TRANE®

User Guide

Tracer CH.530™
Chiller Control System
RTHD only

RLC-SVU03A-E4

General Information

Foreword

These instructions are given as a guide to good practice in the operation of Tracer CH.530 chiller control. They do not contain the full service procedures necessary for the continued successful operation of this equipment. The services of a qualified service technician should be employed, through the medium of a maintenance contract with a reputable service company.

Warranty

Warranty is based on the general terms and conditions of the constructor. The warranty is void if the equipment is modified or repaired without the written approval of the constructor, if the operating limits are exceeded, or if the control system or the electrical wiring is modified. Damage due to misuse, lack of maintenance, or failure to comply with the manufacturer's instructions, is not covered by the warranty obligation. If the user does not conform to the instructions in this manual, it may entail cancellation of warranty and liabilities by the constructor.

Reception

On arrival, inspect the unit before signing the delivery note. Specify any damage on the delivery note, and send a registered letter of protest to the last carrier of the goods within 72 hours of delivery. Notify the local sales office at the same time. The unit should be totally inspected within 7 days of delivery. If any concealed damage is discovered, send a registered letter of protest to the carrier within 7 days of delivery and notify the local sales office.

About this manual

Cautions appear at appropriate places in this instruction manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The constructor assumes no liability for installations or servicing performed by unqualified personnel.

©American Standard Inc. 2003

Contents

General Information 2

Overview 4

DynaView Interface

Key Functions 5

Display Screens 5

TechView Interface

Software Download 19

Diagnostics 21

Maintenance Contract 40

Training 40

Overview

Components

The Trane CH.530 control system that runs the chiller consists of several elements:

- The ***main processor*** collects data, status, and diagnostic information and communicates commands to the starter module and the ***LLID (Low Level Intelligent Device)*** bus. The main processor has an integral display (DynaView).
- Higher level **modules** (e.g. starter) exist only as necessary to support system level control and communications. The starter module provides control of the starter when starting, running, and stopping the chiller motor. It also processes its own diagnostics and provides motor and compressor protection.
- ***LLID bus.*** The main processor communicates to each input and output device (e.g. temperature and pressure sensors, low voltage binary inputs, analog input/output) all connected to a four-wire bus, rather than the conventional control architecture of signal wires for each device.
- The ***communication interface*** to a building automation system (BAS).
- A ***service tool*** to provide all service/maintenance capabilities. Main processor and service tool (TechView) software is downloadable from **www.Trane.com** .The process is discussed later in this section under Tech-View Interface. DynaView provides bus management. It has the task of restarting the link, or filling in for what it sees as "missing " devices when normal communications has been degraded. Use of TechView may be required. The CH.530 uses the IPC3 protocol based on RS485 signal technology and communicating at 19.2 Kbaud to allow 3 rounds of data per second on a 64-device network. Most diagnostics are handled by the DynaView. If a temperature or pressure is reported out of range by a LLID, the DynaView processes this information and calls out the diagnostic. The individual LLIDs are not responsible for any diagnostic functions. The only exception to this is the Starter module.

NOTE: It is imperative that the CH.530 Service Tool (TechView) be used to facilitate the replacement of any LLID or reconfigure any chiller component.

Controls Interfaces

DynaView (picture on cover)

Each chiller is equipped with the DynaView interface. DynaView has the capability to display additional information to the advanced operator including the ability to adjust settings. Multiple screens are available and text is presented in multiple languages as factory-ordered or can be easily downloaded online.

The display on DynaView is a 1/4 VGA display with a resistive touch screen and an LED backlight. The display area is approximately 102mm x 60mm.

TechView

TechView can be connected to the DynaView module and provides further data, adjustment capabilities, diagnostics information and downloadable software and languages.

DynaView Interface

Key Functions

In this touch screen application, key functions are determined completely by software and change depending upon the subject matter currently being displayed. The basic touch screen functions are outlined below.

CAUTION Equipment Damage! Putting excessive pressure on the touch screen could cause damage. It takes less that 7 kg of force to break the screen.

Radio Buttons

Radio buttons show 1 menu choice among 2 or more alternatives, all visible. The possible selections are each associated with a button. The selected button is darkened, presented in reverse video to indicate it is the selected choice. The full range of possible choices as well as the current choice is always in view.

Spin Value Buttons

Spin values are used to allow a variable setpoint to be changed, such as leaving water setpoint. The value increases or decreases by touching the (+) or (-) arrows.

Action Buttons

Action buttons appear temporarily and provide the user with a choice such as **Enter** or **Cancel**.

File Folder Tabs

File folder tabs are used to select a screen of data. The tabs are in 1 row across the top of the display. The user selects a screen of information by touching the appropriate tab.

Display Screens

Basic Screen Format (Figure 1)

The main body of the screen is used for description text, data, setpoints, or keys (touch sensitive areas). The Chiller Mode is displayed here. A double arrow pointing to the right indicates more information is available about the specific item on that same line. Pressing it will bring you to a sub-screen that will present the information or allow changes to settings. The bottom of the screen (7) is present in all screens. The contrast (8,9) may require re-adjustment at ambient temperatures significantly different from those present at last adjustment.

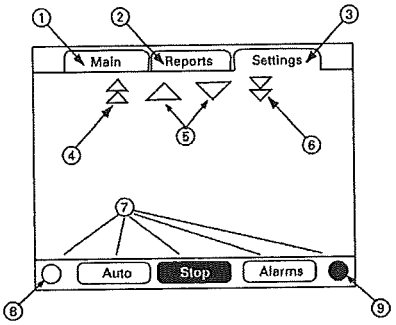
The other functions are critical to machine operation. The AUTO and STOP keys are used to enable or disable the chiller. The key selected is in black. The chiller will stop when the STOP key is touched and after completing the Run Unload mode. Touching the AUTO key will enable the chiller for active cooling if no diagnostic is present. (A separate action must be taken to clear active diagnostics.)

The AUTO and STOP keys take precedence over the Enter and Cancel keys. (While a setting is being changed, AUTO and STOP keys are recognized even if Enter or Cancel has not been pressed.)

The ALARMS button appears only when an alarm is present, and blinks (by alternating between normal and reverse video) to draw attention to a diagnostic condition. Pressing the ALARMS button takes you to the corresponding tab for additional information.

DynaView Interface

Figure 1 - Basic Screen Format



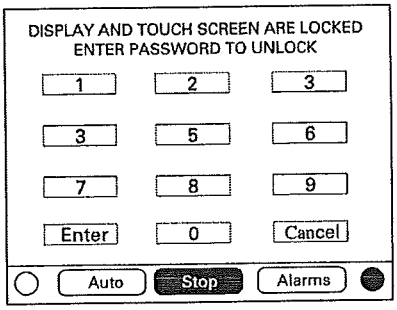
1 = File folder tabs - to select the various display screens
2 = Reports Tab
3 = Settings Tab
4 = Page scroll up
5 = Line scroll up/down
6 = Page scroll down
7 = Fixed display
8 = Contrast control (lighter)
9 = Contrast control (darker)

Display and Touch Screen Lock Feature

This screen (Figure 2) is used if the display and touch screen lock feature is enabled. 30 minutes after the last keystroke, this screen is displayed and the Display and Touch Screen are locked out until the sequence "159 <ENTER>" is pressed.

Until the proper password is entered, there will be no access to the DynaView screens including all reports, setpoints, and Auto/Stop/Alarms/Interlocks. The password "159 " can not be changed from either DynaView or TechView.

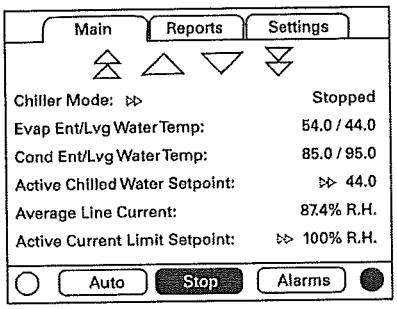
Figure 2 - Locked Screen



Main Screen

The main screen (default screen, see Figure 3) is a summary of the chiller's activity. After an idle time of 30 minutes the CH.530 will display the Main screen with the first data fields. The remaining items (listed in the Table 1) are viewed by selecting the up/down arrow icons.

Figure 3 - Main Screen



DynaView Interface

Table 1 - Main screen Items

Message	Description	Units
Chiller Mode (>> submodes)	See Table 2	Text
Evap Ent/Lvg Water Temp	Indicates the temperature of the water entering and leaving the evaporator	F / C
Cond Ent/Lvg Water Temp	Indicates the temperature of the water entering and leaving the condenser	F / C
Active Chilled Water Setpoint (>>source)	Indicates the active setpoint currently used by the unit (pressing ">>" will indicate the origin of the setpoint (e.g. external, local, BAS...)	F / C
Average Line Current	Indicates the average current of the 3 lines	% RLA
Active Current Limit Setpoint (>>source)	Indicates the active setpoint currently used by the unit (pressing ">>" will indicate the origin of the setpoint (e.g. external, local, BAS...)	% RLA
Active Base Loading Setpoint (>>source)	Indicates the active setpoint currently used by the unit (pressing ">>" will indicate the origin of the setpoint (e.g. local, BAS...)	%
Active Ice Termination Setpoint (>>source)	Indicates the active setpoint currently used by the unit (pressing ">>" will indicate the origin of the setpoint (e.g. external, local, BAS...)	F / C
Outdoor Air Temperature	Indicates the current outdoor air temperature	F / C
Software Type	RTH	Text
Software Version	Version of MP application	Text

DynaView Interface

Chiller Operating Modes

The machine-operating mode indicates the operational status of the chiller. A sub-screen with additional mode summary information is provided by selection of an additional information icon (>>). The operating mode line will remain stationary while the remaining status items scroll with the up/down arrow keys. Table 2 is a list of all Top Level (1) and Sub Level (2) Modes.

Table 2 - Chiller Operating Modes

Chiller Modes	Description
MP Resetting (1)	
Stopped (1)	The chiller is not running and cannot run without intervention. Further information is provided by the sub-mode:
Local Stop (2)	Chiller is stopped by DynaView. Stop button command - cannot be remotely overridden.
Panic Stop (2)	Chiller is stopped by the DynaView. Panic Stop (pressing "Stop" twice) - previous shutdown was manually commanded to shutdown immediately without a run-unload or pumpdown cycle - cannot be remotely overridden.
Diagnostic Shutdown - Manual Reset (2)	The chiller is stopped by a diagnostic that requires manual intervention to reset.

DynaView Interface

Other sub-modes are possible in conjunction with at least one of the above modes - See items below for their descriptions:

Diagnostic Shutdown - Auto Reset (2)	
Start Inhibited by External Source (2)	
Start Inhibited by BAS (2)	
Waiting for BAS Communications (2)	
Ice Building to Normal Transition (2)	
Ice Building is Complete (2)	
Waiting for Oil Level (2)	
Run Inhibit (1)	The chiller is currently being inhibited from starting (and running), but may be allowed to start if the inhibiting or diagnostic condition is cleared. Further information is provided by the sub-mode:
Diagnostic Shutdown - Auto Reset (2)	The entire chiller is stopped by a diagnostic that may automatically clear.
Start Inhibited by External Source (2)	The chiller is inhibited from starting (and running) by the "external stop" hardwired input.
Start Inhibited by BAS (2)	The chiller is inhibited from starting (and running) by command from a BAS via the digital communication link (com 4 or com 5).
Waiting for BAS Communications (2)	This is a transient mode - 15 min. max, and is only possible if the chiller is in the Auto - Remote command mode. After a power up reset, it is necessary to wait for valid communication from a BAS (Tracer) to know whether to run or stay inhibited. Either valid communication will be received from the BAS (Tracer), or a communication diagnostic ultimately will result. In the latter case the chiller will revert to Local control.
Power Up Delay Inhibit (2) min:sec	The compressor is currently being inhibited from starting as part of the power up start delay (or staggered start) feature. This feature is intended to prevent multiple chillers from all starting simultaneously if power is restored to all chillers simultaneously.
Ice Building to Normal Transition (2)	The chiller is inhibited from running for a brief period of time if it is commanded from active ice building mode into normal cooling mode via the ice building hardwired input or Tracer. This allows time for the external system load to "switchover" from an ice bank to the chilled water loop, and provides for a controlled pull down of the loop's warmer temperature. This mode is not seen if the ice making is automatically terminated on return brine temperature per the mode below.
Ice Building is Complete (2)	The chiller is inhibited from running as the Ice Building process has been normally terminated on the return brine temperature. The chiller will not start unless the ice building command (hardwired input or BAS command) is removed or cycled (contact opened).

DynaView Interface

Low Diff Rfgt Pres Cool-Down Time (2) mn:sec	See oil flow protection specification.
Auto (1)	The chiller is not currently running but can be expected to start at any moment given that the proper conditions and interlocks are satisfied. Further information is provided by the sub-mode:
Waiting For Evap Water Flow (2)	The chiller will wait up to 4 minutes in this mode for evaporator water flow to be established per the flow switch hardwired input.
Waiting for Need to Cool (2)	The chiller will wait indefinitely in this mode, for an evaporator leaving water temperature higher than the Chilled Water Setpoint plus the Differential to Start.
Waiting to Start (1)	The chiller is not currently running and there is a call for cooling but start is delayed by certain interlocks or proofs. Further information is provided by the sub-mode:
Waiting For Cond Water Flow (2)	The chiller will wait up to 4 minutes in this mode for condenser water flow to be established per the flow switch hardwired input.
Waiting for Oil Level (2)	The chiller will wait up to 2 minutes in this mode for oil level to appear in the oil tank.
Cond Water Pump PreRun Time (2) min:sec	The chiller will wait up to 30 minutes (user adjustable) in this mode to allow the condenser water loop to equalize in temperature
Compressor Restart Inhibit Time (2) min:sec	The compressor is currently unable to start due to its restart inhibit timer. A given compressor is not allowed to start until 5 minutes (user adjustable) has expired since its last start.
Waiting For EXV Preposition (2)	The chiller will wait for the time it takes the EXV to get to its commanded pre-position prior to starting the compressor. This is typically a relatively short delay and no countdown timer is necessary (less than 15 seconds).
Running (1)	The chiller, circuit, and compressor are currently running. Further information is provided by the sub-mode:
Unit is Building Ice (2)	The chiller is running in the Ice Building Mode, and either at or moving towards full capacity available. Ice mode is terminated either with the removal of the ice mode command or with the return brine temperature falling below the Ice Termination Setpoint.
Establishing Min Capacity - High Disch Temp (2)	The compressor is running and is being forced loaded, without regard to the leaving water temperature control, to prevent tripping on high compressor discharge temperature.
Base Loaded (2)	Chiller is running in "Base Load" operation where the capacity of the chiller is controlled to maintain a given current per an adjustable setpoint. The chiller is forced to run without regard to the chilled water temperatures and the differential to start and stop.

DynaView Interface

Capacity Control Softloading (2)	The chiller is running, but loading is influenced by a gradual 'pulldown" filter on the chilled water temperature setpoint. The settling time of this filter is user adjustable as part of the softload control feature.
Current Control Softloading (2)	The chiller is running, but loading is influenced by a gradual filter on the current limit setpoint. The starting current and the settling time of this filter is user adjustable as part of the softload control feature.
EXV Controlling Differential Pressure (2)	Liquid level control of the Electronic Expansion Valve has temporarily been suspended. The EXV is being modulated to control for a minimum differential pressure. This control implies low liquid levels and higher approach temperatures, but is necessary to provide minimum oil flow for the compressor until the condenser water loop can warm up to approx. 10°C.
Running - Limited (1)	The chiller, circuit, and compressor are currently running, but the operation of the chiller/compressor is being actively limited by the controls. Further information is provided by the sub-mode.
Capacity Limited by High Cond Press (2)	The circuit is experiencing condenser pressures at or near the condenser limit setting. The compressor will be unloaded to prevent exceeding the limits.
Capacity Limited by Low Evap RfgtTemp (2)	The circuit is experiencing saturated evaporator temperatures at or near the Low Refrigerant Temperature Cutout setting. The compressors will be unloaded to prevent tripping.
Capacity Limited by Low Liquid Level (2	The circuit is experiencing low refrigerant liquid levels and the EXV is at or near full open. The compressor will be unloaded to prevent tripping.
Capacity Limited by High Current (2)	The compressor is running and its capacity is being limited by high currents. The current limit setting is 120% RLA (to avoid overcurrent trips).
Capacity Limited by Phase Unbalance (2)	The compressor is running and its capacity is being limited by excessive phase current unbalance.
Note: Other normal running modes (see above) may also appear under this top level mode.	
Shutting Down (1)	The chiller is still running but shutdown is imminent. The chiller is going through a compressor run-unload. sequence. Shutdown is necessary due to one (or more) of the following sub-modes:
Local Stop (2)	Chiller is in the process of being stopped by DynaView Stop button command.
Panic Stop (2)	Chiller is in the process of being stopped by DynaView Panic Stop command.

