



MILLENNIUM REMOTE CONTROL CENTER FOR AIR-COOLED SCREW CHILLERS

INSTALL., OPERATION, MAINT.

Supersedes: Nothing

Form 201.11-NM1 (398)



28376A

SECTION 1 – HARDWARE AND SETUP

GENERAL

The YORK Remote Control Center option (371-02400-102) provides chiller operating data and control from a remote location. This data includes system status, operating information, fault information, and chiller operating history at the push of a key. Control functions include setpoint control, daily schedule programming, and start/stop. Communications between the chiller and the Remote Control Center and updating of information occurs at 30 sec. intervals.

All data is displayed on a 40 character backlit LCD display (2 lines of 20 characters) and is accessed by a soft touch keypad. The keypad and display are built into an 8" x 10" x 2-1/2" (203 mm x 254 mm x 64 mm) NEMA-1 enclosure to be wall mounted indoors.

The Remote Control Center is also designed to enable the user to obtain a remote print-out directly from the remote panel, simplifying the data logging procedure.

One Remote Control Center can communicate with up to four air-cooled screw chillers. *NOTE: The Remote Control Center can not be used with a Millennium ISN System.*

PARTS LIST FOR AIR-COOLED SCREW RCC OPTION

QTY.	DESCRIPTION	YORK PART NO.	REMARKS
1	RCC Unit	371-02400-102	Included
1	RCC EPROM	031-01714-007	Included *
2	LTP Trans. Protect Mod.	031-01586-000	Included***
Ft	Commun. Cable – Alpha 4562 or Beldon 9320		User Supplied
1	115V/24VAC Trans.	025-29917-001	York Option
1	220V/24VAC Trans.	025-29917-002	York Option

OPTIONAL PRINTER

1	Printer	Model 1220	Weigh-Tronix**
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* Version C.ACS.07.02 introduced 1/98; Year 2000 compliant.
 ** Weigh-Tronix, Inc., Santa Rosa, CA. Phone: 1 (800) 847-6743
 Fax: 1 (800) 847-6743
 *** Order one LTP for each additional chiller, i.e. chillers 2, 3, and 4 if multiple units are to be connected to one RCC.

MOUNTING

Mount the Remote Control Center at a convenient location and attach it securely. The panel may be mounted away from the chiller as far as 4000 ft. (1219 m) of wiring will allow.

INSTALLATION CHECKLIST

- 24VAC Power Supply
- 2 conductor shielded cable with shield connected at RCC only; never at chiller.
- At RCC, red wire on 485+ and black wire on 485–.
- At RCC, shield and grnd connected and jumpered.
- At chiller, red wire on BAS+ and black wire on BAS–.
- 180 ohm resistor installed at RCC or micro; never at both.

- At RCC, Proper selection for NUMBER OF ACS UNITS has been made (1 - 4).

AT EACH CHILLER

- For R-22, dip switch #8 CLOSED; use “PROGRAM 7396 ENTER” to input “022”.
- For R-134a, Dip Switch #8 OPEN and “PROGRAM 7396 ENTER” to input “134”.
- J-19 jumper in “485” position
- Rotary switch “S-6” set to establish a specific unit address. (See Address Designations)
- Use “PROGRAM 7396 ENTER” to access and select RCC (2) as type of communications mode.
- Dip Switch #3 in CLOSED position.

WIRING

Connection to the remote chiller is by twisted pair coax cable. Operating voltage requirements for the panel is 24VAC.

If a user supplied 24VAC is utilized, the power source must be capable of 1A capacity, maintain the voltage between 20 - 30VAC, and supply an earth ground to the remote panel. Wire the 24VAC supply as shown in Fig. 2.

An optional 24VAC Wall Mounted Transformer is available. The transformer converts 115-1-50/60 or 220-1-50 to 24VAC. The part number for the 115VAC option is 025-29917-001; the part number for the 220VAC option is 025-29917-002. The transformer is wired into the remote panel as shown in Fig. 1.

