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Release Date: November 9, 1998

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H2 warrants its products to be free from defects in materials and workmanship for a period of one (1) year from the original date of installation or eighteen (18) months from original date of shipment, whichever period is shorter. In the event of a covered defect and subject to proper reporting by Buyer and the opportunity to inspect as set forth below, H2 will repair or replace the defective equipment at its option. H2 shall not be responsible for consequential damages, if any, incurred or claimed by Buyer, including, but not limited to leakage related to the failure of H2 manufactured equipment, loss of income, expenses arising from use and/or installation of the equipment, or unforeseen circumstances related to equipment operation. Manufacturer's liability as stated herein cannot be altered or enlarged except when approved in writing and signed by an officer of the Manufacturer.

Buyer shall report all claimed defects to H2, in writing, within (4) four business days of discovery by Buyer and shall not undertake repair or replacement until H2 has been allowed to inspect the claimed defect. H2 shall make every effort to make a prompt inspection after receipt of notice from Buyer. Pending inspection and/or repair, Buyer will follow all instructions of H2 for preservation and protection of the equipment. **ALL REPAIRS AND RELATED EXPENSES TO BE MADE BY AUTHORIZED H2 PERSONNEL ONLY.**

The warranty granted herein does not extend to products sold by H2 that are warranted by the original equipment manufacturer. Buyer shall be responsible for travel, mileage, labor and per diem connected to the repair or replacement of products not manufactured by H2, per H2's rate schedule. Any freight charges are to be prepaid by Buyer.

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Buyer's order was placed in Deschutes County, Oregon. The Warranty-Disclaimer shall be governed and construed according to the laws of the state of Oregon. Other than in the event of lien foreclosure proceedings commenced in the jurisdiction in which the equipment is installed, any suit or action between H2 and Buyer arising out of this shall be brought in Deschutes County, Oregon. In the event suit or action is instituted to enforce any of the terms, the losing party shall pay, in addition to court costs, the prevailing party's attorney fees, whether at trial or on appeal.

ABOVE WARRANTY IS VOID IN THE EVENT OF ANY UNAUTHORIZED ALTERATIONS TO PRODUCT, LACK OF RECOMMENDED SAFETY OR FILTRATION DEVICES, IMPROPER INSTALLATION BY OTHERS, ABUSE, MISUSE, NEGLIGENCE, ABNORMAL USE, EXCESSIVE PRESSURE OR VACUUM, TRANSIT DAMAGE, FIRE OR ACCIDENT.

PREFACE

CAUTION NOTE

This instruction manual has been prepared to serve as a general guide in operating and maintaining Soil Vapor Extraction (SVE) equipment furnished by H2 Oil Recovery Equipment, Inc. It is intended for use by **qualified personnel** with a knowledge of SVE systems and their operation. It is not intended to cover all possible variations in equipment or to provide for specific operating problems, which may arise. Should additional information be required, H2 Oil or its field representatives should be contacted.

It is recognized that no amount of written instructions can replace intelligent thinking and reasoning on the part of the operators. This manual is not intended to relieve the operating personnel of the responsibility for proper operation of the equipment. Personnel should become thoroughly familiar with the equipment before operating or maintaining the equipment.

H2 Oil Recovery Equipment, Inc.'s liability for the equipment furnished is as set forth in the contract. H2 Oil Recovery Equipment, Inc. does not assume responsibility for any equipment not furnished by H2 Oil. No employee of H2 Oil is authorized to assume any responsibility for equipment not furnished by H2 Oil.

Competent supervision of mechanical and electrical equipment operation and maintenance is necessary to maintain safe and reliable operation.

PRIOR TO INITIAL OPERATION, PLEASE READ THIS MANUAL AND ALL EQUIPMENT MANUALS INCLUDED THOROUGHLY IN ORDER TO AVOID ANY POSSIBLE DAMAGE TO PERSONNEL OR THE EQUIPMENT.

SAFETY CONSIDERATIONS

Your company's policies and procedures for safely operating the SVE system supersede the safety considerations listed below. It is your responsibility to follow your company's safety procedure. If there aren't any, follow those established by OSHA, DEQ, or NEC, as a minimum.

ELECTRICAL SAFETY

- Before attempting any procedures, locate the main electrical source and understand how to safely control it.
- Whenever possible, be sure to lockout and tagout the electrical before beginning any repair or replacement tasks. Refer to your H2 Oil equipment manual and your company's safety policies and procedures for specific instructions.

- During periods of lightning activity, do not connect or disconnect any cables or perform installation, maintenance or reconfiguration.
- Notify nearby personnel that you are attempting to operate or service this system. Follow your company's lockout/tagout procedure.

BEFORE POWERING UP THE SVE SYSTEM

- Know how to stop the system and automatic operation in an emergency.
- Understand the system's alarm indications (refer to Section 3 - Alarms).
- Ensure that all safety devices in the work area are properly installed and functional.

1.0 SYSTEM INSTALLATION

1.1 INSTALLATION INSTRUCTIONS

- ◆ Completely familiarize yourself with the equipment manuals, vendor cut sheets, data sheets, and any other useful literature supplied with the equipment. Each manual has specific guidelines and procedures for safe operation and maintenance of the equipment and should be read thoroughly before operation of the complete SVE system. If unsure or unfamiliar with the installation of SVE system, consult an H2 Oil representative for further information as required.
- ◆ Install the SVE blower, moisture separator and any other equipment on solid level footing. If blower system is mounted on a skid, make sure the skid surface is level.
- ◆ Install equipment only in a **NON-HAZARDOUS (NON-CLASSIFIED)** location.
- ◆ Remove any shipping plugs and wrapping from the control panel and anywhere else they may have been placed.
- ◆ Make all electrical connections as specified in the Note to Installer and Electrical Schematics. All electrical work shall be performed by licensed and/or qualified personnel.
- ◆ Verify proper supply voltage, circuit breakers, and wire gauges as specified in the Note to Installer.
- ◆ Open the control panel and replace the timers, relays and any other equipment that may have been disconnected for shipping purposes. The timers and relays are labeled and will correspond to the timer and relay bases, which are also labeled.
- ◆ Connect any other ancillary equipment that has either been supplied by H2 or other equipment manufacturers. Refer to the respective equipment manuals for installation instructions and procedures.
- ◆ Assure proper rotation of the blower motor. Proper rotation is typically indicated on the blower housing.
- ◆ Test all safety interlocks and alarms prior to start-up.
- ◆ Assure that each of the blower's motor starter's thermal overload relay is adjusted to the full load amperage of the motor, as indicated on the motor's nameplate.

1.2 NOTE TO INSTALLER

Installation shall be performed by a qualified electrician following the guidelines of the NEC and local codes. Use specified branch circuit protection or equivalent. Use specified wire size or larger.

- 1) Branch circuit main disconnect to be supplied by customer.
- 2) Customer to supply branch circuit protection by providing inverse time delay circuit breakers as follows:

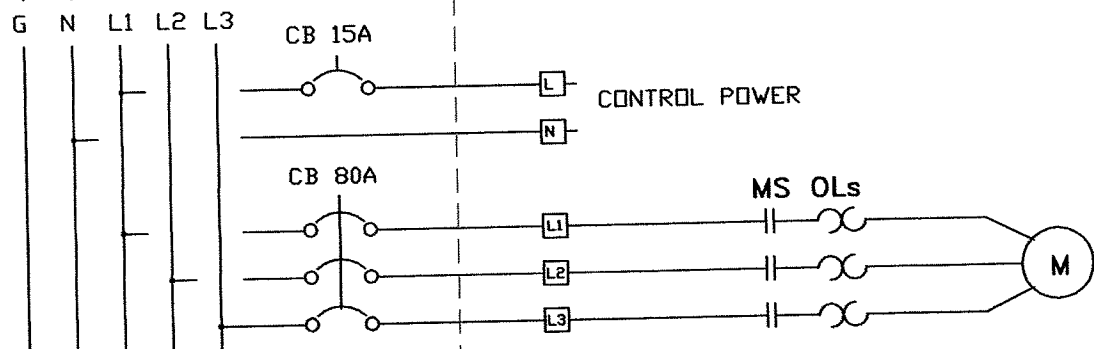
QTY	SIZE	POLES	VOLTAGE	DESCRIPTION	MIN AWG
1	15 Amp	1	120vac	Control Circuit Power	14
1	80 Amp	2	240vac	SVE Blower Power	6

- 3) Use only copper wire rated for 90°C.
- 4) Torque values for field connections are as follows:
 - a) 8-16 lb.-in for control circuit and motor supply wires