DynaView Interface

Diagnostic Shutdown - Manual Reset (2)	Chiller is in the process of being stopped by a Latching Diagnostic shutdown - Manual Reset is required to clear.
Diagnostic Shutdown - Auto Reset (2)	Chiller is in the process of being stopped by a Diagnostic shutdown- Automatic clearing of the diagnostic is possible if condition clears.
Compressor Unloading (2) min:sec	The compressor is in its "run - unload" state in which it is being continuously unloaded for 40 sec prior to shutdown.
Start Inhibited by External Source (2)	Chiller is in the process of being stopped by the External Stop hardwired input.
Start Inhibited by BAS (2)	Chiller is in the process of shutdown due to a command from the BAS (Tracer).
Ice Building to Normal Transition (2)	Chiller is in the process of being stopped by the transition from ice to normal cooling mode with the removal of the ice making command via the hardwired input or BAS (Tracer).
Ice Building is Complete (2)	Chiller is in the process of being stopped as the Ice Building process is being normally terminated on the return brine temperature.
Evap Pump Off Delay (2) min:sec	Chiller is stopped. Evaporator pump is still operating and will stop after the minimum delay set.
Service Override (1)	The Chiller is in a Service Override mode
Service Pumpdown (2)	The chiller, circuit, and compressor is running via a manual command to perform a Service Pumpdown. Both evaporator and condenser water pumps are commanded to run. The EXV is held wide open, but the manual liquid line service valve should be closed.

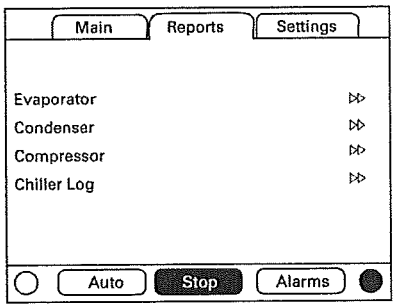
(1) Top Level Mode
(2) Sub Level Mode

DynaView Interface

Reports Screen

This screen allows a user to select from a list of report headings. Each report will generate a list of status items as defined in Table 3.

Figure 4 - Reports Screen



Message	Description	Units
Evaporator		
Evap Entering Water Temp	Indicates the water temperature entering the evaporator	F / C
Evap Leaving Water Temp	Indicates the water temperature leaving the evaporator	F / C
Evap Sat Rfgt Temp	Indicates the evaporator saturated refrigerant temperature	F / C
Evap Rfgt Pressure	Indicates the evaporator refrigerant pressure	psi / kPa
Evap Approach	Indicates the difference between the evaporator leaving water temperature and evaporator saturated refrigerant temperature	F / C
Evap Water Flow Switch Status		Text (Flow, No Flow)
Expansion Valve Position	Indicates the opening of the expansion valve	%
Expansion Valve Position Steps	Indicates the opening of the expansion valve	Steps
Evaporator Liquid Level	Indicates the level of refrigerant in the evaporator	in / mm
Condenser		
Cond Entering Water Temp	Indicates the water temperature entering the condenser	F / C
Cond Leaving Water Temp	Indicates the water temperature leaving the condenser	F / C
Cond Sat Rfgt Temp	Indicates the condenser saturated refrigerant temperature	F / C

DynaView Interface

Cond Rfgt Pressure	Indicates the condenser refrigerant pressure	psi / kPa
Cond Approach Temp	Indicates the difference between the condenser leaving water temperature and condenser saturated refrigerant temperature	F / C
Cond Water Flow Switch Status		Text (Flow, No Flow)
Cond Head Pressure Ctrl Command	Percentage of water condenser flow commanded	%
Outdoor Air Temperature	Indicates the current outdoor air temperature	F / C
Compressor		
Compressor Starts	Indicates the total number of compressor starts	Integer
Compressor Running Time	Indicates the total time the compressor has run	hr:min
System Rfgt Diff Pressure	Indicates the system's refrigerant differential pressure	psi / kPa
Oil Pressure		psi / kPa
Compressor Rfgt Discharge Temp	Indicates the temperature at which the refrigerant is leaving the compressor	F / C
Discharge Superheat	Indicates the difference between the discharge temperature and condensing saturated temperature	F / C
% RLA L1 L2 L3	For each of the 3 lines	% RLA
Amps L1 L2 L3	For each of the 3 lines	A
Volts AB BC CA	Between each line	V
Chiller Log		
Current Time/Date	mmm dd, yyyy	Date /Time
Operating Mode:	See Table 2	Text
Amps L1 L2 L3	For each of the 3 lines	A
Volts AB BC CA	Between each line	V
Active Chilled Water Setpoint	Indicates the active setpoint currently used by the unit	F / C
Active Current Limit Setpoint	Indicates the active setpoint currently used by the unit	F / C
Refrigerant Monitor	Indicates the concentration of refrigerant detected by the refrigerant monitor	Ppm

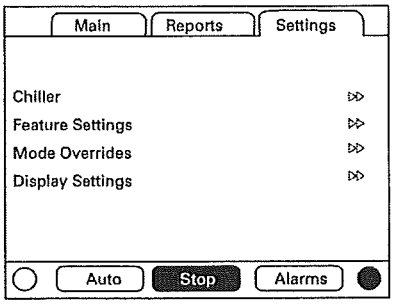
DynaView Interface

Compressor Starts	Indicates the total number of compressor starts	Hours:Minute
Compressor Running Time	Indicates the total time the compressor has run	F / C
Compressor Rfgt Discharge Temp	Indicates the temperature at which the refrigerant is leaving the compressor	F / C
Evap Entering Water Temp	Indicates the water temperature entering the evaporator	F / C
Evap Leaving Water Temp	Indicates the water temperature leaving the evaporator	F / C
Evap Sat Refrigerant Temp	Indicates the evaporator saturated refrigerant temperature	psi / kPa
Evap Rfgt Pressure	Indicates the evaporator refrigerant pressure	F / C
Evap Approach Temp	Indicates the difference between the evaporator leaving water temperature and evaporator saturated refrigerant temperature	Text
Evap Water Flow Switch Status		F / C
Cond Entering Water Temp	Indicates the water temperature entering the condenser	F / C
Cond Leaving Water Temp	Indicates the water temperature leaving the condenser	F / C
Cond Sat Rfgt Temp	Indicates the condenser refrigerant pressure	psi / kPa
Cond Rfgt Pressure	Indicates the condenser refrigerant pressure	F / C
Cond Approach Temp	Indicates the difference between the condenser leaving water temperature and condenser saturated refrigerant temperature	
Cond Water Flow Switch Status		Text

DynaView Interface

Settings Screen
This screen enables the user to adjust settings. The layout provides a list of sub-menus, organized by typical subsystem.

Figure 5 - Settings Screen



Message	Description / Default	Units
Chiller		
Front Panel Chilled Water Setpt	Local setpoint	F / C
Front Panel Current Limit Setpt	Local setpoint	% RLA
Front Panel Base Load Cmd	Local command	Text (On/Auto)
Front Panel Base Load Setpt	Local setpoint	%
Front Panel Ice Build Cmd	Local command	Text (On/Auto)
Front Panel Ice Termn Setpt	Local setpoint	F / C
Ice to Normal Cool Timer Setpt	Time between the end of ice making and return to normal operation, 5 min	TMinutes (0-10)
Differential to Start	Difference between the active chilled water setpoint and the leaving temperature at which the unit will start	F / C
Differential to Stop	Difference between the active chilled water setpoint and the leaving temperature at which the unit will stop	F / C
Setpoint Source	BAS/External/Front Panel (local)	Text (BAS/Ext/FP, Ext/ Front Panel, Front Panel)
Features		
Chilled Water Reset	The chilled water setpoint is reset based on a constant value, or on return water temperature or outdoor air temperature. Disable	Text (Constant, Outdoor, Return, Disable)
Return Reset Ratio	User-adjustable gain based on the return water temperature	%

DynaView Interface

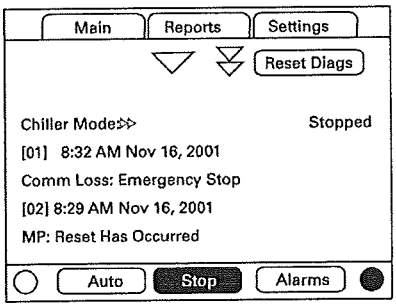
Return Start Reset	The return water temperature at which the reset will start	F / C
Return Maximum Reset	User-adjustable limit providing the maximum amount of reset	F / C
Outdoor Reset Ratio	User-adjustable gain based on the outdoor air temperature	%
Outdoor Start Reset	The outdoor air temperature at which the reset will start	F / C
Outdoor Maximum Reset	User-adjustable limit providing the maximum amount of reset	F / C
Ext Chilled Water Setpoint	Disable	Text (Enable, Disable)
Ext Current Limit Setpoint	Disable	Text (Enable, Disable)
Ice Building	Disable	Text (Enable, Disable)
Ext Base Loading Setpoint	Disable	Text (Enable, Disable)
Mode Overrides		
Evap Water Pump	Auto	Text (Auto, On)
Cond Water Pump	Auto	Text (Auto, On)
Expansion Valve Control	Auto	Text (Auto, Manual)
Slide Valve Control	Auto	Text (Auto, Manual)
Service Pumpdown	Status: (Avail, Not Avail, Pumpdown)	Text
Display Settings		
Date Format	mmm dd, yyy	Text (mmm dd, yyy, dd-mmm-yyyy)
Date		Text
Time Format	12-hour	Text (12-hour, 24-hour)
Time of Day		Text
Keypad/Display Lockout	Disable	Text (Enable, Disable)
Display Units	English	Text (SI, English)
Pressure Units	Absolute	Text (Absolute, Gauge)
Language Selection	Downloaded from TechView	Text

DynaView Interface

Diagnostic Screen

The diagnostic screen (Figure 6) is accessible by depressing the Alarms enunciator. A verbal description will be provided. A scrollable list of the last (up to 10) active diagnostics is presented. Performing a "Reset Diags" will reset all active diagnostics regardless of type, machine or circuit. The scrollable list will be sorted by time of occurrence. If an informational warning is present, the "Alarms" key will be present but not flashing. If a diagnostic shutdown (normal or immediate) has occurred, the "Alarm" key will be flashing. If no diagnostics exist, the "Alarm" key will not be present. The "Operating Mode At Last Diagnostic" text above the most recent diagnostic will display a sub-screen listing the operating mode and submodes at the time of the last diagnostic.

Figure 6 - Diagnostics Screen



TechView Interface

TechView is the laptop-based tool used for servicing Tracer CH.530. Technicians that make any chiller control modification or service any diagnostic with Tracer CH.530 must use a laptop running the software application "TechView." TechView is a Trane application developed to minimize chiller downtime and aid the technicians' understanding of chiller operation and service requirements.

NOTE: Important: Performing any Tracer CH.530 service functions should be done only by a properly trained service technician. Please contact your local Trane service agency for assistance with any service requirements. TechView software is available via Trane.com. (http://www.trane.com/commercial/software/tracerch530/) This download site provides the TechView installation software and CH.530 main processor software that must be loaded onto your PC in order to service a CH.530 main processor. The TechView service tool is used to load software into the Tracer CH.530 main processor.

inimum PC requirements to install and operate TechView are:

Pentium or higher processor

b

0 resolution of display

C -

5 modem

-pin - 3 serial connection

perating system - indows 000

icrosoft ffice (ord

ccess cel)

Parallel Port (5-pin) or Port

NOTE: TechView was designed for the preceding listed laptop configuration. Any variation will have unknown results. Therefore, support for TechView is limited to only those operating systems that meet the specific configuration listed here. Only computers with a Pentium II class processor or better are supported; Intel Celeron, AMD, or Cyrix processors are not supported.

TechView is also used to perform any CH.530 service or maintenance function. ervicing a CH.530 main processor includes:

pdating main processor software

onitoring chiller operation

Viewing and resetting chiller diagnostics

ow evel ntelligent evice ( ) replacement and binding

ain processor replacement and configuration modifications

etpoint modifications

ervice overrides

Software Download

Instructions for First Time TechView Users

This information can also be found at http://www.trane.com/commercial/software/tracerch530/.

1. Create a folder called "CH.530" on your C:\ drive. You will select and use this folder in subsequent steps so that downloaded files are easy to locate.
2. Download the Java Runtime installation utility file onto your PC in the CH.530 folder. Please note that this does not install Java Runtime. It only downloads the installation utility.

a. Click on the latest version of Java Runtime shown in the TechView Download table.

b. Select "Save this program to disk" while downloading the files. Do not select "Run this program from its current location".

3. Download the TechView installation utility file onto your PC in the CH.530 folder. Please note that this does not install TechView. It only downloads the installation utility.

a. Click on the latest version of TechView shown in the TechView Download table.

b. Select "Save this program to disk " while downloading the files. Do not select "Run this program from its current location ".

TechView Interface

4. Remember where you downloaded the files (the "CH.530 " folder). You will need to locate them to finish the installation process.
5. Proceed to the "Main Processor Software Download " page. Read the instructions to download the latest version of main processor installation files. You will first select the chiller type to obtain the available file versions.
6. Select the product family. A table with the download link will appear for that product family.
7. Download the main processor software onto your PC in the CH.530 folder. Please note that this does not install the main processor. It only downloads the installation utility.

a. Click on the latest version of the main processor.

b. Select "Save this program to disk" while downloading the files. Do not select "Run this program from its current location".

8. Remember where you downloaded the files (the "CH.530" folder). You will need to locate them to finish the installation process.
9. To complete the installation process, locate the installation utilities you downloaded into the CH.530 folder. If necessary, use your PC's file manager to locate the downloaded files.
10. Install the applications in the following order by double-clicking on the install program and following the installation prompts:

a. Java Runtime Environment (JRE_VXXX.exe) Note: During the Java Runtime Environment installation, you may be prompted to "select the default Java Runtime for the system browsers". Do not select any system browsers at this step. There should be no default browsers selected for proper operation.

b. TechView (6200-0347-VXXX.exe)

c. The main processor (6200-XXXX-XX-XX.exe).

d. The main processor program will self extract to the proper folder within the TechView program directory, provided the TechView program is properly installed on the C:\ drive.

11. Connect your PC to the CH.530 main processor using a standard 9-pin male/9-pin female RS-232 cable.
12. Run the TechView software by selecting the TechView icon placed on your desktop during the installation process. The "Help...About "menu can be viewed to confirm proper installation of latest versions.

Diagnostics

Table 5 contains all the diagnostics possible. Not all data is available unless TechView is installed.

Hex Code: 3-digit hexadecimal code used on all past products to uniquely identify diagnostics. Refer to the database \\SRV-et-data \ucp3 \service-tool \databases \servicetool.mdb

Diagnostic Name and Source: Note that this is the exact text used in the User Interface and/or Service Tool displays.

Severity: Defines the severity of the above effect. ***Immediate*** means immediate shutdown of the effected portion, ***Normal*** means normal or friendly shutdown of the effected portion, ***Special Mode*** means a special mode of operation (limp along) is invoked, but without shutdown, and ***Info*** means an Informational Note or Warning is generated.

Persistence: Defines whether or not the diagnostic and its effects are to be manually reset (Latched), or can be either manually or automatically reset (Nonlatched) and, if nonlatching, the criteria for auto reset. If more explanation is necessary a hot link to the Functional Specification is used which can clear the diagnostic. The manual diagnostic reset levels in order of can only be reset by a local diagnostic reset command, but not by the lower priority remote Reset command whereas a diagnostic listed as Remote reset can be reset by either.

