

FFI SCR Replacement Kit

Installation Manual

PNEG-1712

Date: 05-22-15



All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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1. Introduction

Read these Instructions before Installation and Operation



To reduce the risk of electrical shock or damage to electrical components, turn OFF and lock out the main power supply before performing any service or maintenance work on the dryer.

FFI SCR Replacement Control Kit

The FFI SCR Replacement Control Kit is a service replacement package for the discontinued woods SCR control boards installed on Farm Fans dryers from 1990 to 2007.

The FFI SCR Replacement Kit supersedes previous SCR kits and contains the necessary parts for replacing the following SCR control boards:

1. 415-3621-0 SCR CONTROL 1 HP-WOODS W/54
2. 415-4563-3 SCR CONTROL 1/3 HP-WOODS W/54
3. 415-3019-7 SCR CONTROL 3/4 HP-WOODS
4. 415-2302-8 SCR CONTROL 3/4 HP-WOODS W/54
5. SCR-003 SCR CONTROL KIT WOODS
6. 056-1580-2 SCR MOTOR CONTROL-WOODS

Beginning in 1990, the woods SCR board was installed on all new CMS-H, CMS-J and M-Series dryers. As of July, 1992, the woods SCR board was installed on all new CF/AB and CF/SA series dryers.

SCR All HP with Vari-Trol (D04-0551)

Part #	Description	Qty	U/M
098-1026-8	Wrapper, Nylon TY - 3-5/8"	1	EA
D03-0013-BRK	DIN Rail Mount Single Comp 3.9"	1	EA
D03-0854	Minarik SCR Drive	1	EA
FH-6999	Insulator, 16 Gauge Insulator Crimp	1	EA
HH-1462	Nut, 16 Gauge Wire	2	EA
PNEG-1712	FFI SCR Replacement Kit	1	EA
WR-16BLK	Wire, 16 Gauge Stranded MTW Black	4	FT
WR-18RED	Wire, 18 Gauge Red Stranded 120-1032-8	3	FT
WR-18WHT	Wire, 18 Gauge White Stranded	3	FT
WR-18YLW	Wire, 18 Gauge Yellow Stranded	3	FT
GT3-0971	24 Volt Power Supply	1	
70-0064	3 Amp Time Delay Fuse	2	
E300-1003	5 Amp Fuse TD	2	
GT3-1065	8 Amp Fuse MDA	2	

SCR All HP without Vari-Trol (D04-0552)

Part #	Description	Qty	U/M
098-1026-8	Wrapper, Nylon TY - 3-5/8"	1	EA
D03-0013-BRK	DIN Rail Mount Single Comp 3.9"	1	EA
D03-0854	Minarik SCR Drive	1	EA
FH-6999	Insulator, 16 Gauge Insulator Crimp	1	EA
HH-1462	Nut, 16 Gauge Wire	2	EA
PNEG-1712	FFI SCR Replacement Kit	1	EA
WR-16BLK	Wire, 16 Gauge Stranded MTW Black	4	FT
WR-18RED	Wire, 18 Gauge Red Stranded 120-1032-8	3	FT
WR-18WHT	Wire, 18 Gauge White Stranded	3	FT
WR-18YLW	Wire, 18 Gauge Yellow Stranded	3	FT
D03-0805	Touch Control, 12 VDC Power Supply	1	EA
70-0064	3 Amp Time Delay Fuse	2	
E300-1003	5 Amp Fuse TD	2	
GT3-1065	8 Amp Fuse MDA	2	

