Temperature Conditioning System

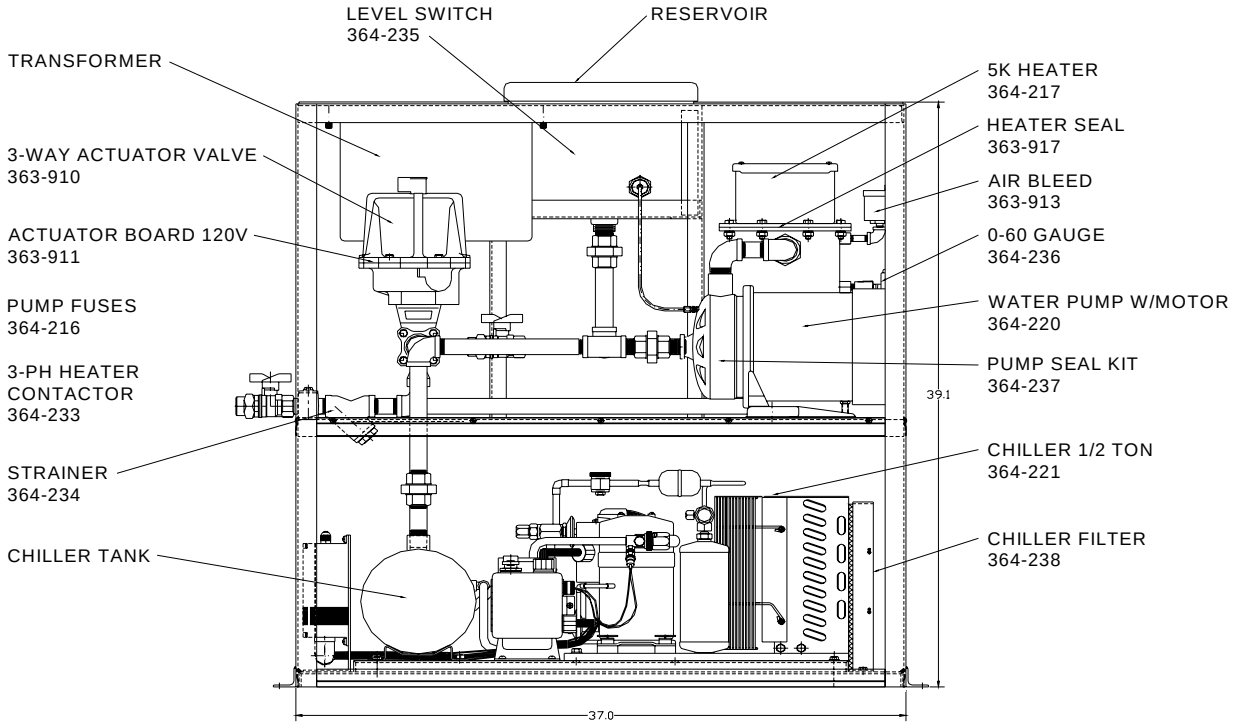
With 3 Way Valve

Ingersoll-Rand
1872 Enterprise Drive
Rochester Hills MI 48309

Phone (248) 293-5700
Tech Support (866) 284-5509

TEMPERATURE CONTROLLER W/3-WAY VALVE

⚠ WARNING *WHEN REPAIRING TURN OFF THE MAIN DISCONNECT AND BLEED THE WATER PRESSURE BEFORE, OPERATING, OR SERVICING THIS EQUIPMENT*



DESCRIPTION:

The Temperature Conditioning system either single or dual zone temperature control systems were designed to provide precision point of application temperature control. Either system maintains this control via a continuous circulation loop of tempered water. The control system reacts to changes in the process material temperature by appropriately altering the temperature of the circulating loop water. When the control system is used in conjunction with Autostream PC.

STORAGE:

If the TCU needs to be stored and is uncrated, follow the instructions below.

- Store the units in a minimum of 50°F (10°C) environment. Prior to shipping the TCU, Precise Finishing tested its functionality. Hence, there may be some residual water in the system that can freeze. This can be harmful to the cooling coils in the TCU's water cooler.
- Place the plastic sheathing that the unit was originally shipped in over the TCU.
- DO NOT store an uncrated TCU outside.
- Consult the DRAWINGS section of this manual for exact unit dimensions.
- DO NOT stack a single or dual zone TCU.