Criteria: Quantitatively defines the criteria used in generating the diagnostic

Reset Level: Defines the lowest level of manual diagnostic reset command priority are: ***Local*** and ***Remote***. A diagnostic that has a reset level of Local, can only be reset by a local diagnostic reset command, but not by the lower priority remote Reset command whereas a diagnostic listed as Remote reset can be reset by either.

Diagnostics

Table 5 - Possible Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
398	BAS Communication Lost	Special		The BAS was setup as "installed" at the MP and the Comm 3 LLID lost communications with the BAS for15 contiguous minutes after it had been established.	Remote
390	BAS Failed to Establish Communication	Special		The BAS was setup as "installed" and the BAS did not communicate with the MP within 15 minutes after power-up.	Remote
2E6	Check Clock	Info	Latch	The real time clock had detected loss of its oscillator at some time in the past. Check / replace battery? This diagnostic can be effectively cleared only by writing a new value to the chiller's time clock using the TechView or DynaView's "set chiller time" functions.	Remote
8A	Chilled Water Flow (Entering Water Temp)	Info	NonLatch	The entering evaporator water temp fell below the leaving evaporator water temperature by more than an integrated value. For diagnostic cannot reliably indicate loss of flow, but can warn of improper flow direction through the evaporator, misbound temperature sensors, or other system problems.	Remote
5F8	Comm Loss: Chilled Water Pump Starter	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5EF	Comm Loss: Chilled Water Flow Switch	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Compressor % RLA Output	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote

Diagnostics

6B6	Comm Loss: Compressor Discharge Temperature	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Cond Head Press Cntrl Output	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Condenser Entering WaterTemperature	Info and Special Action	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. If chiller running, and condenser water regulating valve option installed, force valve to 100% flow.	Remote
6B6	Comm Loss: Condenser Leaving WaterTemperature	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5F2	Comm Loss Condenser Rfgt: Pressure	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Condenser Rfgt Pressure Output	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5F9	Comm Loss: CondenserWater Pump Starter	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
694	Comm Loss: Electronic Expansion Valve, Actuator 1	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote

Diagnostics

695	Comm Loss: Electronic Expansion Valve, Actuator 2	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5DE	Comm Loss: Emergency Stop	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5E4	Comm Loss: Evaporator Entering Water Temperature	Info and Special Action	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall remove any Return or Constant Return Chilled Water Reset, if it was in effect. Apply slew rates per Chilled Water Reset spec.	Remote
5E3	Comm Loss: Evaporator Leaving Water Temperature	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
688	Comm Loss: Evaporator Rfgt Liquid Level	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5F0	Comm Loss: Evaporator Rfgt Pressure	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5E1	Comm Loss: Ext Ice Building Control Input	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall revert to normal (non-ice building) mode regardless of last state.	Remote
5DD	Comm Loss: External Auto/ Stop	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote

Diagnostics

6B6	Comm Loss: External Base Load Enable	Info and Special Action	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. The external base load input is removed from the arbitration to enable Base Loading.	Remote
6B6	Comm Loss: External Base Load Setpoint Input	Info and Special Action	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. The external base load setpoint input is removed from the arbitration to establish the Base Loading Setpoint.	Remote
5E9	Comm Loss: External Base Load Setpoint Input	Info and Special Action	NonLatch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall discontinue use of the External Chilled Water Setpoint source and revert to the next higher priority for setpoint arbitration.	Remote
5EA	Comm Loss: External Current Limit Setpoint	Info and Special Action	NonLatch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall discontinue use of the External Current limit setpoint and revert to the next higher priority for Current Limit setpoint arbitration.	Remote
5EB	Comm Loss: High Pressure Cutout Switch	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5FA	Comm Loss: Ice-Making Status	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall revert to normal (non-ice building) mode regardless of last state.	Remote

Diagnostics

69D	Comm Loss: Local BAS Interface	Info and Special Action	NonLatch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Use the last values sent from BAS.	Remote
6B6	Comm Loss: Master Oil Line Solenoid Valve	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Oil Loss Level Input	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5F4	Comm Loss: Oil Pressure	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Oil Return Gas Pump Drain	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Oil Return Gas Pump Fill	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6A0	Comm Loss: Op Status Programmable Relays	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5E2	Comm Loss: Outdoor Air Temperature	Info and Special Action	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Note that if this diagnostic occurs, Chiller shall remove any OA Chilled Water Reset, if it was in effect and if Tracer OA was unavailable. Apply slew rates per Chilled Water Reset specification.	Remote

Diagnostics

6B6	Comm Loss: Refrigerant Monitor Input	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5D2	Comm Loss: Slide Valve Load	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
5D1	Comm Loss: Slide Valve Unload	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
6B6	Comm Loss: Solid State Starter Fault Input	Info	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
690	Comm Loss: Starter	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
1F5	Compressor Did Not Accelerate Fully	Immediate	Latch	Starter module did not receive an "Up to Speed" or "End of Ramp" signal from the SSS within 2.5 seconds after commanding a bypass, or after the maximum acceleration time had expired, whichever is longer. This diagnostic only applies to SSS.	Remote
EE	Compressor Did Not Accelerate: Shutdown	Immediate	Latch	The compressor did not come up to speed (get to<85%RLA) in the allotted time defined by the Maximum Acceleration Timer and the start was aborted per the starter configuration selected.	Remote

Diagnostics

1FA	Compressor Did Not Accelerate: Transition	Info	Latch	The compressor did not come up to speed (get to<85%RLA) in the allotted time defined by the Maximum Acceleration Timer and a transition was forced (motor put across the line) at that time.	Remote
284	Compressor Discharge Temperature Sensor	Immediate	Latch	Bad Sensor or LLID	Remote
9A	Condenser Entering Water Temperature Sensor	Info and Special Action	Latch	Bad Sensor or LLID. If chiller running, and condenser water regulating valve option installed, force valve to 100% flow.	Remote
5B8	Condenser Refrigerant Pressure Transducer	Normal	Latch	Bad Sensor or LLID	Remote
F7	Condenser Water Flow Lost	Immediate	NonLatch	The condenser water flow proof input was open for more than 6 contiguous seconds after flow had been proven. This diagnostic is automatically cleared once the compressor is stopped by a fixed time out of 7 sec. The Cond Pump shall be commanded off but the Evap pump command will not be effected.	Remote
DC	Condenser Water Flow Overdue	Normal	NonLatch	Condenser water flow was not proven within 20 minutes of the condenser pump relay being energized. The Cond Pump shall be commanded off. Diagnostic is reset with return of flow (although only possible with external control of pump).	Remote
EC or EC	Current Overload Trip Motor Current Overload	Immediate	Latch	Compressor current exceeded overload time vs. trip characteristic.	Local

Diagnostics

FD	Emergency Stop	Immediate	Latch	EMERGENCY STOP input is open. An external interlock has tripped. Time to trip from input opening to unit stop shall be 0.1 to 1.0 seconds.	Local
8E	Evaporator Entering Water Temperature Sensor	Info	Latch	Bad Sensor or LLID Normal operation unless Chilled Water Reset is enabled. If Chilled Water Reset is enabled and either Return or Constant Return Chilled Water Reset is selected, its effect will be removed but slew rates on the change will be limited per the Chilled Water Reset specification.	Remote
AB	Evaporator Leaving Water Temperature Sensor	Normal	Latch	Bad Sensor or LLID	Remote
27D	Evaporator Liquid Level Sensor	Normal	Latch	Bad Sensor or LLID	Remote
5BA	Evaporator Refrigerant Pressure Transducer	Normal	Latch	Bad Sensor or LLID	Remote
ED	Evaporator Water Flow Lost	Normal	NonLatch	The chilled water flow proof input was open for more than 6-10 contiguous seconds after flow had been proven. The pump command status will not be effected. 6-10 seconds of contiguous flow shall clear this diagnostic. Even though the pump may be commanded to run in the STOP modes (pump off delay time), this diagnostic shall not be called out in the STOP modes.	Remote

Diagnostics

384	Evaporator Water Flow Overdue	Normal	Latch	Evaporator water flow was not proven within 20 minutes of the chilled water pump relay being energized. The evaporator pump command status will not be effected.	Remote
5C4	Excessive Loss of Comm	Immediate	Latch	Loss of comm with 20% or more of the LLIDs configured for the system has been detected. This diagnostic will suppress the callout of all subsequent comm loss diagnostics. Check power supply(s) and power disconnects - troubleshoot LLIDS buss using TechView.	Remote
4C4	External Base Loading Setpoint	Info and Special Action	NonLatch	a. Not "Enabled": no diagnostics. b. "Enabled ": Out- Of-Range Low or Hi or bad LLID, set diagnostic, default Base Loading Setpoint to next level of priority (e.g. Front Panel SetPoint). This information diagnostic will automatically reset if the input returns to the normal range.	Remote
87	External Chilled Water Setpoint	Info	NonLatch	a. Function Not "Enabled": no diagnostics. b. "Enabled ": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default Chilled Water Setpoint to next level of priority (e.g. Front Panel SetPoint). This information diagnostic will automatically reset if the input returns to the normal range.	Remote
89	External Current Limit Setpoint	Info	NonLatch	a. Not "Enabled": no diagnostics. b. "Enabled ": Out-Of-Range Low or High or bad LLID, set diagnostic, default Current Limit Setpoint to next level of priority (e.g. Front Panel SetPoint). This information diagnostic will automatically reset if the input returns to the normal range.	Remote

Diagnostics

1C2	High Compressor Discharge Temperature	Immediate	Latch	The compressor discharge temperature exceeded 88°C. This during the compressor run-unload period or after the compressor has stopped, but a run unload will be terminated early as a result.	Remote
1C6	High Differential Refrigerant Pressure	Normal	Latch	a. The system differential pressure was above 11 bar - trip immediately (normal shutdown) b. The differential pressure was above 10.5 bar - trip in 1 hour.	Remote
584	High Evaporator Liquid Level	Normal	Latch	The liquid level sensor is seen to be at or near its high end of range for 80 contiguous minutes while the compressor is running. (The diagnostic timer will hold, but not clear when the circuit is off).	Remote
6B8	High Evaporator Refrigerant Pressure	Info and Special Action	NonLatch	The evaporator refrigerant pressure has risen above 13 bar. The evaporator water pump relay will be de-energized to stop the pump regardless of why the pump is running. The diagnostic will auto reset and the pump will return to normal control when the evaporator pressures falls below 12.7 bar . This diagnostic must shutdown the chiller if it is running.	Local
F5	High Pressure Cutout	Immediate	NonLatch	A high pressure cutout was detected.	Local
1C6	High Refrigerant Pressure Ratio	Immediate	Latch	The system pressure ratio exceeded maximum value for 1 contiguous minute. This pressure ratio is a fundamental limitation of the compressor. The pressure ratio is defined as Pcond (abs)/Pevap(abs).	Remote

Diagnostics

59C	Loss of Oil at Compressor (Running)	Immediate	Latch	In running modes, Oil Loss Level Sensor detects lack of oil in the oil tank feeding the compressor (distinguishing a liquid flow from a vapor flow).	Local
59D	Loss of Oil at Compressor (Stopped)	Immediate and Special Action	Latch	Oil Loss Level Sensor detects a lack of oil in the oil tank feeding the compressor for 90 seconds after EXV preposition is completed. Note: Compressor start is delayed while waiting for oil to be detected.	Local
C5	Low Chilled Water Temp: Unit Off	Info and Special Action	NonLatch	The leaving chilled water temp. fell below the leaving water temp cutout setting (integrated value) while the chiller is in the Stop mode, or in Auto mode with no compressors running. Energize evaporator water pump relay until diagnostic auto resets, then return to normal evaporator pump control. Automatic reset occurs when the temp rises the cutout setting for 30 minutes.	Remote
C6	Low Chilled Water Temp: Unit On	Immediate and Special Action	NonLatch	The chilled water temp. fell below the cutout setpoint (integrated value) while the compressor was running. Automatic reset occurs when the temperature rises 2 cutout setting for 2 minutes. This diagnostic shall not de-energize the Evaporator Water Pump Output.	Remote
1AE	Low Differential Refrigerant Pressure	Immediate	Latch	The system differential pressure was either below 1.6 bar (integrated value).	Remote
18E	Low Discharge Superheat	Normal	Latch	While Running Normally, the Discharge Superheat was less than 7°C (integrated value). At startup the Unit Control Module shall ignore the Discharge Superheat for 5 min.	Remote

Diagnostics

583	Low Evaporator Liquid Level	Info	NonLatch	The liquid level sensor is seen to be at or near its low end of range (lower than 21.2mm) for 80 continuous minutes while the compressor is running.	Remote
B5	Low Evaporator Refrigerant Pressure	Immediate	Latch	The Evaporator Refrigerant Pressure dropped below 0.7bar abs. just prior to compressor start. The pressure fell below 0.7bar abs while running but before the 1 minute ignore time had expired or fell below 1.1 bar abs. after the 1 minute ignore time had expired.	Local
FB	Low Evaporator Refrigerant Temperature	Immediate	Latch	a. The inferred Saturated Evaporator Refrigerant Temperature (calculated from suction pressure transducer(s)) dropped below the Low Refrigerant Temperature Cutout Setpoint while the circuit was running after the ignore period had expired.(1 minute). b. During the timeout of the trip integral, the unload solenoid(s) of the running compressors on the circuit, shall be energized continuously and the load solenoid shall be off. Normal load/unload operation will be resumed if the trip integral is reset by return to temps above the cutout setpoint.	Remote
6B3	Low Evaporator Temp: Unit Off	Info and Special Action	NonLatch	The evaporator saturated temperature fell below the water temperature cutout setting (integrated value) while the respective evaporator liquid level was greater than -21.2mm while chiller is in the Stop mode, or in Auto mode with no compressors running. Energize evaporator water pump relay until diagnostic auto resets, then return to normal evaporator pump control. Automatic reset occurs when either the evaporator temperature rises the cutout setting or the liquid level falls below -21.2mm for 30 minutes.	Remote

Diagnostics

198	Low Oil Flow	Immediate	Latch	The oil pressure was out of the acceptable pressure range for 15 seconds.	Local
E2	Momentary Power Loss	Immediate	NonLatch	Momentary Power Loss option disabled: No effect. Momentary Power Loss option enabled: A loss of power on 3 line cycles or more was detected. Diagnostic is reset in 30 seconds. See Momentary Power Loss Protection specification for additional information.	Remote
1AD	MP Application Memory CRC Error	Immediate	Latch	Application software inside the MP failed its own checksum test. Possible causes: application software in the MP is not complete - software download to the MP was not completed successfully - or MP hardware problem. Note: User should attempt to reprogram the MP if this diagnostic occurs.	Remote
6A1	MP: Could not Store Starts and Hours	Info	Latch	MP has determined there was an error with the previous power down store. Starts and Hours may have been lost for the last 24 hours.	Remote
5FF	MP: Invalid Configuration	Immediate	Latch	MP has an invalid configuration based on the current software installed.	Remote
6A2	MP: Non-Volatile Block Test Error	Info	Latch	MP has determined there was an error with a block in the Non-Volatile memory. Check settings. MP has determined there was an error in a sector of the Non-Volatile memory and it was reformatted. Check settings.	Remote

Diagnostics

69C	MP: Non-Volatile Memory Reformat	Info	Latch	MP has determined there was an error in a sector of the Non-Volatile memory and it was reformatted. Check settings.	Remote
D9	MP: Reset Has Occurred	Info	NonLatch	The main processor has successfully come out of a reset and built its application. A reset may have been due to a power up, installing new software or configuration. This diagnostic is immediately and automatically cleared and thus can only be seen in the Historic Diagnostic List in TechView.	Remote
297	No Differential Refrigerant Pressure	Immediate	Latch	The system differential pressure was below 0.5bar. The occurrence of this diagnostic will saturate the above "Low Diff Rfgt Press" Integral and invoke the same "Compressor Cool Down" operating mode.	Remote
1E1	Oil Flow Protection Fault	Immediate	Latch	The Oil Pressure Transducer for this Chiller is reading a pressure either above its Condenser Pressure by 1 bar or more, or below its Evaporator Pressure 0.7 bar or more for 30 seconds continuously.	Local
5BE	Oil Pressure Transducer	Normal	Latch	Bad Sensor or LLID	Remote
A1	Outdoor Air Temperature Sensor	Info and Special Action	Latch	Bad Sensor or LLID. This diagnostic will only occur if OA sensor is configured. OA Chilled water reset will be suspended if selected and Tracer OA unavailable.	Remote
D7	Over Voltage	Immediate	Latch	Average of all monitored Line voltages above +10% of nominal.	Remote