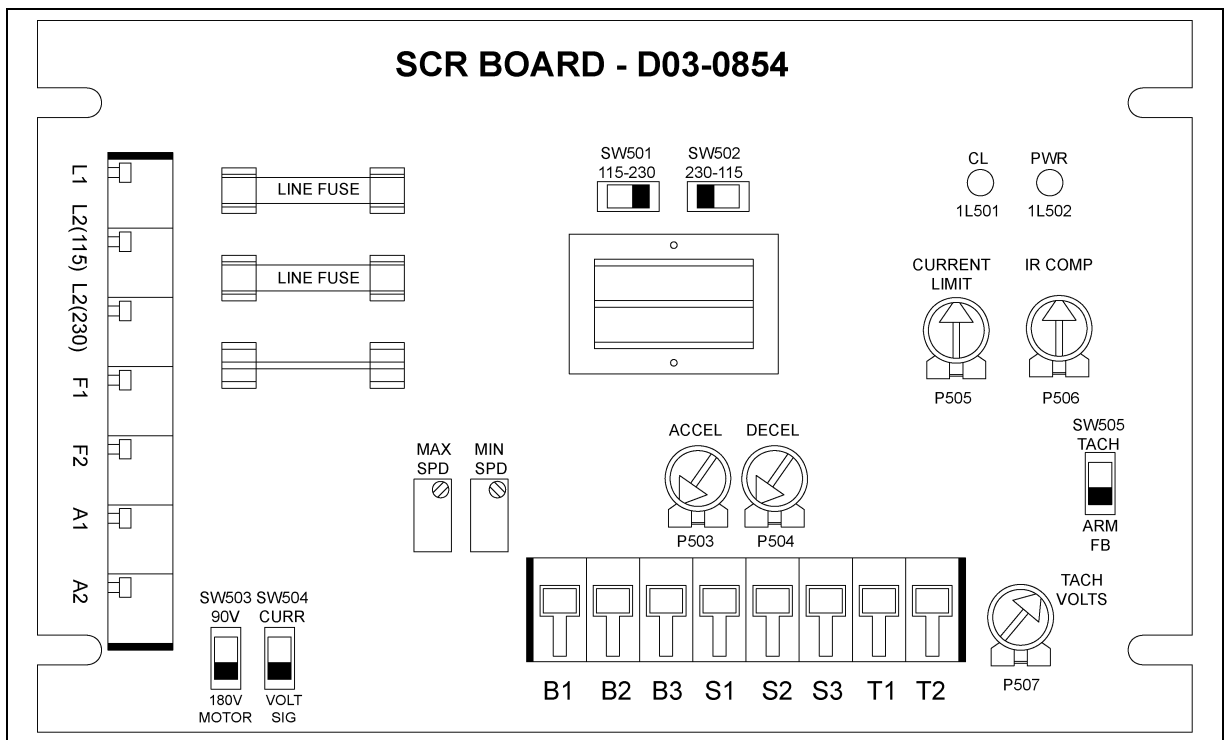


Figure 1A FFI SCR Replacement Board

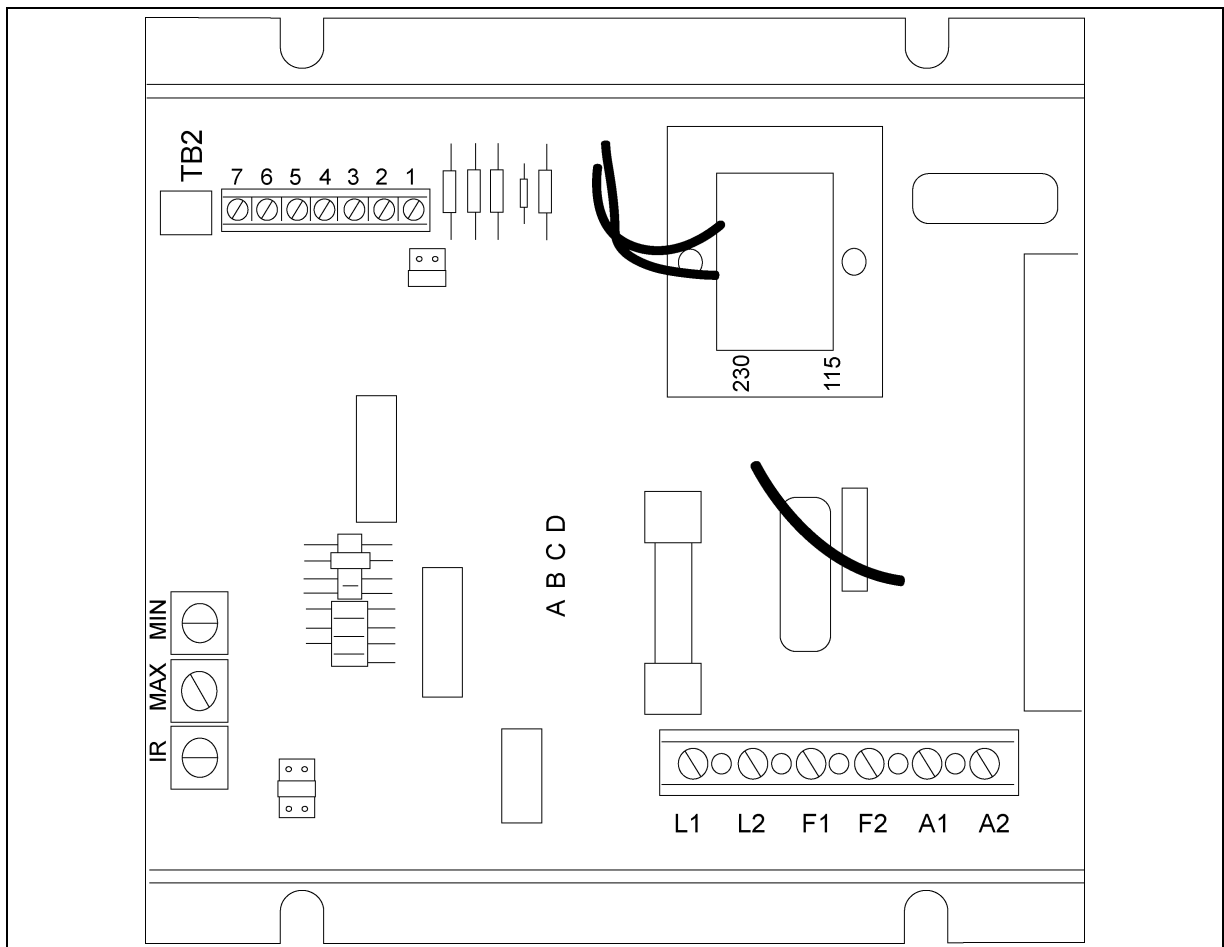


Figure 1B Woods SCR Board (Discontinued)

2. Installation

Replacing the Woods Board

1. Disconnect the power to the circuit.
2. For ease of re-connection, record the colors and terminal numbers of all wires leading to the woods board. Disconnect wiring and remove board. Mount the new SCR board in approximately the same location, oriented as shown in [Figure 1A on Page 5](#). Note that additional holes must be drilled into the mounting surface using a 9/64" drill bit.
3. Mount the DIN Rail (D03-0013-BRK) next to the new SCR board if possible using a 9/64" drill bit. Use the self-tapping screws to secure the DIN Rail to the panel. Snap the power supply (GT3-0971 or D03-0805) onto the DIN Rail.
4. Reconnect the wires as follows:

Previous Woods Terminal	New SCR Terminal	Previous Woods Terminal	New SCR Terminal
L1	L1	1	S3
L2	L2 (230)	2	S2
F1	F1	3	S1
F2	F2	6	B1
A1	A1	7	B3
A2	A2		

Vari-Trol Power Supply

Install power supply on DIN Rail.

1. Connect 24 VDC (+) to wire 54
2. Connect 24 VDC (-) to SCR terminal S1
3. Connect L1 to wire 27
4. Connect N to wire 2
5. Connect G to ground

NOTE: It is very important on Vari-Trol systems to remove the jumper (if present) on the back of the Honeywell moisture controller between terminals 4 and ground. Failure to do so will result in premature failure of components.