A communications cable must connect the chiller(s) to the remote panel. This cable should be a twisted pair shielded cable type Alpha 4562, Beldon 9320, or Quabbin 930421-2. The cable MUST NOT exceed 4000 ft. (1219 m) in length.

Wiring of the communications cable is shown in Fig. 1. This cable is linked between TB7 of each chiller’s Microprocessor Board and TB2 of the Remote Control panel. In the case of 3 or 4 compressor chillers, the communications cable MUST ONLY be connected to the Chiller’s MASTER Control Panel Microprocessor Board.

Assure that the 180 ohm resistor is connected between terminals 1 and 2 of the TB2 connector in the Remote Control Center. See Fig. 1.

Assure that a jumper connects terminals 3 and 4 of the TB2 in the Remote Control Center. See Fig. 1.

Place the J19 jumper on the Microprocessor Board in the RS-485 position.

Place each chiller in the REMOTE mode by placing Dip Switch #3 of the Chiller's Microprocessor Board in the Closed Position. *NOTE: Dip Switch settings can be displayed by touching the "Options" key.*

CAUTION: *The shield of the communications cable MUST only be connected at the Remote Control Center panel and never at the chiller.*

Never run the communication cable in close proximity to any power wiring. For best results, it should be run in dedicated grounded conduit.

ADDRESS DESIGNATIONS

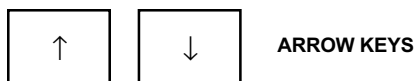
Earlier model remote control units could only communicate with one chiller. The YORK Millennium RCC can communicate with up to *four screw chillers*. The rotary switch S6 found on each chiller's Microprocessor Board must be properly set to designate a particular address of each chiller. To do so, use a small flat screwdriver to rotate the dial on the rotary switch S6, and position the arrow pointer to the proper setting as described below.

- Chiller #1** Position the arrow on S6 at "0"
- Chiller #2** Set S6 at "1"
- Chiller #3** Set S6 at "2"
- Chiller #4** Set S6 at "3"

KEYPAD OPERATION

GENERAL

Communications between the chiller and the remote chiller will not occur faster than 30 sec. intervals. This results in a time lag in displays as well as time lags in commands to the chiller from the Remote Control Center. Keep this in mind when using the remote panel. In addition, when power is first applied to the remote panel, a time lag of 30 sec. to 2 min. may be required before initial communications is established.



During programming, these keys will increase or decrease the value appearing on the display.

The increment value that occurs each time an arrow key is touched is adjustable. To change the increment values, enter the RCC programming setup described below.

The increment value for temperature is adjustable from 0.1 to 5.0 (2.0° is typical). The increment value for pressure is adjustable from 0.1 to 10.0 (5 PSI is typical).

During normal viewing of operating data, the arrow keys may also be used to scroll up or down through the data fields.



During programming, or when selecting a specific chiller on multiple chiller applications, this key is used to store the new values.

During normal viewing of system operating data or program setpoints, this key will advance the display to the next data field.

PROGRAMMING SETUP AT THE CHILLER

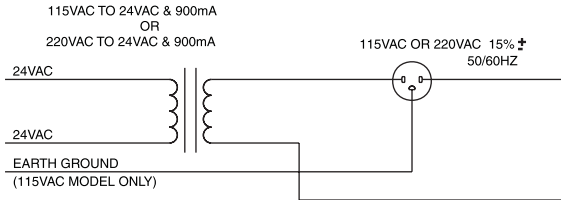
Press the PROGRAM key and scroll by repeatedly touching the ENTER key. At the display titled "COMMUNICATIONS MODE" select RCC by pressing "2", followed by ENTER.

PROGRAMMING SETUP AT THE RCC

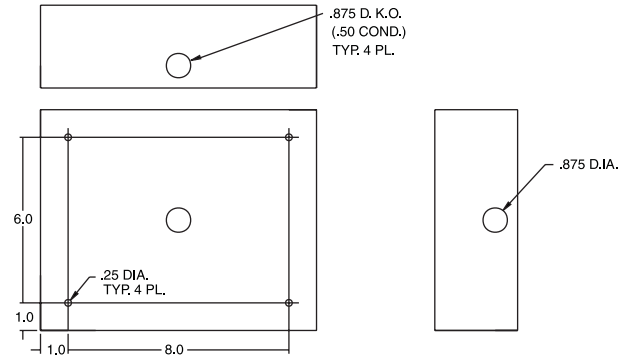
The four character password sequence using arrow keys UP UP DOWN DOWN followed by ENTER must be entered to perform initial setup as well as system programming.