Diagnostics

E4	Phase Loss	Immediate	Latch	a. No current was sensed on 1 or 2 of the current transformer inputs while running or starting (See Nonlatching Power Loss Diagnostic for all three phases lost while running). b. If phase reversal protection is enabled and current is not sensed on 1 or more current transformer inputs. Logic will detect and trip in a maximum of 0.3 second from compressor start.	Local
E5 or E5	Phase Reversal	Immediate	Latch	A phase reversal was detected on the incoming current. On a compressor startup the phase reversal logic must detect and trip in a maximum of 0.3 second from compressor start.	Local
E3	Phase Unbalance Severe Current Imbalance	Normal	Latch	A 30% Phase c Current Unbalance imbalance has been detected on 1 phase relative to the average of all 3 phases for 90 continuous seconds.	Remote
1A0	Power Loss	Immediate	NonLatch	The compressor had previously established currents while running and then all 3 phases of current were lost. Note:This diagnostic prevents nuisance latching diagnostics due to a momentary power loss - It does not protect motor/compressor from uncontrolled power reapplication. See Momentary Power Loss Diagnostic for this protection.This diagnostic will auto reset in 10 seconds from its occurrence, and is not active during the start mode before the transition complete input is proven.This prevents the chiller from cycling due to some internal starter problem, as the starter would latch out on either a "Starter Fault Type 3" or a "Starter Did Not Transition" latching diagnostic. However true power loss occurring during a start would result in a misdiagnosis and the chiller would not automatically recover.	Remote

Diagnostics

2F2	Refrigerant Monitor Sensor	Info	NonLatch	Open or Shorted input and the Rfgt Monitor is setup as installed.	Remote
28C	Restart Inhibit Warning	Info	NonLatch	The Restart Inhibit was invoked on a compressor. This indicates excessive chiller cycling which should be corrected.	Remote
189	Solid State Starter Fault	Immediate	Latch	The Solid State Starter Fault Relay is open.	Local
188	Starter Dry Run Test	Immediate	Latch	While in the Starter Dry Run Mode either 50 % Line Voltage was sensed at the Potential Transformers or 10 % RLA Current was sensed at the Current Transformers.	Local
5CD	Starter Comm Loss with MP	Immediate	Latch	Starter has had a loss of communication with the MP for a 15 second period.	Local
CA	Starter Contactor Interrupt Failure	Immediate and Special Mode Action	Latch	Detected compressor currents greater than 10% RLA on any or all phases when the compressor was commanded off. Detection time shall be 5 seconds minimum and 10 seconds maximum. On detection and until the controller is manually reset: generate diagnostic, energize the appropriate alarm relay, continue to energize the Evaporator and Condenser Pump Outputs, continue to command the affected compressor off, fully unload the effected compressor. For as long as current continues, perform liquid level and oil return gas pump control.	Local

Diagnostics

F0	Starter Did Not Transition	Immediate	Latch	The starter module did not receive a transition complete signal in the designated time from its command to transition.	Local
6A3	Starter Failed to Arm/Start	Info	Latch	Starter failed to arm or start within the allotted time (15 seconds).	Remote
1E9	Starter FaultType I	Immediate	Latch	This is a specific starter test where 1M(1K1) is closed first and a check is made to ensure that there are no currents detected by the CT's. If currents are detected when only 1M is closed first at start, then one of the other contactors is shorted.	Local
1ED	Starter FaultType II	Immediate	Latch	This is a specific starter test where the Shorting Contactor (1K3) is individually energized and a check is made to ensure that there are no currents detected by the CT's. If current is detected when only S is energized at Start, then 1M is shorted.	Local
1F1	Starter FaultType III	Immediate	Latch	As part of the normal start sequence to apply power to the compressor, the Shorting Contactor (1K3) and then the Main Contactor (1K1) were energized. 1.6 seconds later there were no currents detected by the CT's for the last 1.2 seconds on all 3 phases.	Local
5C5	Starter Module Memory ErrorType 1	Info	Latch	Checksum on RAM copy of the Starter LLID configuration failed. Configuration recalled from EEPROM.	Local

Diagnostics

5C9	Starter Module Memory Error Type 2	Immediate	Latch	Checksum on EEPROM copy of the Starter LLID configuration failed. Factor default values used.	Local
3D7	Transition Complete Input Opened	Immediate	Latch	The Transition Complete input is open with the compressor motor running after a successful completion of transition. This is active only for all electromechanical starters.	Local
3D5	Transition Complete Input Shorted	Immediate	Latch	The Transition Complete input is shorted before the compressor was started. This is active for all electromechanical starters.	Local
D8	Under Voltage	Normal	Non-Latch	Average of all monitored Line voltages below -10% of nominal.	Remote

Maintenance Contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance helps ensure that any malfunction is detected and corrected quickly and minimizes the possibility that serious damage will occur. Finally, regular maintenance helps ensure the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

Training

The equipment described in this manual is the result of many years of research and continuous development. To assist you in obtaining the best use of it, and maintaining it in perfect operating condition over a long period of time, the constructor has at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and maintenance technicians a better knowledge of the equipment they are using, or that is under their charge. Emphasis is particularly given to the importance of periodic checks on the unit operating parameters as well as on preventive maintenance, which reduces the cost of owning the unit by avoiding serious and costly breakdowns.

Notes

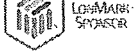
Notes

Notes

Trane
A business of American Standard Companies
www.trane.com

For more information contact your local district office or e-mail us at comfort@trane.com

Quality Management System Approval

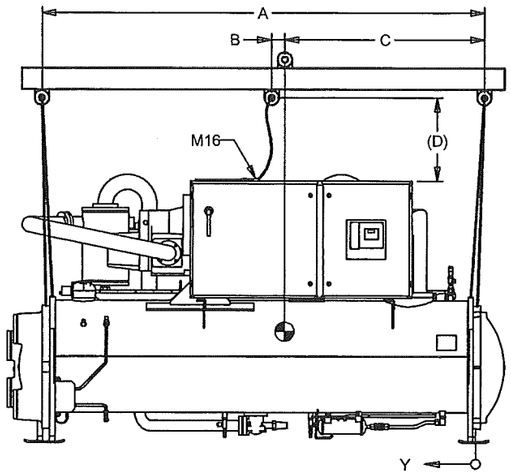


Literature Order Number	RLC-SVU03A-E4
Date	0903
Supersedes	New
Stocking Location	Europe

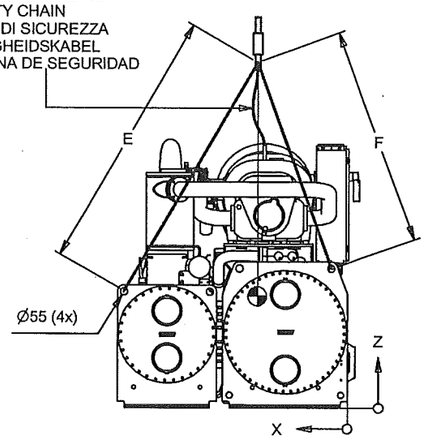
Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this publication.

Société Trane – Société Anonyme au capital de 61 005 000 Euros – Siege Social: 1 rue des Amériques – 88190 Golbey – France – Siret 306 050 188-00011 – RSC Epinal B 306 050 188
Numéro d'identification taxe intracommunautaire: FR 83 3060501888

TRANE	RTHD	C	5712-2328	1 / 1
		Date : 15-12-2003 Rev : /		
			Std	



CHAINE DE SECURITE
SICHERHEITSKETTE
SAFETY CHAIN
CAVO DI SICUREZZA
VEILIGHEIDSKABEL
CADENA DE SEGURIDAD



RTHD	POIDS MAXI MAXI GEWICHT MAXI WEIGTH PESO MASSIMO MAXIMAALGEWICHT PESO MAXIMO (Kg)	DIMENSIONS DIMENSIONEN DIMENSIONS DIMENSIONI AFMETINGEN DIMENSIONES (mm)					CENTRE DE GRAVITE SCHWERPUNKT CENTER OF GRAVITY CENTRO DI GRAVITA MIDDELPUNT VAN DE ZWAARTEKRACHT CENTRO DE GRAVEDAD (mm)		
		A	B	C	(D)	E (2x)	F (2x)	X	Y	Z
B1 B1 B1	4215	2100	103	1153	600	1900	1650	581	1476	902
B1 C1 D1	4462	2100	99	925	600	1950	1700	568	1480	853
B2 B1 B1	4215	2100	103	1153	600	1900	1650	581	1476	902
B2 C1 D1	4462	2100	99	925	600	1950	1700	568	1480	853
C1 D6 E5	5797	2100	226	1198	600	1900	1650	662	1521	1022
C1 D5 E4	5884	2100	226	1198	600	1900	1650	662	1521	1022
C1 D3 E3	6351	2100	226	1198	600	1900	1650	662	1521	1022
C2 D6 E5	5797	2100	226	1198	600	1900	1650	662	1521	1022
C2 D5 E4	5884	2100	226	1198	600	1900	1650	662	1521	1022
C2 E1 F1	6639	1900	136	957	600	1950	1750	670	1612	1040
D1 D4 E4	5883	2100	226	1198	600	1900	1650	662	1521	1022
D1 D3 E3	6351	2100	226	1198	600	1900	1650	662	1521	1022
D2 D1 E1	6551	2100	226	1198	600	1900	1650	662	1521	1022
D3 D1 E1	6551	2100	226	1198	600	1900	1650	662	1521	1022
D2 F1 F2	7353	1900	41	956	600	1950	1750	703	1611	970
D3 F1 F2	7353	1900	41	956	600	1950	1750	703	1611	970
D1 G1 G1	8129	3500	38	1760	600	1950	1650	783	1615	954
D2 G2 G1	8516	3500	38	1760	600	1950	1650	783	1615	954
D3 G2 G2	8666	3500	38	1760	600	1950	1650	783	1615	954
E3 D2 E2	6676	2100	226	1198	600	1900	1650	662	1521	1022
E3 F2 F3	7690	1900	41	956	600	1950	1750	703	1611	970
E3 G3 G3	8913	3500	38	1760	600	1950	1650	783	1615	954

INSTRUCTIONS DE LEVAGE ET DE MANUTENTION

IL EST RECOMMANDE D'UTILISER LES ORGANES DE LEVAGE ET DE MANUTENTION MONTRES PAR LE SCHEMA A GAUCHE ET DE SUIVRE LES INSTRUCTIONS SUIVANTES :

1 - UTILISER LES 4 POINTS D'ANCRAGE PREVUS SUR L'UNITE.
2 - ATTACHER LA CHAINE (CABLE) DE SECURITE COMME INDIQUE, SANS TENSION, AFIN D'EVITER QUE L'UNITE NE SE RENVERSE.
3 - LES ELINGUES ET LE PALONNIER DOIVENT ETRE PREVUS PAR L'INSTALLATEUR.
4 - LA CHARGE MINIMUM ADMISSIBLE PAR ELINGUE ET PAR LE PALONNIER UTILISES NE DOIT PAS ETRE INFERIEURE AU POIDS DE L'UNITE.
5 - ATTENTION : CETTE UNITE DOIT ETRE LEVEE ET MANUTENTIONNEE AVEC PRECAUTIONS. EVITER LES A-COUPS LORS DU LEVAGE ET DE LA MANUTENTION.

ANWEISUNGEN FUER DEN TRANSPORT MIT HEBEZEUG

ES WIRD EMPFOHLEN, DIE MASCHINE ENTSPRECHEND DER ZEICHNUNG MIT EINEM KRAN ANZUHEBEN UND DIE FOLGENDEN ANWEISUNGEN ZU BEACHTEN :

1 - JEDE MASCHINE WIRD MIT 4 IM WERK MONTIERTEN KRANOESEN GELIEFERT.
2 - SICHERHEITSKETTE (KABEL) OHNE SPANNUNG ANBRINGEN. DIENT NICHT ZUM ANHEBEN SONDERN UM UMFALLEN DER MASCHINE ZU VERMEIDEN.
3 - DAS HEBEZEUG (SEILE,QUERBALKEN) IST BEIZUSTELLEN.
4 - DIE TRAGKRAFT JEDES EINZELNEN SEILES SOWIE DES QUERBALKENS MUSS MINDESTENS DEM TRANSPORTGEWICHT DER MASCHINE ENTSPRECHEN.
5 - BEIM ANHEBEN VORSICHTIG VORGEHEN, STOESSE UND ERSCHUETTERUNGEN UNBEDINGT VERMEIDEN.

SPECIAL LIFTING AND MOVING INSTRUCTIONS

IT IS RECOMMENDED TO USE THE SPECIAL BUILT-IN RIGGING POINTS SHOWN IN THE DIAGRAM LEFT AND TO FOLLOW THE FOLLOWING INSTRUCTIONS :

1 - USE THE FOUR RIGGING POINTS WHICH ARE BUILT INTO THE UNIT.
2 - ATTACH SAFETY CHAIN (CABLE) AS SHOWN WITHOUT TENSION, NOT AS A LIFTING CHAIN BUT TO PREVENT UNIT FROM ROLLING.
3 - SLINGS AND A SPREADER BAR ARE TO BE PROVIDED BY THE RIGGER.
4 - THE MINIMUM LIFTING CAPACITY OF EACH SLING AS WELL AS THE SPREADER BAR MUST BE EQUAL OR HIGHER THAN THE TABULATED UNIT SHIPPING WEIGTH.
5 - CAUTION : THIS UNIT MUST BE LIFTED AND HANDLED WITH CARE. AVOID SHOCKS WHILE HANDLING.

ISTRUZIONI PER IL SOLLEVAMENTO E LA MOVIMENTAZIONE DELL'UNITA

SI RACCOMANDA DI SEGUIRE LE ISTRUZIONI QUI RIPORTATE PER IL SOLLEVAMENTO E LA MOVIMENTAZIONE DELL'UNITA :

1 - L'UNITA VIENE FORNITA COMPLETA DI 4 FORI DI SOLLEVAMENTO.
2 - ATTACCARE IL CAVO DI SICUREZZA COME MOSTRATO, SENZA TENDERLO, PER EVITARE CHE LA MACCHINA SI ROVESCI.
3 - IMBRAGATURE E BARRE DISTANZIATRICI DEVONO ESSERE FORNITE DALL'INSTALLATORE E FISSATE AI 4 FORI DI SOLLEVAMENTO.
4 - LA CAPACITA MINIMA NOMINALE DI SOLLEVAMENTO (VERTICALE) DI CIASCUNA IMBRAGATURA E BARRA DISTANZIATRICE NON DEVE ESSERE INFERIORE AL PESO DI SPEDIZIONE DELL'UNITA.
5 - ATTENZIONE : EFFETTUARE IL SOLLEVAMENTO DELL'UNITA CON LA MASSIMA CURA, EVITARE CARICHI ECCESSIVI, SOLLEVARE LENTAMENTE E UNIFORMEMENTE.

HIJS EN TRANSPORT INSTRUCTIES

DE TOE TE PASSEN HIJSMETHODE IS ALS VOLGT VOORGESCHREVEN :

1 - OP DE UNIT ZIJN VIER HIJSOGEN AANGEBRACHT.
2 - SLUIT DE VEILIGHEIDSKABEL ZOALS OPTEKENING STAAT AANGEGEVEN ZONDER SPANNING AAN. DEZE KABEL IS NIET BEDOELD ALS HIJSKABEL MAAR ALLEEN OM DE MACHINE TEGEN OM VALLEN TE BEVEILIGEN.
3 - STROPPEN EN SPREIDBALK DIENEN DOOR HET KRAANBEDRIJF TE VORDEN TOEGELEVERD EN OP DE AANGEGEVEN MANIER TE WORDEN BEVESTIGD.
4 - DE MAXIMAAL TOEGESTANE VERTIKALE HIJSCAPACITEIT VAN ELKE STROP EN DE SPREIDBALK MAG NIET MINDER ZIJN DAN HET TRANSPORTGEWICHT UIT DE TABEL.
5 - WAARSCHUWING : DEZE MACHINE VOORZICHTIG VERPLAATSEN. VOORKOM SCHOKKEN EN STOTEN BIJ HET HIJSEN.