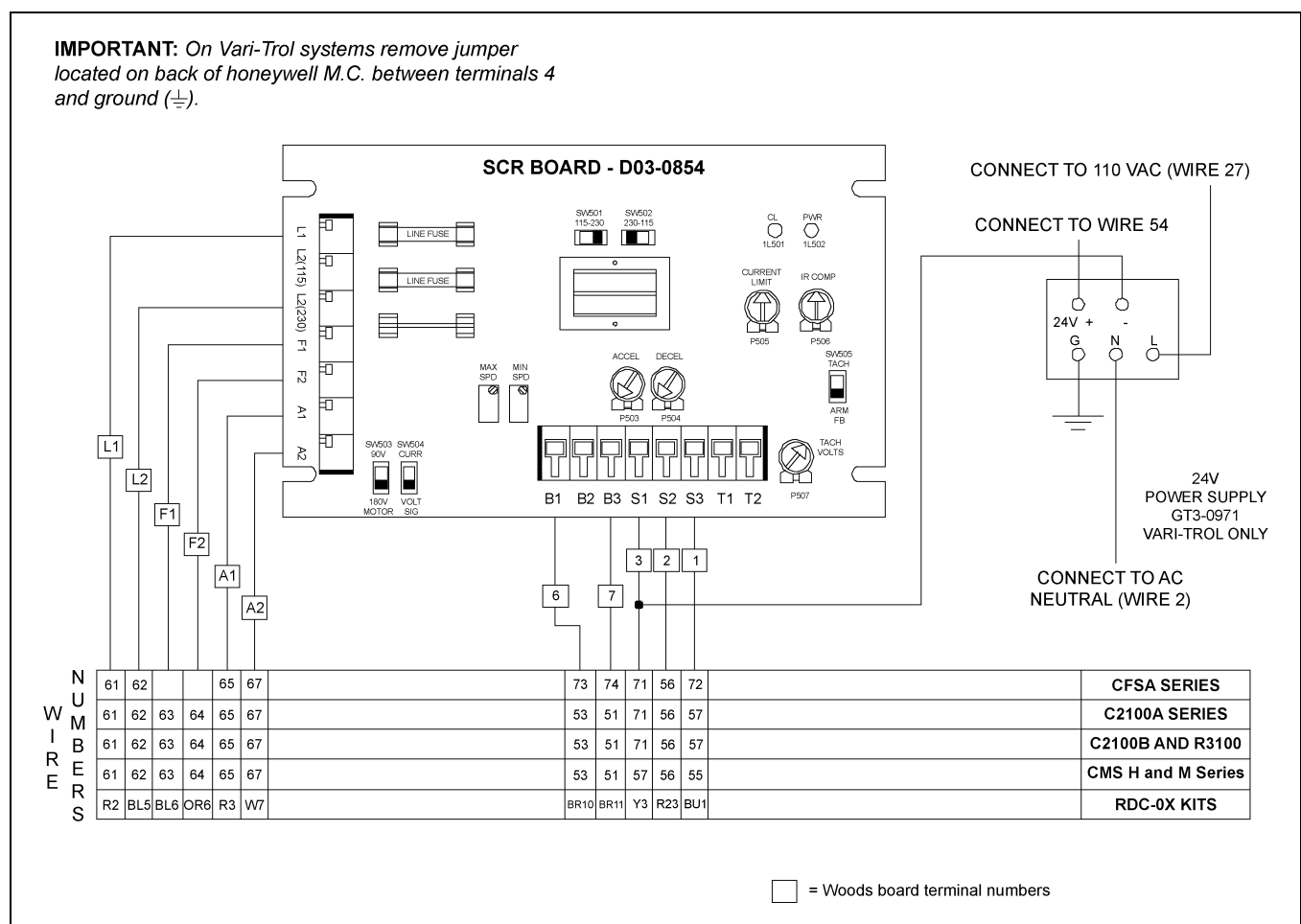


Figure 2A Wiring Diagram for Dryers with Vari-Trol (has 54 Wire and Autorange Module)

2. Installation

Non Vari-Trol Power Supply

Install power supply on DIN Rail.

1. Connect 12 VDC (+) to SCR terminal S3
2. Connect 12 VDC (-) to SCR terminal S1
3. Connect L1 to wire 27
4. Connect N to wire 2
5. Connect G to ground

