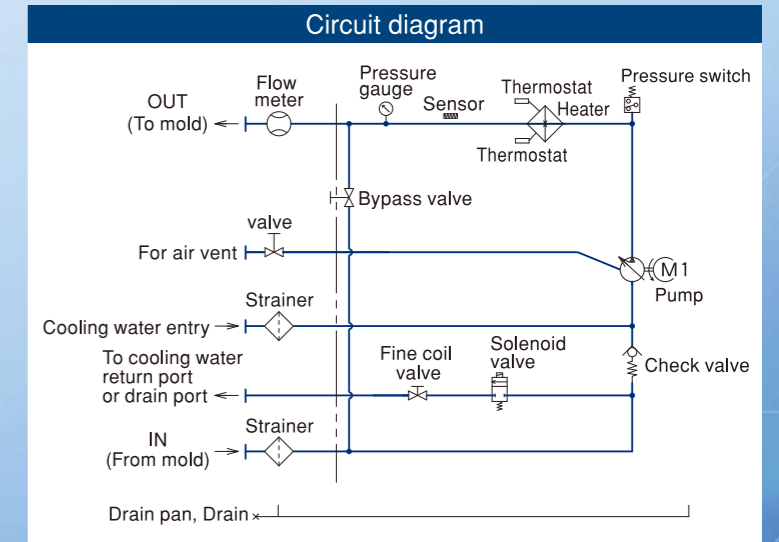


KMA-H series

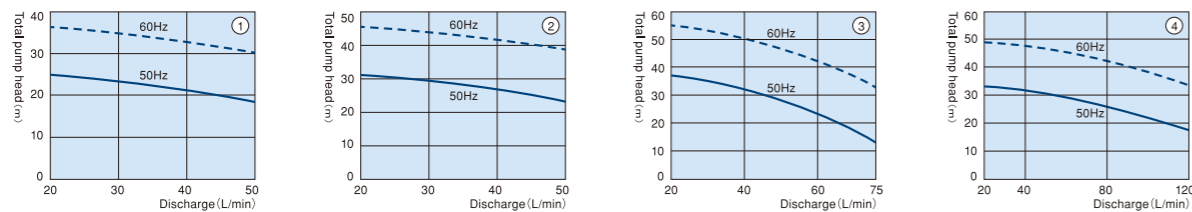
Automatic mold temperature controller (For water)
Liquid temp. range, Supply water temp. ~90°C



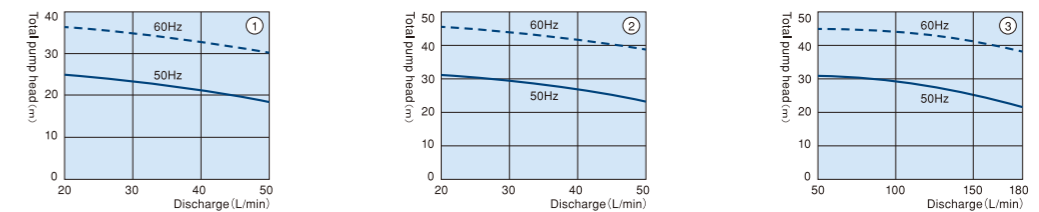
KMAS-H4B



Circuit diagram of KMAS-RH



Pump performance curve



Model	KMAS-R7.5B-40/-RH7.5B-90	KMAS-R11B-40/-RH11B-90	KMAS-R15B-40/-RH15B-90	KMAS-R22B-40/-RH22B-90	KMAS-R38B-40/-RH38B-90
Effective cooling capacity (60Hz)[W]	3400	4300	6000	8700	14600
Nominal chiller capacity[W]	750	1100	1500	2200	3750
Heater capacity[W] ※ 1	4000		6000		
Refrigerant used	R-407C				
Refrigerant capacity[g]	980	1580	1450	3000	3800
Solution-sending pump type	Discharge amount[L/min](50/60Hz)	Pump performance curve (1)	Pump performance curve (2)	Pump performance curve (3)	
	Lifting height[m]	Pump performance curve (4)			
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph				
	Maximum operating current[A]	8A / 20A	13A / 21A	16A / 29A	21A / 39A
Range of liquid temperature[°C]	5~40°C / 5~90°C				
Liquid used	Water				
Pipe connect	Water supply port X Return refrigerant port	Rc3/4 X Rc3/4		Rc1 X Rc1	
External dimension W X L X H (mm)	642 X 471 X 1255	692 X 537 X 1355	802 X 582 X 1453	828 X 580 X 1529	878 X 762 X 1772
Tank capacity[L]	17	27	48	54	94
Weight[kg]	145/150	170/180	200/210	270/280	470/480

※Specifications may be improved and are subject to change without notice.

Model	KMAS-H2B-90	KMAS-H4B-90	KMAS-H8B-90	KMAS-H8D-90	KMAS-H12D-90	KMAS-H20D-90
Heater capacity[W]	2000	4000	8000	4000 X 2	6000 X 2	6600 X 3
Solution-sending pump type	Discharge amount [L/min] (50/60Hz)	Pump performance curve (2) + Cooling water supply pressure		Pump performance curve (3) + Cooling water supply pressure		
	Lifting height[m]					
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph					
	Maximum operating current[A]	9A	15A	27A	32A	45A
Range of liquid temperature[°C]	Supply water temp. ~90°C					
Liquid used	Water					
Pipe connect	Water supply port X Return refrigerant port	Rc1/2 X Rc1/2		Rc1 1/4 X Rc1 1/4		
	Water supply port X Return refrigerant port	Rc1/2 X Rc1/2		Rc1 1/4 X Rc3/4		
External dimension W X L X H (mm)	300 X 495 X 706			456 X 734 X 839		
Weight[kg]	65		145		150	

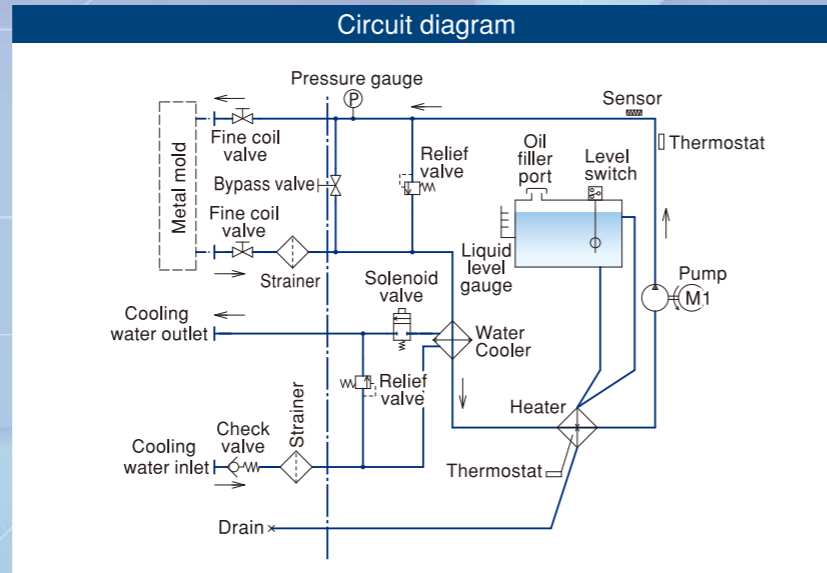
※Specifications may be improved and are subject to change without notice.

KMO-CH series

Automatic mold temperature controller (For oil)
Liquid temp. range, Supply water temp. ~150°C



KMOS-CH3B

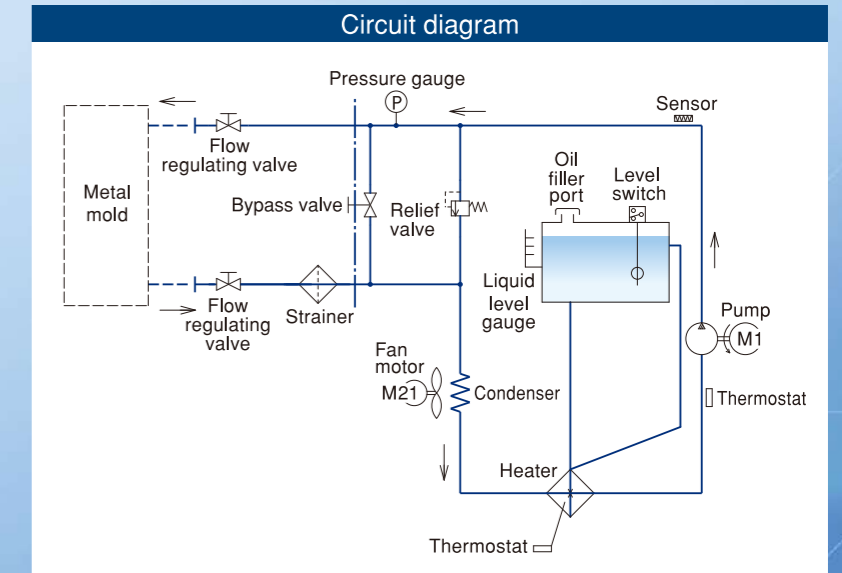


KMO-FH series

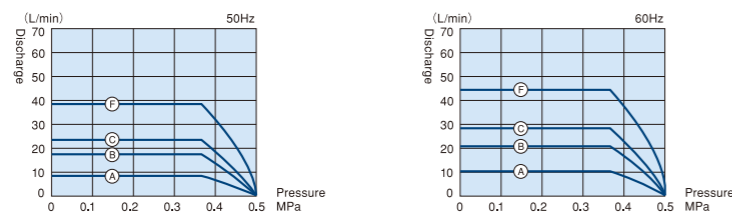
Automatic mold temperature controller (For oil)
Liquid temp. range, Supply water temp. ~200°C