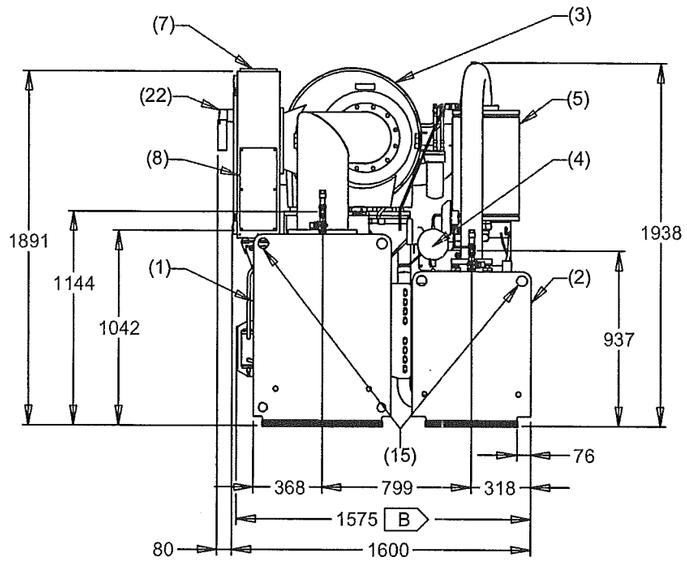
INSTRUCCIONES DE TRANSPORTE Y DESCARGA

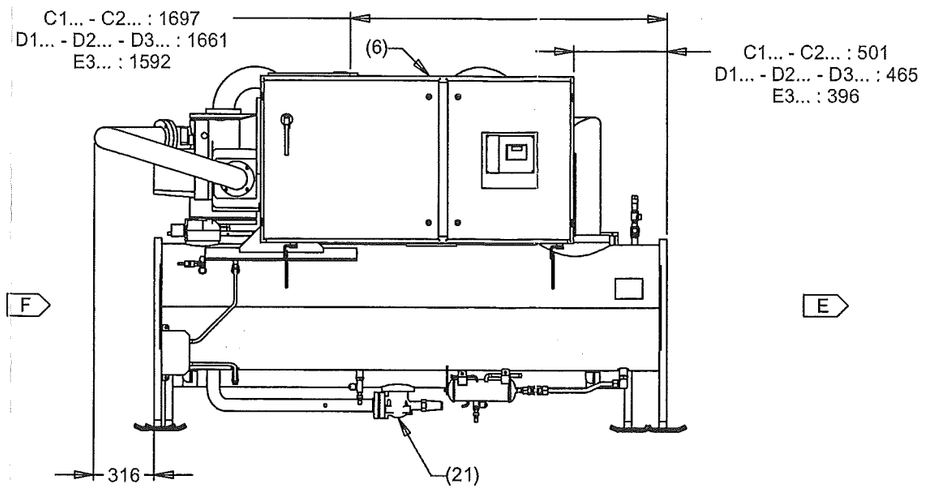
SE RECOMIENDA SEGUIR LAS INSTRUCCIONES SIGUIENTES PARA LA CARGA Y DESCARGA DE LA UNIDAD :

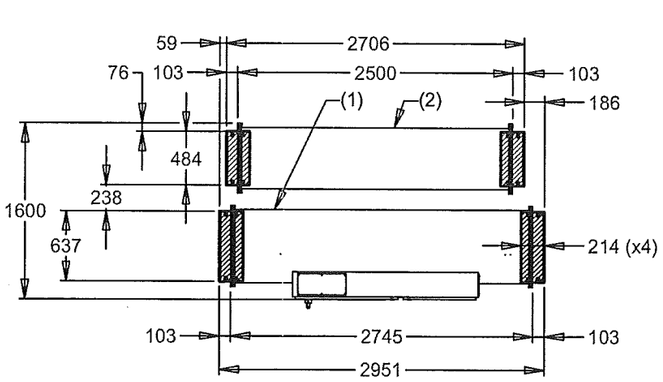
1 - LA MAQUINA ESTA PROVISTA DE CUATRO PUNTOS DE ENGANCHE.
2 - ATAR LA CADENA DE SEGURIDAD COMO INDICADO, SIN TENSARLA, PARA IMPEDIR QUE LA MAQUINA SE RETORNA.
3 - LOS CABLES Y LA BARRA SEPARADORA DEBEN SER SUMINISTRADOS POR EL INSTALADOR Y FIJADOS A LOS CUATRO PUNTOS DE ENGANCHE.
4 - LA CAPACIDAD MINIMA DE CARGA (VERTICAL) DE CADA CABLE Y DE LA BARRA SEPARADORA NO DEBERA SER INFERIOR AL PESO DE LA UNIDAD.
5 - ATENCION : ESTA UNIDAD DEBE SER DESCARGADA CON EL MAYOR CUIDADO PARA EVITAR CHOQUES. DESCARGAR DESPACIO Y CUIDADOSAMENTE.

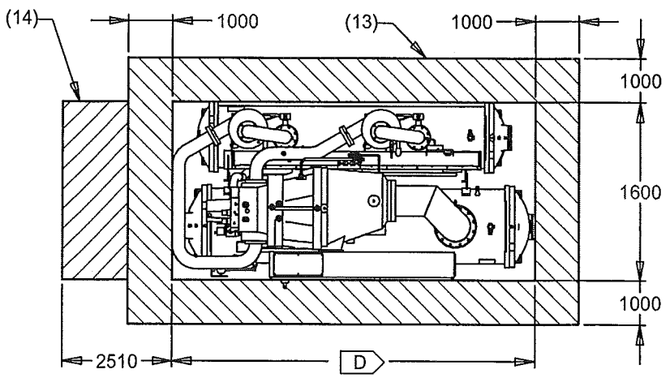
TRANE	RTHD	C 5712-2972 1 / 1
		Date : 09-10-2003 Rev : /
		Std

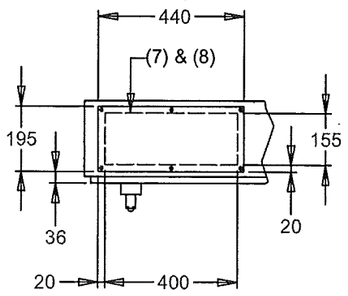
C1 D6 E5 - C1 D5 E4 - C1 D3 E3 - C2 D6 E5 - C2 D5 E4
D1 D4 E4 - D1 D3 E3 - D2 D1 E1 - D3 D1 E1
E3 D2 E2

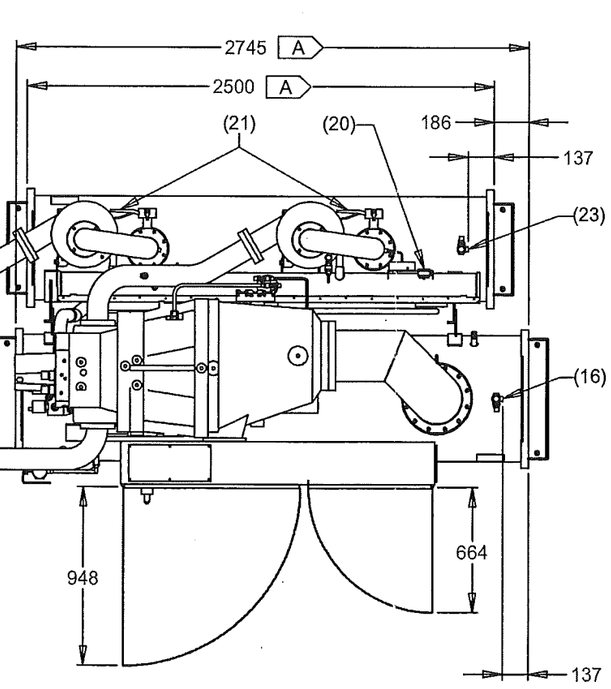










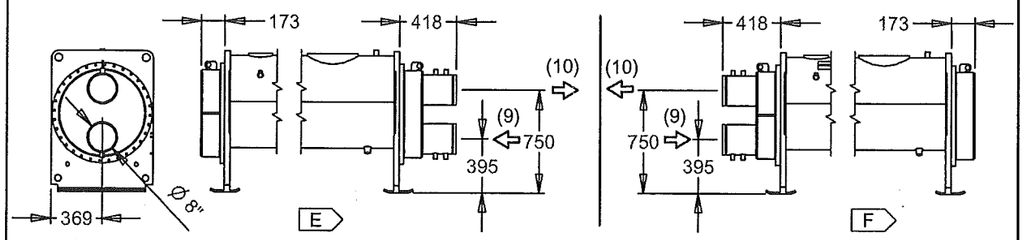


C	5712-2972	1 / 1

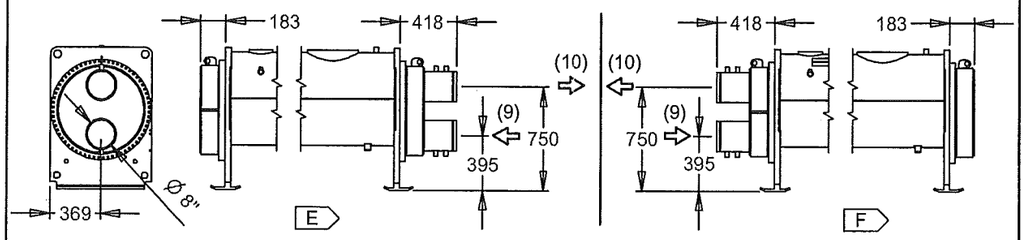
TRANE	RTHD	C 5712-2977 1 / 1
		Date : 05-12-2003 Rev : A
		Std

C1 D6 E5 - C1 D5 E4 - C1 D3 E3 - C2 D6 E5 - C2 D5 E4 - C2 E1 F1
D1 D4 E4 - D1 D3 E3 - D2 D1 E1 - D3 D1 E1
E3 D2 E2

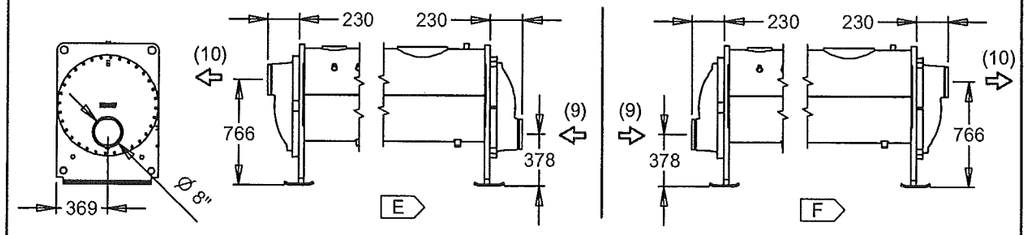
G 10 bar



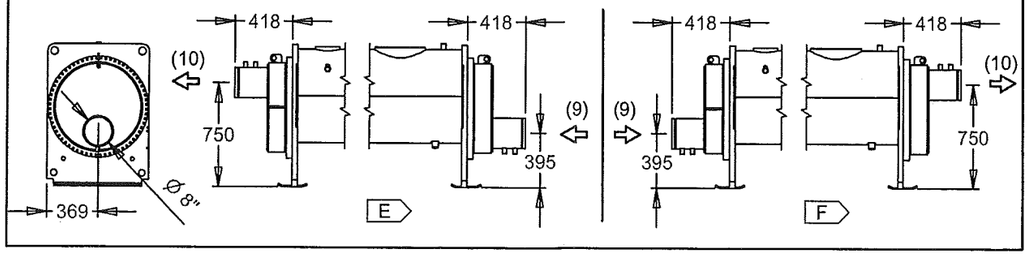
G 21 bar

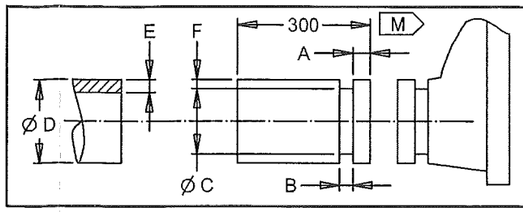


H 10 bar



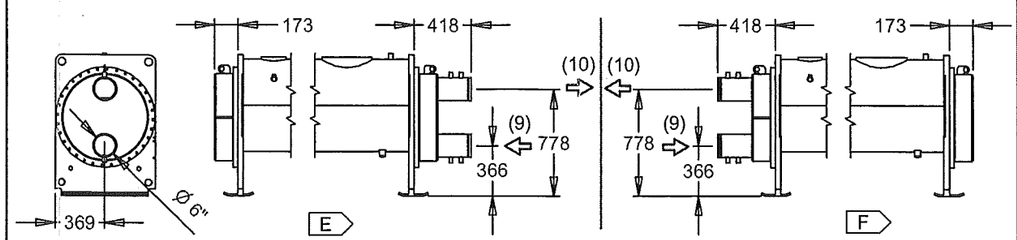
H 21 bar



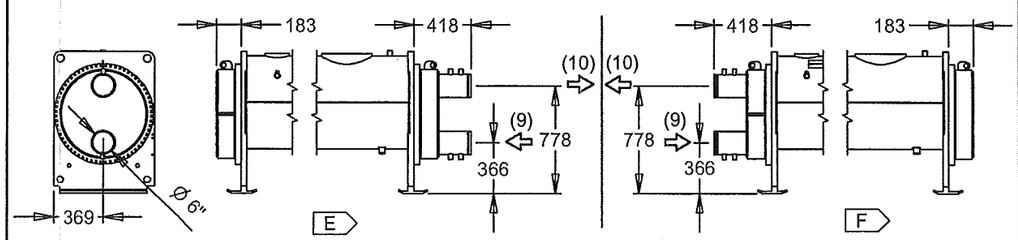


D	A +/-0,8	B +/-0,8	C 0/-0,7	E mini	F
6" (168,3) (DN150)	15,87	9,52	164	5,56	2,15
8" (219,1) (DN200)	19,05	11,11	214,4	6,04	2,34