1.3 TERMINAL DESIGNATIONS

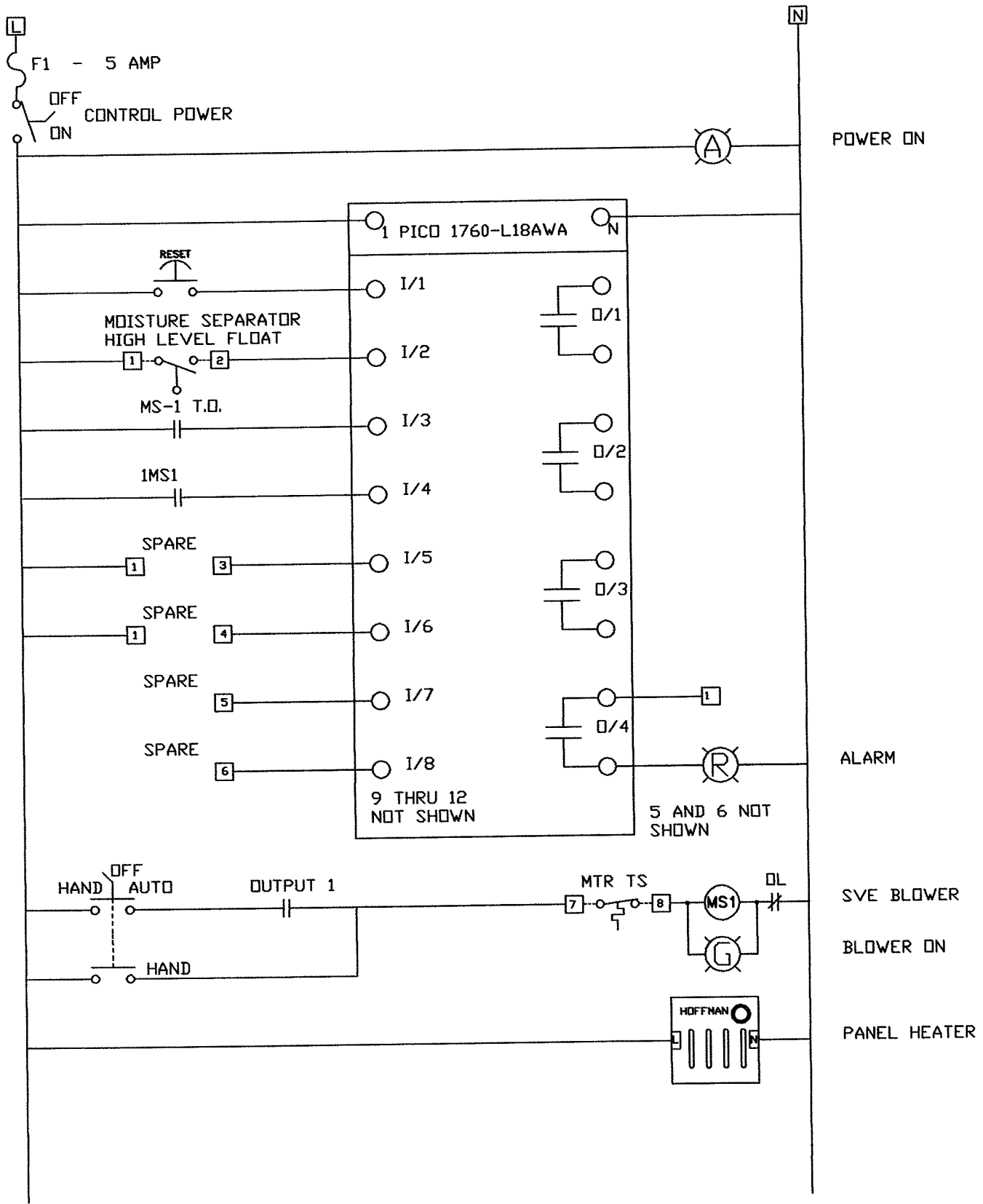
L	Control Voltage Supply Power 120vac
N	Control Voltage Neutral 120vac
N	Control Voltage Neutral 120vac
1	Switched Control Power 120vac
1	Switched Control Power 120vac
1	Switched Control Power 120vac
2	MS high level float switch N.O.
3	To Spare Input #5 of PLC
4	To Spare Input #6 of PLC
5	To Spare Input #7 of PLC
6	To Spare Input #8 of PLC
7	To SVE blower motor internal thermals
8	To SVE blower motor internal thermals
L1	SVE Blower Motor Supply Power 240vac
L2	SVE Blower Motor Supply Power 240vac
L3	SVE Blower Motor Supply Power 240vac

230VAC, 3 PHASE, 60 HZ
 CUSTOMER SUPPLIED
 BREAKERS



SVE BLOWER
 15 HP

H2 OIL RECOVERY EQUIPMENT		
RDG SVE SKID CONTROL		
Designed by: RS	SCALE	DRAWING NO.
DRAWN BY	DATE 10/14/02	E220546SKID A
CAD	DATE	
REVISED BY	DATE	

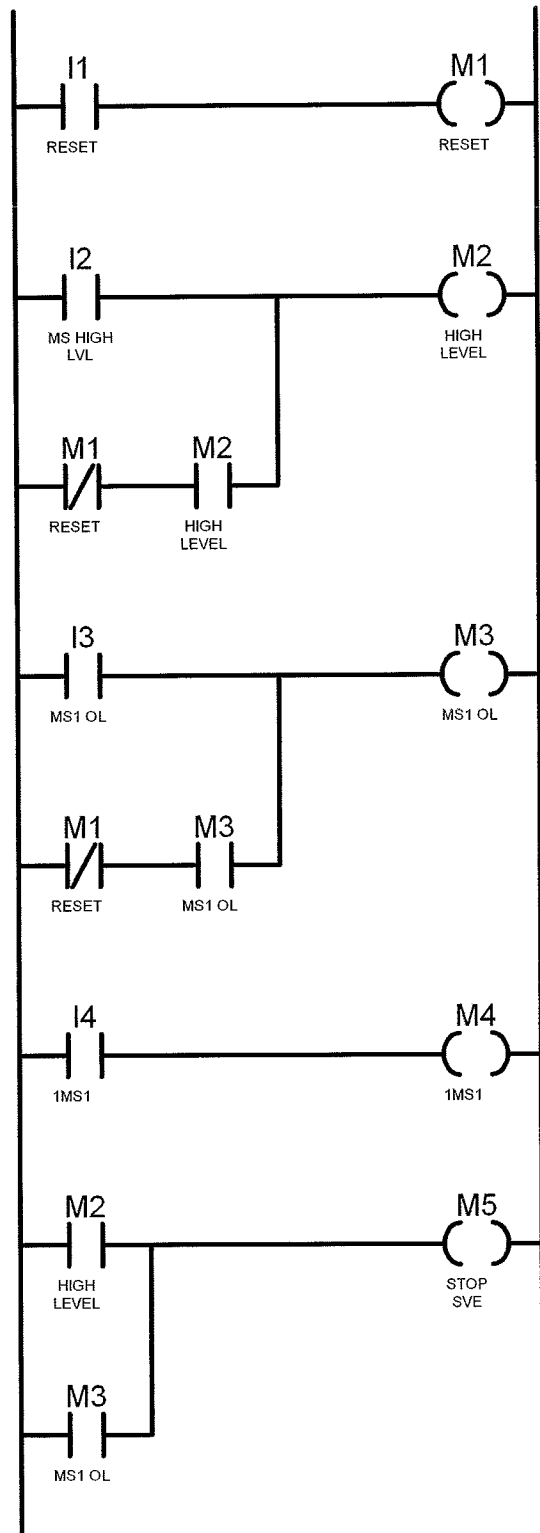


H2 OIL RECOVERY EQUIPMENT		
RDG SVE SKID CONTROL		
DESIGNED BY: RS	SCALE	DRAWING NO.
DRAWN BY	DATE 10/14/02	E220546SKID
JOB#	DATE	B
REVISED BY	DATE	

Documentation

Customer RDG
Customer Doc. No.

Order No. 220546
Factory No. H2 OIL
Document No.



1
2
3
4
5
6
7
8

Date	11/21/02	Customer: RDG	Order No. 220546
Revised		Customer	Factory No. H2 OIL
Tested		Doc. No.:	Document No.
			Author: RICK
			Sheet 1
			From Sheet 4

Channel A:
 Mon-Sun ON 08:00 OFF 20:00 -
 Channel B:
 -
 Channel C:
 -
 Channel D:
 -