Upon successful access into the program mode, the initial display will appear as "NUMBER OF AC SCREW UNITS CONNECTED 1". Use of the arrow keys to enter the correct number of units (1 - 4), followed by the ENTER key.

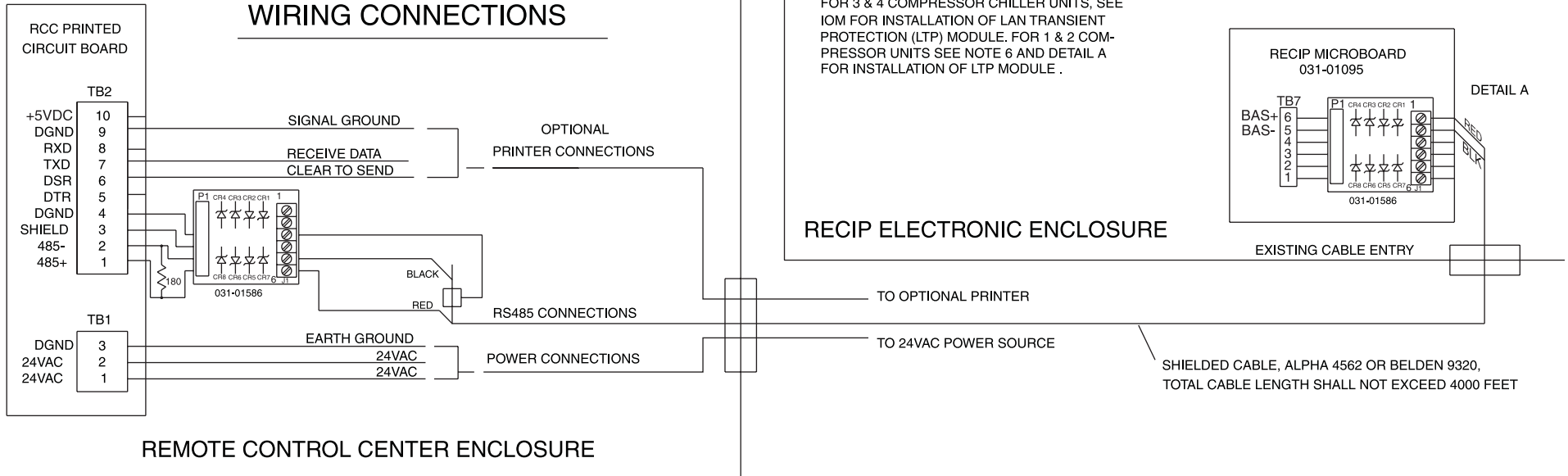
OPTIONAL WALL MOUNT TRANSFORMER



MOUNTING AND KNOCKOUT LOCATIONS



WIRING CONNECTIONS

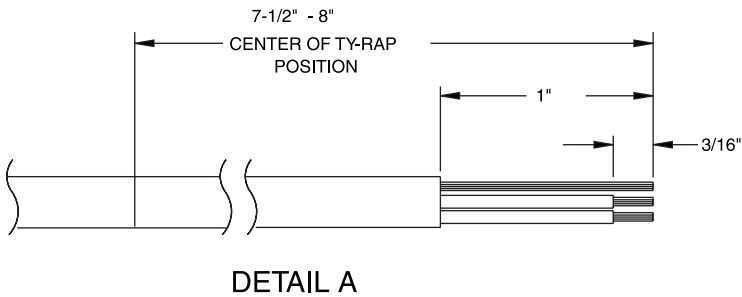
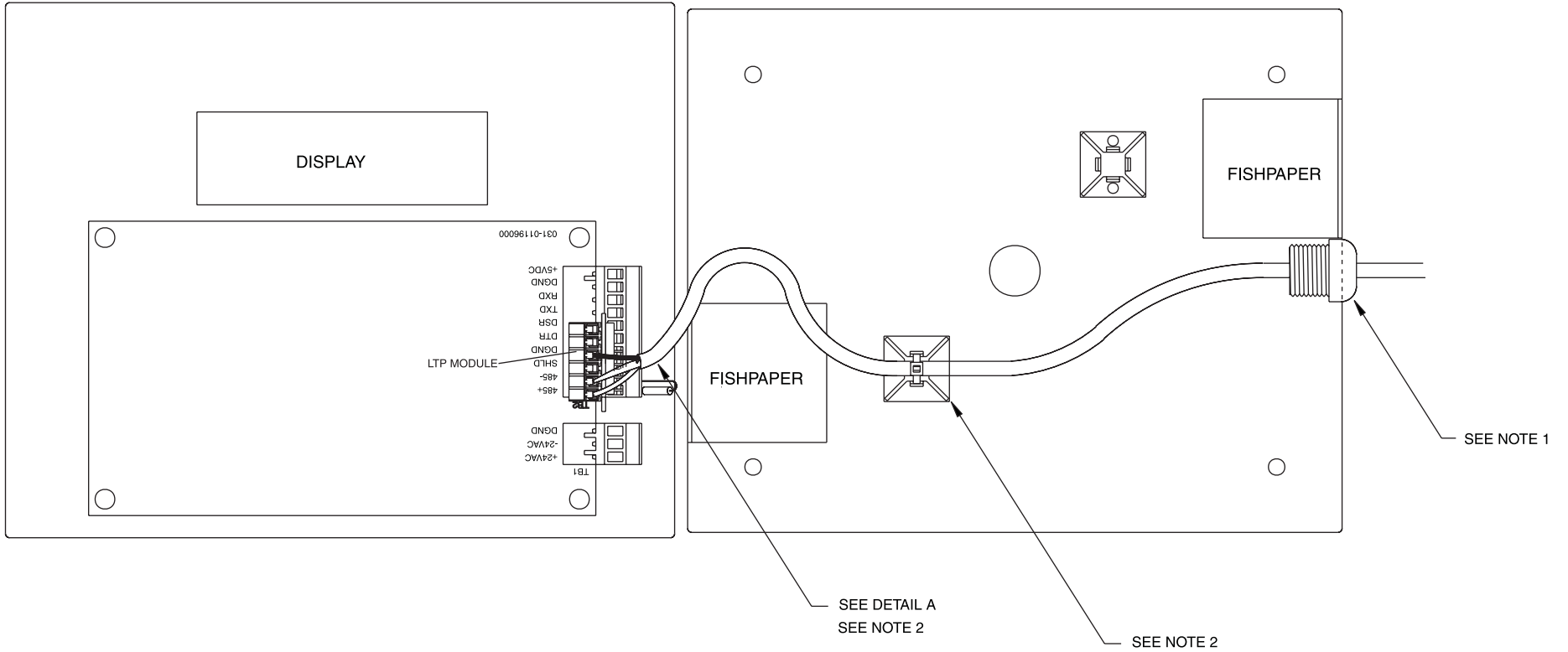


MULTIPLE CHILLER WIRING

For multiple YCAS chillers (up to 4), communication wiring can be in series from chiller microboard to the next chiller microboard, or each chiller can be linked in parallel to the RCC. Connections at each microboard should be as shown and include an LTP module. (Additional LTP modules must be ordered separately)

FIG. 1 – RCC WIRING CONNECTIONS

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NOTES:

1. INSERT LAN CABLE THRU HEYCO CABLE FITTING ON REMOTE BASE LEAVING 16 INCHES OF CABLE INSIDE OF BASE. TIGHTEN HEYCO FITTING.
2. CABLE END TO LTP MODULE BOARD MUST BE PREPARED PER DETAIL A. SECURE CABLE WITH TIE WRAP PROVIDED (2 SPARES INCLUDED) TO MOUNTING BLOCK AFFIXED TO BOTTOM OF BASE AT POSITION SHOWN IN DETAIL A.