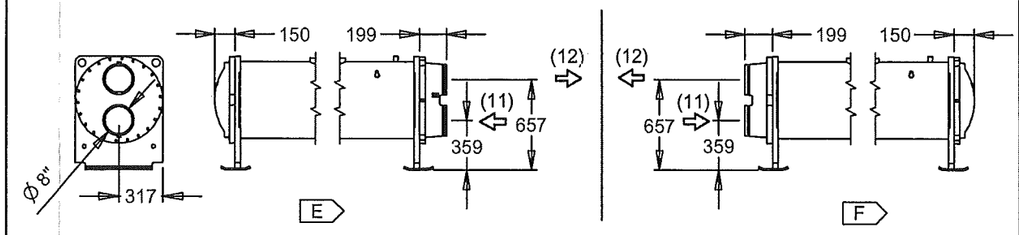
J 10 bar



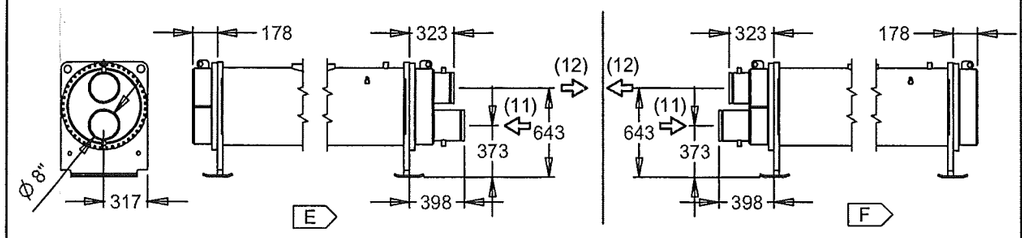
J 21 bar



L 10 bar



L 21 bar



RTHD

C | 5712-2980 | 1 / 1

Date : 05-12-2003 Rev : B

Std

	FRANCAIS	DEUTSCH	ENGLISH
(1)	EVAPORATEUR	VERDAMPFER	EVAPORATOR
(2)	CONDENSEUR	VERFLUESSIGER	CONDENSER
(3)	COMPRESSEUR	VERDICHTER	COMPRESSOR
(4)	RESERVOIR D'HUILE	OELTANK	OIL TANK
(5)	SEPARATEUR D'HUILE	OELABSCHEIDER	OIL SEPARATOR
(6)	ARMOIRE ELECTRIQUE	STEUERSCHRANK	ELECTRICAL PANEL
(7)	ACCES RACCORDEMENT CLIENT PUISSANCE	ABDECKPLATTE FÜR BAUSEITIGE KABELEINFÜHRUNG	POWER CABLE GLAND PLATE FOR CUSTOMER WIRING
(8)	ACCES RACCORDEMENT CLIENT CONTRÔLE ET REGULATION	ABDECKPLATTE FÜR BAUSEITIGE STEUERVERKABELUNG	EXTERNAL CONTROL WIRING CABLE GLAND PLATE FOR CUSTOMER WIRING
(9)	CONNEXION ENTREE EAU EVAPORATEUR	WASSER-EINTRITT-VERDAMPFER	EVAPORATOR WATER INLET CONNECTION
(10)	CONNEXION SORTIE EAU EVAPORATEUR	WASSER-AUSTRITT-VERDAMPFER	EVAPORATOR WATER OUTLET CONNECTION
(11)	CONNEXION ENTREE EAU CONDENSEUR	WASSER-EINTRITT-VERFLUESSIGER	CONDENSER WATER INLET CONNECTION
(12)	CONNEXION SORTIE EAU CONDENSEUR	WASSER-AUSTRITT-VERFLUESSIGER	CONDENSER WATER OUTLET CONNECTION
(13)	AIRE CONSEILLEE POUR MAINTENANCE	MINDEST-WANDABSTAND (ZUR WARTUNG)	MINIMUM CLEARANCE (FOR MAINTENANCE)
(14)	AIRE NECESSAIRE POUR LE RETUBAGE DES ECHANGEURS (D'UN COTE OU DE L'AUTRE)	MINDEST-WANDABSTAND (FÜR DEN AUSBAU DER ROHRE AUS DEM VERDAMPFER/VERFLUESSIGER) AUF EINER DER BEIDEN STIRNSEITEN DER MASCHINE	MINIMUM CLEARANCE (TO REINSTALL EVAPORATOR AND CONDENSER TUBES) AT EITHER END OF THE UNIT
(15)	POINTS DE LEVAGE Ø 55	TRANSPORT-OESEN Ø 55	RIGGING EYES Ø 55
(16)	RACCORDEMENT SOUPAPE BASSE PRESSION : 3/4"G MALE	ANSCHLUSS ÜBERSTRÖM VENTIL NIEDERDRUCK-SEITE : 3/4" GASGEWINDE (AUSSENGEWINDE)	LOW PRESSURE RELIEF VALVE CONNECTION : 3/4"G MALE
(17)	CHARGE DE FLUIDE FRIGORIGENE (Kg)	KAELTEMITTEL-FUELLUNG (Kg)	REFRIGERANT CHARGE (Kg)
(18)	CHARGE D'HUILE (Litres)	OELFUELLUNG (Liter)	OIL CHARGE (Litres)
(19)	MASSE EN FONCTIONNEMENT (Kg)	BETRIEBSGEWICHT (Kg)	OPERATING WEIGHT (Kg)
	OPTIONS	*ZUBEHOER*	*OPTIONS*
(20)	MANOMETRES	MANOMETER	PRESSURE GAUGES
(21)	VANNES D'ISOLEMENT	ABSPERRVENTILE	ISOLATING VALVES
(22)	SECTIONNEUR PUISSANCE	SCHALTSCHRANK HAUPTSCHALTER	DISCONNECT SWITCH
(23)	RACCORDEMENT SOUPAPE HAUTE PRESSION : 3/4"G MALE	ANSCHLUSS ÜBERSTRÖM VENTIL HOCHDRUCK-SEITE : 3/4" GASGEWINDE (AUSSENGEWINDE)	HIGH PRESSURE RELIEF VALVE CONNECTION : 3/4"G MALE

A	LA LONGUEUR MENTIONNEE EST SANS LES BOITES A EAU. POUR CALCULER LA LONGUEUR TOTALE, VOIR LE PLAN DES BOITES A EAU.	DIE ANGEGEBENE LAENGE IST OHNE WASSEREDECKEL. ZUR BERECHNUNG DER GESAMTLAENGE DER MASCHINE, SIEHE MASSZEICHNUNG WASSERDECKEL	THE LENGTH MENTIONNED IS WITHOUT WATERBOXES. FOR CALCULATION OF THE TOTAL UNIT LENGTH, SEE WATERBOXES DRAWING
B	LARGEUR SANS ARMOIRE ELECTRIQUE	BREITE OHNE STEUERSCHRANK	WIDTH WITHOUT ELECTRICAL PANEL
C	DIMENSIONS ET POSITION DES BASES	ABMESSUNGEN UND POSITIONNIERUNG DER STUETZEN	BASE DIMENSIONS AND POSITION
D	UNITE AVEC BOITES A EAU	KÜHLMASCHINE MIT WASSERDECKEL	UNIT WITH WATERBOXES
E	MAIN DROITE	RECHTE SEITE	RIGHT HAND
F	MAIN GAUCHE	LINKE SEITE	LEFT HAND
G	EVAPORATEUR 2 PASSES	VERDAMPFER MIT 2 DURCHGÄNGEN	2 PASSES EVAPORATOR
H	EVAPORATEUR 3 PASSES	VERDAMPFER MIT 3 DURCHGÄNGEN	3 PASSES EVAPORATOR
J	EVAPORATEUR 4 PASSES	VERDAMPFER MIT 4 DURCHGÄNGEN	4 PASSES EVAPORATOR
K	EVAPORATEUR 6 PASSES	VERDAMPFER MIT 6 DURCHGÄNGEN	6 PASSES EVAPORATOR
L	CONDENSEUR 2 PASSES	VERFLUESSIGER MIT 2 DURCHGÄNGEN	2 PASSES CONDENSER
M	LONGUEUR MANCHETTE (ACCESSOIRE)	LAENGE DER KANNELIERTEN PFEIFE (ZUBEHOER)	LENGTH OF THE GROOVED PIPE STUB (ACCESSORY)

RTHD	B1 B1 B1	B1 C1 D1	B2 B1 B1	B2 C1 D1	C1 D6 E5	C1 D5 E4	C1 D3 E3	C2 D6 E5	C2 D5 E4	C2 E1 F1
(17)	186	222	186	222	222	222	222	222	222	238
(18)	17	17	17	17	23	23	23	23	23	38
(19)	4476	4787	4476	4787	6077	6202	6824	6077	6202	7175

	ITALIANO	NEDERLANDS	ESPANOL
(1)	EVAPORATORE	VERDAMPER	EVAPORADOR
(2)	CONDENSATORE	CONDENSOR	CONDENSADOR
(3)	COMPRESSORE	COMPRESSOR	COMPRESOR
(4)	SERBATOIO OLIO	OLIETANK	TANQUE DE ACEITE
(5)	SEPARATORE OLIO	OLIEAFSCHEIDER	SEPARADOR DE ACEITE
(6)	PANNELLO ELETTRICO	ELEKTRISCH PANEEL	PANEL ELECTRICO
(7)	ACCESSO RACCORDI CLIENTE ALIMENTAZIONE DI POTENZA	BLINDPLAAT TEN BEHOEVE VAN VOEDINGSKABEL KLANT	ACCESO PARA EL CABLEADO DE FUERZA A REALISAR POR EL CLIENTE
(8)	ACCESSO RACCORDI CLIENTE CONTROLLO E REGOLAZIONE	BLINDPLAAT TEN BEHOEVE VAN AANSLUITKABEL DOORMELDINGEN KLANT	ACCESO PARA EL CABLEADO DE CONTROL EXTERNO A REALISAR POR EL CLIENTE
(9)	COLLEGAMENTO INGRESSO ACQUA EVAPORATORE	VERDAMPER WATERINLAAT	CONEXION DE ENTRADA DE AGUA AL EVAPORADOR
(10)	COLLEGAMENTO USCITA ACQUA EVAPORATORE	VERDAMPER WATERUILAAT	CONEXION DE SALIDA DE AGUA AL EVAPORADOR
(11)	COLLEGAMENTO INGRESSO ACQUA CONDENSATORE	CONDENSOR WATERINLAAT	CONEXION DE ENTRADA DE AGUA AL CONDENSADOR
(12)	COLLEGAMENTO USCITA ACQUA CONDENSATORE	CONDENSOR WATERUILAAT	CONEXION DE SALIDA DE AGUA AL CONDENSADOR
(13)	MINIMO SPAZIO DI SERVIZIO	GEADVISEERDE VRIJE RUIMTE VOOR ONDERHOUD	ESPACIO LIBRE MINIMO PARA MANTENIMIENTO
(14)	SPAZIO NECESSARIO PER LA SOSTITUZIONE DEI TUBI DEL EVAPORATORE E DELL' CONDENSATORE	GEADVISEERDE RUIMTE VOOR HET TREKKEN EN HET OPNIEUW AANBRENGEN VAN PIJPEN VAN VERDAMPER EN CONDENSOR	ESPACIO NECESARIO PARA SACAR LOS TUBOS DEL EVAPORADOR O DEL CONDENSADOR
(15)	GOLFARI Ø 55	HIJSOGEN Ø 55	PUNTOS DE ELEVACION Ø 55
(16)	RACCORDO VALVOLA DI SCARICO BASSA PRESSIONE : MASCHIO 3/4"G	AANSLUITING LAGEDRUKONTLASTKLEP : 3/4"G PEN (MANNELIJKE ANNSLUITING)	CONEXION DE LA VALVULA DE ALIVIO DE BAJA PRESION : MACHO G 3/4"
(17)	CARICA DI FLUIDO FRIGORIGENO (Kg)	KOELMIDDELVULLING (Kg)	CARGA DE REFRIGERANTE (Kg)
(18)	CARICA D'OLIO (Litri)	OLIEVULLING (Liters)	CARGA DE ACEITE (Litros)
(19)	PESO IN FUNZIONAMENTO (Kg)	BEDRIJFSGEWICHT (Kg)	PESO EN OPERACION (Kg)
	OPZIONI	*TOEBEHOREN*	*OPCIONES*
(20)	MANOMETRI	MANOMETERS	MANOMETROS
(21)	VALVOLE DI INTERCETTAZIONE	ISOLATIEKLEPPEN	VALVULAS DE SERVICIO
(22)	SEZIONATORE DI POTENZA	HOOFDSCHAKELAAR	SECCIONADOR DE FUERZA
(23)	RACCORDO VALVOLA DI SCARICO ALTA PRESSIONE : MASCHIO 3/4"G	AANSLUITING HOGEDRUKONTLASTKLEP : 3/4"G PEN (MANNELIJKE ANNSLUITING)	CONEXION DE LA VALVULA DE ALIVIO DE ALTA PRESION : MACHO G 3/4"

A	LA LUNGHEZZA INDICATA NON COMPRENDE L'INGOMBRO DELLE CASSE D'ACQUA. PER CONOSCERE LA LUNGHEZZA TOTALE, VEDERE LO SCHEMA DELLE CASSE D'ACQUA	DE VERMELDE LENGTE IS ZONDER WATERKASTEN. VOOR HET BEPALEN VAN DE TOTALE LENGTE, ZIE TEKENING WATERKASTEN	PARA CALCULAR LA LONGITUD TOTAL DE LA MAQUINA, HAJ QUE ANADIR LOS CAJAS DE AGUA, REMITASE A LA ILUSTRACION DE LOS CAJAS DE AGUA
B	LARGHEZZA SENZA PANNELLO ELETTRICO	BREEDTE ZONDER ELEKTRISCH PANEEL	ANCHURA SIN EL PANEL ELECTRICO
C	DIMENSIONI DELLA BASE E POSIZIONE	BASIS AFMETINGEN EN POSITIE	DIMENSIONS Y POSICION DE LA BASE
D	UNITA CON CASSE D'ACQUA	UNIT MET WATERKASTEN	UNIDAD CON CAJAS DE AGUA
E	DESTRA	RECHTS	DERECHA
F	SINISTRA	LINKS	IZQUIERDA
G	EVAPORATORE 2 CANALI	VERDAMPER 2 DOORGANGEN	EVAPORADOR 2 PASOS
H	EVAPORATORE 3 CANALI	VERDAMPER 3 DOORGANGEN	EVAPORADOR 3 PASOS
J	EVAPORATORE 4 CANALI	VERDAMPER 4 DOORGANGEN	EVAPORADOR 4 PASOS
K	EVAPORATORE 6 CANALI	VERDAMPER 6 DOORGANGEN	EVAPORADOR 6 PASOS
L	CONDENSATORE 2 CANALI	CONDENSOR 2 DOORGANGEN	CONDENSADOR 2 PASOS
M	LUNGHEZZA DEL TRONCHETTO (ACCESSORIO)	LENGTE LASSTOMP TEGENVICTAULIC (TOEBEHOREN)	LONGITUD DEL CARRETE VICTAULIC (OPCIONAL)

D1 D4 E4	D1 D3 E3	D2 D1 E1	D3 D1 E1	D2 F1 F2	D3 F1 F2	D1 G1 G1	D2 G2 G1	D3 G2 G2	E3 D2 E2	E3 F2 F3	E3 G3 G3
215	215	215	215	284	284	318	318	318	215	284	318
23	23	23	23	38	38	42	42	42	23	38	42
6201	6824	6978	6978	7955	7955	8943	9360	9555	7134	8326	9882

TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT	©DATE: 21-10-03	2309-1697 X	SHEET 3/6 REV A
REPLACES: /		RTHD	
REVISION DATE: 14-11-03			
SIMILIAR TO: /			

DEMARRAGE ETOILE TRIANGLE – STERN–DREIECK ANLAUF – WYE–DELTA START

/1. 130

4

EISSPEICHERBETRIEB

1A8 J2

20

RELAIS EISSPEICHERBETRIEB

110/220V

S8

5K20

J11 J1

ALIMENTATION SEPAREE STEUERSPANNUNG SEPARATE SUPPLY

STRÖMUNGSWÄCHTER VERDAMPFER

1A7

110/220V J3 5K1 5S1

110/220V J3 5K2 5S2

J11 J1

1A9 J2

VERDAMPFER Wasserpumpe 5K1

VERFLÜSSIGER WASSERPUMPE 5K2

1A12 J2

5K22

40

5K21 5

41

K 1K5 10 X1 11 X2 /1.49

ERDUNGSFEHLER RELAIS

1A11 J2

/2.97

1X5–1 14 (RD)

1X5–2 15 (BK)

1X5–3 16 (WH)

4B2

1A13 J2

GND

AUSGANG COMPRESSOR/CONDENSER 23

S11 2 ... 10V % NOMINALSTROM VERDICHTER

S12 2 ... 10V VERFLÜSSIGUNGSDRUCK

/4. 191

TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT	©DATE: 21-10-03	2309-1697 X	SHEET 4/6 REV A
REPLACES: /		RTHD	
REVISION DATE: 14-11-03			
SIMILIAR TO: /			

DEMARRAGE ETOILE TRIANGLE – STERN-DREIECK ANLAUF – WYE-DELTA START

/3. 188

4

EXTERNE SOLLWERTE

1A14 J2
GND 6 — E2 — 4 ... 20 mA / 2 ... 10 V — SOLLWERT EXTERNE KALTWASSER-TEMPERATUR (22)
\+ 5
+12VDC 4
GND 3 — E1 — 4 ... 20 mA / 2 ... 10 V — SOLLWERT EXTERNE STROMBEGR.
\+ 2
+12VDC 1
J11, J1

INTERFACE

1A16 J2
4 — S13 — COMM 4 ANDERE UNIT (24)
3
2 — S14 — TRACER OR TRANE REMOTE DEVICE
1
J11, J1

EISSPEICHERBETRIEB

1A15 J2
4 — 5K13 — E3 — AKTIVIERUNG EXTERNE GRUNDLAST (20)
3
2 — 5K12 — E4 — EISSPEICHERBETRIEB
1
J11, J1

1A17 J2
GND 6 — E5 — 4 ... 20 mA / 2 ... 10V — EINGANG EXTERNER GRUNDLAST SW (25)
\+ 5
4
GND 3 — E6 — 4 ... 20 mA / 2 ... 10V — EINGANG KÄLTEMITTEL ÜBERWACHUNG
\+ 2
1
J11, J1

1A10 J2 (26)
12 — L — ALIMENTATION SEPAREE STEUERSPANNUNG SEPARATE SUPPLY
11 — N — 5K4
10 — 5K5
9
8 — 5K6
7 — 5K7 — S2 — PROGRAMMIERBARE RELAIS
6
5 — 5K8
4 — 5K9
3
2 — 5K10
1 — 5K11
J11, J1

TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE.