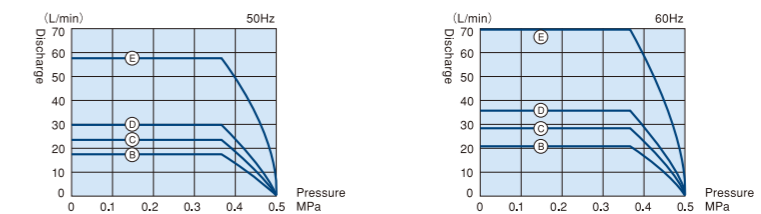
KMOS-FH8B



Pump performance curve



Pump performance curve



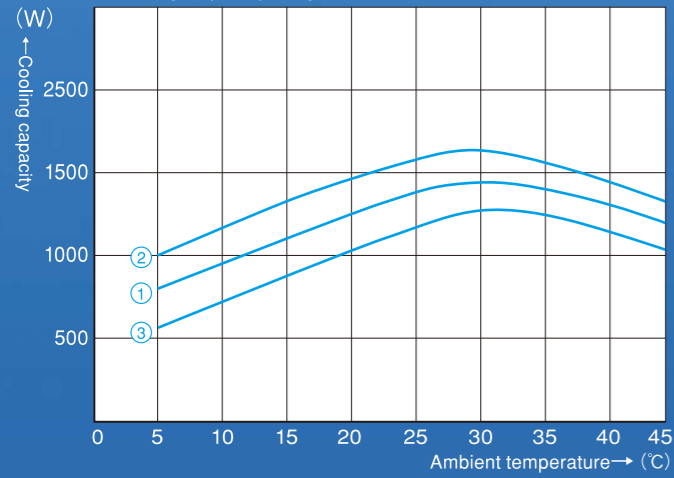
Model	KMOS-CH2B-150	KMOS-CH3B-150	KMOS-CH6B-150	KMOS-CH10B-150	KMOS-CH20B-150
Effective cooling capacity (60Hz) [W]	3300	5000	6700	7300	
	(Water-cooled type 25°C·25L/min Oil temp. 80°C)				
Refrigerant used	—				
Refrigerant capacity[g]	—				
Heater capacity[W]	2000	3000	3000×2	5000×2	5000×4
Solution-sending pump type	Discharge amount[L/min] (50/60Hz)	9/10.8	18/21.6	24/28.8	39/46.8
	Lifting height[m]	Pump performance curve (A)	Pump performance curve (B)	Pump performance curve (C)	Pump performance curve (F)
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph				
Maximum operating current[A]	8A	12A	20A	32A	65A
Liquid temperature range[°C]	Supply water temp. ~150°C				
Liquid used	Heat exchange oil				
Pipe connect	Water supply port×Return refrigerant port	Rc1/2×Rc1/2		Rc3/4×Rc3/4	Rc1×Rc1
	Water supply port×Return refrigerant port	Rc1/2×Rc1/2			
External dimension W×L×H (mm)	276×576×774	276×626×772		408×690×1106	408×890×1106
Weight[kg]	65	80	100	185	

※Specifications may be improved and are subject to change without notice.

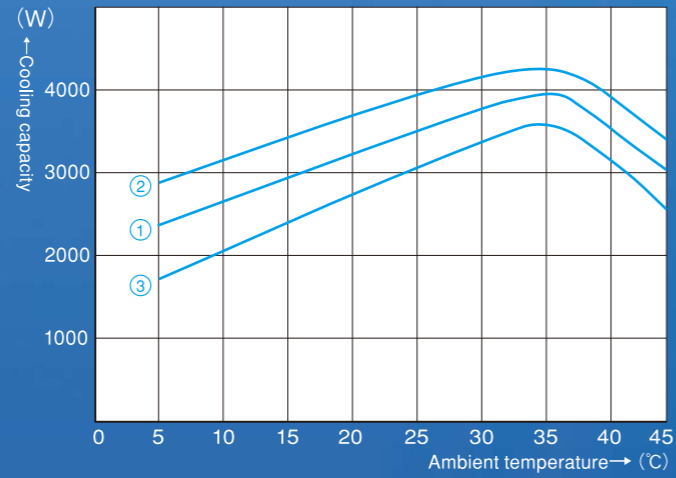
Model	KMOS-FH5B-200	KMOS-FH8B-200	KMOS-FH12B-200	KMOS-FH20B-200
Effective cooling capacity (60Hz) [W]	5000			
	(Ambient temp. 30°C Oil temp. 80°C)			
Refrigerant used	—			
Refrigerant capacity[g]	—			
Heater capacity[W]	2000+3000	4000×2	4000×3	4000×5
Solution-sending pump type	Discharge amount[L/min] (50/60Hz)	18/21.6	24/28.8	30/36
	Lifting height[m]	Pump performance curve (B)	Pump performance curve (C)	Pump performance curve (D)
Power source	AC200V 50/60Hz, AC220V 60Hz 3Ph			
Maximum operating current[A]	17A	26A	39A	64A
Liquid temperature range[°C]	Room temp. ~200°C			
Liquid used	Heat exchange oil			
Pipe connect	Water supply port×Return refrigerant port	Rc1/2×Rc1/2	Rc3/4×Rc3/4	Rc1×Rc1
External dimension W×L×H (mm)	408×686×1069			558×786×1199
Weight[kg]	100	115	150	210

※Specifications may be improved and are subject to change without notice.

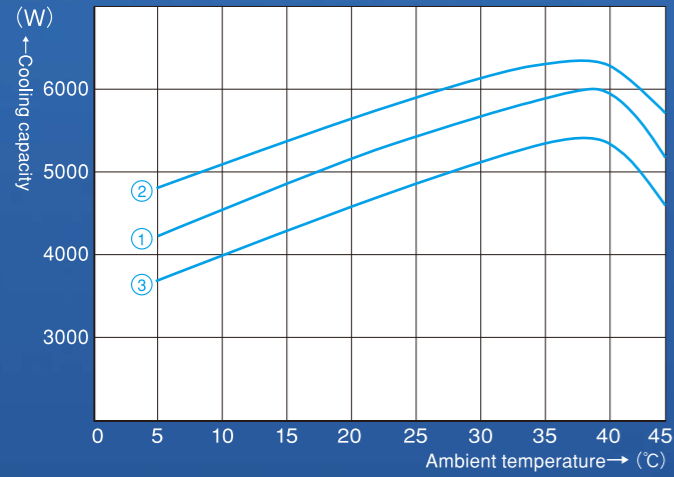
- - 03 cooling capacity diagram
- -300 cooling capacity diagram



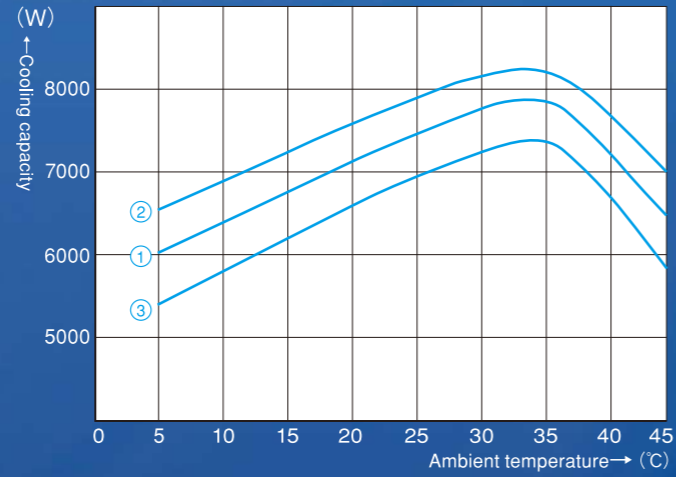
- - 07 cooling capacity diagram
- -750 cooling capacity diagram



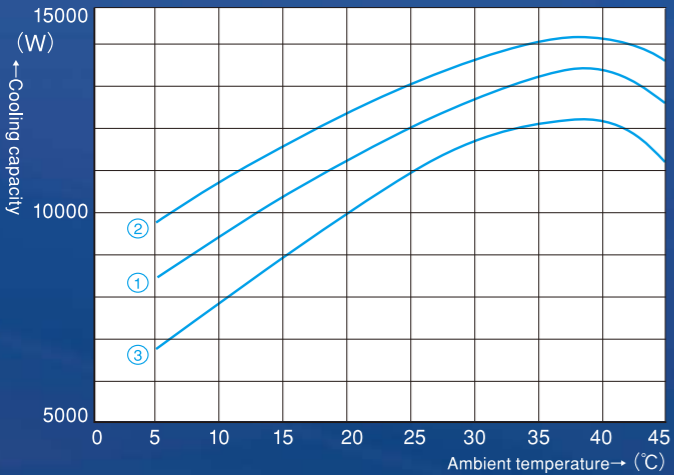
- - 15 cooling capacity diagram
- -1500 cooling capacity diagram