PHYSICAL ENVIROMENT:

The environment that the unit is installed in is critical for it's operation. The unit must be installed indoors, where the plant ambient temperature is between 50°F (10°C) and 90°F (32°C) (heating and cooling units only). Should plant ambient fall below the lower limit, the system heater will not be capable of maintaining the desired process temperature. Conversely if the plant ambient temperature exceeds the higher limit, the water chiller's output capacity decreases 1% per degree Fahrenheit above 90°F (heating and cooling units only). Hence the ability for the unit to maintain the desired process temperature will be compromised. Therefore do not install the unit near an oven, furnace, or in a mezzanine located in a non-temperature controlled environment.

ASSEMBLY:

The assembly procedure of the unit for commissioning consists of four phases; providing electrical power to the unit, wiring the DEVICE NET COMPONENTS into the control panel, connecting the material conditioning package, and connecting remote communications (if purchased as part of the unit).

Warning: Before making any electrical connections to unit, verify that incoming power source has been turned off and locked out. Electrocution hazard exists.

Following governing electrical codes and safe wiring practices connect the appropriate voltage supply to the units control panel. Install power cable. Wire incoming power to the (3) lugs located on the unit's main disconnect (a grounding lug is also provided on the back plane of the panel next to the disconnect for grounding purposes). Consult the electrical diagrams located in the back of this manual to ensure that the appropriate voltage is supplied to the unit

Warning: All electrical connections should be made by trained, qualified personnel. Electrocution hazard exists.

The material conditioning package can vary between each unit and even each circuit (in the case of a dual unit). Therefore please consult the drawings section in the back of this manual. There will be a drawing for each different material conditioning package setup. Please consult these drawings for further installation instructions. Although no special tools will be required an experienced pipe fitter and electrician will be needed for assembly. Below is a list of system volumes for every temperature conditioning unit. It is imperative that the volume of any components located remote to the conditioning unit and installed above the unit's reservoir not exceed 25% of the units volume shown below. If this occurs, water can overflow the reservoir when the unit is powered down.

Model #	*Volume* - Gallons (Liters)*
Single	*6 (22)*
Dual	*8.5 (32)*

WATER LEVEL AND WATER TREATMENT:

USE DISTILLED WATER: DO NOT ADD GLYCOL, CHLORINE OR BLEACH

CORESHIELD 362-736 is the recommended water treatment chemical. If another product is being used please consult the manufactures suggested maintenance routine. If CORESHIELD 362-736 is being used three tests should be preformed every 90 days.

1. Test the circulation water for clarity. This can easily preformed by draining a small amount of water into a glass beaker. Use the ¼" drain valve located on the water cooler and not the reservoir, because the water in the water cooler does get circulated throughout the process as the water in the reservoir does not. Hold the beaker up to a light and make sure that the solution is NOT cloudy. If it is, shut down the entire system and drain.
2. To determine water treatment quality, use Molybdenum test kit Part # 363-704. A minimum of 200 ppm of molybdate should be maintained to provide adequate corrosion protection.

3. PH test (included in the Molbdenum test kit). If the pH is between 7.0 and 8.5 system is acceptable. If the pH is outside these parameters shut down the entire system, drain, refill with distilled water and add a corrosion inhibitor. Follow the start-up procedures in of this manual.

Every year drain the entire system and fill with new CORSHIELD.

START – UP PROCEDURE:

1. Open the three ball valves (2 of the valves are located on the side of the unit for process connection and the other valve is located near pump suction) on the unit. Repeat #2 if the unit is a dual. The ball valve on the c chiller tank is the system drain and should not be opened at this time

2. Fill the entire system with **Distilled water** via the reservoir located on the unit. **Distilled water is the only fluid that should be used.**

3. Set the 3-PH motor start circuit breaker relay to 1.6 amps.

4. Bump the pump in each zone to ensure proper rotation. This is done by depressing the "System Start" button or each zone on the control panel then depressing the "Stop" button. An arrow is located on the pump housing indicating proper rotation. If the pump's) are spinning backwards, switch any two legs of the three-phase power being supplied to the electrical control panels main disconnect. **Ensure that all power is off to the unit before performing this procedure.**

5. Purge all air from the system. An automatic air purge assembly is located on the heater housing; open the red cap on the automatic air purge assembly 3-4 turns when first starting the system. After all air has been purged from the system, leave the cap open one turn, any remaining trapped air in the system will purge from the small slots located on top of the cap. Air can also be purged from the system by closing the process supply ball valve located near the outlet of the heater housing, allowing the system pressure to build up, and slowly reopening the valve (*if performing an air purge in this manner make sure that the heater is not on).* This step may need to be performed multiple times to ensure a complete air purge. By performing this operation, trapped air is forced to escape through the reservoir. Always leave the ball valves in the full open position after air has been purged and the system is running.