DRAWN BY: FLEUROT ©DATE: 21-10-03
REPLACES: /
REVISION DATE: 14-11-03
SIMILIAR TO: /

2309-1697 X | SHEET 1/6 | REV A

RTHD

DEMARRAGE ETOILE TRIANGLE – STERN-DREIECK ANLAUF – WYE-DELTA START

L1 L2 L3 1X1 PE
1
5T10 K L 8 9 1K5 K
A1 A2 A3
1T2-1 51 50 /2.80,81
1T2-2 53 52 /2.82,84
1T2-3 55 54 /2.84,86
A1 A2 A3

L1 L2 L3 5F10 1Q10 A1 A2 A3 A
L1 L2 L3 1Q10 1F10 A1 A2 A3 E
L1 L2 L3 1Q11 A1 A2 A3 F

AVEC OPTION J
MIT ZUBEHOER J.
WITH OPTION J

SANS OPTION J
OHNE ZUBEHOER J.
WITHOUT OPTION J

J
A1 A2 A3 1Q2 X3 60 X4 61 X5 62
60 62 1T3-3 68 67 /2. 95
61 60 1T3-2 66 65 /2. 92
62 61 1T3-1 64 63 /2. 89
62 61 1T1 0V 380V 400V 415V 4 PE 110V 27V 56 57 58 59
A1 A2 1Q2
62 61 1T1 0V 380V 400V 415V 4 PE 110V 27V 56 57 58 59
1Q3 10 11 X1 X2 /2.73
1Q4 12 13

1K1 1R1 T9 1K4 T6 1K2 1K3 T1 T6
1K1 1R1 T7 1K4 T4 1K2 1K3 T2 T4
1K1 1R1 T8 1K4 T5 1K2 1K3 T3 T5
A1 A2 A3
M 3~

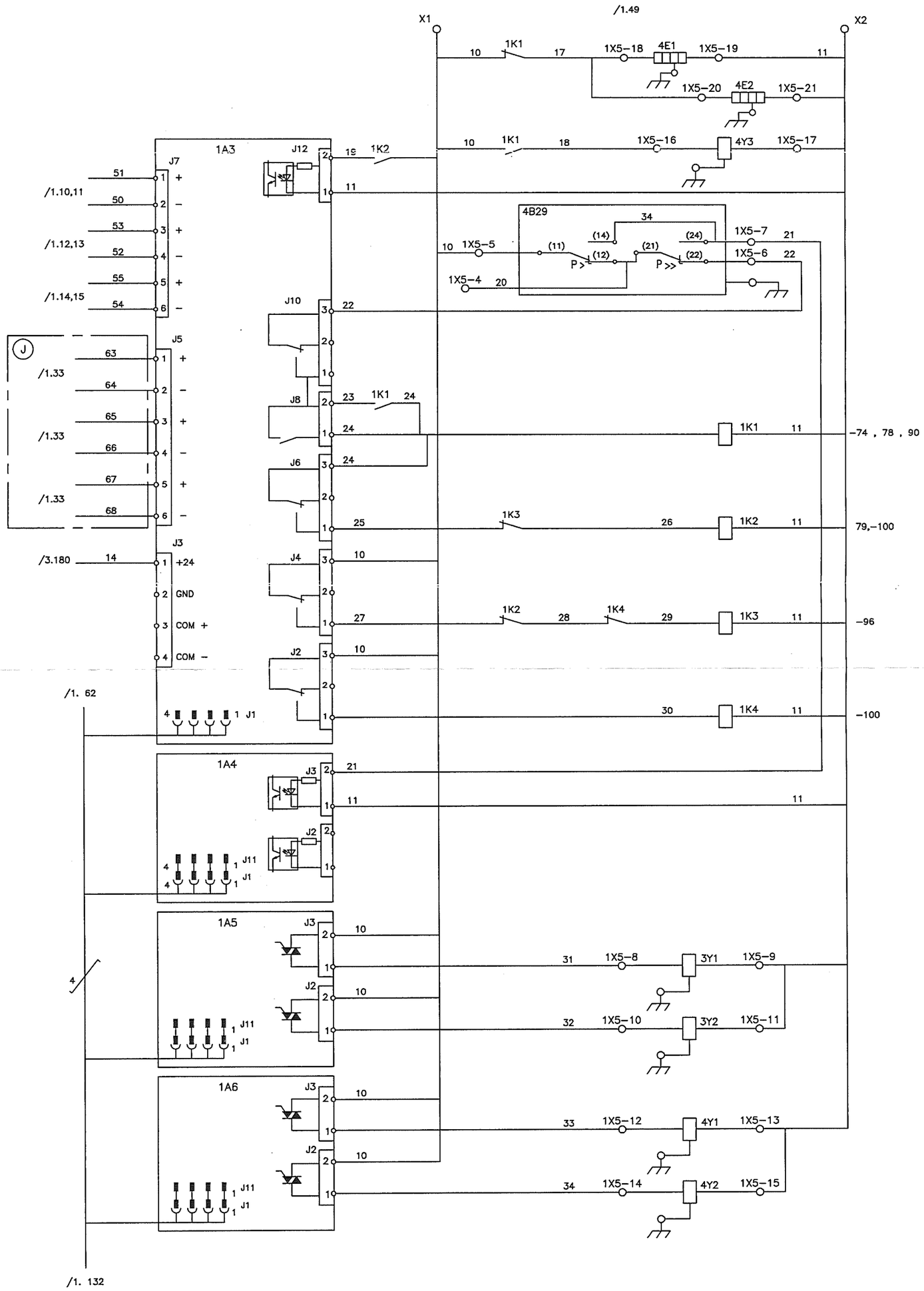
DETAIL 3M1
3M1 EINZELHEIT
3M1 DETAIL
T1 T4 T2 T5 T3 T6

4B3 3
4Y21 M 2
4Y20 M
4B20 tc
4B21 tc
4B22 tc
4B23 tc
4B24 P
4B27 tc
4B25 P
4B26 P
1A1 J1 == +24 GND COM+ COM- 1 RD 2 BK 3 GN 4 WH
5B28 tc 3
GY BU GY/BK RD WH GN BK RD WH GN BK RD
4 3 2 1 J3 4 3 2 1 J4 4 3 2 1 J5
/2.104 4 J11 J1 1A2 J2 3 2 1 13 12

TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT © DATE: 21-10-03	2309-1697 X — SHEET 2/6 — REV A
REPLACES: /	RTHD
REVISION DATE: 14-11-03	
SIMILIAR TO: /	

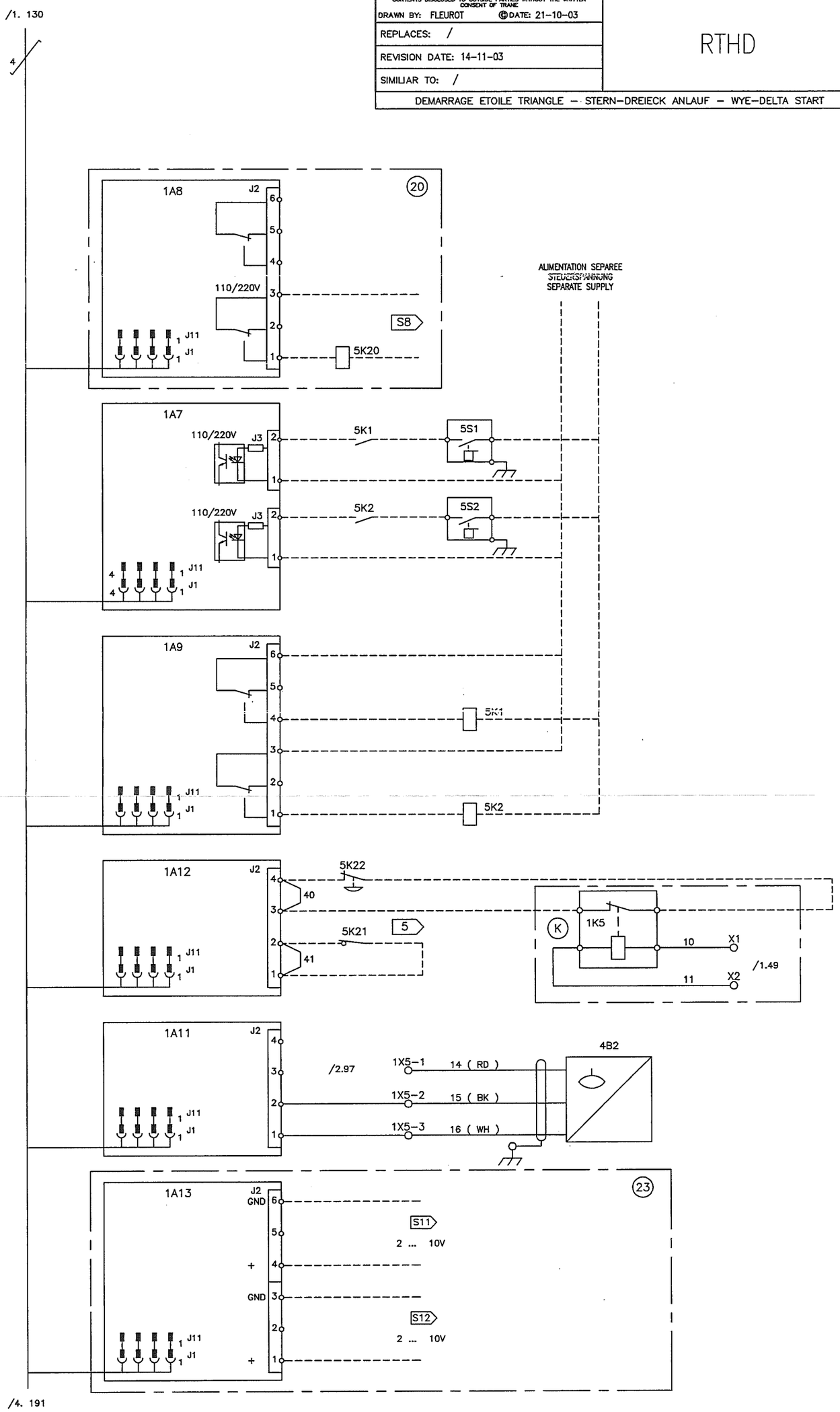
DEMARRAGE ETOILE TRIANGLE – STERN-DREIECK ANLAUF – WYE-DELTA START



TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT	©DATE: 21-10-03	2309-1697 X	SHEET 3/6 REV A
REPLACES: /		RTHD	
REVISION DATE: 14-11-03			
SIMILIAR TO: /			

DEMARRAGE ETOILE TRIANGLE – STERN–DREIECK ANLAUF – WYE–DELTA START



TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT	DATE: 21-10-03	2309-1697 X	SHEET 4/6 REV A
REPLACES: /		RTHD	
REVISION DATE: 14-11-03			
SIMILIAR TO: /			

DEMARRAGE ETOILE TRIANGLE – STERN-DREIECK ANLAUF – WYE-DELTA START

/3. 188

4

(22)

1A14 J2
GND 6 — E2 — 4 ... 20 mA / 2 ... 10 V
\+ 5
+12VDC 4
GND 3 — E1 — 4 ... 20 mA / 2 ... 10 V
\+ 2
+12VDC 1
1 J11
1 J1

(24)

1A16 J2
4
3 — S13
2
1 — S14
1 J11
1 J1

(20)

1A15 J2
4 — 5K13 — E3
3
2 — 5K12 — E4
1
1 J11
1 J1

(25)

1A17 J2
GND 6 — E5 — 4 ... 20 mA / 2 ... 10V
\+ 5
4
GND 3 — E6 — 4 ... 20 mA / 2 ... 10V
\+ 2
1
1 J11
1 J1

(26)

1A10 J2
12 — L
11 — 5K4 — N
10 — 5K5
9
8 — 5K6
7 — 5K7 — S2
6
5 — 5K8
4 — 5K9
3
2 — 5K10
1 — 5K11
1 J11
1 J1

ALIMENTATION SEPAREE
STEUERSPANNUNG
SEPARATE SUPPLY

TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT	©DATE: 21-10-03	2309-1697 X	SHEET 5/6 REV A
REPLACES: /		RTHD	
REVISION DATE: 14-11-03			
SIMILIAR TO: /			

NOMENCLATURE – LEGEND – COMPONENTS DESIGNATION

———	CABLAGE TRANE	TRANE VERDRAHTUNG	TRANE WIRING
— —	CABLAGE CLIENT	VERDRAHTUNG DURCH KUNDEN	CUSTOMER WIRING

CODE COULEUR FARBMARKIERUNG COLOUR CODE		
BK: NOIR	SCHWARZ	BLACK
BN: BRUN	BRAUN	BROWN
BU: BLEU	BLAU	BLUE
GD: OR	GOLD	GOLD
GN: VERT	GRUEN	GREEN
GY: GRIS	GRAU	GRAY
OG: ORANGE	ORANGE	ORANGE
PK: ROSE	ROSE	PINK
RD: ROUGE	ROT	RED
SR: ARGENT	SILBER	SILVER
VT: VIOLET	VIOLETT	PURPLE
WH: BLANC	WEISS	WHITE
YE: JAUNE	GELB	YELLOW

1K20–1

	INDICE	ZAHLENINDEX	INDEX
	ATTRIBUT	ATTRIBUT	ATTRIBUTE
	DESIGNATION	BEZEICHNUNG	DESIGNATION
	EMPLACEMENT	STELLE	LOCATION
	EMPLACEMENT	STELLE	LOCATION
1	COFFRET UNITE	GERATE–SCHALTTAFEL	UNIT PANEL
2	PAS UTILISE	NITCH BENUTZT	NOT USED
3	COMPRESSEUR	VERDICHTER	COMPRESSOR
4	MONTE EN USINE	AN DER MASCHINE MONTIERT	UNIT MOUNTED
5	CABLAGE CLIENT	VERDRAHT. KUNDEN	CUSTOMER WIRING

NOTES – BEACHTE – NOTES:

1 –VOIR DETAIL SI OPTION A, E, OU F MONTEE	–SIEHE EINZELHEIT, WENN OPTION A,E ORDER F MONTIERT IST	–SEE DETAIL IF OPTION A,E OR F MOUNTED
2 –SEULEMENT POUR COMPRESSEUR C ET AU DESSUS	–NUR FUR VERDICHTER C UND HORER	–ONLY FOR COMPRESSOR C AND OVER
3 –SONDE EXTERIEURE INSTALLEE EN USINE	–FUEHLER, UMGEBUNGSTEMPERATUR WERKSMONTIERT	–OUTDOOR AIR TEMP FACTORY INSTALLED LEAD LENGTH EXTENDED BY CUSTOMER
4 –COUPLE EN 400V EN USINE	–400V VERDRAHTET (WERKSMONTIERT)	–CONNECTED IN 400V (FACTORY WIRED)
5 –OTER CE PONTAGE QUAND UTILISATION DE CE CONTACT	–ENTFERNE DIESE BRUECKE, WENN DIESER KONTAKT BELEGT IST	–REMOVE THIS JUMPER WHEN USING THIS CONTACT

