STERLCO TEMPERATURE CONTROL UNIT
SERVICE AND INSTRUCTION MANUAL

MODEL S-8612

Engineered and Manufactured by INDUSTRIAL CONTROL DIVISION
STERLING, INC.
5200 West Clinton Avenue, P.O. Box 23435, Milwaukee, WISCONSIN 53223-0435
Manufacturers of Temperature Control Equipment Since 1916

Please note that our address and phone information has changed. Please reference this page for updated contact information.

⚠CAUTION These manuals are obsolete and are provided only for their technical information, data and capacities. Portions of these manuals detailing procedures or precautions in the operation, inspection, maintenance and repair of the products may be inadequate, inaccurate, and/or incomplete and shouldn't be relied upon. Please contact the ACS Group for more current information about these manuals and their warnings and precautions.

Parts and Service Department

The ACS Customer Service Group will provide your company with genuine OEM quality parts manufactured to engineering design specifications, which will maximize your equipment's performance and efficiency. To assist in expediting your phone or fax order, please have the model and serial number of your unit when you contact us. A customer replacement parts list is included in this manual for your convenience. ACS welcomes inquiries on all your parts needs and is dedicated to providing excellent customer service.

For immediate assistance, please contact:

- North, Central and South America, 8am – 5pm CST +1 (800) 483-3919 for drying, conveying, heating and cooling and automation. For size reduction: +1 (800) 229-2919.
  North America, emergencies after 5pm CST (847) 439-5855
  North America email: acsuscanadacustserv@corpemail.com
- Mexico, Central & South America
  Email: acslatinamericacustserv@corpemail.com
- Europe, Middle East & Africa +48 22 390 9720
  Email: acseuropecustserv@corpemail.com
- India +91 21 35329112
  Email: acsindiacustserv@corpemail.com
- Asia/Australia +86 512 8717 1919
  Email: acsasiacustserv@corpemail.com

Sales and Contracting Department

Our products are sold by a worldwide network of independent sales representatives. Contact our Sales Department for the name of the sales representative nearest you.

Let us install your system. The Contract Department offers any or all of these services: project planning; system packages including drawings; equipment, labor, and construction materials; and union or non-union installations.

For assistance with your sales or system contracting needs please Call:
North, Central and South America +1 (262) 641-8600 or +1 (847) 273-7700 Monday–Friday, 8am–5pm CST

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India +91 21 35329112
Asia/Australia +86 512 8717 1919

Facilities:
ACS offers facilities around the world to service you no matter where you are located. For more information, please visit us at www.acscorporate.com

United States:

ACS Schaumburg – Corporate Offices
1100 E. Woodfield Road
Suite 588
Schaumburg, IL 60173
Phone: + 1 847 273 7700
Fax: + 1 847 273 7804

ACS New Berlin – Manufacturing Facility
2900 S. 160th Street
New Berlin, WI 53151
Phone : +1 262 641 8600
Fax: + 1 262 641 8653

Asia/Australia:

ACS Suzhou
109 Xingpu Road SIP
Suzhou, China 215126
Phone: + 86 8717 1919
Fax: +86 512 8717 1916

Europe/Middle East/Africa:

ACS Warsaw
Ul. Działkowa 115
02-234 Warszawa
Phone: + 48 22 390 9720
Fax: +48 22 390 9724

India
ACS India
Gat No. 191/1, Sandbhor Complex
Mhalunge, Chakan, Tal Khed,
Dist. Pune 410501, India
Phone: +91 21 35329112
Fax: + 91 20 40147576

MODEL: S-8612 SERIES

INTRODUCTION

The Model S-8612 single zone temperature control unit is designed to continuously circulate water to an open tank or a process requiring very low pressure while automatically maintaining the temperature which the operator has selected. It is designed for use through a temperature range from tap water temperature up to approximately 180° F.

The Sterl-Tronic High Temperature Control Unit; designed and tested over a period of many years, represents one of the most significant advances ever in its field. These self-contained units are used for a variety of applications such as circulating temperature controlled water through molds, rolls or jackets of processing equipment.