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FIG. 2 – REMOTE CONTROL CENTER INSTALLATION DETAILS

SECTION 2 – OPERATION

REMOTE SYSTEM PROGRAMMING

The four character password sequence must be entered to allow adjusting of setpoint values.

OPERATING SETPOINTS

Current ACS software incorporates twenty-one (21) adjustable setpoints. Other versions may vary slightly. These 21 parameters are accessed by entering the numerical password 7396 at the chiller, or at the RCC by entering the arrow sequence UP UP DOWN DOWN followed by ENTER. (Four asterisks should appear as the arrow keys are touched).

The operating values and safety parameters can then be reprogrammed from the RCC unit. Refer to the chiller IOM under PROGRAM KEYS for complete details on programmable variables.

STATUS

When the STATUS KEY is pressed, information relating to the general operating condition of each system is displayed. These displays will be very similar to those displayed in the chiller control panel. In the case of 3 or 4 compressor chillers, the STATUS key must be pressed twice to view status on all systems.

As mentioned, status displays will be much like those displayed at the panel. Explanation of these displays will be outlined in the Installation Manual for each specific chiller. Subtle differences may be noted in the exact wording displayed versus the display which is shown on the chiller control panel. An example of this is apparent in the anti-recycle and anti-coincidence timers. In the case of these two messages, the chiller control panel indicates actual time left on the timers. The Remote Control Center will only indicate that the timers are "ACTIVE". A few new STATUS displays have been added. The new displays and corresponding explanation of their meaning will follow.

U1 LOSS OF COMM LINK
TO AC SCREW PANEL

A LOSS OF COMM LINK TO AC SCREW PANEL message indicates that the communications link between the chiller MicroComputer Control Center and the Remote Control Center has been lost. This loss of communications is normally a result of disconnecting the RS-485 communications cable between the two panels or the loss of power to the chiller control panel.

NOTE: This message will appear for 30 seconds when power is first applied to the chiller or the Remote Control Center and should not be cause for alarm.

If communications are lost and not re-established, local chiller setpoints will command chiller control after 5 minutes.

PLEASE WAIT * * * * *
INITIALIZING REMOTE

The PLEASE WAIT * * * * * INITIALIZING REMOTE message will appear shortly after power to the Remote Control Panel or the chiller is first turned on. The message will follow the LOSS OF COMM LINK TO AC SCREW PANEL message which will disappear when communications are established. During the time the initializing message appears, the remote panel will be communicating with the chiller and filling its memory with current chiller information as well as information from the chiller's three HISTORY buffers. This typically takes 30 seconds or more. As soon as the process is complete, chiller status messages will be displayed.

CHILLER SWITCHED
TO THE OFF CONDITION

CHILLER SWITCHED TO THE OFF CONDITION informs the operator that the OFF key at the Remote Control Center has been pressed, commanding the chiller to shut down. This message will appear for a few seconds, after which the display will show a REMOTE CONTROLLED SHUTDOWN.

REMOTE CONTROLLED
SHUTDOWN

A REMOTE CONTROLLED SHUTDOWN message indicates that the Remote Control Center has commanded the chiller to shut down.

CHILLER SWITCHED
TO THE RUN CONDITION

CHILLER SWITCHED TO THE RUN CONDITION will appear for a few seconds after the ON key is pressed at the Remote Control Center, which commands the chiller to turn ON. *NOTE: The REMOTE CONTROLLED SHUTDOWN message will then appear for a few seconds until communication of the restart is transmitted to the chiller. Once the transmission of the Run signal is made, the display will automatically display current STATUS of the chiller.*



Pressing this key allows viewing of current chiller operating conditions. To scroll through the data, repetitively press the arrow keys.

NOTE: This data will only be updated every 30 sec. and should not be confused with the display on the chiller which updates approx. every 2 seconds.