Flashing
 0,75 sec
 +

Flashing
 0,50 sec
 +

Setpoint
 3600
 -

Setpoint
 3600
 -

Setpoint
 9999
 +

Flashing
 0,75 sec
 +

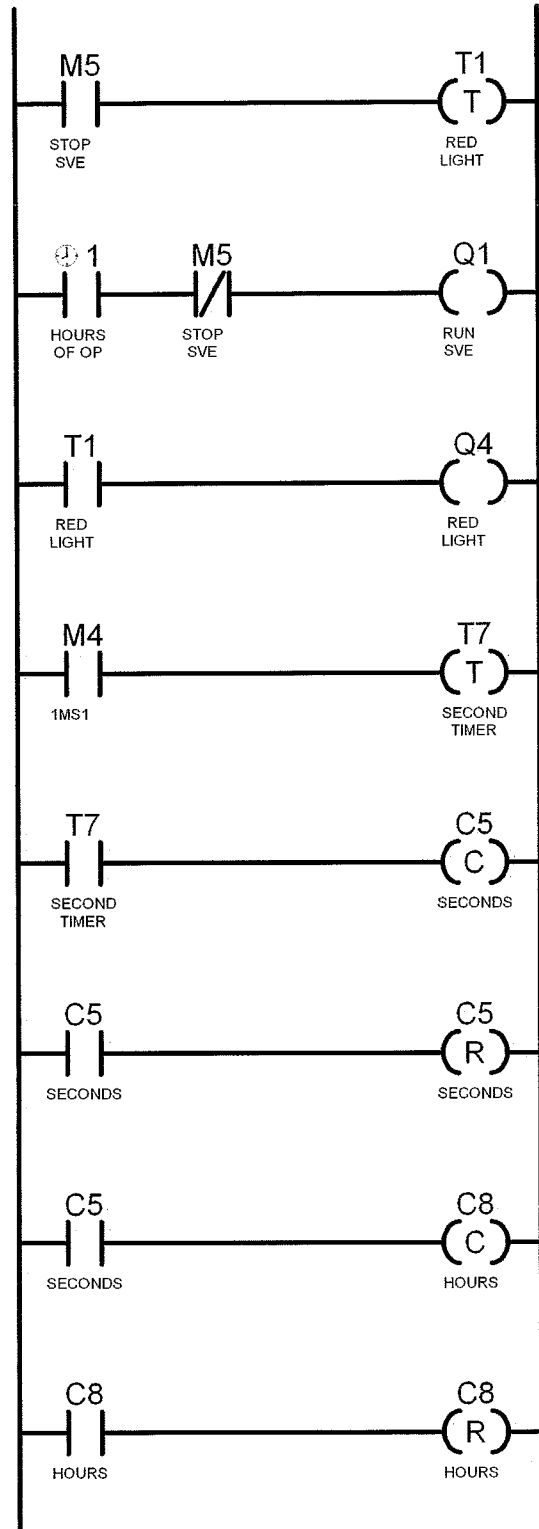
Flashing
 0,50 sec
 +

Setpoint
 3600
 -

Setpoint
 3600
 -

Setpoint
 9999
 +

Setpoint
 9999
 +



9
 10
 11
 12
 13
 14
 15
 16

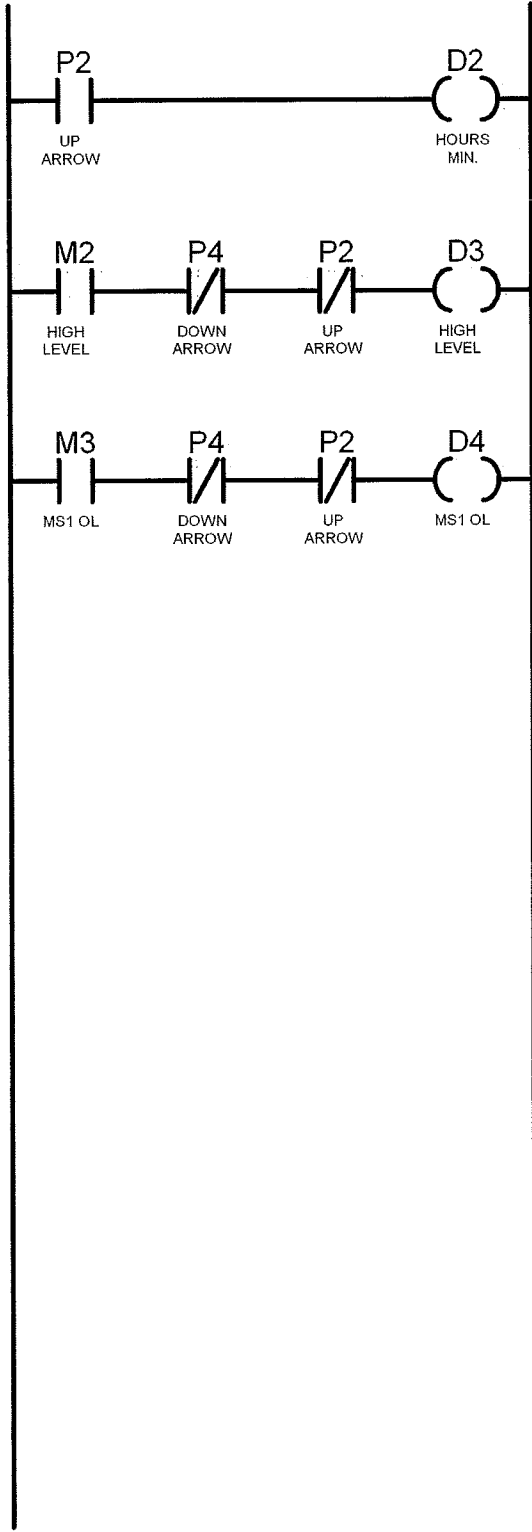
Date	11/21/02	Customer: RDG	Order No. 220546
Revised		Customer	Factory No. H2 OIL
Tested		Doc. No.:	Document No.
			Author: RICK
			Sheet 2
			From Sheet 4

SVE HOURS

SECONDS

MOISTURE
SEPARATOR
HIGH LEVEL

SVE MOTOR
THERMAL
OVERLOAD



17

18

19

20

21

22

23

24

Date	11/21/02	Customer: RDG	Order No. 220546
Revised		Customer	Factory No. H2 OIL
Tested		Doc. No.:	Document No.
			Author: RICK
			Sheet 3
			From Sheet 4

Contact/Coil	Comment	Circuit Connection
I1:	RESET	1
I2:	MS HIGH LVL	2
I3:	MS1 OL	4
I4:	1MS1	6
Q1:	RUN SVE	#10
Q4:	RED LIGHT	#11
P2:	UP ARROW	17, -18, -19
P4:	DOWN ARROW	-18, -19
T1:	RED LIGHT	#9, 11
T7:	SECOND TIMER	#12, 13
C5:	SECONDS	#13, 14, #14, 15
C8:	HOURS	#15, 16, #16
H1:	HOURS OF OP	10
M1:	RESET	#1, -3, -5
M2:	HIGH LEVEL	#2, 3, 7, 18
M3:	MS1 OL	#4, 5, 8, 19
M4:	1MS1	#6, 12
M5:	STOP SVE	#7, 9, -10
D2:	HOURS MIN.	#17
D3:	HIGH LEVEL	#18
D4:	MS1 OL	#19

Date	11/21/02	Customer: RDG	Order No. 220546
Revised		Customer	Factory No. H2 OIL
Tested		Doc. No.:	Document No.
			Author: RICK
			Sheet 4
			From Sheet 4

2.0 SYSTEM OVERVIEW

2.1 SOIL VAPOR EXTRACTION (SVE) SYSTEM

The Soil Vapor Extraction (SVE) blower consists of a centrifugal regenerative blower to withdraw hydrocarbon vapors out of the contaminated soil. As the vapors are extracted from the soil, they flow through a moisture separator, which separates any inherent moisture from the vapors. Figure 2-1 shows detail of the SVE blower and components.

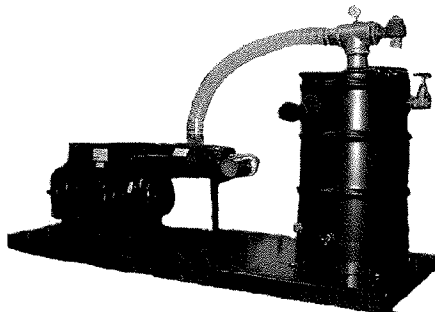


FIGURE 2-1 SVE SYSTEM

2.2 CONTROL PANEL

Shown in Figure 2-2 is the SVE control panel. Each of the selector switches and indicating lamps on the control panel serve a specific function. The indicator lamps signify specific system status or alarm conditions. Refer to the Alarm Section for more detailed information about the possible causes of the alarms and how to recover from them.

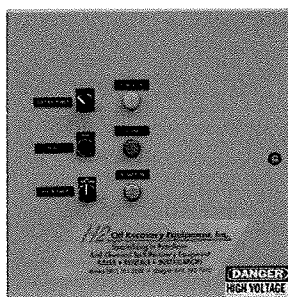


FIGURE 2-2 SYSTEM CONTROL PANEL

2.2.1 SWITCHES

CONTROL POWER (OFF-ON) - Provides power to the control circuits.

RESET (Momentary PB) - Resets any system failures and energizes the safety interlocks.

SVE BLOWER (HAND-OFF-AUTO) - Provides selection of manual override "HAND" or automatic operation "AUTO" of the SVE process blower. Manual mode bypasses all shutdown alarms with the exception of blower motor internal temperature or thermal overload failure. "AUTO" mode requires that all interlocks within the circuit are in their normal operating state.

2.2.2 INDICATOR LAMPS

POWER ON (Amber) - Indicates that the control circuit is energized.

ALARM (Red) - Indicates that the system has experienced an alarm.

BLOWER ON (Green) - Indicates that the SVE blower is functioning.

2.3 SYSTEM COMPONENTS

Below are some of the individual system components and their function in the SVE system.

PICO PLC TIMER - This device is a mini PLC that has the ability to control it's 6 outputs based upon the user developed programs. It contains 12 inputs and numerous PLC based programming functions. It is most commonly used in the SVE system as a 7-day timer, which will turn on the SVE blower based upon the user programmed on/off time cycles. Section 1.5 contains a printout of the factory set program for this device. This device will need to be re-programmed in the field based upon the desired on/off cycles for the blower. This device also stores the accumulated run time hours for the SVE blower and the exhaust fan. Note: If the PLC program is changed after the hour meter has accumulated run time hours, the hours will revert back to 0. Setting the timer through the Pico key pad will not cause the hour meter to revert back to 0.

VACUUM RELIEF VALVE - This is a mechanical device that will exhaust any excessive vacuum to the atmosphere to help protect the system from an excessive amount of vacuum.

MOISTURE SEPARATOR - This is a 55 gallon drum that separates the groundwater content from the vapor phase in order to protect the SVE blower.

3.0 SYSTEM ALARMS

The system is set up to monitor various types of failure conditions. The control panel is equipped with a RED indicating lamp for the alarm condition. Generally, a fault by any one of these alarms will not allow the system to function while in the "AUTO" mode. The fault condition must be corrected and a manual reset is required by pressing the "RESET" button on the control panel before operation can resume. In the event of a device failure (motor overload), a reset button is located on each corresponding motor starter and must be reset before operation can continue. If the light is blinking, you can view the alarm message on the LCD of the PLC.

3.1 ALARMS

MOISTURE SEPARATOR HIGH LEVEL - An explosion proof float switch is installed in the moisture separator and will provide an alarm signal to the control panel to shutdown the SVE blower in the event of excessive moisture being collected in the tank. If this fault should occur, drain the tank and press the "RESET" button to resume normal operation. If the alarm is activated the red light will blink and a message will be displayed on the LCD.

MS1 OL - This alarm is based on the thermal overload relay of the SVE motor starter. If the alarm is activated, the system will shutdown, the red light will blink and a message will be displayed on the LCD.

TELEMECANIQUE

LRD 33 SQUARE D

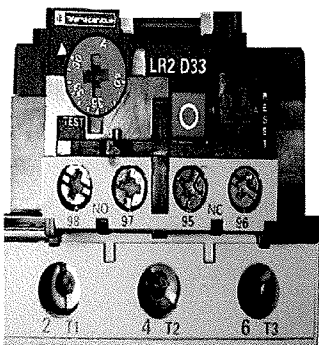


FIGURE 3-1 MOTOR STARTER OVERLOAD RELAY

MOTOR FAILURE - Each motor is monitored for an over current trip condition, which is indicated by the overload relay of the motor starter. A small plastic window is located next to the current trip adjustment dial. If the yellow flag OR THE LETTER "T" appears in the window, the motor has tripped out on an over current. DETERMINE THE CAUSE OF THE OVERLOAD BEFORE RESTARTING THE SYSTEM. A manual reset is required on the overload relay to resume operation. Explosion proof motors also contain an internal temperature switch, which will open in the event of an over-temperature condition in the motor. The switch will reset once the temperature has returned to normal. DETERMINE THE CAUSE OF THE FAILURE BEFORE RESUMING OPERATION.

4.0 SYSTEM OPERATION

4.1 START-UP PROCEDURE

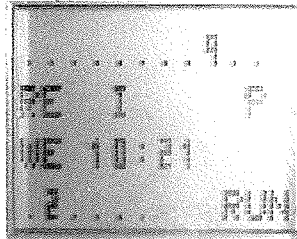
- 1) Refer to System Overview Section for identification and description of system components. Locate the system CONTROL PANEL.
- 2) Place the SVE BLOWER "HAND-OFF-AUTO" switches in the "OFF" position.
- 3) Turn the CONTROL POWER switch to the "ON" position. The amber "POWER ON" light should be illuminated.
- 4) Turn on the SVE BLOWER by placing the "HAND-OFF-AUTO" switch in the "AUTO" position. The green "BLOWER ON" light should be illuminated. The SVE blower is controlled by timed settings that are set from the factory. If an alarm exists, the blower will shutdown. The SVE blower will not operate if an alarm condition exists within the SVE system. Refer to the Alarm Section for more information on fault conditions and corrections.

Placing the "HAND-OFF-AUTO" switch in the "HAND" position allows the motor to run regardless of any fault conditions that may exist. However, it will not function in either the "HAND" or "AUTO" position if the motor overload relay contacts have opened.

