

TEMPERATURE CONTROL UNITS

MFC SERIES

- Water Units
- Heaters from 10 to 34 KW
- Pumps from 3/4 to 7.5 HP
- Temperatures Up To 250°F



MCW-10 shown.
Water-cooled unit with 10 tons
capacity and HE instrument.

Model : MFCH-75

MFCH Instrument



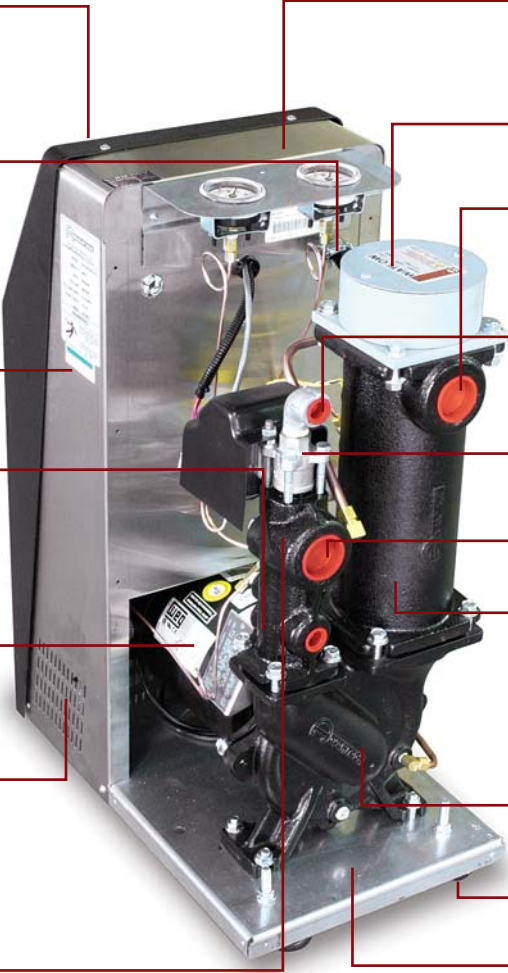
MFCL Instrument



**CINCINNATI
MILACRON**

OVERVIEW ...

The MFC Series temperature control unit is used to preheat a process to the desired operating temperature by engaging the unit's electrical immersion heater and recirculating the water in the system. Upon reaching the operating temperature the unit can continue to add heat or becomes a cooling device by exchanging a small amount of recirculated water with cooling water from an external source. The cooling water is precisely metered into the system by a cooling valve.



CONTROL INSTRUMENT... choice of microprocessor instrument offers precise temperature control, machine status and diagnostic information presented in an easy-to-understand interface (not visible).

SENSOR PROBE... placed in the fluid steam for accurate temperature monitoring. The **To Process** sensor reads process temperature delivered to process. The **High Temperature Limit** protects against overheating. MFCH models include a From Process sensor probe.

ELECTRICAL CABINET... hinged door opens to allow full access to electrical components.

FLOW METER... included on MFCH models to monitor process flow. Flow is displayed in GPM (gallons per minute) or LPM (liters per minute). Knowing the process flow is critical for fine tuning heat transfer efficiency.

MOTOR... horizontal orientation extends pump seal service life and assures that water and debris will not foul motor windings.

STAINLESS STEEL CABINET... durable and sturdy construction, vented to dissipate excess process heat, and easy to clean. The rear cover panel is easy-to-remove for access to the mechanical components (panel removed in photo).

COOLING CYLINDER

PRESSURE GAUGES... indicates 'to process' and 'from process' pressure.

HEATER... flange mounted for easy service.

TO PROCESS CONNECTION... all unit connection ports are machined into reinforced bosses to provide strong and rigid connections.

COOLING WATER DRAIN CONNECTION

MODULATING COOLING VALVE... provides precise control and easy maintenance.

FROM PROCESS CONNECTION

HEATING CYLINDER... cylinder castings are custom designed to eliminate leak-prone pipe fittings found on competitive models. The Heating and Cooling cylinders are flange mounted to the pump casing.