**RCC OPERATING DATA MESSAGES
(Same as chiller display)**

Operating Data

- LWT = ____ °F (°C)
- RWT = ____ °F (°C)
- AMBIENT AIR TEMP ____ °F (°C)
- OIL PRESSURE ____ PSID (BAR D)
- SUCTION PRESSURE (SP) ____ PSIG (BAR G)
- DISCHARGE PRESSURE (DP) ____ PSIG (BAR G)
- SUCTION TEMP (ACTUAL) ____ °F (°C)
- DISCH TEMP (ACTUAL) ____ °F (°C)
- OIL TEMP ____ °F (°C)
- DISCH TEMP (SATURATED) ____ °F (°C)
- SUCTION TEMP (SATURATED) ____ °F (°C)
- SLIDE VALVE POSITION = ____ % (APPROX.)
- SUPERHEAT ____ °F (°C)
- COMP = ____ AMPS ____ % FLA
- COMP1 = **AVG**; PH L, 1, 2, 3
- 88**; 92, 87, 86 %FLA
- LOAD TIMER ____ SEC
- UNLOAD TIMER ____ SEC
- TEMP ERROR ____ °F (°C)
- TEMP RATE ____ °F/MIN. (°C/MIN.)
- LEAD SYSTEM IS NUMBER ____
- EVAP WATER PUMP STATUS ON/OFF
- EVAP HEATER STATUS ON/OFF
- SYS RUN TIME
- 0 - 0 - 39 - 31 - D - H - M - S
- LIQUID LINE SOL STATUS ON/OFF
- LIQUID INJECTION VALVE STATUS ON/OFF
- FORWARD FAN STATUS ON/OFF
- REVERSE FAN STATUS ON/OFF



When this key is pressed, the display will prompt you to select either the oper data or the history to print.



When this key is pressed the following display will appear.



The display will prompt the operator to choose the history buffer the operator wishes to access. The History Buffer stores data that was recorded by the chiller at the instant a fault shutdown occurred. The History Buffer at the RCC contains data on the last 3 shutdowns regardless of whether the fault caused a system lockout. Keep in mind when accessing these buffers that the most recent fault will be stored in Buffer #1. The Remote Control Center will automatically update the History Buffer each time a fault shutdown occurs. (The chiller micropanel can record up to 9 faults).

To choose the buffer to be accessed, press the ↑ or ↓ key until the desired buffer number appears. The ENTER/ADV key may then be pressed and the first item in the History Buffer will appear. The entire contents of the History Buffer can be scrolled through by repetitively pressing the ENTER/ADV key.

The contents of the History Buffer will be displayed in a format very similar to the History Buffer which is accessible directly at the Chiller Control Panel.



This key allows the operator to remotely change the chiller target temperature.

When the CHILLED LIQUID key at the RCC is pressed, a display will appear for one second which informs the operator as to which control device is commanding the chiller operation. One of the following two displays will appear:



OR



The display will then show the setpoint and control range which is programmed. A typical display is shown below:

```
LWT = 42.0 F
CR = 42.0 TO 44.0 F
```

By repetitively pressing the ↑ or ↓ keys, the target setpoint can be changed in 0.1°F (0.1°C) increments each time the key is pressed. Initiate the change by pressing the ENTER/ADV key which will store it into memory.

Anytime the setpoint is changed remotely, the new setpoint will appear at the chiller control panel after the next communication between the chiller and the Remote Control Center.

With Switch 3 in the OPEN position or “LOCAL” mode, the RCC panel will receive data from the chiller, but it **will not allow** setpoint changes. This mode may be chosen after setup to prevent unauthorized personnel from making setpoint changes.

NOTE: Typically it is only required to change the “target” temperature of the chilled liquid from the RCC. The Control Range (CR), which is the acceptable temperature range above and below the target temperature, can not be changed from the RCC.

**SCHEDULE/
ADVANCE DAY**

The SCHEDULE / ADVANCE DAY key allows the operator to remotely change the daily schedule. This enables remote setting of individual daily start / stop times as well as special holiday start / stop times.