- - 22 cooling capacity diagram
- -2200 cooling capacity diagram



- -3800 cooling capacity diagram



- ② Oil temp.= Ambient temp.+5°C
- ① Oil temp.= Ambient temp.
- ③ Oil temp.= Ambient temp.-5°C
- Operating conditions
 - Liquid to use.....VG2
(Series V and W use city water)
 - Power frequency...50Hz (⇔)
 - liquid temperature.....Return liquid temperature
(Series V and W are sending liquid temperature)

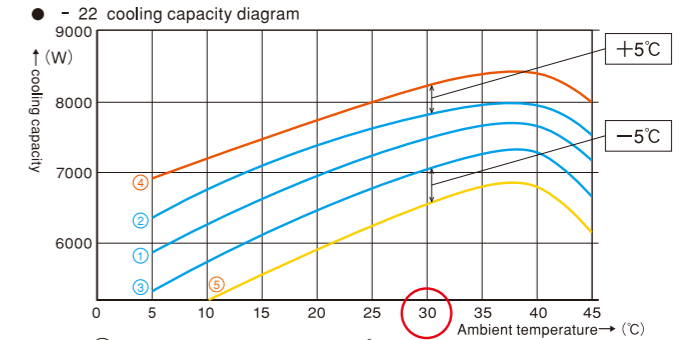
How to read the cooling capacity diagrams

The maximum cooling capacity (standard) changes as shown below for each target oil temperatures when the ambient temperature is constant.

(Example) When the ambient temp. is 30°C.

- Maximum cooling capacity when the target oil temp. is 40°C. About 8200 [W] ④
- Maximum cooling capacity when the target oil temp. is 35°C. About 7800 [W] ②
- Maximum cooling capacity when the target oil temp. is 30°C. About 7400 [W] ①
- Maximum cooling capacity when the target oil temp. is 25°C. About 7000 [W] ③
- Maximum cooling capacity when the target oil temp. is 20°C. About 6600 [W] ⑤

※Condensation may occur when the liquid temp. is lower than the ambient temp.



- ② Oil temp.= Ambient temp.+5°C
- ① Oil temp.= Ambient temp.
- ③ Oil temp.= Ambient temp.-5°C

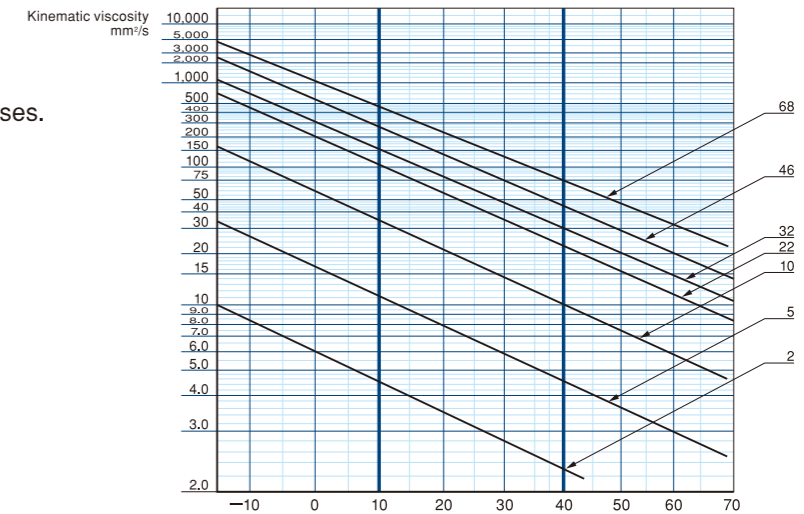
Viscosity of oil

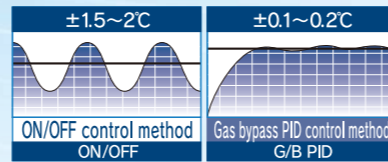
Kinematic viscosity of oil changes depending on its temperature. OIL MATIC's cooling capacity decreases as kinematic viscosity increases. (Please contact us for details)

Examples of coefficient of kinematic viscosity

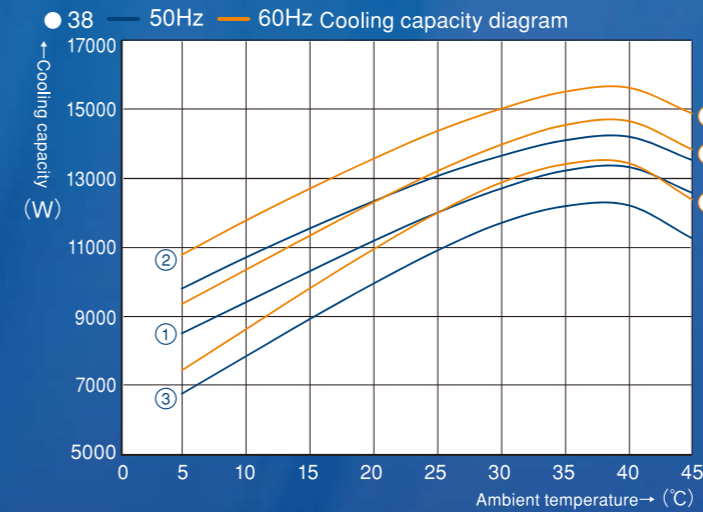
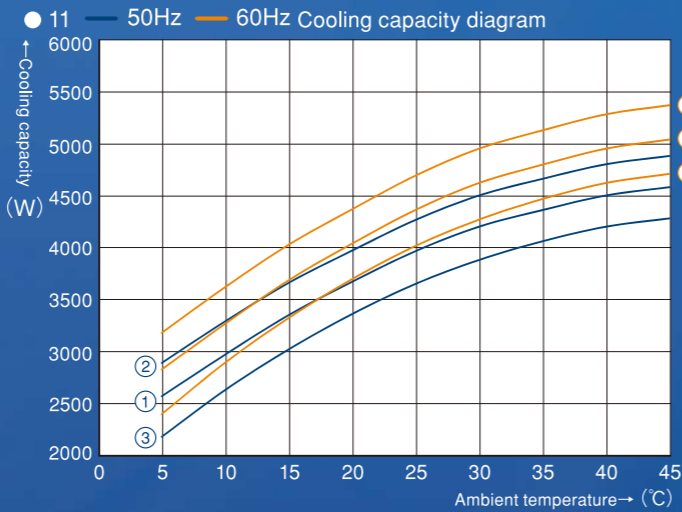
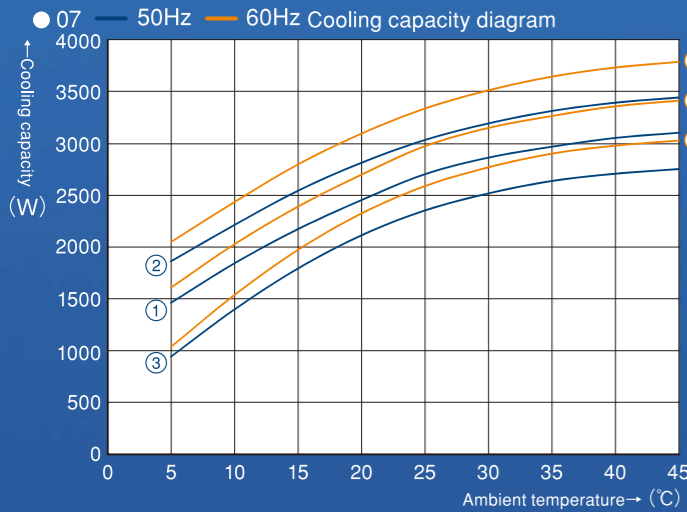
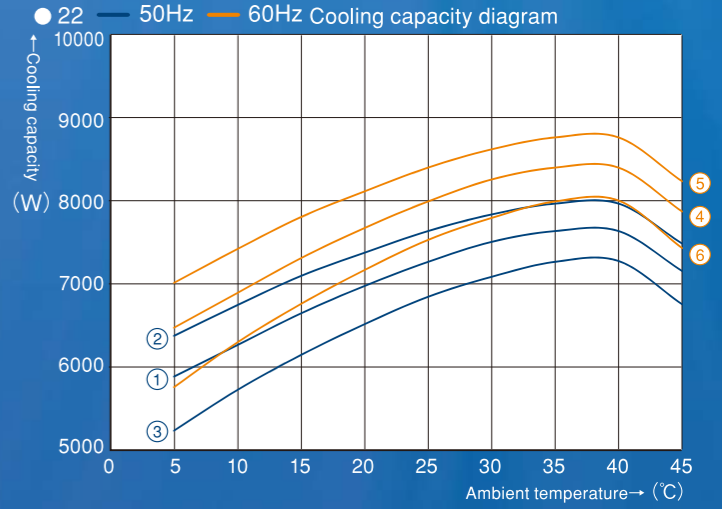
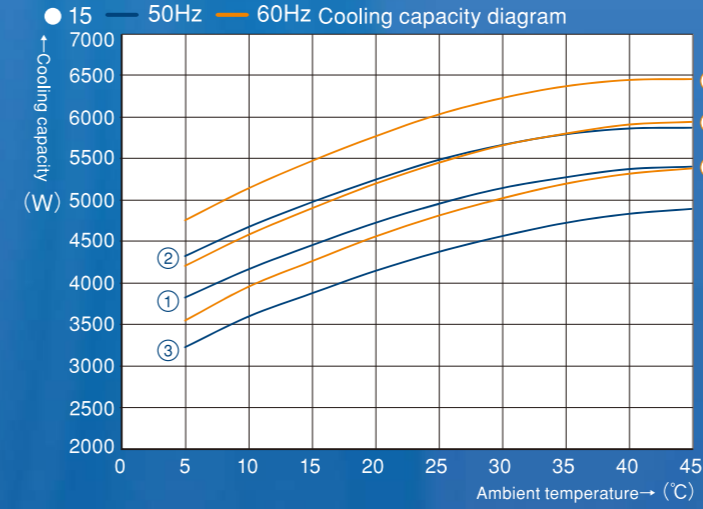
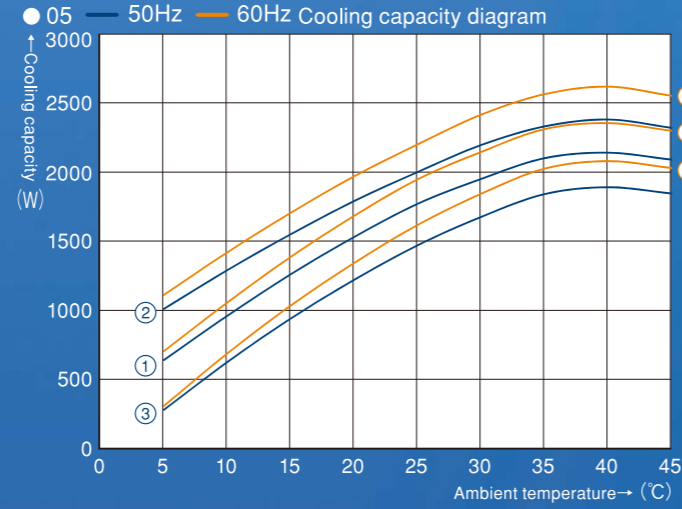
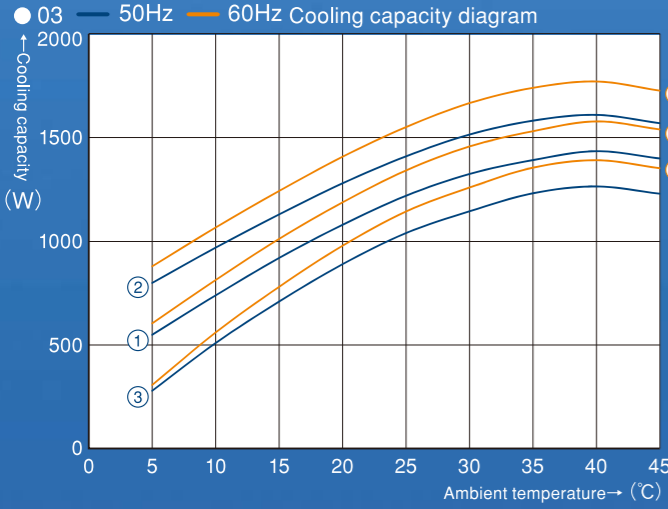
	10°C	40°C
VG 2	4.6	2
VG 10	36	10
VG32	150	32
VG68	450	68