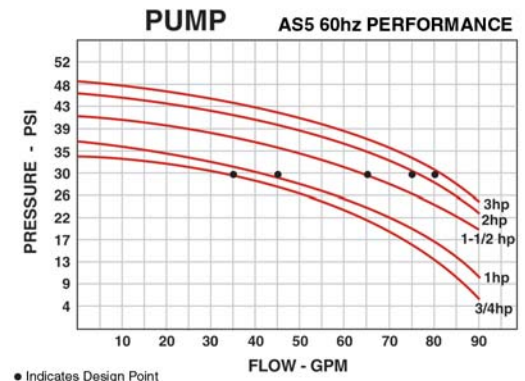
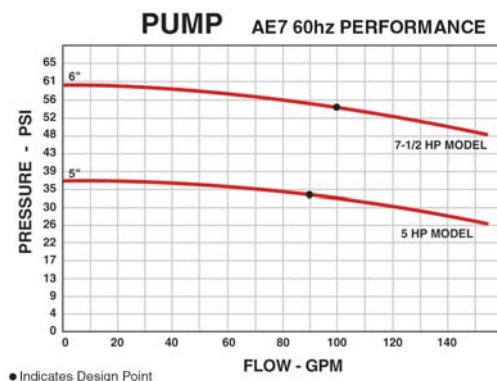
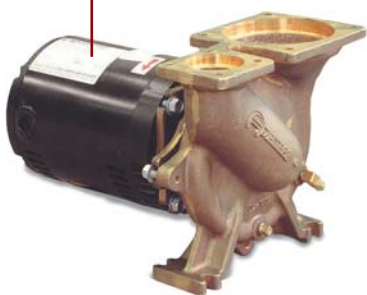
PUMP CASING... with built-in seal flush for extended pump seal service life.

CASTERS... swivel casters allow easy mobility.

GALVANIZED STEEL BASE... provides a rigid, strong, and long lasting support structure.

PROCESS PUMP...

CUSTOM PUMP CASING... generates greater flow with less horsepower for increased performance. Pumps use a cast bronze impeller and ceramic seal. Pumps are offered from 3/4 to 7-1/2 HP. Cast iron construction is standard with optional bronze castings for nonferrous units (shown in photo).





ELECTRICAL...

Sub-panel mounted electrical components are selected for reliability and are UL approved. Color coded numbered wires are easy to identify for service purposes. A **10' power cord** is included on standard models up to 3HP and 16KW. The **transformer** supplies power to the control circuit. The **motor starter** is a high grade contactor type, tested for over 10,000 cycles. A **mercury contactor** is standard for the heater and is more reliable and lasts longer than mechanical contactors. **NEMA 1** electrical construction is standard and suitable for the majority of applications. **NEMA 12** electrical construction is available.

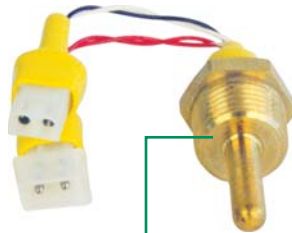
CONTROL INSTRUMENTS...

Instruments provide precise control of process fluid temperature. Custom microprocessor architecture and circuit design assures reliability and integrity. Intuitive operator interface promotes ease of use.

The **MFCH Series** provides **Four Large Display Windows** showing 'Temperature', 'Setup', 'Flow', and 'Capacity'. **Process temperatures** can be displayed in Fahrenheit or Celsius. **Setup parameters** are easily programmed. The built-in **flow meter** displays process flow in gallons per minute (gpm) or liters per minute (lpm). **Capacity** displays the heating or cooling capacity in use. Six **OK - Fault Indicators** monitor unit operation and display green for Ok conditions and Visual alarm outputs are provided for temperature and flow deviations. An optional audible alarm is available. **Machine Status Indicators** are provided for 'probe', 'water pressure', 'high temp', 'pump overload', 'valve' and 'phase'. Built-in **SPI Communications** allow for set up and monitoring from an injection molding machine. A 20' communications cable is available as an option.

KEY COMPONENTS...

HEATER... with a stainless steel sheath provides long service by minimizing corrosion and pitting from high temperature use.

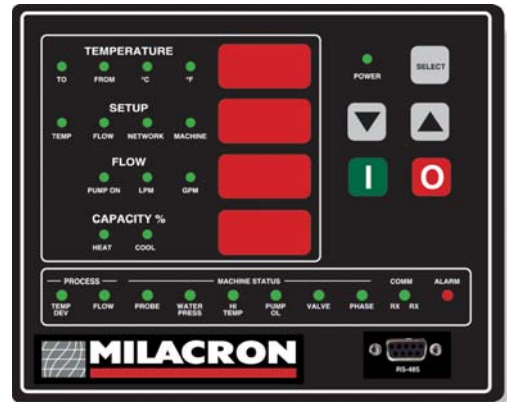


PROBES... solid state temperature sensors are embedded in a threaded bulbwell. All probes are terminated with quick-disconnect plugs to ease service and maintenance.

MODULATING COOLING VALVE... eliminates water hammer associated with many competitive models. The modulating valve consists of a high temperature stainless steel ball valve that meters the precise amount of cooling water into the system for straight line temperature control.



FLOW METER... optional accessory included in the MFCH instrument that displays process flow. Flow meters are made of high quality elastomer to operate under high temperature and a wide range of flows.