The Sterl-Tronic temperature control unit is designed to circulate water through your process and to precisely, automatically, and reliably maintain this water at the selected temperature. The unit is well suited for use with a city water supply, water from portable or central chillers, towers, or with well water.

Many new improved designed features have been incorporated into the Sterl-Tronic. Among them are: solid-state electronic thermostat, automatic mechanical proportioning of heating and cooling, and dual electronic sensing probes.

The relatively small amount of water, rapidly recirculated by the Sterl-Tronic, provides a close and uniform temperature relationship between the delivery and return lines of the unit. This assures uniform and stable temperature control as well as a very even temperature throughout the work area. Also, the high rate of recirculation combined with the large immersion heater and high cooling rate, gives the unit exceptionally fast response in bringing the process up to temperature and in making changes of settings when necessary.

These standard units may have many variations of optional features added to them, relative to the customer's application of specific desires.

The unit is warranteed against defects in materials and workmanship for one year from date of shipment.

Any Sterlco unit which has been used contrary to specific operation instructions or materially altered, will not be covered by this warranty. Final determination of defects must be made at Sterling, Inc.

The units can easily be moved from one location to another, simply by removing the circulating connection lines.

By following the instructions in the manual and treating your equipment with care and respect due any precision equipment, you will be rewarded with years of uninterrupted, trouble free service.

MODEL: S-8612 SERIES

INSTALLATION AND CIRCULATION

SYSTEM TEMPERATURES

The system temperatures are easily read on the meter which is part of the thermostat. Its long thin needle with close calibration permits the detection of small temperature variations.

ELECTRICAL

The pump motor and immersion heater operate on three phase, full line voltage with the control circuit operating at 115 V. single phase. The control circuit voltage is provided by a single phase transformer wired across two legs of the three phase power supply. Magnetic motor starters with overload and high/low voltage protection are used for the pump motors. The 115 V. control circuit is fused.

NOTE:

ALL PUMP MOTORS ARE THREE (3) PHASE AND PUMP ROTATION MUST BE CHECKED TO INSURE PROPER OPERATION OF YOUR UNIT.

DELIVERY AND RETURN CONNECTIONS

Since the delivery and return hoses create resistance to flow, we suggest that the hoses be as short in length and as large in diameter as possible. Even though the passages in the process may be small, it is necessary to use large hoses and fittings to minimize the total restriction to flow.

Installation and Circulation - Continued

PUMP

The pump is a straight centrifugal type, bronze-fitted. It has a high output capacity with good discharge pressure and is well suited for the conditions under which the unit is designed to operate. The circulating capacity available to the user, outside the unit, is as stated below.

NOTE:

ALL PUMP MOTORS ARE THREE (3) PHASE AND PUMP ROTATION MUST BE CHECKED TO INSURE PROPER OPERATION OF YOUR UNIT.

A special seal-flush system in the pump, helps keep the seal clean, thereby extending seal life. The seal itself is the finest type available for this type of service and provides an excellent combination of long wearability, high abrasion resistance and heat resistance. The following table is a listing of true unit capacities.

1/2 H.P.	15 GPM @ 20 PSI
3/4 H.P.	20 GPM @ 20 PSI
1 H.P.	30 GPM @ 25 PSI
1-1/2 H.P.	40 GPM @ 30 PSI
2 H.P.	50 GPM @ 30 PSI
3 H.P.	45 GPM @ 40 PSI
5 H.P.	60 GPM @ 50 PSI

COOLING

Cooling is accomplished by the direct mixing of plant cooling water into the circulating system. Naturally the plant water supply temperature will govern the minimum operating temperature of the unit.

MODEL: S-8612 SERIES

OPERATION

"ON-OFF" SWITCH

"ON" Position

When the switch is in the "ON" position, the fill solenoid is opened and supplies raw water to the system. Once the water in the tank reaches the correct level, the float switch closes. The fill solenoid is closed automatically and the motor starter is energized. The starter then supplies power to the motor and temperature controller and the controller begins to regulate "Heating" or "Cooling".