When the SCHEDULE / ADVANCE DAY key is pressed, the following message will appear:

```
MON START = 06:00 AM
STOP = 05:30 PM
```

To view the daily schedules already programmed with no intent of making any changes, the SCHEDULE/ADVANCE DAY key can be repetitively pressed to scroll through the schedule one day at a time.

To change a start/stop time, the ↑ or ↓ key may be pressed, allowing incrementing/decrementing of the time by 15 min. each time the key is pressed.

To store the new time into memory, the ENTER/ADV key must be pressed each time a START or a STOP time is to be stored. Failure to “ENTER” (store) the new time will cause it to be ignored. As new times are “entered” the cursor will scroll to the next start/stop time.

NOTE: Anytime 00.00 is programmed into a Start time, the chiller will remain in the state (on or off) it was in at the end of the previous day. Programming 00.00 for a Stop time will cause the chiller to remain in the same state (on or off) that it was in during that specific day. Programming the same time for both Start and Stop times will cause the display to enter 00.00 for both times which will, as in the case above, cause the chiller to remain in the same state that it ended in the previous day.

In a situation where it is required to run the chiller 24 hours a day, 7 days a week, the Chiller Control panel should first have its entire Daily Schedule zeroed (00.00) for all Start and Stop times. This puts the chiller in the run mode at all times. The Remote Control Center may now be programmed with all zeroes (00.00) for all Start and Stop times. Since the chiller panel is already in the run mode, programming the Remote Control Panel for all zeroes will keep the chiller in this mode indefinitely, allowing the chiller to run whenever demand requires.

Once the Start/Stop times for each of the days have been programmed, the display will advance to the HOLIDAY Start/Stop time. This allows the operator to program a single Start and Stop time to be used on any day(s) of the week which may require special programming that will not require repeating the following week. The following display will appear when all days are scrolled through.

```
HOL START = 08:30 AM
STOP = 12:00 PM
```

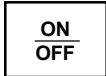
Holiday Start/Stop times should be programmed in the same manner as individual weekdays. Once the times are “entered”, the display will scroll to the next message.

```
S M T* W T F S
HOLIDAY NOTED BY *
```

*NOTE: In the above display, the * behind Tuesday designates it as a holiday.*

When this display appears, the cursor will first stop behind Sunday. To designate a day as a holiday, press the ↑ or ↓ key to place an * behind a day. Pressing the ↑ or ↓ key again will delete the * and the day as a Holiday. Pressing the ENTER/ADV key stores the designation for a given day and advances the cursor to the next day. The cursor will advance until the final day is programmed, which causes the display to scroll to the MON START/STOP display.

The Holiday Schedule programmed for a given week will only be executed once. Once executed, a day designated as a "Holiday" will automatically switch to the Daily Schedule Start/Stop time. The chiller control panel will not recognize Holiday programming until a change is made to the Holiday Schedule at the Remote Control Center.



The ON/OFF key allows the operator to remotely turn the chiller on and off. When the ON/OFF key is pressed, the following message will appear:



Pressing ENTER will initiate the OFF command. The display will then be displaced with a message indicating the chiller is in the shutdown mode.

The ARROW keys will toggle the ON/OFF command which appears on the display, which must then be followed by ENTER. Since there may be multiple chillers, select the particular unit using the UNIT SELECT and arrow keys followed by ENTER.



This display will then be replaced by a current STATUS message which will indicate present operating conditions. *NOTE: The REMOTE CONTROLLED SHUTDOWN message will appear for a few seconds until communication of a restart is transmitted to the chiller.*

POWER LOSS

In the event of a power loss to the Remote Control Center, the microprocessor in the chiller control panel will continue to adhere to the setpoints and commands dictated from the Remote Control Center prior to the power loss for five minutes. At the end of the five-minute period, the chiller will revert to local control if communication is not re-established. When communications are re-established after power is returned, the chiller will honor all commands programmed into the Remote Control Center.