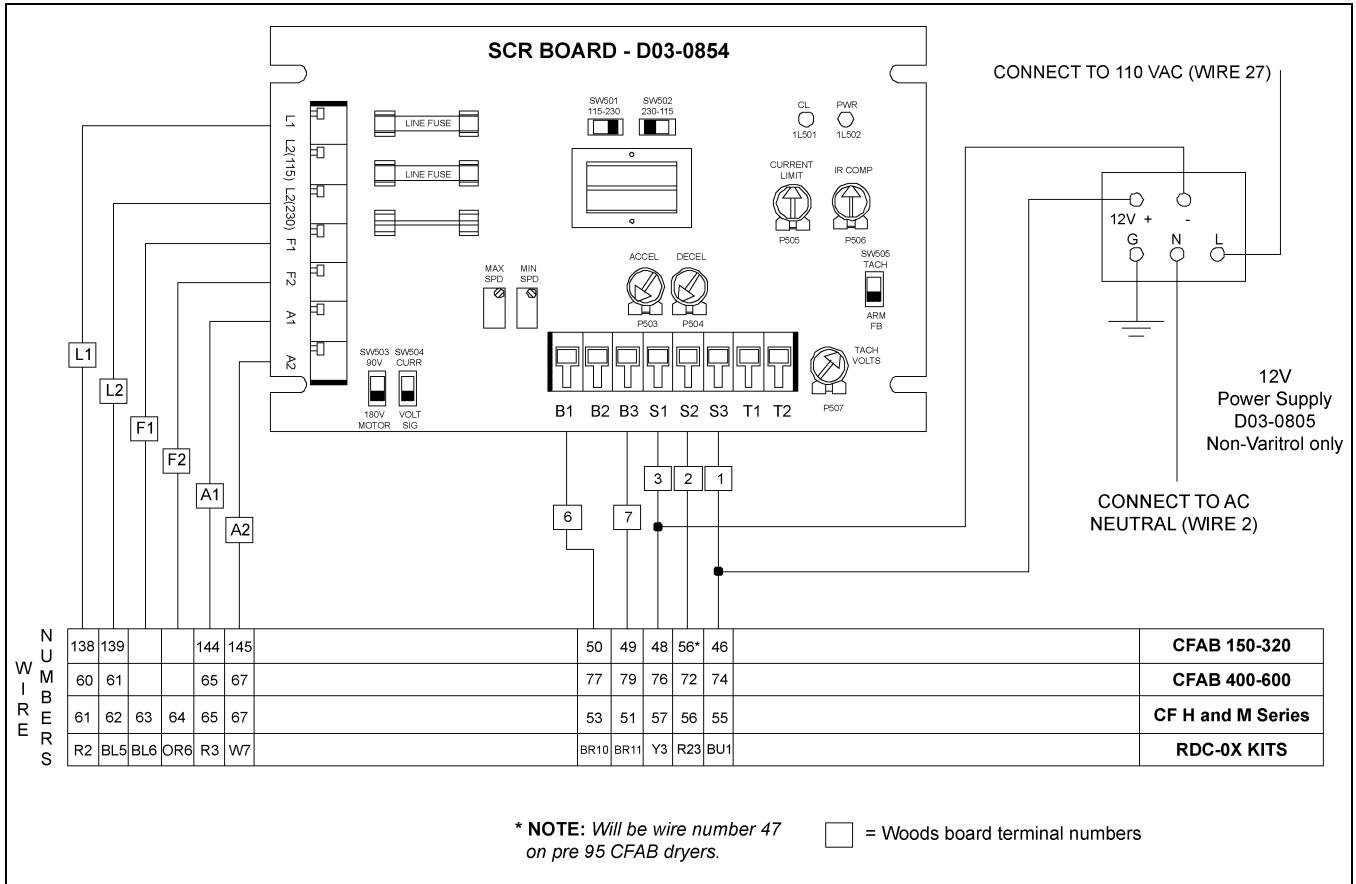


Figure 2B Wiring Diagram for Dryers with Non Vari-Trol (no 54 Wire)

Maximum Potentiometer Adjustment

With dryer unload circuit energized, set the SCR speed control knob on the ASC panel to 100%. Using a small blade screwdriver, adjust the maximum potentiometer to obtain 180 VDC across the DC motor armature terminals A+ and A- on the new SCR board. **(NOTE: Some early M-Series dryers were designed to operate with a 175 VDC armature voltage. Consult the factory if there is any question regarding these early models.)**

Minimum Potentiometer Adjustment

Set the SCR speed control knob on the ASC panel at the 10% setting. Adjust the minimum potentiometer to obtain 18 VDC across the DC motor armature terminal A+ and A-.

Recheck the maximum potentiometer setting and readjust if necessary. Repeat and readjust the minimum potentiometer if necessary. Rechecking the maximum and minimum potentiometer settings once should be sufficient.

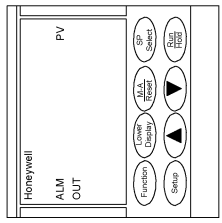
3. Setup Parameters

Vari-Trol Calibration

“OUT HI” will need to be set to 80. Refer to [Figure 3A](#) for instructions.