6. Add water as needed to replace the air that is being purged.

7. While performing the air purging process, follow the water circulation path and review all the pipe and hose connections. Verify that there are no leaks.

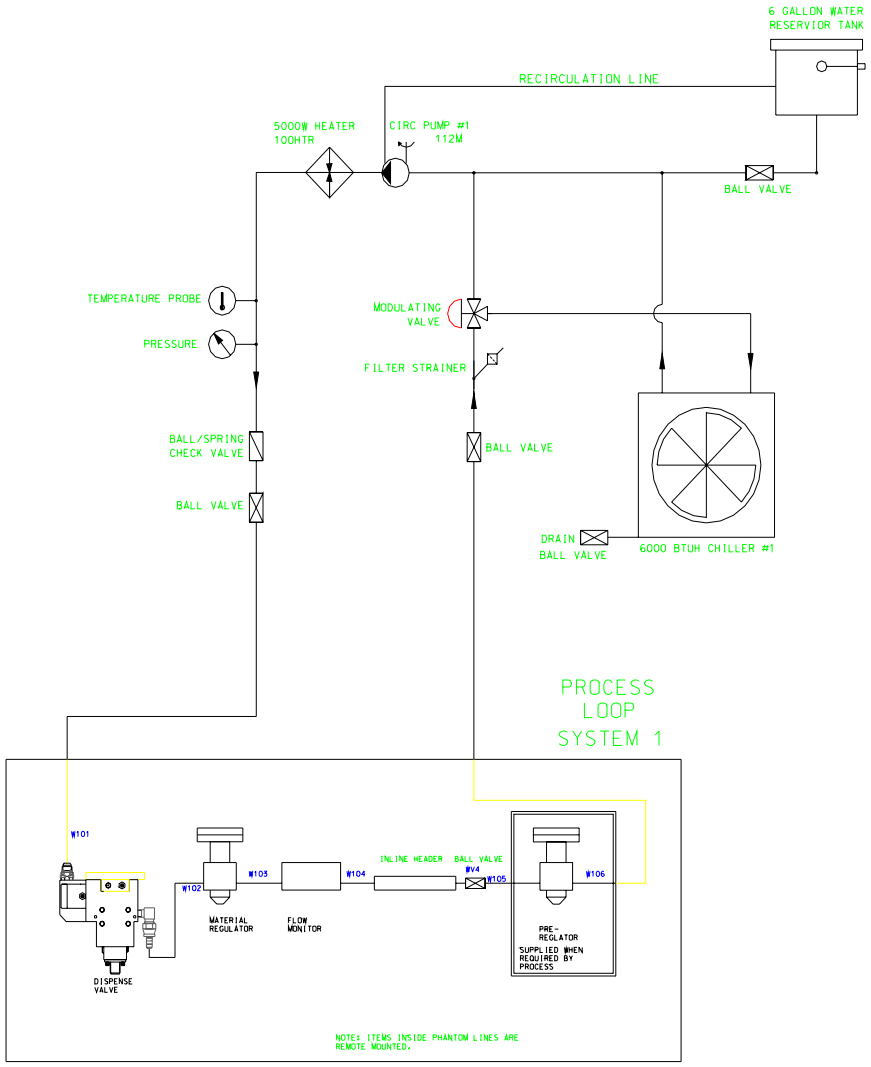
8. The purging process is complete when the pressure gage in each zone stabilizes around 28 to 33 psi (193 to 228 kPa).

9. Allow the system to run for 15 minutes, turn the control system off, and drain the entire system using the drain valve located in the reservoir of the water cooler.