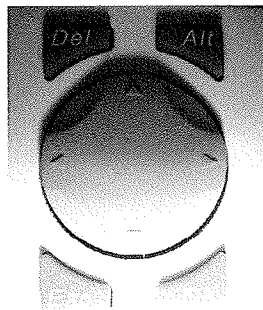
The system should now run in an "AUTO" mode as long as no alarm conditions become present.

4.2 PICO CLOCK SETTING and HOUR METER TUTORIAL

The following is a method of setting the Real Time clock settings for controlling your equipment.

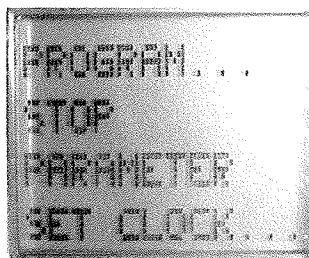


SCREEN 1. PICO DEFAULT SCREEN



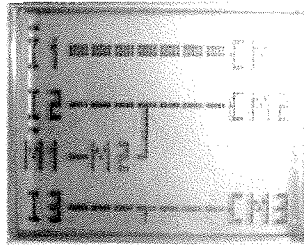
PICO P-BUTTONS

STEP 1. PRESS "ESCAPE" AND "OK" SIMULTANEOUSLY AND HOLD DOWN FOR ONE SECOND. "PROGRAM" flashes.



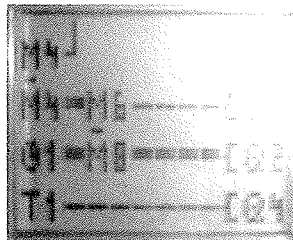
SCREEN 2. AFTER TAKING STEP ONE

STEP 2. PRESS "OK". Lines of logic will appear on the screen.



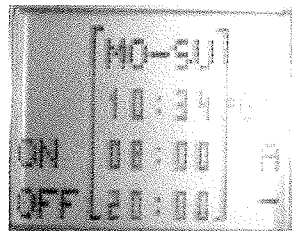
SCREEN 3. AFTER STEP 2

STEP 3. PRESS THE DOWN ARROW / P-BUTTON. You will reach the line of logic that has the real time clock on the left hand side of the screen



SCREEN 4. AFTER STEP 3

STEP 4. PRESS "OK" when the flashing cursor is on the clock.



SCREEN 5. AFTER STEP 4

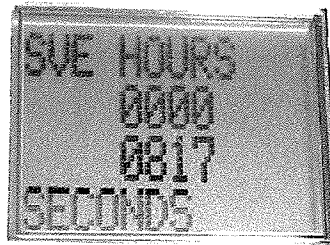
Settings to the clock are made from this screen. The letter "A" on the right represents one of the four channels available per day. The On and Off times are displayed. The unit will cycle Monday thru Sunday. To make changes to any of these settings, navigate around the screen with the Right or Left Arrows / P-Buttons. To make changes to the entries use the Up and Down Arrows / P-Buttons.

When done making your changes depress the "ESC" button until you are back out to the default screen.

The following is a method of viewing the total run hours for the SVE blower.

STEP 1. PUSH THE UP ARROW / P-BUTTON. The total accumulated run hours and seconds for the SVE blower will be displayed.

The total SVE run hours has a maximum of 9999 hours. After 9999 hours have accumulated, the timer resets and starts out at 0. Below is the hour meter display.

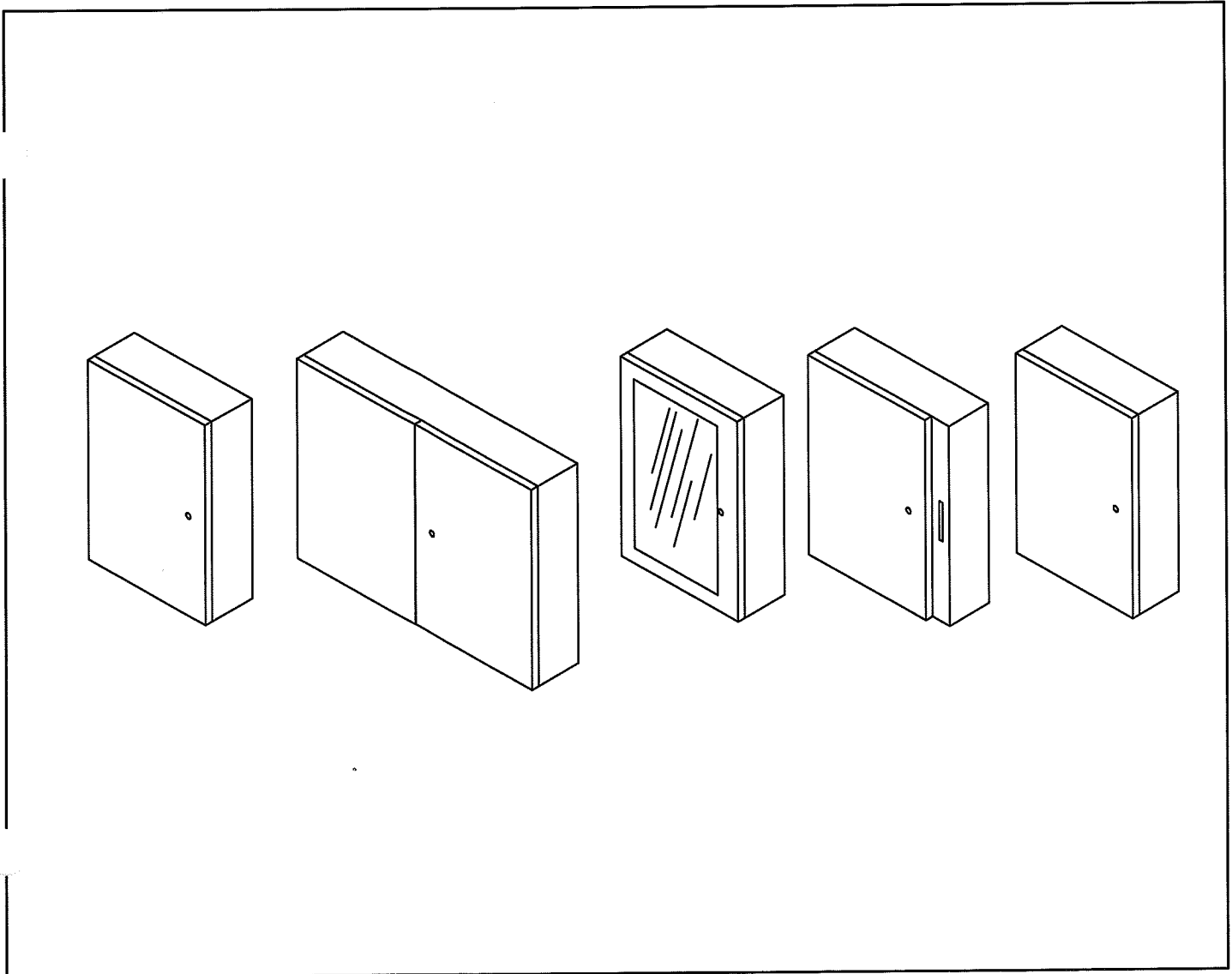




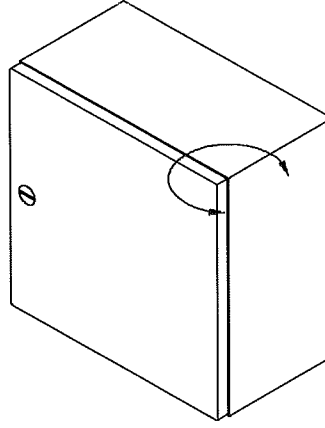
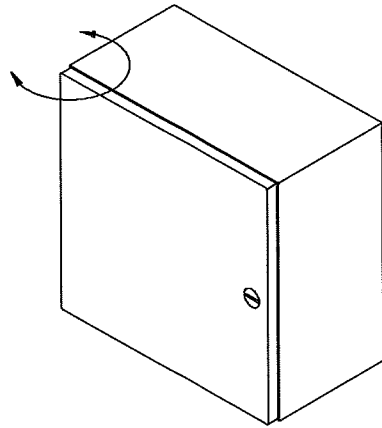
A Pentair Company

CONCEPT®

Wall-Mount Enclosure
Gehäuse zur Wandmontage
Boîtier mural
Caja Para Montaje En Pared



REVERSING DOOR HINGES (lower door only)
UMKEHREN DER TÜRSCHARNIERE (nur untere Tür)
INVERSION DES CHARNIÈRES DE PORTES (porte inférieure seulement)
BISAGRAS PARA INTER CAMBIO DE POSICION DE PUERTAS



ENGLISH

- 1) Remove door from body by removing hinge pins.
- 2) Unscrew hinges from body.
- 3) Drill Ø.203 (5.16 mm) on opposite enclosure flange at drill point locations.
- 4) Reinstall hinges and door.
- 5) Seal the unused hinge holes with customer supplied #10 or M5 screw and silicone sealer.

ESPAÑOL

- 1) Retire la puerta del cuerpo al mover las bisagras.
- 2) Desatornille las bisagras del cuerpo.
- 3) Hacer un hueco con el taladro Ø.203 (5.16mm) en la bisagra del enclaustrado opuesto a la ubicación del punto del taladro.
- 4) Reinstale las bisagras y la puerta.
- 5) Los orificios de la bisagra que no se usarán se sellarán con el tornillo #10 ó M5 y con el sellador de silicón.

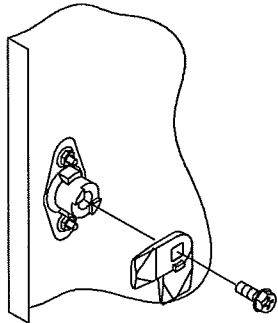
DEUTSCH

- 1) Entfernen Sie die Scharnierstifte und nehmen Sie die Tür vom Gehäuse ab.
- 2) Schrauben Sie die Scharniere vom Gehäuse ab.
- 3) Bohren Sie an der gegenüberliegenden Gehäusewand an den Bohrungspunkten Löcher mit einem Durchmesser von 5,16 mm (Ø .203)
- 4) Bauen Sie die Scharniere und die Tür wieder ein.
- 5) Dichten Sie die nicht benutzten Scharnierlöcher mit Schrauben- (Größe #10 oder M5, vom Kunde zu besorgen) und Silikondichtstoff ab.