(mm²/s)





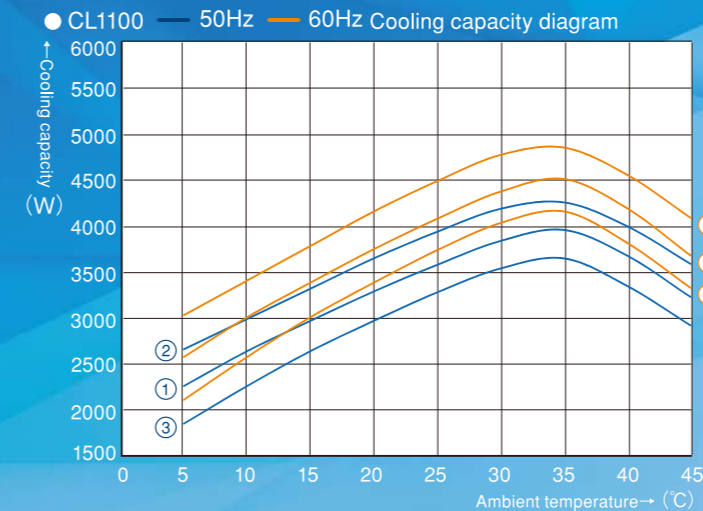
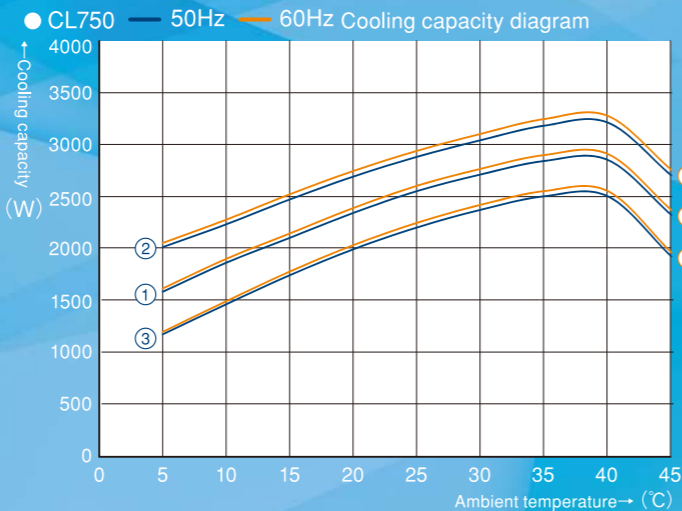
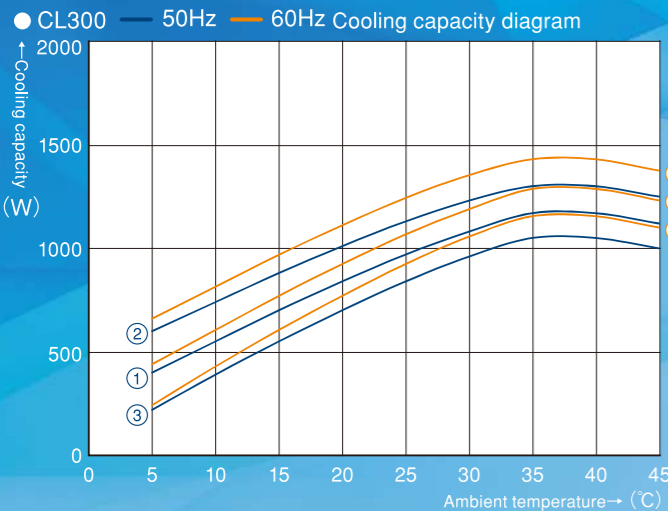
ML/KTV/KTC Series



● 2 5 liquid temperature= Ambient temp.+5°C
 ● 1 4 liquid temperature= Ambient temp.
 ● 3 6 liquid temperature= Ambient temp.-5°C

● Operating conditions
 • Liquid to use..... VG2
 (Series KTV uses city water)
 • Power frequency..... 50Hz (⇌), 60Hz (→)
 • liquid temperature..... Return liquid temperature
 (Series KTV is sending liquid temperature)