In the case of a remote shutdown before the power loss occurred, the chiller may start on local control, if demand exists, after five minutes. The chiller will continue to run until demand shuts it off or until communication is re-established. When communication returns, the chiller will shut down, honoring the remote shutdown that was commanded prior to the communications loss. The ability to do this is built into the chiller micro, which remembers the setpoints/control commands established before the communications loss.

PRINTER

The Remote Control Center allows the operator to obtain a remote printout through the Remote Control Center as far as 4000 ft. (1219 m) of wiring from the chiller permits. This is in contrast to typical printer hookups which must be no further than 25 ft. (7.6 m) from the chiller. *NOTE: The printer may not be located beyond 25 ft. of wiring from the Remote Control Center.*

A Weigh-Tronix 1220 Dot Matrix printer is recommended. Wiring for this printer is shown in Fig. 2.

All wiring connections at the printer, printer configuration and printer restrictions that apply with the chiller control panel also apply. See the Installation and Operation Manual for the chiller.

A printout of current system data is initiated by pressing the PRINT CHILLER OPER DATA key on the Remote Control Center. This printout is similar to the one obtained locally from the chiller.

A printout of the last three fault shutdowns may be obtained by pressing the HISTORY key. This printout is similar to the one obtained locally from the chiller.

Any time a fault occurs, an automatic printout is generated. This printout will be a printout of operating conditions at the instant that the fault occurs.

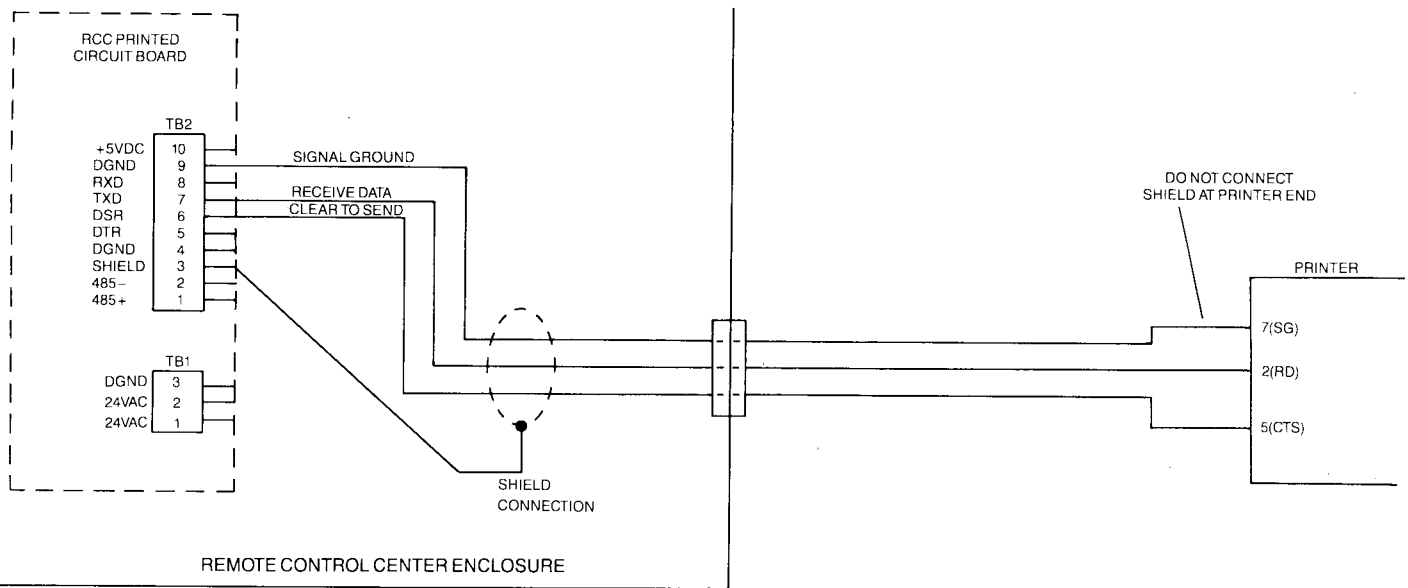


FIG. 3 – PRINTER WIRING

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