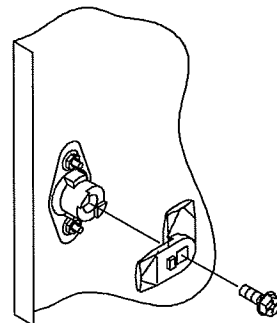
FRANÇAIS

- 1) Enlever la porte du corps du meuble en retirant les broches des charnières.
- 2) Dévisser les charnières du corps du meuble.
- 3) Percer des trous de 5,16 mm (0,203 po) de diamètre sur le bord opposé du meuble, aux endroits voulus.
- 4) Réinstaller les charnières et la porte.
- 5) Boucher les trous de charnière inutilisés avec des vis n° 10 ou M5 et du calfeutrant au silicone, fournis par le client.

REVERSING LATCH DIRECTION
UMKEHREN DER SCHLISSRICHTUNG
ALLER EN SENS INVERSE LOQUET
INVERSIÓN PICAPORTE DIRECCIÓN



Clockwise to open.
 Im Uhrzeigersinn öffnen.
 Ouverture dans le sens horaire.
 Abrir en dirección a las manecillas del reloj.



Counterclockwise to open.
 Entgegen dem Uhrzeigersinn öffnen.
 Ouverture dans le sens anti-horaire.
 Abrir en sentido contrario, a las manecillas del reloj.

ENGLISH

- 1) Remove Latch Cam.
- 2) Invert as shown and reinstall cam.
- 3) Torque fastener to 4.3Nm (38 in-lbs)

ESPAÑOL

- 1) Quite la leva del cierre
- 2) Invierta como se muestra y reinstale la leva
- 3) Use un torque de 4.3 Nm(38 pulgadas-libras)

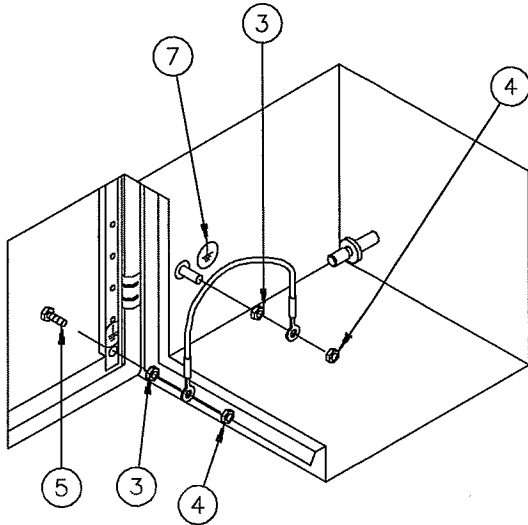
DEUTSCH

- 1) Riegelnocken entfernen.
- 2) Nocken gemäß Abbildung umdrehen und wieder installieren.
- 3) Verschluss mit einem Drehmoment von 4,3 Nm festdrehen.

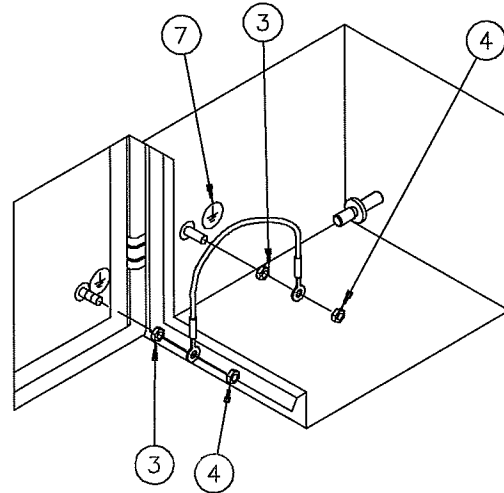
FRANÇAIS








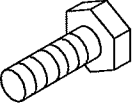


- 1) Enlever la came du loquet.
- 2) Inverser comme indiqué et reposer la came.
- 3) Appliquer à l'attache un couple de 4,3 Nm (38 lb-po.)

GROUNDING (MILD STEEL)
ERDUNG (STAHL)
MISE À LA TERRE (ACIER MOU)
CABLE A TIERRA (ACERO SWAVE)



GROUNDING (STAINLESS STEEL)
ERDUNG (EDELSTAHL)
MISE À LA TERRE (ACIER INOXYDABLE)
CABLE A TIERRA (ACERO INOXIDABLE)



1	M8-1.25	2		3	M6-1	4	M6-1
	(4x) (8x)		(1x)		(3x)		(3x)
5	M6-1x16	6		7		8	
	(2x)		(4x)		(2x)	supplied by customer vom Kunden zu besorgen fourni par le client Proporcionudo por el cliente	

HARDWARE KITS

Included with your Hoffman enclosure is a complete package of hardware for back panel installation. Also provided is all the necessary hardware for grounding the back panel and doors to the enclosure body.

Shown are the proper installation procedures for grounding the doors, covers, and optional panels and mounting the optional side and back panels.

Ground wires (item 1) are available from HoffmanEngineering. Consult the Hoffman Specifiers Guide.

HARDWARE-PAKETE

Für die Installation der Rückwand ist ein komplettes Hardware-Paket im Lieferumfang des Hoffman Gehäuses enthalten. Ferner werden alle Hardware-Bauteile mitgeliefert, die für die Erdung der Rückwand und Türen am Gehäuse erforderlich sind.

Gezeigt werden die passenden Installationsverfahren für die Erdung der Türen, Abdeckungen und optionalen Wände und die Montage der optionalen Seite und Rückwände.

Erdungsdrähte (Pos. 1) sind bei Hoffman Engineering erhältlich. Konsultieren Sie den Hoffman Specifiers Guide.

ACCESORIOS

Estos se incluyen en el enclaustrado Hoffman y comprende en paquete con el equipo para la instalación del panel trasero. También se proporciona todo el equipo necesario para hacer tierra de las puertas del panel inferior al cuerpo del enclaustrado.

También se muestran los procedimientos de instalación apropiados para hacer tierra en las puertas, cubiertas y paneles opcionales así como el montaje de los paneles laterales opcionales y traseros.

Los cables de tierra (artículo 1) están disponibles en Hoffman Engineering. Consulte la guía de Hoffman que lo especifica.

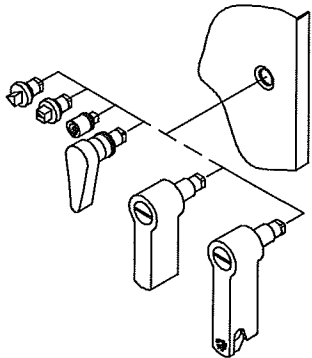
KITS D'ACCESSOIRES

Un paquet complet d'accessoires pour l'installation du panneau arrière est fourni avec le meuble Hoffman. Est également fourni tout le matériel nécessaire de mise à la terre du panneau et des portes du corps du meuble.

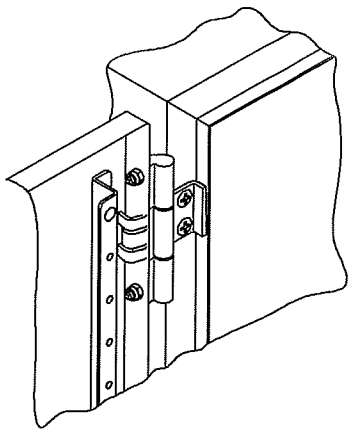
Les illustrations montrent les procédures d'installation correctes de mise à la terre des portes, du dessus ainsi que des panneaux en option et le montage du côté optionnel et des panneaux arrière.

Les fils de mise à la terre (article 1) sont disponibles à Hoffman Engineering. Consulter le guide des identificateurs Hoffman.

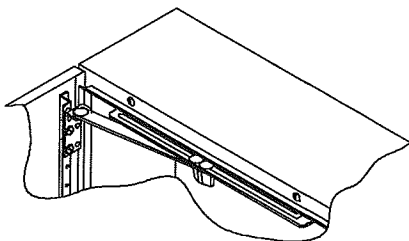
EXTERNAL ACCESSORIES
ZUBEHÖR AUSSEN
ACCESSOIRES EXTERNES
ACCESORIOS EXTERNOS



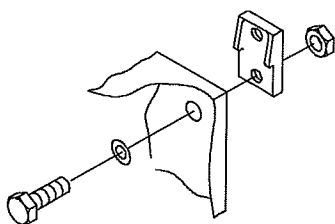
Latch Accessories
Riegelzubehör
Accessoires pour loquet
Accesorios para Seguro



180° Hinge Kit
180 Grad-Scharnierbausatz
Kit de charnière à 180°
Juego de Bisagra de 180°



Door Stop Kit
Türanschlag-Bausatz
Kit de butée de porte
Juego Para Tope de Puerta



Mounting Feet
Montagefüße
Pattes de montage
Pata de Montaje

GENERAL ACCESSORIES

Temperature Control

Options are available to provide an optimal environment for your controls. Options include louvers, filter fans, heat exchangers, air conditioners, and electric heaters.

Floor Stand Kits

Field or factory installation available on single door enclosures.

Drip Shield Kits

Field or factory installation available on single or double door enclosures.

Electrical Interlocks

Internal safety lockout while the enclosure contents are energized.

Corrosion Inhibitors

Protect interior components from corrosion.

Hole Seals

Used to seal extra conduit openings, pushbutton holes, or cutouts against dust, dirt, oil, and water.

Folding Shelves

Can be used to support instruments and test equipment.

Terminal Kit Assemblies

Provides an easy method to mount terminal blocks.

Pedestals

Provides floor mounting for small to medium size enclosures.

Safety Lockouts

Protect personnel and equipment by enabling multiple padlocks to be installed on a de-energized switch.

Touch-Up Paint

Used to repair the finish of enclosures and panels.

Enclosure Stabilizers

Provides stability to floor mounted enclosures which are not bolted to the floor.

Window Kits

Available for many types of Hoffman enclosures.

Data Pocket Kits

Convenient place for documentation.

ALLGEMEINES ZUBEHÖR

Temperaturregulierung

Zur Optimierung der Umgebung für Ihre Bedienelemente sind Optionen verfügbar. Zu den Optionen gehören Jalousien, Filterventilatoren, Wärmetauscher, Klimaanlage und elektrische Heizungen.

Standfuß-Bausatz

Vor-Ort- oder Werkinstallation bei Einzeltürgehäusen verfügbar.

Tropfschutz-Bausätze

Vor-Ort- oder Werkinstallation bei Einzel- oder Doppeltürgehäusen verfügbar.

Elektrisches Schloß

Hält die Tür geschlossen, solange Stromkreis im Gehäuse unter Spannung steht.

Korrosionsschutz

Schützt Bauteile im Gehäuse vor Korrosion.

Bohrungsdichtungen

Zur Abdichtung zusätzlicher Rohröffnungen, Druckknopfbohrungen oder Ausschnitte gegen Staub, Schmutz, Öl und Wasser.