Part #	Description	Function	SETT.	SETT.	SETT.	SETT.	SETT.
415-5048-8	Moisture Controller Assembly - 50 Hz - 2 Alarm						
...	Moisture Controller Assembly - 50 Hz - 2 Alarm						
	TUNING	SP TRK	0.00	0.00	0.00	0.00	X
		RB T	0.00	0.00	0.00	0.00	X
		SRM	02	02	02	02	X
		SECUR	0	0	0	0	X
		LOCK	NONE/ALL	NONE/ALL	NONE/ALL	NONE/ALL	X
		*A TUNE	DIS	DIS	DIS	DIS	X
		*RN HLD	DIS	DIS	DIS	DIS	X
		AUTOMA	DIS	DIS	DIS	DIS	X
		SP SEL	DIS	DIS	DIS	DIS	X
		FLUZZY	DIS	DIS	DIS	DIS	X
		TUNE	DIS	DIS	DIS	DIS	X
		AT ENB	DIS	DIS	DIS	DIS	X
		AT ERR	NONE	NONE	NONE	NONE	X
		CTRALG	PIDA	PIDA	PIDA	PIDA	X
		TIMER	DIS	DIS	DIS	DIS	X
		CUR	400	400	400	400	X
		CHGE	100H	100H	100H	100H	X
		INI TYP	300	300	300	300	X
		INI HI	-300	-184	-184	-184	X
		INI LO	1.0	1.0	1.0	1.0	X
		RATIO 1	0	0	0	0	X
		BIAS 1	2	2	2	2	X
		FILTR 1	NONE	NONE	NONE	NONE	X
		BRNGOUT	NONE	NONE	NONE	NONE	X
		ALSP	ONE	ONE	ONE	ONE	X
		LSPS	ONE	ONE	ONE	ONE	X
		SP TRK	NONE	NONE	NONE	NONE	X
		PWRUP	ALSP	ALSP	ALSP	ALSP	X
		SP HI	200	90	90	90	X
		SP LO	0	0	0	0	X
		ACTION	DIR	DIR	DIR	DIR	X
		OUT HI	80	80	80	80	X
		OUT LO	38	38	38	38	X
		FALSE	0	0	0	0	X
		PBOR GN	PB	PB	PB	PB	X
		MIN RPM	RPM	RPM	RPM	RPM	X
		ALSTVA	15	15	15	15	X
		AIS2VA	15	15	15	15	X
		AIS1VA	0.1	0.1	0.1	0.1	X
		ALSTY	DE	DE	DE	DE	X
		AS2TY	DE	DE	DE	DE	X
		AS1TY	DE	DE	DE	DE	X
		AS2TY	DE	DE	DE	DE	X
		AS1TY	NONE	NONE	NONE	NONE	X
		AIS1HL	LOW	LOW	LOW	LOW	X
		AIS2HL	HIGH	HIGH	HIGH	HIGH	X
		AIS2HL	LOW	LOW	LOW	LOW	X
		ALHST	0.1	0.1	0.1	0.1	X
		BLKX 1	DIS	DIS	DIS	DIS	X
		BLKX 2	DIS	DIS	DIS	DIS	X
		BLKX 3	DIS	DIS	DIS	DIS	X
		DECIMAL	NONE	NONE	NONE	NONE	X
		UNITS	F	C	C	C	X
		FREQ	60	50	50	50	X
		DISPLY	PRY	PRY	PRY	PRY	X
		LANGUAG	ENGL	ENGL	ENGL	ENGL	X

* NOTE: To change 'A TUNE' and 'RN HLD' Settings, 'LOCK' must be set to 'NONE'.



1. Use SET UP, FUNC, and ARROW Keys to achieve the correct programming.
2. Remove from power.
3. Place silver label with part # on the bottom of the unit, E.G. 415-2811-8, plenum controller.
4. Place silver label on the outside of the case, E.G. 415-2811-8, plenum controller.
5. When a UDC2300 replaces a UDC2000, the wires, located on terminals 6 and 8, must be transposed.
6. When any parameter, other than listed in the chart, is displayed, do not change it. If it has been changed by accident, set it to the factory setting shown in the honeywell manual.

SCR drive conversion: Please set "OUT HI" to 80.