CL Series

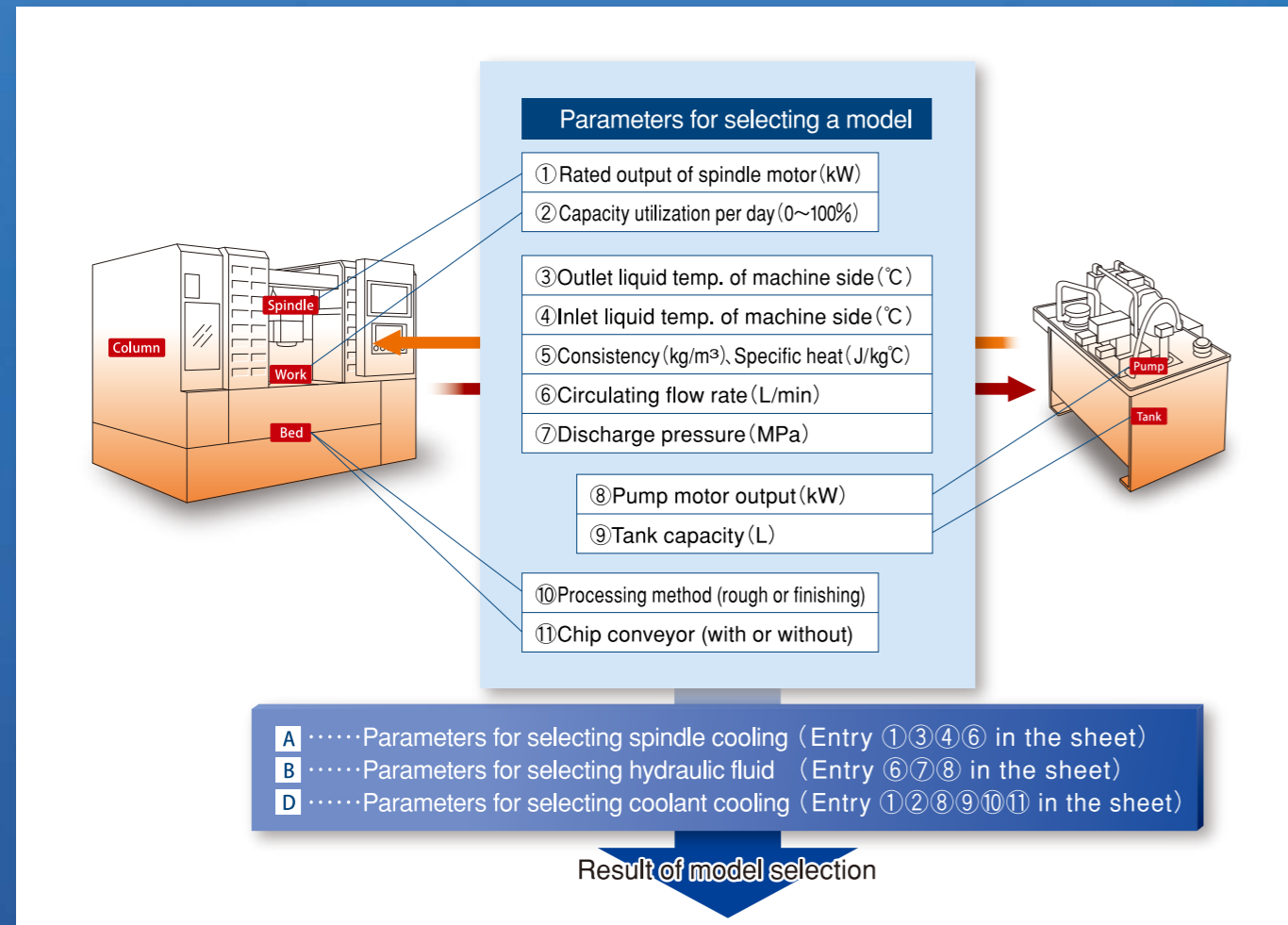


● 2 5 liquid temperature= Ambient temp.+5°C
 ● 1 4 liquid temperature= Ambient temp.
 ● 3 6 liquid temperature= Ambient temp.-5°C

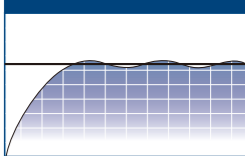
● Operating conditions
 • Liquid to use..... VG2
 • Power frequency..... 50Hz (⇌), 60Hz (→)
 • liquid temperature..... Return liquid temperature

Model choice Model selection information

Please check these model selection parameters and fill out the OIL MATIC selection survey form.



We select specifications to meet customers' needs



Physical properties and characteristics table	Kinematic viscosity	Density	Specific heat	Specific heat	Water equivalent (10L/min)
Unit	mm ² /s(cst)	kg/m ³	J/kg°C	kcal/kg°C	W/°C
Water (at 20°C)	1	1000	4200	1	700
Oil equivalent to VG2(at 20°C)	3.6	830	1890	0.452	261
Oil equivalent to VG10(at 20°C)	21	840	2100	0.502	294
Oil equivalent to VG32(at 20°C)	80	850	1990	0.476	282
Oil equivalent to VG68(at 20°C)	230	870	1930	0.461	280

Consistency and specific heat differ depending on temperature.

Unit conversion	
1000W	860kcal/h
1000kcal/h	1163W
1L	0.001m ³
1kg/cm ²	0.098MPa
0.1MPa	1.02kg/cm ²
1kcal/kg°C	4186J/kg°C

Model selection form

Model selection form (Common category)

Use*		e.g.: For cooling coolant
Type and viscosity of liquid (VG Number)*		e.g.: VG2, oil coolant
Temperature accuracy*		e.g.: ±2~3°C
Highest ambient temp.*		e.g.: 40°C
Set value*		e.g.: 25°C
Cooling method* (water-cooled type, enter water temp., flow rate and pressure here)		e.g.: Air-cooled e.g.: Water-cooled(25°C, 20L/min, 0.2MPa)
Machine name		e.g.: ○○—250○H
Material property of liquid (Consistency/Specific heat)		e.g.: 830kg/m ³ , 0.452kcal/kg°C

*is required item

Individual selection form

A Spindle simple selection

① Spindle motor output		e.g.: 1.5kW
③ Outlet temperature of machine side liquid		e.g.: 35°C
④ Inlet temperature of machine side liquid		e.g.: 25°C
⑥ Circulating flow rate		e.g.: 15L/min
With or without tank		e.g.: None

B For hydraulic-fluid/lubricant cooling

⑥ Circulating flow rate		e.g.: 25L/min
⑦ Discharge pressure		e.g.: 0.3MPa
⑧ Pump motor outlet		e.g.: 250W

C For coolant cooling(if temperature data is available)

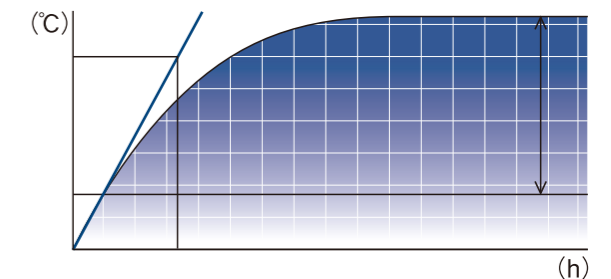
Time	Tank liquid temp.°C	Room temp.°C	Measurement method and cautions
0min			<p><Measuring method> Record data for temperature increase as shown in the lower right diagram. Plot the data at regular intervals starting from "liquid temp.=ambient temp."</p> <p><Note> Plot data on actual processing condition. (Morning: start/ Evening: finish) If you use additional refrigerators, like water coolers, please record the circulation flow rate and IN-OUT temperature gap.</p>
10min			
20min			
30min			
40min			
50min			
60min			
2h			
3h			
4h			
5h			
6h			
7h			
8h			
Notes			

Layout image (Common category)



D For coolant cooling (if it's impossible to get temperature data)

① Rated output of spindle motor		e.g.: 1.5kW
② Capacity utilization per day		e.g.: 50%
⑧ Number of pump motor and Pump motor output		e.g.: 3 pumps e.g.: 750W×2,400W
⑨ Tank capacity		e.g.: 150L
⑩ Processing method		e.g.: Rough machining, finish machining
⑪ Chip conveyor (with or without)		e.g.: None



Please send the Model selection form to the address below.

Kanto Seiki Co., Ltd. Cooling machine department Sales group 1

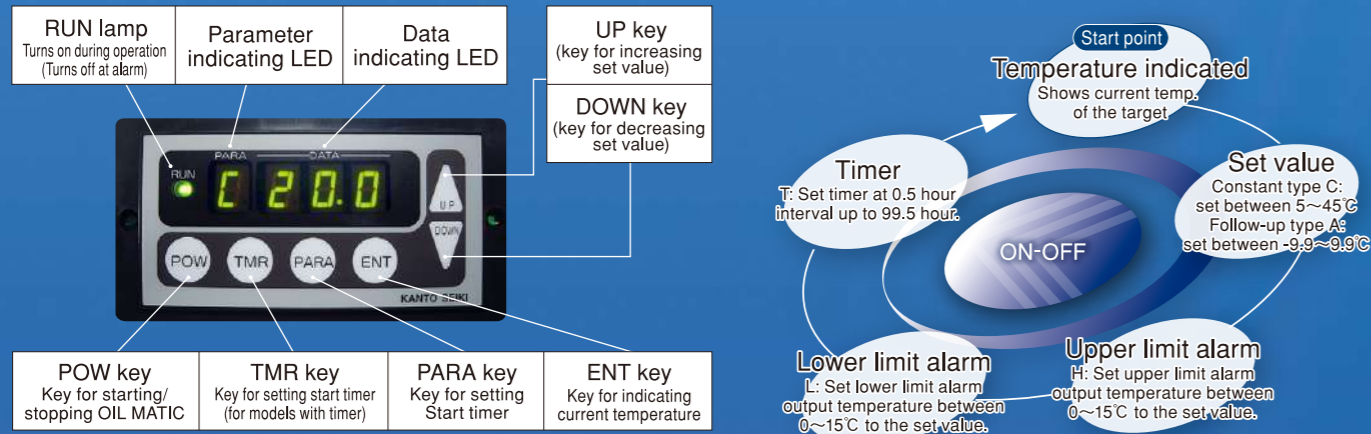
Phone.+81-27-251-5585 Fax.+81-27-251-0924 E-mail sales@kantoseiki.co.jp

Controller

OIL MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

ON-OFF controller (ML series, KTV series)