Klappregale

Zur Unterbringung von Instrumenten und Testgeräten.

Verteiler Montage Einheit

Erlaubt eine leichte Befestigung von Verteilern.

Sockel

Erlaubt Bodenmontage für kleine und mittelgroße Gehäuse.

Sicherheitsaussperrungen

Ermöglicht den Einbau mehrerer Vorhängeschlösser bei ausgeschaltetem Stromkreis zum Schutz von Personal und Geräten.

Tupflack

Zur Lackreparatur an Gehäusen und Panels.

Stabilisatoren für Gehäuse

Zur Stabilität von Standgehäusen, die nicht am Boden verankert sind.

Fensterbausätze

Für viele Arten von Hoffman Gehäuse erhältlich.

Datentaschen-Bausätze

Nützliche Ablage für Handbücher.

ACCESSOIRES GÉNÉRAL

Contrôle de la température

Des options sont disponibles afin de procurer un environnement optimum à vos contrôles. Ces options comprennent des auvents, ventilateurs à filtre, échangeurs de chaleur, climatiseurs et appareils de chauffage électriques.

Kit de tenue autonome sur le sol

Installation sur place ou en usine disponible sur les éléments à une seule porte.

Kits de dispositifs anti-écoulement

Installation sur place ou en usine disponible sur les éléments à une ou deux portes.

Verrouillages électriques

Verrou de sécurité interne pendant que le contenu de l'élément est sous tension.

Inhibiteurs anti-corrosion

Protection des composants internes contre la corrosion.

Joint d'orifices

Utilisés pour assurer l'étanchéité des passages de conduits supplémentaires, des orifices pour boutons-poussoirs ou des découpages contre la poussière, la saleté, les produits huileux et l'eau.

Etagères pliantes

Peuvent être utilisées pour supporter des instruments et des équipements d'essais.

Assemblages de borniers

Fournissent une méthode simple de montage des borniers.

Caissons

Offrent une disposition autonome reposant sur le sol pour les éléments de petites à moyennes tailles.

Fermetures de sécurité

Protection du personnel et du matériel en permettant l'installation de cadenas multiples sur un interrupteur hors tension.

Peinture de retouche

Utilisée pour réparer le fini des éléments et panneaux.

Stabilisateurs d'éléments

Procurent la stabilité des éléments reposant à même le sol sans y être boulonnés.

Kits de fenêtres

Disponibles pour ne nombreux éléments Hoffman.

Kits de poches à documents

Endroits pratiques pour toute documentation.

ACCESORIOS GENERALES

Control de Temperatura

Opciones disponibles que proporcionen un ambiente óptimo a sus controles. Estas opciones incluyen : rejillas para ventilación, filtros, abanicos, intercambiadores de calor, aires acondicionados y calentadores eléctricos.

Juegos Para Estantes de Piso

Disponibilidad Para Instalación de cajas de una sola puerta , tanto en fábricas como en el campo.

Juego Para Protección de Goteras

Disponibilidad para instalación de cajas de una o dos puertas, tanto en la fábrica como en el campo

Sistema de Cierre Eléctrico

Seguro de protección interna cuando está energizado el contenido de la caja.

Inhibidor de Corrosión

Protege a los componentes de interiores de la corrosión.

Sellos para Orificios

Utilizado para sellar aperturas de conductos para cables, orificios para botones de arranque o protección contra el polvo, suciedad, aceite y agua.

Estantes Plegadizos

Pueden utilizarse como soporte de instrumentos y equipo de prueba.

Juego de Ensamblado para Terminales

Proporciona un método sencillo para montaje de bloques terminales.

Pedestales

Se proporcionan accesorios para montaje en el piso de enclaustrados medianos y pequeños

Candado de Seguridad

Protege a la persona y al equipo al proporcionar diversos candados de seguridad al instalarse en un interruptor desenergizado.

Pintura de Retoque

Utilizada para reparar el terminado de cajas y paneles

Estabilizador de Enclaustrados (Cajas)

Proporciona estabilidad a los enclaustrados montados, los cuales no han sido anclados al piso.

Juego para Ventana

Disponible para diferentes tipos de cajas Hoffman.

Juego Para Información de Bolsillo

Lugar conveniente para la documentación.

3-Pole Contactors with AC and DC Operating Coils

Single Phase	Maximum Horsepower Ratings						Maximum Current		Auxiliary Contacts Built In		AC Control		DC Control	
	115V HP	Three Phase				Inductive AC3 Amperes	Resistive AC1 Amperes	N.O.	N.C.	Catalog Number A	Price	Catalog Number A	Price	
		230V HP	200V HP	230V HP	460V HP									575V HP
0.5	1	2	2	5	7.5	9	20	1	0	LC1D091000	\$ 91.	LP1D091000	\$ 115.	
1	2	3	3	7.5	10	12	25	1	0	LC1D090100	91.	LP1D090100	115.	
1	3	5	5	10	15	18	35	1	0	LC1D121000	115.	LP1D121000	140.	
1	3	5	5	10	15	18	35	0	1	LC1D120100	115.	LP1D120100	140.	
2	3	7.5	7.5	15	20	25	40	1	0	LC1D181000	131.	LP1D181000	155.	
2	3	7.5	7.5	15	20	25	40	0	1	LC1D180100	131.	LP1D180100	155.	
2	5	10	10	20	30	32	50	1	0	LC1D251000	146.	LP1D251000	175.	
2	5	10	10	20	30	32	50	0	1	LC1D250100	146.	LP1D250100	175.	
3	5	10	10	30	30	40	60	1	1	LC1D401100	211.	LP1D401100	266.	
3	7.5	15	15	40	40	50	70	1	1	LC1D501100	226.	LP1D501100	281.	
5	10	20	20	50	50	65	80	1	1	LC1D651100	311.	LP1D651100	366.	
7.5	15	30	30	60	60	80	110	1	1	LC1D801100	351.	LP1D801100	406.	
		30	40	75	100	115	175	0	0	LC1D115000	463.	LC1D115000	463.	
		40	50	100	125	150	200	0	0	LC1D150000	672.	LC1D150000	672.	
		30	40	75	100	115	175	1*	0	LC1F115	463.	LC1F115	463.	
		40	50	100	125	150	200	1*	0	LC1F150	672.	LC1F150	672.	
		50	60	125	150	185	200	1*	0	LC1F185	906.	LC1F185	906.	
		60	75	150	175	265	285	1*	0	LC1F265	1139.	LC1F265	1139.	
		75	100	200	250	330	360	1*	0	LC1F330	1566.	LC1F330	1566.	
		100	125	250	300	400	420	1*	0	LC1F400	1785.	LC1F400	1785.	
		150	200	400	500	500	700	1*	0	LC1F500	4802.	LC1F500	4802.	
		250	300	600	800	630	1000	1*	0	LC1F630	6640.	LC1F630	6640.	
		Current rated					780	1350	0	0	LC1F780	7525.	LC1F780	7525.
		450	800	900	800	1000	0	0	0	LC1F800	6450.	LC1F800	6450.	

* This one normally open holding circuit contact is incorporated in the design of the standard coil.
 † Contactor catalog number to be completed by the code corresponding to the coil voltage.
 ‡ Contactor supplied with touch safe cable clamps. For ring terminal configuration add "G" before coil voltage suffix.

AC Coil voltages for LC1 D09 to D80 and LC1D115 to D150

Volts AC	24	48	110	120	127	208	220	240	277	380	415	440	480	575	600	660
50 Hz	B5	E5	F5	-	G5	-	M5	U5	-	Q5	N5	R5	-	-	-	Y5
60 Hz	B6	E6	F6	G6	-	L6	M6	U6	W6	Q6	R6	T6	S6	X6	-	-
50/60 Hz	B7	E7	F7	-	-	-	M7	U7	-	Q7	N7	R7	-	-	-	-

(D115/D150 include surge suppression)

DC Coil voltages for LP1 D09 to D80 and LC1D115 to D150

Volts DC	12	24	36	48	60	72	110	125	220	250	440	-	-	-	-	-
Coil code	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD	-	-	-	-	-

(D115/D150 include surge suppression)

AC Coil voltages for LC1 F115 to F780

Contactor	Hz	24V	48V	110V	120V	125V	208V	220V	240V	250V	380V	415V	440V	480V	600V
F115, F150	50Hz	B5	E5	F5	-	-	-	M5	U5	-	Q5	-	-	-	-
F185	60 Hz	B6	E6	F6	G6	-	L6	M6	U6	-	Q6	N5	-	Q5	SC
F265, F330	50/60 Hz	B7	E7	F7	G7	-	L7	M7	U7	-	Q7	Q7	-	S7	X7
F400-F780	50/60 Hz	-	E7	F7	F7	-	L7	M7	U7	-	Q7	N7	-	N7	X7*

Application Note: If contactor dropout time is critical, see Pages 15-17 or 15-19 before selecting a coil code suffix for LC1 F265 through F780.
 † 600 volt coil not available for F780.

DC Coil voltages for LC1 F115 to F780

F115-F330	-	BD	ED	FD	-	GD	-	MD	-	UD	-	-	RD	-	-
F400-F780	-	-	ED	FD	-	GD	-	MD	-	UD	-	-	RD	-	-

Application Note: If contactor dropout time is critical, see Pages 15-17 or 15-19 before selecting a coil code suffix for LC1 F265 through F780.

AC and DC Coil voltages for F800 (includes built-in surge suppressor)

Volts AC/DC	24	48	110	120	127	208	220	240	277	380	415	440	480	575	600	660
	-	-	FW	FW	FW	-	MW	MW	-	QW	QW	QW	-	-	-	-

Lugs

Contactor Type LC1	Lug Kit Catalog Number	Cable Size AL/CU	Price
F115	DZ2FF6	14 to 2/0	\$ 38.
F150, F185	DZ2FG6	6 to 3/0	63.
F265, F330	DZ2FH6	6 to 300 MCM	63.
F400	DZ2FJ6	4 to 500 MCM	63.
F500	DZ2FK6	2 x 2 x 600 MCM	127.
F630, F800	DZ2FL6	2 x 2 x 600 MCM	156.
F780	DZ2FX6	1 x 1/0 x 750 MCM	156.

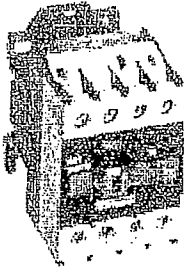
Lugs for LC1F must be ordered separately. Each kit consists of six (6) lugs. Mounting hardware (screws, washers, nuts,) are provided with the contactor, not the lugs.