UDC	UDC	UDC	UDC
2000	2300	2300	2400
AC Line	L2	L2	L2
RTD YEL	8	6	25
RTD WHT	7	7	26
RTD WHT	6	8	27
4-20 mA+	5	5	19
4-20 mA-	4	4	21

SCR Drive Honeywell Modification

Part #	Description	Assembly
415-2811-8	Plenum Controller Assembly - 60 Hz	X
415-2812-6	Moisture Controller Assembly - 60 Hz	X
415-2825-5	Plenum Controller Assembly - 50 Hz	X
415-2825-3	Moisture Controller Assembly - 50 Hz	X
415-5048-8	Moisture Controller Assembly - 60 Hz - 2 Alarms	X

Part #	Description	Function	SETT.	SETT.	SETT.	SETT.
415-2811-8	Plenum Controller Assembly - 60 Hz					
415-2812-6	Moisture Controller Assembly - 60 Hz					
415-2825-5	Plenum Controller Assembly - 50 Hz					
415-2825-3	Moisture Controller Assembly - 50 Hz					
	TUNING	SP TRK	0.00	0.00	0.00	X
		RB T	0.00	0.00	0.00	X
		SRM	2.5	02	2.5	02
		SECUR	0	0	0	0
		LOCK	NONE/ALL	NONE/ALL	NONE/ALL	NONE/ALL
		*A TUNE	DIS	DIS	DIS	DIS
		*RN HLD	DIS	DIS	DIS	DIS
		AUTOMA	DIS	DIS	DIS	DIS
		SP SEL	DIS	DIS	DIS	DIS
		FLUZZY	DIS	DIS	DIS	DIS
		TUNE	DIS	DIS	DIS	DIS
		AT ENB	DIS	DIS	DIS	DIS
		AT ERR	NONE	NONE	NONE	NONE
		CTRALG	PIDA	PIDA	PIDA	PIDA
		TIMER	DIS	DIS	DIS	DIS
		CUR	400	400	400	400
		CHGE	100H	100H	100H	100H
		INI TYP	300	300	300	300
		INI HI	1200	648.8	148.9	148.9
		INI LO	-300	-300	-184	-184
		RATIO 1	1.0	1.0	1.0	1.0
		BIAS 1	0	0	0	0
		FILTR 1	2	2	2	2
		BRNGOUT	NONE	NONE	NONE	NONE
		ALSP	ONE	ONE	ONE	ONE
		LSPS	ONE	ONE	ONE	ONE
		SP TRK	NONE	NONE	NONE	NONE
		PWRUP	ALSP	ALSP	ALSP	ALSP
		SP HI	250	200	120	90
		SP LO	0	0	0	0
		ACTION	REV	DIR	REV	DIR
		OUT HI	100	80	100	80
		OUT LO	0	38	0	38
		FALSE	0	38	0	38
		PBOR GN	PB	PB	PB	PB
		MIN RPM	RPM	RPM	RPM	RPM
		ALSTY	NONE	NONE	NONE	NONE
		AS2TY	NONE	NONE	NONE	NONE
		AS1TY	NONE	NONE	NONE	NONE
		AS2TY	NONE	NONE	NONE	NONE
		AS1TY	NONE	NONE	NONE	NONE
		DECIMAL	DIS	DIS	DIS	DIS
		UNITS	F	C	C	C
		FREQ	60	50	50	50
		DISPLY	PRY	PRY	PRY	PRY
		LANGUAG	ENGL	ENGL	ENGL	ENGL

* NOTE: To change 'A TUNE' and 'RN HLD' Settings, 'LOCK' must be set to 'NONE'.

Alarm operation:
 Output of alarm 1 is ON if process TEMP. is 15° greater than or 15° less than the set point.
 Output of alarm 2 is ON when process TEMP. is 1° greater than the set point.

Figure 3A

GSI Group, LLC Limited Warranty

The GSI Group, LLC ("GSI") warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions:

The Limited Warranty period is extended for the following products:

	Product	Warranty Period	
AP Fans and Flooring	Performer Series Direct Drive Fan Motor	3 Years	* Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 25% 5 to 7 years - end-user pays 50% 7 to 10 years - end-user pays 75%
	All Fiberglass Housings	Lifetime	
	All Fiberglass Propellers	Lifetime	
AP and Cumberland	Flex-Flo/Pan Feeding System Motors	2 Years	
Cumberland Feeding/Watering Systems	Feeder System Pan Assemblies	5 Years **	** Warranty prorated from list price: 0 to 3 years - no cost to end-user 3 to 5 years - end-user pays 50%
	Feed Tubes (1-3/4" and 2.00")	10 Years *	
	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
Grain Systems	Grain Bin Structural Design	5 Years	
Grain Systems Farm Fans Zimmerman	Portable and Tower Dryers	2 Years	† Motors, burner components and moving parts not included. Portable dryer screens included. Tower dryer screens not included.
	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) PRODUCT MANUFACTURED OR SOLD BY GSI OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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