If the water level in the tank becomes too low, the float switch opens causing the fill solenoid to open. Raw water is again supplied to the system. The motor starter de-energizes, cutting power to the motor and temperature controller.

"OFF" Position

When the switch is pressed to the "Off" position and the float switch is closed, the motor starter is de-energized cutting power to the motor and temperature controller.

When the switch is pressed to the "Off" position and the float switch is open, the fill solenoid closes.

TEMPERATURE SELECTION

Position the "SET-POINT" on the temperature controller to the desired temperature.

Select Lo or Hi heat with the HEAT SELECTOR SWITCH.

As the unit operates in the heating cycle, the HEAT pilot light will illuminate. When the temperature of the water increases beyond the set point, the unit will automatically switch to the cooling cycle and the COOL pilot light will illuminate.

A small neutral band is provided in the thermostat between heat-on and cooling-on so that at times the unit will maintain continuous circulation without heating or cooling.

SHUTDOWN

Prior to shutdown, the water supply to the unit should be shut off.

Water supply and drain lines, delivery and return lines, and the power supply may then be disconnected.

DRAINING

If your Sterl-Tronic is to be taken out of service for a long time, or if it will be exposed to freezing, it should be thoroughly drained. Drain plugs are provided at the base of the heater tank, and water supply and drain lines. Open the blow-off valve to drain the tank.

OPERATION OF ONE ZONE ONLY ON A DUAL OR TRIPLE ZONE UNIT

When one zone of a dual or triple zone unit is to be operated while the other remains idle, it is necessary to run a by-pass line from the delivery to the return line of the idle zone.

PREVENTATIVE MAINTENANCE

EVERY SIX (6) MONTHS - DISCONNECT ALL POWER PRIOR TO SERVICING

Inspect all electrical connections for secure attachment and for safe and secure ground connections. Inspect the power cable, especially at entrance point to the unit. This inspection should be made by a qualified electrician!

MODEL: S-8000 SERIES

ALL ELECTRICAL TROUBLESHOOTING MUST BE DONE BY A QUALIFIED ELECTRICIAN

TROUBLESHOOTING

TEMPERATURE FLUCTUATIONS Alternate Overheating and Overcooling.

While the user might be inclined to believe the trouble to be in the controller, this fluctuation can most always be traced to poor water flow, resulting from one or more of the following conditions.

1. Small connectors or small water passages. Slow water flow will create a long reaction time which causes overheating and overcooling.

2. Very long connecting lines or long serpentine flow of water in and out of the mold in series rather than in parallel. Refer to the page on installation.

3. Blocked water line in the mold. New molds sometimes contain metal chips or other foreign particles inside the water lines. Old molds sometimes contain lime or rust accumulations.

4. Quick disconnect fitting with check valves. (A source of very serious obstruction.) The check valves should be removed.

5. Lime buildup in the piping or fittings.

NOTE: The unit itself can be checked out for normal control by the use of a short 3/4" or 1/2" line connected directly from the delivery to the return line. This will provide a condition of very good flow and will establish whether the blockage is in the unit or the piping. This connection line should meet all the requirements of the "Process Connections" stated earlier.

RAPID CYCLING FROM HEAT TO COOL

This condition is traceable to the same causes as the temperature fluctuations indicated above.

UNABLE TO HEAT PROPERLY

When the temperature will not rise above a certain temperature, the cause will generally be traced to continuous loss of water from the system (allowing cooling water to enter). This can be checked by observing the drain. Under some conditions it is possible to have the solenoid valve close on a particle of grit which, of course, will allow the valve to continuously leak. This solenoid valve can be flushed out easily by having the operator adjust the "set point" up and down scale several times to open and close the solenoid. If it continues to leak, the unit should be stopped and the electric power and water turned off and the solenoid valve should be taken apart and cleaned or replaced, as required.