10. Remove the screen in the Y-strainer, inspect, and clean if necessary.

11. Add the water treatment provided with the control system.

12. Set the desired set point of the process material in the Autostream PC (for each zone if applicable).



DESCRIPTION OF OPERATION:

During operation the process material (such as a sealant or adhesive) moves slowly through pipes, fittings, a heat exchanger, and a hose to a dispense valve for application onto a part. The temperature control system operates to maintain a continuous flow of conditioned water throughout the system.

Water enters the suction side of the centrifugal pump and is discharged into a stainless steel housing containing the 5K Heater. The Autostream PC controls the heater condition (on or off). Then the water flows past a temperature gauge and pressure gauge. Next it passes though a check valve and is routed by ½ hose to the load. The load consists of the 1K, 2K, or 1R dispense head and conditioned hoses. The water returns to the Temperature control unit inlet ball valve. The water passes through a strainer and a 3-way variable position actuator valve. The 3-way actuator valve directs the water (if closed) to the circulation pump. If the valve is open, water passes through the chiller tank and the water is cooled before it is routed into the circulation pump. The 3-way actuator valve can be set to any position, allowing water to pass into the chiller tank and directly into the circulation pump at the same time. This allows variable control of the chilling circuit. The Autostream PC controls the output signal to the 3-way actuator valve. The Autostream PC controls the entire conditioning process of heat/cool. The controller uses a temperature sensor input (RTD) in the process material. The output from the RTD is sent to the Autostream PC Controller and it uses this signal to determine if and how long the Heater is on and the position of the 3-way actuator valve. A positional signal of 6000 (4ma) fully Closes (Heating mode) the 3-way actuator valve and a positional signal of 32756 (20ma) completely Opens (Chilling Mode) the valve allowing water to flow through the chiller tank. (View of PC screen showing 3-way valve position)

The Chilling circuit is designed to run at about *60°F (15.5°C).*
NOTE: The chiller does not need to run if the 3-way valve is allowing water into the chiller tank. When the chiller tank temperature rises the chiller will automatically start.

OPERATION PROCEDURES:

Once the unit has been installed, follow the start-up procedures in the previous section for first time commissioning. If the unit has already been purged of air and is ready for duty, proceed as follows.

- *Make sure the electrical enclosure door is closed and locked.*
- *Depress the Temperature system on button to start the circuit. If the unit is a dual depress the Temperature system on push button for "System 1" and "System 2".*
- *Enter the desired set point temperature in the microprocessor controller.*

Depending on the initial temperature of the material and the set point temperature, it may take the unit up to 20 minutes to stabilize.

OPERATING PARAMETERS:

The system pressure should stabilize in the range of 28 to 33 psig (193 to 228 kPa). The water cooler maintains a constant reservoir temperature of 60°F (15.5°C). This temperature is displayed on a LQD located on the water cooler level. Finally the flow rate of the circulating conditioned water will depend on the water conditioning components that are used for each circuit. However it is typical to expect a flow range of 2 to 5 GPM (7.5 to 19 liters per minute).

STOPPING PROCEDURES:

To stop a particular system, depress the "STOP" button. This will remove power to that system's pump, 3-way diverting valve and heater.

CONTAMINATED WATER AND AIR PURGE PROCEDURE:

1. Turn off the temperature conditioning system.
2. Remove the Chiller Fuse or trip the Circuit Breaker.
3. Adjust the temperature controller set point to 60 degrees.
4. Close the Return ball valve located at the Temperature condition unit.
5. Remove the return hose.
   a. To Purge Air from the system put the return hose in the reservoir.
   b. To purge contaminated water from the system, put the hose in a 5-gallon pail.
6. Turn on the system. The water reservoir will need to be refilled during this step.
   a. Continue until the water starts flowing constantly and the air is out of the lines.
   b. Continue until the water starts running clear.
      i. If the water system still looks dirty, it will need to be chemically cleaned.

ii. Finish the Contaminated water and air purge procedure. Then add 1 ounce of TRISODIUM PHOSPHATE to the system. (Nalco brand of Trisodium Phosphate is called NALPREP III).

iii. Let the system run for four hour and repeat the Contaminated water and air purge procedure.

7. Turn off the temperature conditioning system.
8. Attach the return hose to the temperature unit (return ball valve).
9. Purge the air out from the system by opening and closing the return ball valve.
10. Install the chiller fuse or turn on the circuit breaker and reset the temperature controller set point value.
    NOTE: The system must be completely flushed of Trisodium Phosphate before adding any water treatment/Conditioner.
11. Add Water Treatment/Conditioner to the system in the proper concentration.