Dimensions Pages 15-26 - 15-33
 Overload Relays Pages 15-20 - 15-21
 Accessories Pages 15-7 - 15-15
 Replacement Coils Pages 15-16 - 15-19

For additional information about D-Line, reference catalog number 9500CT9704 or D-Fax™ number 1614, 1709, 1714, 1736, 2275, 2276, 2277.
 For additional information about F-Line, reference catalog number 9500CT9702 or D-Fax™ number 1615, 1684, 1686, 1688.



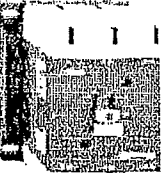
15 IEC STYLE CONTACTORS AND STARTERS



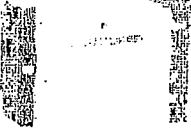
LC1D2510



LP1D1210

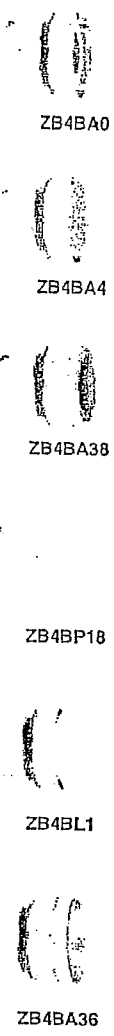


LC1D11500



LC1F115

Non-Illuminated Operators, Momentary - Unmarked



Shape of Head	Type of Push	Color of Cap	Catalog Number	Price
	Flush, without color cap ■	-	ZB4BA0	\$ 5.30
	Flush, with set of 6 color caps	White Black Green Red Yellow Blue	ZB4BA9	6.30
	Flush	White Black Green Red Yellow Blue Grey	ZB4BA1 ZB4BA2 ZB4BA3 ZB4BA4 ZB4BA5 ZB4BA6 ZB4BA8	6.30
	Flush with transparent cap, for insertion of legend ▲	White Green Red Yellow Blue	ZB4BA18 ZB4BA38 ZB4BA48 ZB4BA58 ZB4BA68	7.70
	Booted (clear) Color of cap unobscured	White Black Green Red Yellow Blue	ZB4BP1 ZB4BP2 ZB4BP3 ZB4BP4 ZB4BP5 ZB4BP6	12.50
	Booted (clear) for insertion of legend ▲ Color of cap unobscured	White Green Red Yellow Blue	ZB4BP18 ZB4BP38 ZB4BP48 ZB4BP58 ZB4BP68	14.00
	Extended	White Black Green Red Yellow Blue	ZB4BL1 ZB4BL2 ZB4BL3 ZB4BL4 ZB4BL5 ZB4BL6	6.30
	Guarded Head	White Black Green Red Yellow Blue	ZB4BA16 ZB4BA26 ZB4BA36 ZB4BA46 ZB4BA56 ZB4BA66	16.90

■ Color cap to be ordered separately, see Page 16-30.
▲ For legend ordering information, see Page 16-29.

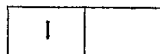
Non-Illuminated Operators, Momentary - Premarked



Shape of Head	Type of Push	Marking Text	Color	Color of Cap	Catalog Number	Price
	Flush	I	White	Green	ZB4BA331	\$ 9.00
			Black	White	ZB4BA131	
		START	White	Green	ZB4BA333	
			Black	White	ZB4BA133	
		ON	White	Green	ZB4BA341	
			Black	White	ZB4BA141	
		O	White	Red	ZB4BA432	
			Black	Black	ZB4BA232	
STOP	White	Red	ZB4BA434			
	Black	Black	ZB4BA234			
OFF	White	Red	ZB4BA435			
	Black	Black	ZB4BA235			
↑ ■	Black	White	ZB4BA334			
	White	Black	ZB4BA335			
	Extended	O	White	Red	ZB4BL432	9.00
			Black	Black	ZB4BL232	
		STOP	White	Red	ZB4BL434	
OFF	Black	Black	ZB4BL234			
	White	Red	ZB4BL435			
Black	Black	ZB4BL235				



■ Cap supplied not clipped-in, allowing orientation of arrow in 4 directions: ↑, ↓, ← or →

For additional information, reference: Catalog Number 9001CT9902 or D-Fax™ #4349.



16 PUSH BUTTONS AND

Pilot Light Heads

Shape of Head	For Use with Body Comprising Light Module Type	Color of Lens	Catalog Number	Price
 ZB4BV063  ZB4BV04	Protected LED only	White	ZB4BV013	\$ 3.70
		Green	ZB4BV033	
		Red	ZB4BV043	
		Yellow	ZB4BV053	
		Blue	ZB4BV063	
	For BA 9s incandescent bulb, neon or LED only	White	ZB4BV01	3.70
		Green	ZB4BV03	
		Red	ZB4BV04	
		Yellow	ZB4BV05	
		Blue	ZB4BV06	
		Clear	ZB4BV07	

Complete Bodies (Mounting Collar + Light Module for BA 9s Incandescent Bulb, Neon or LED)

Description	Light Source	Supply Voltage (V)	Catalog Number	Price
Screw clamp terminal connections				
Direct supply	BA 9s bulb 2.4 W max. Not included ●	≤ 250	ZB4BV6	\$ 18.60
Transformer type 1.2 VA, 6 V secondary	BA 9s incandescent bulb included	110-120 Vac 50/60 Hz	ZB4BV3	47.50
		230-240 Vac 50/60 Hz	ZB4BV4	
		400-50 Hz	ZB4BV5	
		440-480 Vac 60 Hz	ZB4BV8	
		550-600 Vac 60 Hz	ZB4BV9	

● Bulb to be ordered separately, see Page 16-31.

Complete Bodies (Mounting Collar + Light Module with Protected LED)

Light Source	Supply Voltage	Color of Light Source	Catalog Number	Price
Screw clamp terminal connections				
Protected LED Protected LED	24 Vac or Vdc	White	ZB4VB1	\$ 27.60
		Green	ZB4VB3	
		Red	ZB4VB4	
		Yellow	ZB4VB5	
		Blue	ZB4VB6	
Protected LED Protected LED	110-120 Vac	White	ZB4VG1	27.60
		Green	ZB4VG3	
		Red	ZB4VG4	
		Yellow	ZB4VG5	
		Blue	ZB4VG6	



ZB4BV6



ZB4BV-



ZB4BV-

For additional information, reference: Catalog Number 9001CT9902 or D-Fax™ #4349.

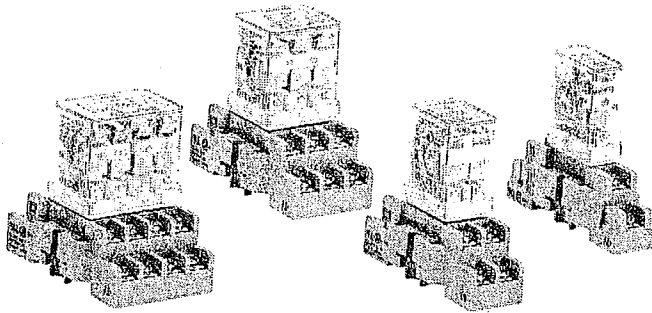


Miniature Plug-In Relays

Class 8501 - Type R

Square D
www.squared.com
FOR CURRENT INFORMATION

21 RELAYS



- Compact Size
- SPDT through 4PDT
- AC or DC Operated
- Horsepower rated
- 10 Amp Resistive Rating
- Complete Socket Line
- Manual Operator/
Pilot Light Options

UL Contact Ratings

Type	Voltage	Resistive Rating	General Use Rating	Horsepower Rating
RS41	120 Vac	-	-	1/8
	240 Vac	10	7	1/8
RSD41	30 Vdc	10	7	-
	120 Vac	-	-	1/8
RS42	240 Vac	10	7	1/8
	30 Vdc	10	7	-
RSD42	120 Vac	10	7.5	1/8
	240 Vac	7.5	6.5	1/8
RS43	120 Vac	10	-	-
	240 Vac	7.5	5	-
RSD43	120 Vac	10	-	-
	240 Vac	7.5	-	-
RS44	120 Vac	10	-	-
	240 Vac	7.5	-	-
RSD44	120 Vac	10	-	-
	28 Vdc	10	-	-

Application Data

Class 8501 Type...		RS41	RSD41	RS42	RSD42	RS43	RSD43	RS44	RSD44
Operating Data	Pick-Up Time	20 ms Maximum							
	Drop-Out Time	20 ms Maximum							
	Operating Temperature Range	-25°C to +50°C (-13°F to +122°F)							
Coil	Duty Cycle	Continuous							
	Voltage Range	AC coils +10%, -15% of nominal DC coils +10%, -20% of nominal							
	AC Coils	1.2 VA inrush, 1.0 VA sealed	-	2.0 VA inrush, 1.2 VA sealed	-	2.8 VA inrush, 1.7 VA sealed	-	3.2 VA inrush, 2.0 VA sealed	-
DC Coils	-	0.8 watts	-	0.9 watts	-	1.5 watts	-	1.5 watts	
	File CCN	-							-
	File CCN	E78351 NLDX2							E78427 NLDX2
	File Class	LR35144 3211 04							LR35144 3211 04

Voltage Codes

Voltage	6 Vac	12 Vac	24 Vac	120 Vac	240 Vac	6 Vdc	12 Vdc	24 Vdc	110 Vdc
Voltage Code	V35	V36	V14	V20	V24	V50	V51	V53	V60

10 Amps	Input Voltage	Options	Type	Price Each	Std. Pack▲
	AC 50/60 Hz	None	RS41*	\$19.00	20
		DC	RSD41*	19.00	20

Silver Cadmium Oxide Contacts

10 Amps	Input Voltage	Options	Type	Price Each	Std. Pack▲
	AC 50/60 Hz	None	RS42*	\$22.50	10
		Pilot Light	RS42P14*	27.70	10
		Manual Operator and Pilot Light	RS42M1P14*	29.10	10
	DC	None	RSD42*	22.50	10
		Pilot Light	RSD42P14*	27.70	10
		Manual Operator and Pilot Light	RSD42M1P14*	29.10	10

Silver Cadmium Oxide Contacts

10 Amps	Input Voltage	Options	Type	Price Each	Std. Pack▲
	AC 50/60 Hz	None	RS43*	\$25.30	10
		Pilot Light	RS43P14*	30.60	10
		Manual Operator and Pilot Light	RS43M1P14*	32.00	10
	DC	None	RSD43*	25.30	10

Silver Cadmium Oxide Contacts

10 Amps	Input Voltage	Options	Type	Price Each	Std. Pack▲
	AC 50/60 Hz	None	RS44*	\$28.50	10
		Pilot Light	RS44P14*	33.80	10
		Manual Operator and Pilot Light	RS44M1P14*	35.10	10
	DC	None	RSD44*	28.50	10
		Pilot Light	RSD44P14*	33.80	10

Silver Cadmium Oxide Contacts

▲ Orders MUST specify standard package quantity or multiples of that quantity.