Another cause would be traceable to a leaking connection or fitting somewhere in the system. It is also possible that the immersion heater might be inoperative or defective. Most any qualified electrician can check this out readily. Heater terminals are readily accessible for checking.

HEATER BURN OUT

A direct visual indication of heater burn out is the presence of scorched or discolored paint on the heater tank. In most cases, the water level inside the tank at the time of burn out can be determined because the paint on the exterior of the tank below the water level will not be scorched. Causes of heater burn out are generally traceable to:

1. The unit not being filled with water and purged of air prior to start-up.

2. A faulty heater (tank discoloration not always present).

3. A plugged system or badly obstructed flow.

PUMPS AND SEALS

Before leaving our factory, each unit is operated for a considerable period of time and calibrated. After this test, the unit is drained and blown out with warm air to remove most of the water from the piping systems. If the unit is allowed to stand idle for a longtime before being installed in your factory, the housing gasket at the pump can dry out and will possibly leak when the unit is started. In many cases these gaskets will soon swell and form a tight seal, while in other cases it may be necessary for you to tighten the pump screws to stop a leaking condition.

It is possible to have the pump seal surface separate slightly because of rough handling or considerable vibration during transit from our plant to yours. This, of course, would cause a leak at the pump seal when the pump is started, but in most cases the surface will mate again after the pump is allowed to run for short periods of time. If they do not mate, you might find it necessary to open the pump and free the seal by hand. It is seldom necessary to install a replacement seal in a new unit unless the seal has been damaged because the unit has been started without water.

Our pump seals should give a long period of service life. There are conditions, of course, which tend to shorten the seal life - such as presence of grit,operation of the unit without water, sustained high water temperatures or the presence of certain chemicals in the water. Our pump seal assembly has been developed to resist abrasive particles which we find present in many water systems. It is also fitted with high temperature flexible components for a maximum amount of heat resistance. These same components remain flexible even at low temperatures. Thus, the standard seal has a fine combination of heat resistance and wear resistance.

PARTS LIST # 792
August 21, 1984

MODEL S-8612 (A)

PART NO.	DESCRIPTION
729-00084	Contactor 30 amp.
601-00271-05	Controller "S-2"
725-00600	Fuse, Control #FNM 1.6 amp.
725-00562	Fuse, Motor #FRS 2.25 Amp.
722-00108-01	Immersion Heater 9 KW @ 480V
720-09167	Motor 1/2 HP 3/60/ 460V
715-10037	Pilot Light (Red - "Power-On")
715-10036	Pilot Light (Amber - "Pump-Run")
605-00030-11	Pump & Motor Complete 1/2 HP 3/60/ 460V
695-00007-03	Motor, Impeller, Seal Assembly 1/2 HP 3/60/ 460V
726-00005-02	Starter, Motor
632-02858	Switch, Pressure
717-10027	Switch, Selector (Off-On)
717-00028	Switch, Micro
724-00033	Thermostat, Safety
704-00052	Transformer 240/480V
044-00138	Valve, Safety Relief
732-00012	Valve, Solenoid w/coil 1/2" 5/8" Orfice
162-00001-06	Solenoid Coil only 115V
734-00018	Switch, Float

NOTE: Please give Model & Serial No's. when ordering parts. Part No's. are listed as a guide, but many units have special parts or features not covered by this list. Prices are subject to change without notice. Net 30 days, F.O.B. Milwaukee, Wisconsin

STERLING, INC., 5200 W. Clinton Avenue, Milwaukee, Wisconsin 53223-0435
Phone: (414) 354-0970 Telex 2-6805