ALARM CIRCUITRY

The unit has three different alarms as a standard and they are a low water level fault, a material temperature deviation fault, and a high water temperature fault. The following is a complete description of each.

Low Water Level Fault

If the water level in the reservoir falls below a certain level, the level switch will open thus eliminating power to all pumps, heaters, 3 way diverting valves, and water coolers. Additionally Fault will occur on the Autostream PC. This fault indicates that there is a leak somewhere in the conditioned water flow path. Once the problem is resolved and additional water is added to the reservoir (enough to close the level switch), the system can be restarted.

Material Temperature Fault

This fault is linked to a specific circuit. Hence if the unit is a dual there is one pilot light for each circuit. Should this fault occur, then the process temperature is not within the range of ±7 degrees of set point. Please consult the troubleshooting section of this manual for remedies of the type of fault.

High Water Temperature Fault

This fault is also linked to a specific circuit. Should this fault occur, then the temperature of the circulating water has exceeded 145°F (60°C). Please consult the troubleshooting section of this manual for remedies of the type of fault. When this fault occurs, an electrical contactor will open thus removing power to the system heater. Therefore, the system will continue to operate and try to maintain temperature. Should the problem correct itself, the yellow pilot light will shut off when the water temperature drops below 135°F (57°C) and power will be restored to the heater.
Notes on System Faults
In any one of the three faults Major or Minor fault light illuminates to alert an operator and the appropriate action is taken. The fault will stop the process only if it is set to Major.

INAPPROPRIATE USE OF THIS EQUIPMENT:

- Do not attempt to operate the unit at any voltage other than what is shown on the electrical drawings.
- Do not select a set-point temperature greater than 140°F (60°C).
- Do not lower the water cooler's thermostat setting below 55°F (13°C)
- Do not run the system with any other fluid other than water and the prescribed water treatment.
- Do not open the door on the electrical control panel or service the unit without first removing power.

MAINTENANCE

Autostream temperature control units were designed to provide you with years of trouble-free service with minimal maintenance. Below is a list of all the major components used to manufacture your temperature control unit along with the suggested maintenance and frequency.

WATER CHILLER:

Every 30 days inspect the water cooler's condenser coils. They are located on the electrical control panel end of the unit. If any dust and debris is present, shut down the unit and carefully blow compressed air across the coils. Please note that the air pressure should not be greater than 50 psig (345 kPa).

Every 30 days inspect the air filter, which located in front of the water cooler's condenser coils. Clean and/or replace as needed.

Also every 90 days inspect the site glass on the refrigerant side of the water cooler. Specifically look to make sure there is a level of refrigerant present. This device is located towards the middle of the water cooler and is connected to ¼" (0.64 cm) copper. It is circular in shape and is about 1-1/2" (3.8 cm) in diameter. If no level of refrigerant is present, please contact Ingersoll-Rand.

WATER PUMP:

Every 30 days inspect to make sure no debris is on or near the pumps cooling fan. Other than that the pumps motor bearings are lubricated during manufacture and additional lubrication is not required during their normal lifetime.

WATER LEVEL AND WATER TREATMENT:

DO NOT ADD GLYCOL
Every 30 days check the water level in the reservoir and fill as needed (evaporation loses).
CORESHIELD is the recommended water treatment chemical. If another product is being used please consult the manufacture's suggested maintenance routine. If CORESHIELD is being used then every 90 days two tests should be preformed.

1. Test the circulation water for clarity. Drain a small amount of water into a glass beaker. Use the ¼" drain valve located on the water cooler and not the reservoir, because the water in the water cooler does get circulated throughout the process as the water in the reservoir does not. Hold the beaker up to a light and make sure that the solution is NOT cloudy. If it is, shut down the entire system and drain. Follow the start-up procedures in Section 3 of this manual.

2. To determine water treatment quality is to use a test kit Part # 363-704. The aluminum corrosion must be below 3mil/year and the Copper corrosion must be below 1 mil/year. If the pH is 9 or above then the system is acceptable. If the pH is less than 9, shut down the entire system and drain.

Every year drain the entire system and fill with new CORESHIELD.