The **MFCL Series** instrument provides **Two Large Display Windows** showing 'To Process' and 'Setpoint' temperatures. Setup parameters are displayed when necessary. The proximity of these display windows allow instant analysis of unit performance. Temperatures can be displayed in Fahrenheit or Celsius. **Machine Status Indicators** are provided for 'power', 'safety', 'alarm', 'pump', 'heat' and 'cool'. Built-in **SPI Communications** allow for set up and monitoring from an injection molding machine. A 20' communications cable is available as an option.



STANDARD FEATURES

TANK CONSTRUCTION: Twin tanks - separate heating and cooling tanks • Cast iron material • Mild steel on models with 5 and 7.5 hp pumps and 24 & 34 kw heaters • Machined process connections • Flange mounted to pump casing • Replaceable.

PUMP: Cast iron casing - custom design for increased flow • Bronze pump impeller • Pump seal flush • Stainless steel pump motor shaft.

COOLING VALVE: Modulating valve • 0 - 100% aperture range • Microprocessor controlled • Integral to the cooling tank • Field serviceable.

HEATER: Flanged bolt-in mounting • Stainless steel sheath • Mercury heater contactor.

CABINETY: Stainless steel • Hinged electrical cabinet door • Lift-off mechanical cover • Portable, on casters.

LIMIT DEVICES: Water supply pressure • Motor overloads • Pressure relief valve • High temperature • Fused control circuit.

PRESSURE GAUGES: To process • From process.

ELECTRICAL: Process pump motor starter • Fused transformer • 10' power cord installed on models up to 16 kw • 110 volt alarm output.

MFCL¹ CONTROL INSTRUMENT: Continuous *to process* and *setpoint* temperature display • Temperature display in °F & °C • Status indicators for *power on, pump on, heat on, cool on, safety condition* and *alarm* • RS-485 SPI communications via a DB-9 receptacle.

MFCH² CONTROL INSTRUMENT: Digital flow indication (gpm / lpm) • Capacity indication (% or actual) • Out-of-spec alarms for temperature and flow • Ok-fault status display for *probe, water pressure, high temp, pump overload, cooling valve and phase (pump rotation)* • Continuous *to process* temperature display • Continuous *setpoint* temperature display • Selectable from process temperature display • Temperature display in °F & °C • Setup display for *temperature, flow, network* and *machine* • RS-485 SPI communications via a DB-9 receptacle.

OPTIONS

INSTRUMENTATION: MFCH remote display - 20' cable • SPI communications cable - 20'.

INCREASE HEATER CAPACITY: 16 KW, 24 KW, 34 KW, 48 KW (selection of larger heaters may change unit dimensions).

COOLING VALVE: 3/4" modulating.

MOLD PURGE: Includes external valves and controls to enable owner supplied compressed air to purge mold of process water for easier mold changes.

TANK CONSTRUCTION: Non ferrous tanks • Bronze pumps • Bronze piping • Total non ferrous units • Closed circuit designs.

SYSTEM ALARMS: Audible alarm • Visual/audible alarm beacon.

UNIT: Dual zone dolly with water manifold and / or with electrical junction box • Stacking stand with water manifold with electrical junction box.

ELECTRICAL: Nema 12 construction.

CABINETY: Rear panel covers.

COMMUNICATION PROTOCOLS: Modbus™ RTU, Modbus™ TCP/IP (MFCH models only).

SPECIFICATIONS

	MFCL ¹ or MFCH ² -	75	100	150	200	300	500	750
HEATER³	KW	10	10	10	10	10	10	10
PROCESS PUMP	HP	3/4	1	1 1/2	2	3	5	7 1/4
	GPM	35	45	62	75	80	90	100
	PSI	30	30	30	30	30	34	54
FULL LOAD AMPERAGE	240 Volt	27.8	28.6	30.2	31.8	34.6	40.3	47.1
	@3Ø/60hz ⁴	480Volt	13.9	14.3	15.1	15.9	17.3	20.2
DIMENSIONS (inches)	Height	28 1/2	28 1/2	28 1/2	28 1/2	28 1/2	44	44
	Width	12 1/2	12 1/2	12 1/2	12 1/2	12 1/2	16	16
	Depth	19 1/2	19 1/2	19 1/2	19 1/2	19 1/2	24	24
CONNECTIONS (inches)	To / From Process	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	2	2
	Supply / Drain	1/2	1/2	1/2	1/2	1/2	1/2	1/2
WEIGHT (pounds)	Shipping ⁵	200	208	208	213	223	275	290

Notes: 1. See description of MCHL control instrument in the Standard Features list. 2. See description of MFCH control instrument in the Standard Features list. 3. Derate heater output by 25% for 208/3/60 operation. 4. Consult factory for 50hz operations. 5. Approximate unit shipping weight.



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