ENTREES CARTES POUR RACCORDEMENT CLIENT – MODULEINGANG – CUSTOMER INPUTS:

E1 –POINT DE CONSIGNE EXTERNE D'INTENSITE	–SOLLWERT EXT. STROMBEGRENZUNG	–EXTERNAL CURRENT LIMIT SETPOINT
E2 –POINT DE CONSIGNE EXTERNE EAU FROIDE	–SOLLWERT EXT. KALTWASSERTEMPERATUR	–EXTERNAL CHILLED WATER SETPOINT
E3 –CONTROLE DE CHARGE EXTERNE	– AKTIVIERUNG EXTERNE GRUNDLAST	–EXTERNAL BASE LOAD ENABLE
E4 –FONCTIONNEMENT STOCKAGE DE GLACE	–EISSPEICHERBETRIEB	–ICE BUILDING CONTROL
E5 –ENTREE CONTROLE DE CHARGE EXTERNE	–EINGANG EXTERNER GRUNDLAST–SOLLWERT	–EXTERNAL BASELOAD SETPOINT INPUT
E6 –ENTREE DETECTEUR DE REFRIGERANT	–EINGANG KALTEMITTEL–UBERWACHUNG	–REFRIGERANT MONITOR INPUT

SORTIES CARTES POUR RACCORDEMENT CLIENT – MODULAUSGANG – CUSTOMER OUTPUTS:

S2 –RELAIS PROGRAMMABLES	–FUNKTION DES RELAIS PROGRAMMIERBAR	–PROGRAMMABLE RELAIS
S8 –FONCTIONNEMENT STOCKAGE DE GLACE	–RELAIS EISSPEICHERBETRIEB	–ICE MAKING ENABLE
S11 –0–10VDC : INFORMATION % RLA COMPRESSEUR	– 0–10VDC : INFO NOMINALSTROM VERDICHTER (RLA)	– 0–10VDC COMPRESSOR % RLA OUTPUT
S12 –0–10VDC : INFORMATION CONTROLE CONDENSEUR (PRESSION ...)	– 0–10VDC : INFO VERFLUESSIGUNSDRUCK (DRUCK ...)	– 0–10VDC CONDENSER CONTROL OUTPUT (CONDENSER PRESSURE , DELTA PRESSURE ...)
S13 – VERS AUTRE UNITE	– ZUE ANDERE UNIT	–TO NEXT UNIT
S14 – VERS TRACER OU AUTRE UNITE TRANE	– NACH TRACER	–TO TRACER OR OTHER TRANE REMOTE DEVICE

REPERE	OPTIONS	ZUBEHOER	OPTIONS
A	INTERRUPTEUR–SECTIONNEUR	HAUPTSCHALTER	DISCONNECT SWITCH
E	INTERRUPTEUR–SECTIONNEUR + FUSIBLES	HAUPTSCHALTER + SICHERUNG	DISCONNECT SWITCH + FUSES
F	DISJONCTEUR	SCHUTZSCHALTER	CIRCUIT BREAKER
J	TRANSFO. DE SUR/SOUS TENSION	UEBER/UNTERSPANNUNGSTRAFO.	OVER/UNDER VOLTAGE TRANSFO.
K	DEFAUT DE MISE A LA TERRE	ERDUNGSFEHLER RELAIS	GROUND FAULT RELAY
20	FONCTIONNEMENT MACHINE A GLACE	EISSPEICHERBETRIEB	ICE MAKING ENABLE
22	POINTS DE CONSIGNES EXTERNES	EXTERNER SOLLWERT	EXTERNAL SETPOINTS
23	SORTIES COMPRESSEUR / CONDENSEUR	AUSGANG KOMPRESSOR / VERFLUSSIGER	CONDENSER / COMPRESSOR OUTPUT
24	INTERFACE COMM4 OU COMM5	COMM4 ORDER COMM5	COMM4 OR COMM5
25	ENTREE DETECTEUR DE REFRIGERANT ET CONTROLE DE CHARGE EXTERNE	EINGANG KALTEMITTELLUBERWACHUNG UND SOLLWERT EXTERNE GRUNDLAST	REFRIGERANT MONITOR INPUT & EXTERNAL BASELOAD SETPOINT INPUT
26	RELAIS PROGRAMMABLE	FUNKTION DES RELAIS PROGRAMMIERBAR	PROGRAMMABLE RELAIS

TRANE
A DIVISION OF AMERICAN STANDARD INC.
ALL RIGHTS RESERVED
THIS DRAWING IS PROPRIETARY AND SHALL NOT BE COPIED OR ITS CONTENTS DISCLOSED TO OUTSIDE PARTIES WITHOUT THE WRITTEN CONSENT OF TRANE

DRAWN BY: FLEUROT	©DATE: 21-10-03	2309-1697 X	SHEET 6/6 REV A
REPLACES: /		RTHD	
REVISION DATE: 14-11-03			
SIMILIAR TO: /			

NOMENCLATURE – LEGEND – COMPONENTS DESIGNATION

LINE #	ITEM	FRANCAIS	DEUTCH	ENGLISH
/	X	BORNE	KLEMMEN	TERMINAL BLOCK
51–57	1A1	INTERFACE UTILISATEUR LOCAL	LOKALE MENSCH/MASCHINE SCHNITTSTEL.	DYNA VIEW DISPLAY AND INTERFACE
61–65	1A2	MODULE ALIMENTATION	MODUL SPANNUNGSEINGANG	POWER SUPPLY MODULE
78–105	1A3	MODULE DEMARREUR	STARTER MODUL	STARTER MODULE
106–113	1A4	MODULE COUPURE PRESSOSTAT HAUTE PRESSION	MODUL MITTLELSPANNUNGSEINGANG BINAER	HIGH PRESSURE CUTOUT SWITCH
113–121	1A5	MODULE ELECTROVANNES CHARGE ET DECHARGE	MODUL MIT 2 AUSGAENGEN TRIAC	SLIDE VALVE INLOAD AND LOAD CONTROL SOLENOID VALVE
121–128	1A6	MODULE ELECTROVANNES REMPLISSAGE ET VIDANGE GAS PUMP	MODUL MIT 2 AUSGAENGEN TRIAC	OIL RETURN GAS PUMP DRAIN AND FILL SOLENOID VALVE
149–159	1A7	MODULE CONTROLEUR DE DEBIT EVAPORATEUR ET CONDENSEUR	MODUL MITTLELSPANNUNGSEINGANG BINAER	CONDENSER AND CHILLED WATER FLOW SWITCH INTERLOCKS
139–148	1A8	MODULE ETAT MODE STOCKAGE GLACE/ELECTROVANNE D'HUILE	MODUL MIT ZWEI RELAIS AUSGAENGEN	ICE BUILDING STATUS OUTPUT AND MASTER OIL LINE SOLENOID VALVE
160–169	1A9	MODULE DEMARRAGE POMPE EVAPORATEUR ET CONDENSEUR	MODUL MIT ZWEI RELAIS AUSGAENGEN	CONDENSER AND CHILLED WATER PUMP STARTER
234–251	1A10	MODULE SORTIES RELAIS D'INDICATEUR D'ETAT PROGRAMMABLE	MODUL MIT VIER RELAIS AUSGAENGEN	OPERATING STATUS PROGRAMMABLE RELAYS
177–183	1A11	MODULE INDICATEUR PRESENCE D'HUILE	MODUL OELSTANDSKONTROLLE	OIL LOSS LEVEL SENSOR AND UNUSED INPUTS
170–176	1A12	MODULE SORTIES MARCHE/ARRET EXTERNE ET ARRET D'URGENCE	MODUL NIEDERSPANNUNGSEINGANG BINAER	EXTERNAL AUTO/STOP AND EMERGENCY STOP INPUT
185–188	1A13	MODULE SORTIES CONTROLE CONDENSEUR ET SORTIE RLA	ANALOG I/O MODUL MIT 2 I/O ANSCHLUESSEN	CONDENSER CONTROL AND % RLA OUTPUT
197–205	1A14	MODULE SORTIE PNT CONSI. EXT. LIM. COURANT ET EAU GLACEE	ANALOG I/O MODUL MIT 2 I/O ANSCHLUESSEN	EXTERNAL CURRENT LIMIT AND CHILLED WATER
216–222	1A15	MODULE MODE STOCKAGE GLACE/CONTROLE CHARGE EXTERNE	MODUL NIEDERSPANNUNGSEINGANG BINAER	ICE BUILDING CONTROL AND EXTERNAL BASE LOADING ENABLE
208–214	1A16	INTERFACE COMM4 OU LCI–C (COMM5)	COMM4 ORDER COMM5	COMM 4 OR LCI–C (COMM 5)
224–233	1A17	MODULE ENTREE DETECTEUR RFGT/CONTROLE CHARGE EXTERNE	ANALOG I/O MODUL MIT 2 I/O ANSCHLUESSEN	REFRIGERANT MONITOR INPUT AND EXTERNAL BASE LOADING SETPOINT
12	1F10	FUSIBLE COMPRESSEUR	SICHERUNG, VERDICHTER	COMPRESSOR FUSE
36...44	1K1	CONTACTEUR LIGNE COMPRESSEUR	SCHUETZ, BETRIEB VERDICHTER	COMPRESSOR LINE CONTACTOR
38...46	1K2	CONTACTEUR TRIANGLE COMPR.	SCHUETZ DREIECK VERDICHTER	DELTE COMPRESSOR CONTACTOR
38...46	1K3	CONTACTEUR ETOILE COMPRESSEUR	SCHUETZ STERN VERDICHTER	STAR COMPRESSOR CONTACTOR
37...45	1K4	CONTACTEUR TRANSITION COMPR.	SCHUETZ, UEBERGANG VERDICHTER	COMPRESSOR TRANSITION CONTACTOR
5,6,174	1K5	RELAIS PROTECTION	RELAIS STOERUNG	PROTECTION RELAY
23/45	1Q2/3/4	DISJONCTEUR MAGNETOTHERMIQUE	UBERSTROMREL. MAGNET THERMIQUE	MAGNETOTHERMIC OVERLOAD RELAY
11	1Q10	INTERRUPTEUR SECTIONNEUR UNITE	TRENNER MASCHINE	UNIT DISCONNECT SWITCH
11	1Q11	DISJONCTEUR UNITE	UBERSTROMREL. MASCHINE	UNIT CIRCUIT BREAKER
37...45	1R1	RESISTANCE DE TRANSITION	WIDERSTAND UEBERGANG	TRANSITION RESISTOR
39	1T1	TRANSFORMATEUR	TRANSFORMATOR	TRANSFORMER
10...15	1T2 ...	TRANSFORMATEUR D'INTENSITE	STROMWANDLER	CURRENT TRANSFORMER
30,77..82	1T3 ...	TRANSFO. DE SUR/SOUS TENSION	UEBER/UNTERSPANNUNGSTRAFO.	OVER/UNDER VOLTAGE TRANSFORMER
2	1X1	BORNIER PUISSANCE COMPRESSEUR	KLEMMEN, KRAFTSTROM, VERDICHTER	COMPRESSOR POWER CIRCUIT TERMINAL STRIP
40	3M1	MOTEUR COMPRESSEUR	MOTOR, VERDICHTER	COMPRESSOR MOTOR
116	3Y1	ELECTROVANNE CHARGE COMPRESSEUR	MAGNETVENTIL. LEISTUNGSREGELUNG	COMPRESSOR LOAD SOLENOID VALVE
119	3Y2	ELECTROVANNE DECHARGE COMPRESSEUR	MAGNETVENTIL. LEISTUNGSREGELUNG	COMPRESSOR UNLOAD SOLENOID VALVE
179...183	4B2	DETECTEUR PRESENCE HUILE	OELSTANDSKONTROLLE	OIL LOSS LEVEL SWITCH
48	4B3	CONTROLE NIVEAU REFRIGERANT EVPAPORATEUR	VERD. KAELTEMITTEL NIVEAU SENSOR	EVP. REFRIGERANT LIQUID LEVEL SENSOR
55	4B20	SONDE TEMPERATURE ENTREE D'EAU EVPAPORATEUR	FUEHLER WASSEREINTRITT VERD.	ENTERING EVAPORATOR WATER TEMPERATURE SENSOR
57	4B21	SONDE TEMPERATURE SORTIE EAU EVAPORATEUR	FUEHLER, WASSERAUSSTRITT VERD.	LEAVING EVAPORATOR WATER TEMPERATURE SENSOR
58	4B22	SONDE TEMPERATURE ENTREE EAU CONDENSEUR	FUEHLER. WASSERAUSSTRITT VERFL.	ENTERING CONDENSER WATER TEMPERATURE SENSOR
62	4B23	SONDE TEMPERATURE SORTIE EAU CONDENSEUR	FUEHLER. WASSERAUSSTRITT VERD.	LEAVING CONDENSER WATER TEMPERATURE SENSOR
64	4B24	CAPTEUR DE PRESSION D'HUILE	OELSTANDSKONTROLLE	OIL PRESSURE TRANSDUCER
51	4B25	CONTROLE PRESSION EVAPORATEUR	GEBER VERDAMPFUNGSDRUCK	EVAPORATOR REFRIGERANT PRESSURE TRANSDUCER
53	4B26	CONTROLE PRESSION CONDENSEUR	VERFLUESSIGUNGSDRUCKKONTROLLE	CONDENSOR REFRIGERANT PRESSURE TRANSDUCER
49	4B27	SONDE TEMPERATURE REFOULEMENT	FUEHLER. HEISSGASTEMPERATUR	DISCHARGE TEMPERATURE SENSOR
72	4B29	PRESSOSTAT HAUTE PRESSION	DRUCKSCHALTER,HOCHDRUCK	HIGH PRESSURE CUTOUT SWITCH
74/76	4E1/2	RESISTANCE CARTER HUILE	OELHEITZUNG, VERDICHTER	OIL SUMP HEATERS
121	4Y1	ELECTROVANNE REMPLISSAGE	MAGNETVENTIL FUELLEN	FILL SOLENOID VALVE
126	4Y2	ELECTROVANNE VIDANGE	MAGNETVENTIL ABLASSEN	DRAIN SOLENOID VALVE
78	4Y3	ELECTROVANNE CIRCUIT HUILE	MAGNETVENTIL. OELKREIS	MASTER OIL LINE SOLENOID VALVE
50/53	4Y20–21	VANNE D' EXPANSION ELECTRONIQUE	ELEKTRONISHES EXPANSIONVENTIL	DUAL PORT EXV ACTUATOR
58	5B28	SONDE TEMPERATURE AIR EXTERIEUR	FUEHLER, UMGEBUNSLUFT	OUTDOOR TEMPERATURE AIR SENSOR
9	5F10	FUSIBLES	SICHERUNG	FUSES
163	5K1	CONTACTEUR POMPE A EAU EVAPORATEUR	SCHUETZ, WASSERPUMPE VERDAMPFER	CHILLED WATER PUMP STARTER
168	5K2	CONTACTEUR POMPE A EAU CONDENSEUR	SCHUETZ, WASSERPUMPE VERFLUESS	CONDENSER WATER PUMP STARTER
236...251	5K4..20	RELAIS	RELAIS	UNIT STATUS RELAYS
219	5K12	FONCTIONNEMENT EN MODE STOCKAGE DE GLACE	EISSPEICHERBETRIEB	ICE BUILDING CONTROL
216	5K13	VALIDATION EXTERNE DU CONTROLE DE CHARGE	SOLLWERT "EXTERNAL BASE LOADING "	EXTERNAL BASE LOAD ENABLE
174	5K21	ARRET UNITE	EIN/AUS MASHINE	EXTERNAL STOP
171	5K22	ARRET D' URGENCE UNITE	NOTSCHALTER–AUS	EXTERNAL EMERGENCY STOP
6	5T10	TRANSFORMATEUR D' INTENSITE	STROMWANDLER	CURRENT TRANSFORMER
151	5S1	INTERRUPTEUR DEBIT EAU EVP	STROEMUNGSWAECHTER VERD.	EVP WATER FLOW SWITCH
155	5S2	INTERRUPTEUR DEBIT EAU CDS	STROEMUNGSWAECHTER VERFLUESSIGER	CDS WATER FLOW SWITCH