SYSTEM WATER PRESSURE:

Every 30 days inspect the system pressure, which will range from 28 to 33 psig (193 to 228 kPa). If the system pressure is above 33 psig (228 kPa), a flow blockage most likely is present somewhere in the circulation loop. Consult the troubleshooting section of this manual for possible remedies.

SYSTEM COMPONENTS

Pump Assembly 364-220:

1, To Remove:
2. Power down panel And lock out.
3. Disconnect electrical wiring.
4. Disconnect pipe couplings
5. Remove mounting bolts and Remove pump.

Reverse procedure to assemble.

Pump Impeller Assembly:
Pump Seal Kit 364-237

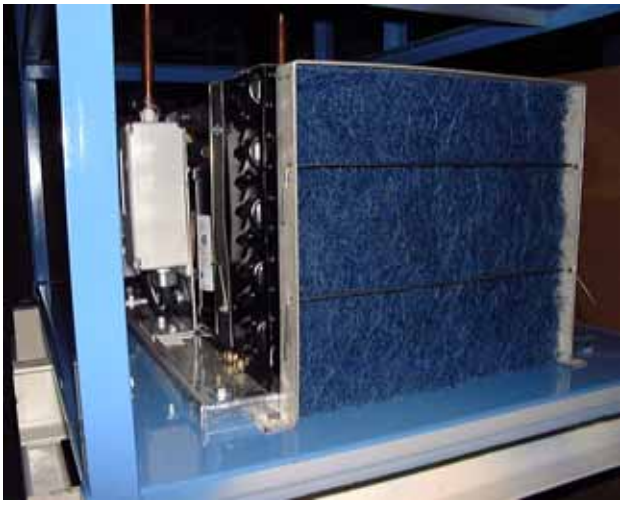
To Remove:
1. Remove Pump Assembly
2. Remove the 8 housing Mounting bolts.
3. Loosen the Impeller set screw the impeller can be removed.
4. Remove the pump mounting Bolts and remove the pump back cover.
5. The seals can be replaced

Reverse procedure to assemble

Chiller Filter 364-238:

To Remove:
Slide filter from holding pins

To Install:
Slide filter through the holding pins.



SYSTEM COMPONENTS

Heater Assembly 364-217:

To remove:
1. Power down and Lock out
2. Disconnect electrical wiring
3. Remove Cover mounting bolts
4. Remove heater from switch.
5. Replace Heater Seal 363-917 Gasket. Not Shown

To Install reverse procedure.

Heater Switch:

To remove:
1. Power down and Lockout Electrical.
2. Disconnect electrical wiring
3. Remover Heater
4. Remove heater from Switch.

To Install reverse procedure.

CHILLER ½ TON 364-221:

CHILLER TANK

CHILLER TEMPERATURE NORMALLY SET TO 60 deg. F

SYSTEM COMPONENTS

Chiller drain:

Power Down Electrical System Open drain until Water Runs clear.

3-WAY DIVERTER VALVE:
3-Way Valve Actuator 363-910:
Actuator board 120V 363-911:

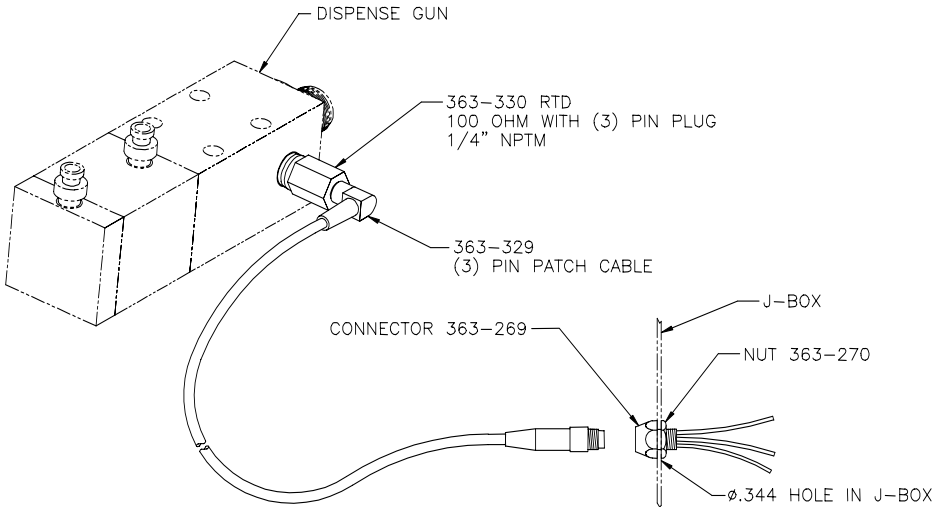
Note: With power OFF the valve can Be manually operated.