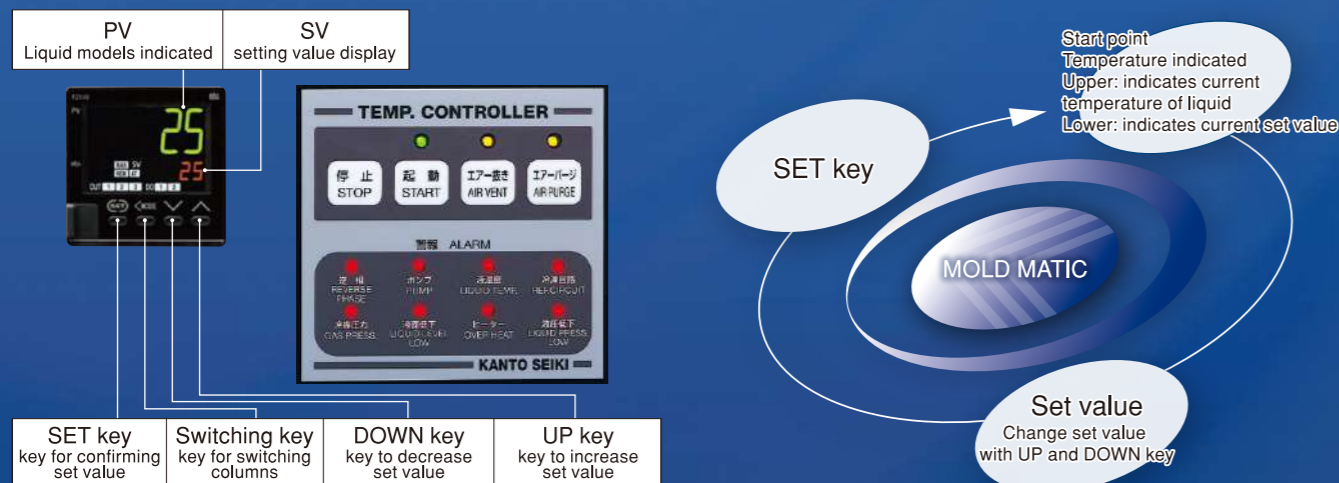
※The picture shows indicated state, and it may differ from actual.

Start / Stop	Power ON/OFF with POW key
Set temperature	Push PARA key → operate with UP/DOWN key and confirm with ENT key
Switch controls (constant⇔follow-up)	Push and hold PARA key and ENT key, at the same time then push up and down to operate DOWN key same time (0⇔1, 2⇔3)
Key lock	Push UP key and DOWN key at the same time (displays a dot in the lower right of DATA indicating locked status)
Timer	After setting the time, confirm with ENT key, and start countdown with TMR key.

MOLD MATIC

AUTOMATIC MOLD TEMP. REGULATOR

Controller for MOLD MATIC



※The picture shows indicated state, and it may differ from actual.

※KMAS-RH series controller. The controller is different in other series.

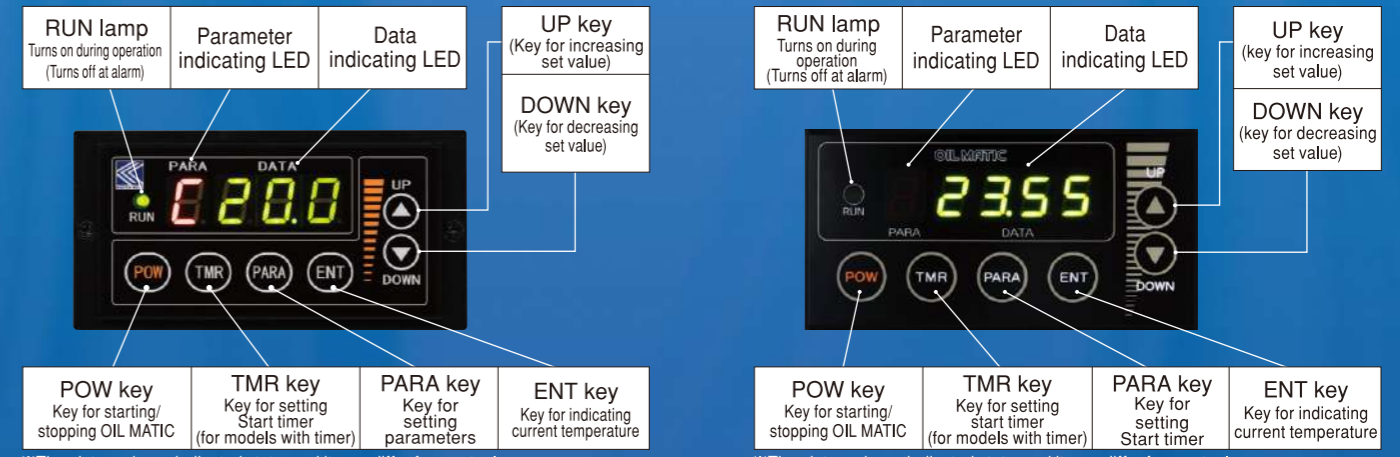
START / STOP	Operate with START and STOP key
Set temperatures	SET key 1 time → Change SV value with UP/DOWN key, and confirm with SET key
AIR VENT	Push AIR VENT to vent air at starting state
AIR PURGE	Push AIR PURGE key and vent air as necessary

OIL MATIC PURE MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

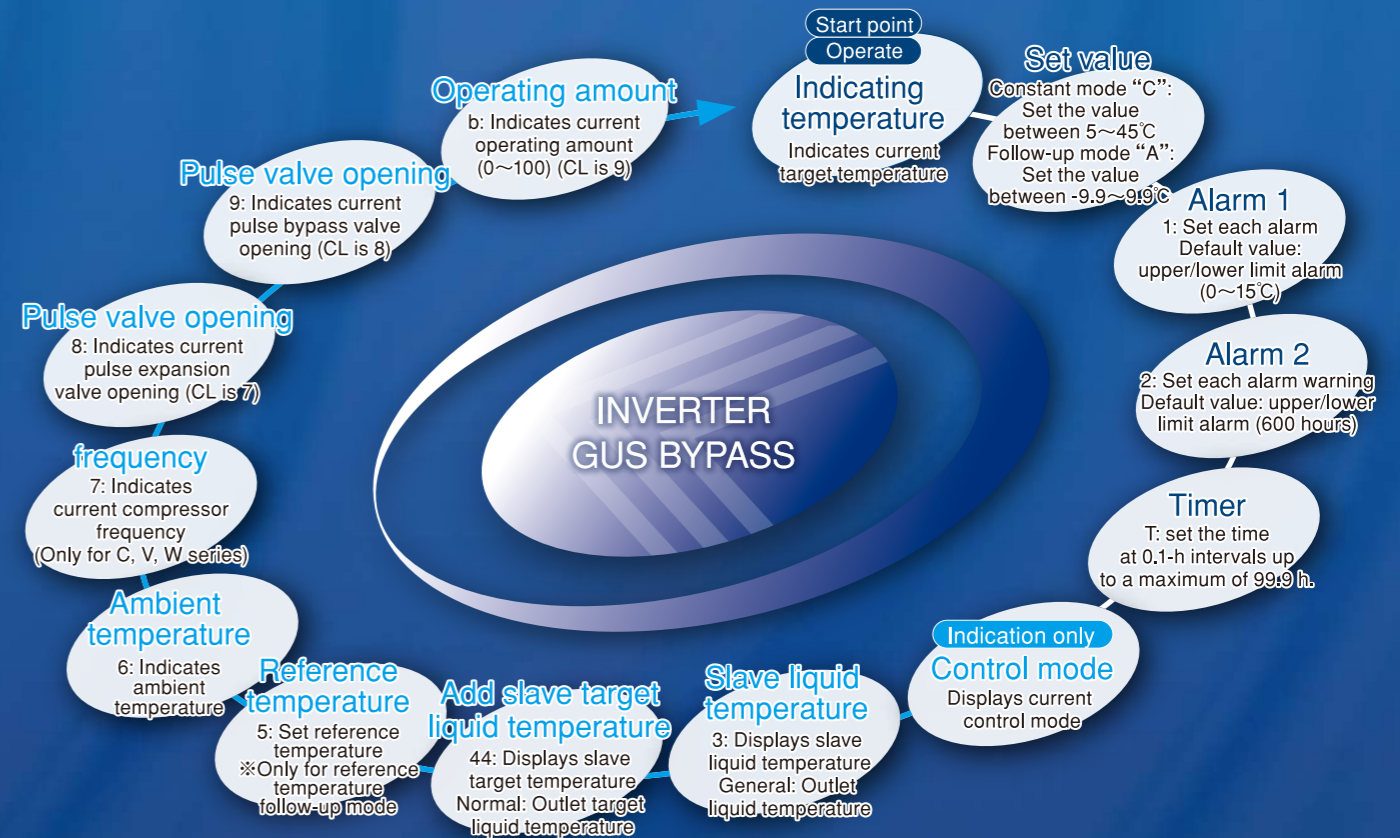
Automatic WATER Temp. Regulator

Inverter, gas bypass PID controller (C, V, W, CL series) ※Cμ is also same



※The picture shows indicated state, and it may differ from actual.

※The picture shows indicated state, and it may differ from actual.



Start / Stop	Power on / off with POW key
Set temperature	Push PARA key → operate with UP/DOWN key and confirm with ENT key
Switch controls (constant⇔follow-up)	Hold down ENT key ⇒ (constant mode:**0⇔follow-up mode**1) confirm with ENT key
Key lock	Push UP key and DOWN key at the same time (displays a dot in the lower right of DATA indicating locked status)
Timer	After setting the time, confirm with ENT key, and start countdown with TMR key.

OIL MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

ON-OFF controller (ML series, KTV series)



Alarm list

Display	Description
AL01	Reverse phase
	Pump motor abnormality (ML/KTC series)
	Agitator motor abnormality (KTV series)
AL02	Compressor abnormality
AL03	Overheating of compressor abnormality / refrigerant pressure abnormality
AL04	Heater abnormality (models with heater)
FIL ※1	Air filter cleaning

※1: the unit will not stop working

※The picture shows the state indicated and may differ from the actual unit.