STERLING, INC.
PARTS LIST (D-G)
STERLCO PUMP 1 TO 3 HP

COMPLETE PUMP & MOTOR ASSEMBLY

Open Drip Proof 3450 RPM, 3/60/230-460V

605-00083-11	1 HP
605-00084-07	1-1/2 HP
605-00065-03	2 HP
605-00086-01	3 HP

*TEFC 3450 RPM, 3/60/230-460V

605-00083-01	1 HP
605-00084-02	1-1/2 HP
605-00065-09	2 HP
605-00086-03	3 HP

*7EQ and Explosion Proof Not Included

605-00083-10 — 1-HP - 575V
695-00035-03 — 1-HP - 575V

STERLING, INC., 5200 West Clinton Avenue, P.O. Box 23435, Milwaukee, Wisconsin 53223-0435
Phone: (414) 354-0970 Telex: 2-6805

STERLING, INC.
PARTS LIST (D-G)
STERLCO PUMP 1 TO 3 HP

ITEM	PART NO.	DESCRIPTION
O	001-05915	Motor Screw, (4) Required
P	542-10404	Water Slinger
O	615-00001	Bracket
R	081-00024	Rotary Seal Assembly
S		Impeller-specify part no. and diagram (See pump nameplate)
T	525-00001	Lock Washer
U	535-00001	Impeller Nut
V	545-00002	Housing Gasket
W-A	615-00003	Threaded Inlet Casting
W-B	615-00002	Tank Inlet Casting
X-A	001-05915	Pump Screw for pump w/threaded suction (8) required
X-B	001-05915	Pump Screw for pump w/tank suction (6) required
X-B	001-05923	Pump Screw for pump w/tank suction (2) required
		(Above parts illustrated on Form MP-1)
	M-160-00005	Motor Drip Cover (**)
	N-720-09003	Electric Motor 1 HP - 3/60/230-460V Open (#)
	N-720-09009	Electric Motor 1 HP - 3/60/230-460V TEFC (#ç)
	N-720-09004	Electric Motor 1-1/2 HP - 3/60/230-460V Open (#)
	N-720-09010	Electric Motor 1-1/2 HP - 3/60/230-460V TEFC (#ç)
	N-720-09005	Electric Motor 2 HP - 3/60/230-460V Open (#)
	N-720-09011	Electric Motor 2 HP - 3/60/230-460V TEFC (#ç)
	N-720-09006	Electric Motor 3 HP - 3/60/230-460V Open (#)
	N-720-09012	Electric Motor 3 HP - 3/60/230-460V TEFC (#ç)
	720-09144	ELECTRIC MOTOR 1 HP - 3/60/575V

**Used only on drip proof motors
* State Motor Manufacturer
# State Motor Manufacturer if preferred
ç State special specification (i.e. 7EQ-Spec., 7E-Spec., etc.)

:ling part numbers apply to non-special motors. Consult Parts List in your unit manual for specific motor requirements.

STERLING, INC.
PARTS LIST A & C
STERLCO PUMP 1/2 & 3/4 HP

ITEM	PART NO.	DESCRIPTION
C	542-10404-00	Water Slinger
E	615-13341-01	Bracket
H	081-00024	Rotary Seal Assembly
I	695-18409-00	Impeller, Standard Brass, 1/2 HP
I	695-18409-03	Impeller, Standard Brass, 3/4 HP
J	001-06850	Impeller Screw
K	545-00001	Housing Gasket
LA	615-14921-00	Volute
LB	614-14951-00	Housing
B	720-09170	Motor 1/2 HP 3/60/230-460V TEFC
B	720-09167	Motor 1/2 HP 3/60/230-460V Open
B	720-09168	Motor 3/4 HP 3/60/230-460V Open
B	720-09190	Motor 3/4 HP 3/60/230-460V TEFC

MOTOR, IMPELLER, SEAL ASSEMBLY

695-00007-03	1/2 HP 3/60/230-460V Open
695-00007-24	1/2 HP 3/60/230-460V TEFC
695-00030-03	3/4 HP 3/60/230-460V Open
695-00030-10	3/4 HP 3/60/230-460V TEFC

Sterling part numbers apply to non-special motors. Consult Parts List in your unit manual for specific motor requirements.

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