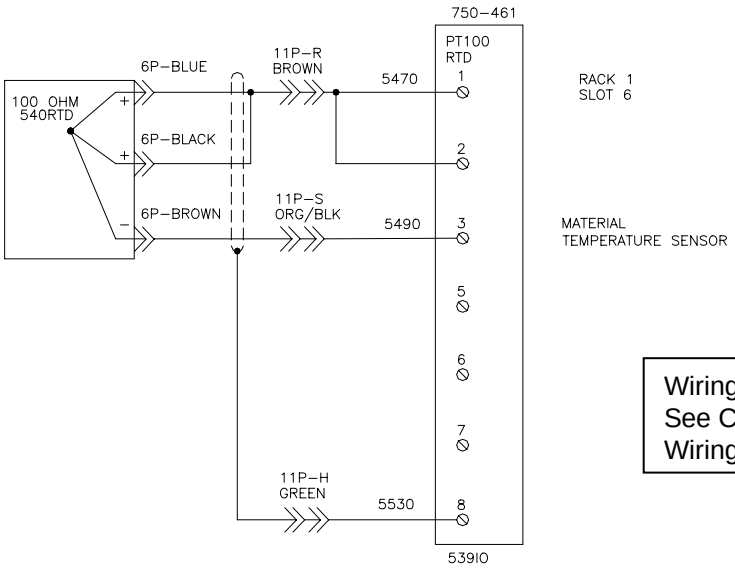
To remove:
1. Power down and Lock out.
2. Drain Water System.
3. Remove Cover
4. Disconnect Electrical Wiring.
5. Remove Valve from Plumbing.

To Install reverse procedure.

Resistive Temperature Detector (RTD) 363-330

RTD and Cable Assembly # 110-379





Wiring Diagram example only. See Control Drawing for Exact Wiring Schematic.

Testing the RTD:

An Ohmmeter (Resistance Meter) from blue and black wire should read between 0 and 10 Ohms

An Ohmmeter from brown to the (blue or black) wire should read between 100 and 200 Ohms.

If either of these readings are off, the RTD **must** be replaced.

GE Betz

GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
Business telephone: (215) 355-3300

Material Safety Data Sheet

Issue Date: 17-DEC-2001

EMERGENCY TELEPHONE (Health/Accident): (800) 877-1940

1 PRODUCT IDENTIFICATION

PRODUCT NAME:

CORRSHIELD MD405

PRODUCT APPLICATION AREA:

WATER BASED CORROSION INHIBITOR/DEPOSIT CONTROL AGENT

2 COMPOSITION / INFORMATION ON INGREDIENTS

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

CAS#	CHEMICAL NAME
7775-19-1	SODIUM METABORATE OCTAHYDRATE Potential irritant (eyes and respiratory)
7631-95-0	SODIUM MOLYBDATE (MOLYBDIC ACID,DISODIUM SALT) Potential irritant (respiratory); potential lung toxicity

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

3 HAZARDS IDENTIFICATION

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EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Emergency Response Guide is not applicable
Odor: Slight; Appearance: Colorless To Light Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

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POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:
Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:
May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:
Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:
May cause gastrointestinal irritation.

TARGET ORGANS:
Prolonged or repeated exposures may cause toxicity to the lung.

MEDICAL CONDITIONS AGGRAVATED:
Not known.

SYMPTOMS OF EXPOSURE:
May cause redness or itching of skin.

4 FIRST AID MEASURES

SKIN CONTACT:
Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:
Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:
If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:
Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 3-4 glasses milk or water.