OIL MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

High accuracy inverter controller (Cμ series)



Alarm list

Display	Description
AL01	Pump motor abnormality
AL02	Compressor overheating / refrigerant pressure abnormality
AL03	Overcurrent / inverter board failure
AL04	Heater abnormality of (models with heater)
AL61	Master fluid temperature sensor abnormality
AL62	Slave fluid temperature sensor abnormality
AL63	Base temperature sensor abnormality
AL64	Ambient temperature sensor abnormality
AL70	DIP switch setting error
AL71	Data abnormality
AL72	Communication error between control board and inverter board
FIL ※1	Air filter cleaning

※1: The unit will not stop working

※The picture shows the state indicated and may differ from the actual unit.

OIL MATIC PURE MATIC

AUTOMATIC LIQUID TEMP. REGULATOR

AUTOMATIC WATER Temp. Regulator

Gas bypass controller (C/CL/V/MRCC/W series)



Alarm list

Display	Description
AL01	Pump motor abnormality (C/CL/W series)
	Agitator motor abnormality (V series)
AL02	Compressor overheating / refrigerant pressure abnormality
AL03	Inverter abnormality
AL04	Heater abnormality (models with heater)
AL61	Master fluid temperature abnormality
AL62	Slave fluid temperature abnormality
AL63	Base temperature sensor abnormality
AL64	Ambient temperature sensor abnormality
AL71	Control board abnormality
AL72	Communication error between control board and inverter board
FIL ※1	Air filter cleaning

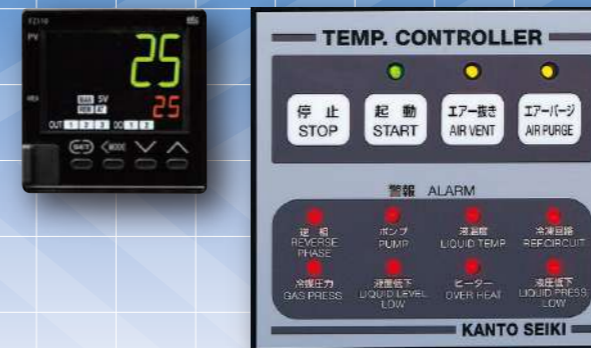
※1: The unit will not stop working

※The picture shows the state indicated and may differ from the actual unit.

MOLD MATIC

AUTOMATIC MOLD TEMP. REGULATOR

Controller for MOLD MATIC (KM series)



Alarm list

Display	Description
REVERSE PHASE	Reverse phase abnormality
PUMP	Pump motor abnormality
LIQUID TEMP.	Fluid temperature abnormality
REF. CIRCUIT	Compressor abnormality
GAS PRESS.	Refrigerant circuit pressure abnormality
LIQUID LEVEL LOW	Level of liquid in tank is low
OVER HEAT	Heater abnormality
LIQUID PRESS. LOW	Liquid feeding pressure is low (option)

※The picture shows the state indicated and may differ from the actual unit.
※KMAS-RH series controller. The controller is different in other series.

Instructions

Precautions for transporting and moving OIL MATIC

- (1) When moving OIL MATIC by its hanging hooks, use a reliable method to keep the main unit balanced and stable during movement.
- (2) When using a forklift to move OIL MATIC if the main unit is heavy or cannot be easily lifted using the hooks, take care to insert the forklift forks under the main unit until they pass out the opposite side and move the machine in stable position.
- (3) When moving an OIL MATIC equipped with casters, check the floor conditions in front of the machine before moving it and observe caution to prevent the machine from falling.
- (4) Please note that any strong impact may damage the equipment.

Precautions for power supply

- (1) The primary power wires and signal wires must be connected by qualified personnel.
- (2) Use only wiring materials for the voltage and current specified for primary power wires and signal wires.
- (3) Make sure to connect protective ground wires to the primary power wires.
- (4) Confirm that electricity is turned off before connecting the primary power wires.
- (5) If our product is not equipped with a breaker, then provide a power supply breaker with adequate capacity to power the machine.
- (6) Turn off the power when not operating OIL MATIC for a long time.
- (7) If power wires are connected in reverse phase, then a reverse-phase protection relay is activated so that OIL MATIC will not start. If this happens, make sure that the primary power supply is turned off and switch the two power wires.
- (8) In case of an emergency stop, make sure to turn off the primary power supply.
- (9) Be sure to use a commercial power supply. (Using an inverter power supply may lead to fire damage.)

Precautions for installation environment

- (1) Do not install our product in dusty environment or misty environments with coolant vapor or water droplets.
- (2) Never use near explosive vapors.
- (3) If it is installed at a high altitude, it may not exhibit optimal performance. If you have any questions, please contact us.

Precautions for operation, maintenance, and inspection

- (1) Do not clean OIL MATIC by pouring water onto it directly.
 - (2) Do not insert a finger or any tool (fine-tipped tool) through the exhaust vent.
 - (3) Do not put screws, fuses, tools, etc. on the top of OIL MATIC to avoid the danger of them falling into a cutout hole in the exhaust vent.
 - (4) Do not place anything on the exhaust vent that could block air from escaping.
 - (5) During operation, be careful not to put your face, etc. near the exhaust vent, since hot air is coming out of it.
- Precautions for people responsible for maintenance and inspection of customers' machines, or service engineers for manufacturers.
- (6) Use a fuse of appropriate capacity (if the machine has one).
 - (7) Make sure to turn off the power supply to the OIL MATIC when opening the control box cover for maintenance or inspection.
 - (8) Allow operation to stop before removing the main unit cover for maintenance or inspection.
 - (9) Models equipped with a heater are safe since the heater is usually covered, however do not touch the surface of the heater casing with your hands while removing the cover for maintenance or inspection. Also, be careful not to touch the surface of the compressor or high-voltage refrigerant pipes since they may be hot.
 - (10) If liquid leaks on the floor around this device, watch your step since the floor may be slippery.
 - (11) If the refrigerant chlorofluorocarbon leaks in a refrigeration circuit, ventilate the factory properly to prevent adverse effects on human health.

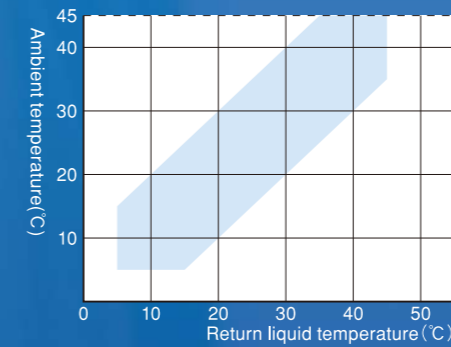
Precautions for disposal of equipment

Our products that use chlorofluorocarbons as refrigerant are designated as "class-1 specified equipment" as described in the "Act on Rational Use and Proper Management of Fluorocarbons JAPAN." When disposing of our products, please contact the dealer from whom you purchased it or request a class-1 fluorocarbon recovery operator registered with the prefectural government to recover the fluorocarbons. Any person who has released fluorocarbons enclosed in specific products knowingly, which constitutes "indiscriminate emission" and is prohibited by law, may be punished with a maximum of 1-year imprisonment or a fine of up to 500,000 yen. If there is anything we can help you with, please do not hesitate to contact us.

About range of use

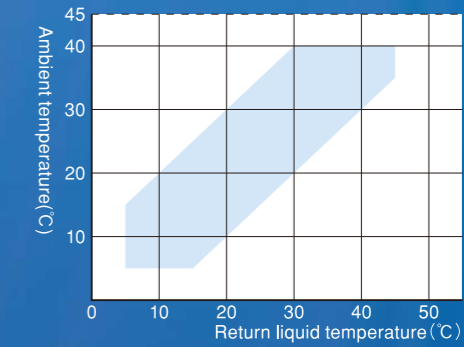
Since OIL MATIC uses a built-in chiller to cool liquid, it can only be used within a limited ambient temperature range and oil temperature range. Please use the machine within the ranges shown in the following diagrams.

● C/V/CL/ML/KTV/MRCC/MLCC series (※except MLCC-07)



※Range of use may vary between models.
※Please contact us regarding the Cμ series.

● Model MLCC-07



About oil use

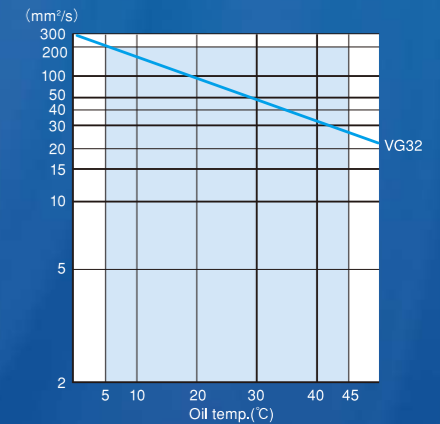
- (1) A limited number of liquid types can be used with the OIL MATIC depending on its intended use. The following liquids cannot be used.