* The relay catalog number must be stocked by Square D in the warehouse or it is not available.

For additional information, reference the G.P. Relay Catalog # 8501CT9201 R10/96 or D-FAX™ # 1251.



MODEL EN909BG72WL PART NO. 038629

MAX. AMPS @ 60 Hz: 36.0/18.0

MAXIMUM INCHES H2O FOR CONTINUOUS DUTY OPERATION:
100 SUCTION OR 120 PRESSURE AT 40 DEG. C AMBIENT

CAUTION:
MOUNT SECURELY AND ATTACH GROUND CONNECTION
BEFORE OPERATING. DO NOT EXCEED MAXIMUM LIMITS.

AMETEK®

ROTRON INDUSTRIAL PRODUCTS
SAUGERTIES, NY 12477

02-41-287

ISO 9001 CERTIFIED

WORK ORDER: BP19195

CAUTION:

THIS MOTOR IS EQUIPPED WITH PILOT DUTY THERMAL
OVERLOAD PROTECTION. FAILURE TO PROPERLY WIRE
THIS PROTECTION VIOLATES UL STANDARD #74 AND NEC
501, AND CAN RENDER ROTRON'S WARRANTY NULL AND

AMETEK 100

ROTRON INDUSTRIAL PRODUCTS
SAUGERTIES, NY 12477

ISO 9001 CERTIFIED



ROTRON TECHNICAL MOTOR DIVISION
REGENERATIVE BLOWER GROUP

75 North Street
Saugerties, New York 12477
Phone: (845) 246-3401
Fax: (845) 246-3802

EXPLOSION-PROOF BLOWERS



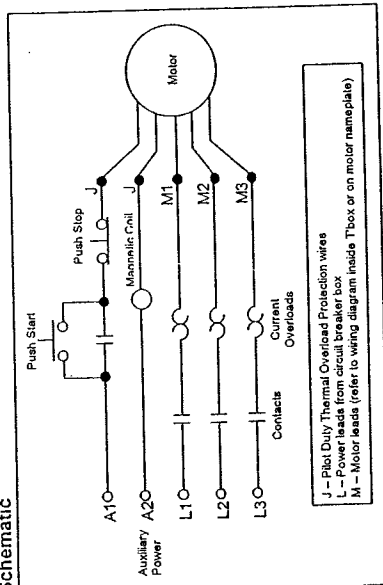
IMPORTANT: Read before wiring this Explosion-proof Blower

This AMETEK Rotron Explosion-proof Regenerative Blower may be equipped with Pilot Duty Thermal Overload (PDTO) or Automatic Thermal Overload (ATO) protection. When properly wired to a motor starter, this protection limits the motor winding temperature rise per the National Electric Code (NEC) article 500. Failure to properly wire this blower is an NEC violation and could cause an explosion. AMETEK Rotron assumes no responsibilities for damages incurred by negligent use of this product, and will not warrant a blower on which the PDTO is not properly connected. Some blowers 1 HP and under do not require PDTO and have built in ATO. Consult the factory if verification of wiring connections is required.

In all cases, follow the motor controller manufacturer's instructions. The following schematic is for conceptual understanding only, and may not apply to all motor/controller combinations.

The manufacturer's wiring diagram found on the motor takes precedent over reference diagrams supplied by AMETEK Rotron Technical Motor Division.

Schematic



The schematic is shown for a three phase motor. For a single phase motor disregard L3 and M3. Pushing the START button completes the auxiliary control circuit, allowing current to flow through the magnetic coil. The contacts are magnetically closed, starting the motor and latching the auxiliary circuit. The motor will continue to run until the STOP push button is depressed, the motor reaches the overload temperature, or the current sensing overloads trip out.

If you have any questions, contact AMETEK Rotron at 914-246-3401 for the location of your area representative.

POLICY REGARDING INSTALLATION OF AMETEK ROTRON REGENERATIVE BLOWERS IN HAZARDOUS LOCATIONS

AMETEK Rotron will not knowingly specify, design or build any regenerative blower for installation in a hazardous, explosive location without the proper NEMA motor enclosure. AMETEK Rotron does not recognize sealed blowers as a substitute for explosion-proof motors. Sealed units with standard TEFC motors should never be utilized where local, state, and/or federal codes specify the use of explosion-proof equipment.

AMETEK Rotron has a complete line of regenerative blowers with explosion-proof motors. Division 1 & 2, Class I, Group D; Class II, Groups F & G requirements are met with these standard explosion-proof blowers.

AMETEK Rotron will not knowingly specify, design or build any regenerative blower for installation in a hazardous, corrosive environment without the proper surface treatment and sealing options.

AMETEK Rotron has a complete line of Chemical Processing and Nasty Gas™ regenerative blowers with Chem-Tough™, stainless steel parts, and seals.

AMETEK Rotron offers general application guidance; however, suitability of the particular blower selection is ultimately the responsibility of the purchaser, not the manufacturer of the blower.



ROTRON INDUSTRIAL PRODUCTS
75 North Street, Saugerties, NY 12477 U.S.A.
Telephone: 845-246-3401 Fax: 845-246-3802
e-mail: rotsonindustrial@mettek.com website: www.rotsonindustrial.com

GENERAL INSTALLATION INSTRUCTIONS

Rotron Regenerative Blowers

Installation Instructions for SL, DR, EN, CP, and HiE Series Blowers

- 1. Bolt It Down** - Any blower must be secured against movement prior to starting or testing to prevent injury or damage. The blower does not vibrate much more than a standard electric motor.
- 2. Filtration** - All blowers should be filtered prior to starting. Care must be taken so that no foreign material enters the blower. If foreign material does enter the blower, it could cause internal damage or may exit at extremely high velocity.
Should excessive amounts of material pass through the blower, it is suggested that the cover(s) and impeller(s) be removed periodically and cleaned to avoid impeller imbalance. Impeller imbalance greatly speeds bearing wear, thus reducing blower life. Disassembling the blower will void warranty, so contact the factory for cleaning authorization.

- 3. Support the Piping** - The blower flanges and nozzles are designed as connection points only and are not designed to be support members.
Caution: Plastic piping should not be used on blowers larger than 1 HP that are operating near their maximum pressure or suction point. Blower housing and nearby piping temperatures can exceed 200°F. Access by personnel to the blower or nearby piping should be limited, guarded, or marked, to prevent danger of burns.

- 4. Wiring** - Blowers must be wired and protected/fused in accordance with local and national electrical codes. All blowers must be grounded to prevent electrical shock. Slo-Blow or time delay fuses should be used to bypass the first second of start-up amperage.

- 5. Pressure/Suction Maximums** - The maximum pressure and/or suction listed on the model label should not be exceeded. This can be monitored by means of a pressure or suction gage (available from Rotron), installed in the piping at the blower outlet or inlet. Also, if problems do arise, the Rotron Field representative will need to know the operating pressure/suction to properly diagnose the problem.

- 6. Excess Air** - Bleed excess air off. DO NOT throttle to reduce flow. When bleeding off excess air, the blower draws less power and runs cooler.

Note: Remote Drive (Motorless) Blowers - Properly designed and installed guards should be used on all belts, pulleys, couplings, etc. Observe maximum remote drive speed allowable. Due to the range of uses, drive guards are the responsibility of the customer or user. Belts should be tensioned using belt gauge.

For further information regarding Rotron regenerative blowers (including service & parts manuals), please contact your local field sales engineer.

Maintenance Procedure

When properly piped, filtered, and applied, little or no routine maintenance is required. Keep the filter clean. Also, all standard models in the DR, EN, CP, and HiE series have sealed bearings that require no maintenance. Bearing should be changed after 15,000 to 20,000 hours, on average. Replacement bearing information is specified on the chart below.

Bearing Part Number	Size	Seal Material	Grease	Heat Stabilized
510217	205			
510218	206	Polyacrylic	Nye Rheotemp 500 30% +/- 5% Fill	Yes - 325 F
510219	207			
510449	203			
516440	202	Buna N	Shell Doliium "R" 25-40% Fill	NO
516648	307			
516840	206			
516841	207	Buna N	Shell Doliium "R" 30% +/- 5% Fill	NO
516842	208			
516843	210			
516844	309			
516845	310			
516846	311			
516847	313			

Troubleshooting

Problem	Possible Cause	Out of Warranty Remedy ***
IMPELLER DOES NOT TURN	<ol style="list-style-type: none"> * One phase of power line not connected * One phase of stator winding open Bearings defective Impeller jammed by foreign material Impeller jammed against housing or cover ** Capacitor open 	<ol style="list-style-type: none"> Connect Rewind or buy new motor Change bearings Clean and add filler Adjust Change capacitor
IMPELLER TURNS	<ol style="list-style-type: none"> * Two phases of power line not connected * Two phases of stator winding open Insufficient fuse capacity Short circuit High or low voltage * Operating in single phase condition Bearings defective Impeller rubbing against housing or cover Impeller or air passage clogged by foreign material Unit operating beyond performance range Capacitor shorted 	<ol style="list-style-type: none"> Connect Rewind or buy new motor Use time delay fuse of proper rating Repair Check input voltage Check connections Check bearings Adjust Clean and add filler Reduce system pressure/vacuum Change capacitor Rewind or buy new motor Adjust Clean and add filler Change bearings
Blown Motor Protector Trips	<ol style="list-style-type: none"> Leak in piping Piping and air passages clogged Impeller rotation reversed Leak in blower Low voltage 	<ol style="list-style-type: none"> Tighten Clean Check wiring Tighten cover, flange Check input voltage
Motor Overheated Or Abnormal Sound	<ol style="list-style-type: none"> Impeller rubbing against housing or cover Impeller or air passages clogged by foreign material Bearings defective 	<ol style="list-style-type: none"> Adjust Clean and add filler Change bearings
Performance Below Standard	<ol style="list-style-type: none"> Leak in piping Piping and air passages clogged Impeller rotation reversed Leak in blower Low voltage 	<ol style="list-style-type: none"> Tighten Clean Check wiring Tighten cover, flange Check input voltage

* 3 phase units

** 1 phase units

*** Disassembly and repair of new blowers or motors will void the Rotron warranty. Factory should be contacted prior to any attempt to field repair an in-warranty unit.