NOTES TO PHYSICIANS:
No special instructions

5 FIRE FIGHTING MEASURES

FIRE FIGHTING INSTRUCTIONS:
Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).
EXTINGUISHING MEDIA:
dry chemical, carbon dioxide, foam or water
HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
FLASH POINT:
> 200F > 93C P-M(CC)

6 ACCIDENTAL RELEASE MEASURES

PROTECTION AND SPILL CONTAINMENT:
Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container. Flush area with water. Wet area may be slippery. Spread sand/grit.
DISPOSAL INSTRUCTIONS:
Water contaminated with this product may be sent to a sanitary sewer treatment facility,in accordance with any local agreement,a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 HANDLING & STORAGE

HANDLING:
Normal chemical handling.
STORAGE:
Keep containers closed when not in use. Reasonable and safe chemical storage. Protect from freezing.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS
CHEMICAL NAME

SODIUM METABORATE OCTAHYDRATE
PEL (OSHA): NOT DETERMINED
TLV (ACGIH): NOT DETERMINED

SODIUM MOLYBDATE (MOLYBDIC ACID,DISODIUM SALT)
PEL (OSHA): 5 MG/M3(AS Mo)
TLV (ACGIH): 0.5 MG/M3(AS Mo) RESPIRABLE FRACTION

ENGINEERING CONTROLS:
Adequate ventilation to maintain air contaminants below exposure limits.
PERSONAL PROTECTIVE EQUIPMENT:
Use protective equipment in accordance with 29CFR 1910 Subpart I
RESPIRATORY PROTECTION:
A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.
If air-purifying respirator use is appropriate, use a respirator with dust/mist filters.

SKIN PROTECTION:
neoprene gloves-- Wash off after each use. Replace as necessary.
EYE PROTECTION:
splash proof chemical goggles

9 PHYSICAL & CHEMICAL PROPERTIES

Specific Grav.(70F,21C)	1.112	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	28	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-2		
Viscosity(cps 70F,21C)	10	% Solubility (water)	100.0

Odor		Slight
Appearance		Colorless To Light Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		11.6
Evaporation Rate (Ether=1)		< 1.00

NA = not applicable ND = not determined

10 STABILITY & REACTIVITY

STABILITY:
Stable under normal storage conditions.
HAZARDOUS POLYMERIZATION:
Will not occur.
INCOMPATIBILITIES:
May react with strong oxidizers.
DECOMPOSITION PRODUCTS:
Thermal decomposition (destructive fires) yields elemental oxides.
INTERNAL PUMPOUT/CLEANOUT CATEGORIES:
"B"

11 TOXICOLOGICAL INFORMATION

Oral LD50 RAT:	>2,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	

12 ECOLOGICAL INFORMATION

AQUATIC TOXICOLOGY
Daphnia magna 48 Hour Static Acute Bioassay
0% Mortality= 5000 mg/L
Fathead Minnow 96 Hour Static Bioassay with 48-Hour Renewal
0% Mortality= 5000 mg/L
Rainbow Trout 96 Hour Static Renewal Bioassay
LC50= 3540; No Effect Level= 1250 mg/L

BIODEGRADATION
No Data Available.

13 DISPOSAL CONSIDERATIONS

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 TRANSPORT INFORMATION

DOT HAZARD:	Not Applicable
UN / NA NUMBER:	Not applicable
DOT EMERGENCY RESPONSE GUIDE #:	Not applicable

15 REGULATORY INFORMATION

TSCA:
All components of this product are listed in the TSCA inventory.
CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):
No regulated constituent present at OSHA thresholds
USDA FEDERALLY INSPECTED MEAT AND POULTRY PLANTS:
This product is composed of ingredients previously approved by USDA to meet G5 and G7 classification and may be used in water for cooking/cooling or in boiler or cooling systems with no food contact.
SARA SECTION 312 HAZARD CLASS:
Immediate(acute);Delayed(Chronic)
SARA SECTION 302 CHEMICALS:
No regulated constituent present at OSHA thresholds
SARA SECTION 313 CHEMICALS:
No regulated constituent present at OSHA thresholds
CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65) CHEMICALS PRESENT:

No regulated constituent present at OSHA thresholds
MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 OTHER INFORMATION

NFPA/HMIS		CODE TRANSLATION
Health	1	Slight Hazard
Fire	0	Minimal Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles,Gloves

(1) refer to section 8 of MSDS for additional protective equipment

recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
MSDS status:	14-FEB-1997		** NEW **
	06-MAY-1998	;EDIT:9	14-FEB-1997
	18-JAN-1999	15	06-MAY-1998
	02-JUN-2000	12	18-JAN-1999
	17-AUG-2001	4,16	02-JUN-2000
	17-DEC-2001	2,3,8	17-AUG-2001