- Cutting oil (fluid), grinding oil (fluid)
 - Water and water-soluble liquid
 - Chemical and food liquids
 - Highly-volatile liquids with poor lubricating properties, such as gasoline and thinner
 - Flame-retardant hydraulic oil, phosphoesters, chlorinated-hydrocarbons, water+glycol
- These can be used for the MRCC and MLCC series (excluding water) and the KTV and V series (water only).

※For temperature control of special liquids, please consult with us so that we can provide a model with specific compatibility.

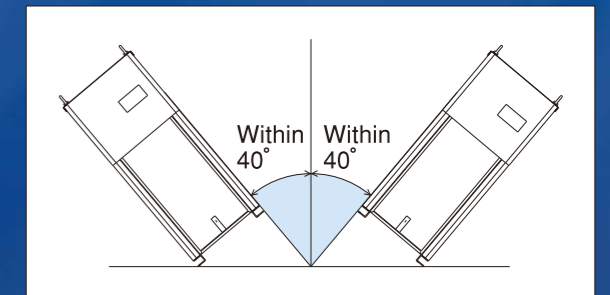
- (2) Select oil for the C series within the range shown on the right. The recommended kinematic viscosity is 2-200mm²/s (ISO VG2-32).
※ Failing to use the appropriate oil or using oil with viscosity outside of the recommended range may lead to serious failure. Please use the appropriate oil.

● Viscosity range



Transportation method

When transporting or moving the OIL MATIC, do not tilt the machine back and forth or side to side beyond a 40-degree angle. Tilting the machine beyond this limit may lead to compressor failure. Also, do not subject the machine to strong shocks or vibrations. Doing so may result in gas leakage (refrigerant). Please heed to these cautions because the resultant damage cannot be fixed in the field.



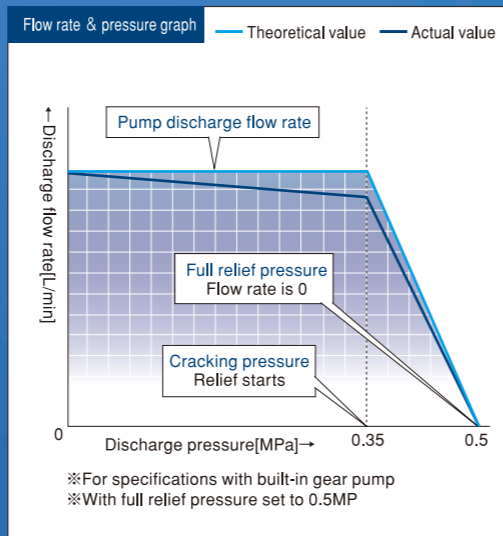
Installation site

Install the OIL MATIC horizontally in a location out of direct sunlight and free from vibration. The OIL MATIC takes air in from the condenser (see an appearance diagram), so the intake vent should be positioned to take in air that is as cool and clean as possible. If any heat-generating equipment is positioned near the OIL MATIC, then consider using a partitions, etc. Hot air is emitted from the OIL MATIC exhaust vent (see the diagram). Ensure proper airflow around the exhaust vent to prevent the hot air from flowing around the machine.

Instructions

Pipe connection

The OIL MATIC uses a built-in constant-flow pump (trochoid gear pump) to enable stable heat exchange. The OIL MATIC must be operated at a discharge pressure not exceeding 0.35 MPa (0.5 MPa with the drain port fully opened with total relief) and intake pressure not exceeding -0.03 MPa, because of the relationship between OIL MATIC's internal structure and the pump motor output. If the discharge pressure exceeds 0.35 MPa, a relief valve will be activated. This will reduce oil flow and cooling capacity, and also increase pump noise. Also, if discharge pressure exceeds -0.03 MPa, then the pump noise will increase, flow rate will decrease, and cooling capacity will be reduced. In addition, this will produce strong vibrations, which may lead to product failure. The higher the oil viscosity or the lower the oil temperature, the higher the pressure loss due to pipe resistance under the same piping conditions (in general, oil viscosity increases as temperature decreases). Therefore, when laying out the pipe circuit for OIL MATIC, you should consider the cold season low-temperature state and take care to reduce pipe resistance as much as possible.



Power connection

● Power capacity

Determine the power capacity by referring to specification lists and wiring diagrams. (Be sure to install a Molded Case Circuit Breaker (MCCB) suitable for the capacity at the main power supply.)

● Rotation direction

OIL MATIC must be connected to the power supply such that the oil pump and fan motor can rotate in the positive direction. The input terminals for the OIL MATIC power switch are distributed in the order R, S, and T phase from the left side. Connect the R, S, and T phases of the three-phase power supply to each of the terminals to ensure that the motor rotates in the positive direction (OIL MATIC is equipped with a reverse-phase protection relay, so it will not start if the phases are reversed.)

Washing and cleaning

Wash the air filter regularly, at least twice a month (warm water, air-washing, etc.), to prevent it from clogging. (Also, clean the condenser fin unit at least once a year.)

About OIL MATIC series V and KTV models

● Reservoir tank sizes

Reservoir tank in which OIL MATIC series V and KTV machines are installed must have larger planar dimensions than the OIL MATIC itself. Tank depth may be determined using the table at the right. Be aware that in order to control the temperature effectively the tank capacity should be at least three times the flow rate (L/min) of the liquid sent from this tank.

(Note 1) If the tank is too small, this may interfere with vortex motion and reduce cooling capacity.

MODEL	TANK DEPTH
KTV-3、V300	More than 350mm
KTV-5	More than 400mm
KTV-7.5、V750	
KTV-11	
KTV-15、V1500	More than 500mm
KTV-22、V2200	

● Liquid level height

For OIL MATIC series KTV/V models, maintain the liquid level so that the space between the bottom of the chassis and the liquid level inside the tank is 30-100mm.

(Note 2) If the liquid falls below the specified level, then there is a possibility that condensation may form on the exposed cooling coil and moisture may be mixed into the liquid. If the liquid level is too low and the cooling coil is exposed, the liquid will not be cooled properly. For OIL MATIC machines equipped with a heater, pay special attention to the liquid level because it is dangerous to allow the heater to operate without water.

Water-cooled condenser

Water-cooled condenser-type OIL MATIC devices require piping work to distribute coolant used to radiate condensation heat. This table shows coolant pipe diameters and required flow rates.

※Regarding coolant quality, use soft water to avoid adhesion of scales.

※Use supply primary-side cooling water at 10~34°C.

“OIL MATIC for coolant”

As the coolant for controlling temperature of the “OIL MATIC for coolant”, use clean coolant filtered by a magnet separator, filter, etc. to prevent failures caused by clogging of cooler, circulation pump, etc. from occurring.

MOLD MATIC

● The MOLD MATIC uses high-temperature fluid. Check the valve's heat and pressure resistance at the connections between the MOLD MATIC and mold. Also, there is a risk of burns from heated areas, so cover these areas with heat insulation.

● KMA-H series devices cannot start if there is no cooling water inside.

● For KMA-H series, if the cooling capacity is greater than the set-value, turn the cooling capacity adjustment valve to “小” and if the cooling capacity is smaller than the set-value, turn it to “大”. The temperature gap will decrease. (At the factory default setting, the cooling capacity adjustment valve is locked at the “set-value 60°C, heat-load 3kW”. Unlock the valve and modify the cooling capacity as needed.)

● If air is retained in the oil circuit of the KMO-CH or FH series, push “AIR VENT” on the control panel to vent air retained in the unit when the operating pump produces noise or the unit stops feeding liquid. Vent air through the circuit for a while, and then operate the unit for 5 seconds and stop it for 10 seconds. Repeating this process moves air from the circuit to the tank. The operating pump will stop producing noise due to suctioned air when the air is gone.

● The filter installed in the liquid return port is important to protect the pump motor, control valve, solenoid valve, etc. Clean it at least once a week, depending on how dirty the cooling water is.

● Do not add water to the MOLD MATIC KMA-R* series unit except when starting-up or changing molds. (If there is a water leak, the automatic water supply will be activated, so the water will not stop leaking.)

Global service



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Service

We provide service to production fields spread through many countries. We are constantly networking to respond to the manufacturing companies we supply and provide prompt support abroad.

Inquiries about support or repair

Check our website for troubleshooting or inquiry forms and to download maintenance checklists.
<https://www.kantoseiki.co.jp/support/>

Contact us by telephone or FAX

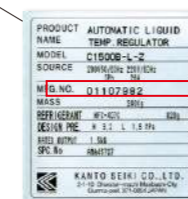
Cooling machine department, KANTO SEIKI Co., Ltd
 Sales division group 2 (for inquiries about after-service or repair)
Phone.+81-27-251-2123
 Fax.+81-27-290-1881

Sales division group 1
 (for inquiries about model selection or where to buy)
Phone.+81-27-251-5585
 Fax.+81-27-251-0924

Business hours 8:00am-17:00pm

About MFG.No.

Please be sure to have your "MFG.No" is, when you contact us about service or repair.



S Series transition

Old specification		Current specification	
KTC	For spindle For operating oil	Model MLSA	For spindle, ON/OFF control
		Model MLHA	For operating oil, ON/OFF control
		Model C&CL	For spindle, PID control
CL175	For spindle	CL300	※Capacity changing
KTV-300	For coolant	KTV-3	※Capacity changing

Old specification		Current specification	
KTCG	For coolant	MLCC	For coolant, ON/OFF control
		MRCC	For coolant, inverter control