

FFI SCR Replacement Kit

Installation Manual

PNEG-1712

Date: 09-21-09

GSI GROUP



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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 Insul. 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
D03-0854	Minarik SCR Drive	1	EA
FH-6999	Insulator, 16 Gauge Insul. 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
70-0064	3 Amp Time Delay Fuse	2	
E300-1003	5 Amp Fuse TD	2	
GT3-1065	8 Amp Fuse MDA	2	

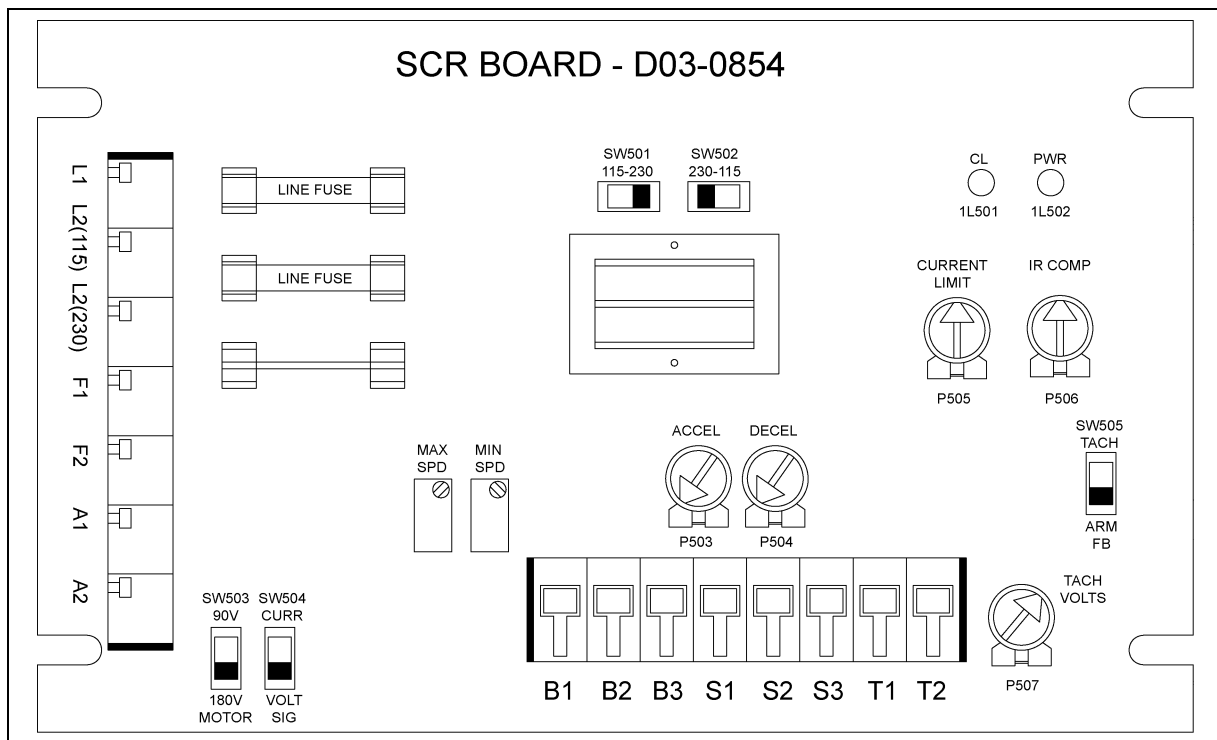


Figure 1A FFI SCR Replacement Board

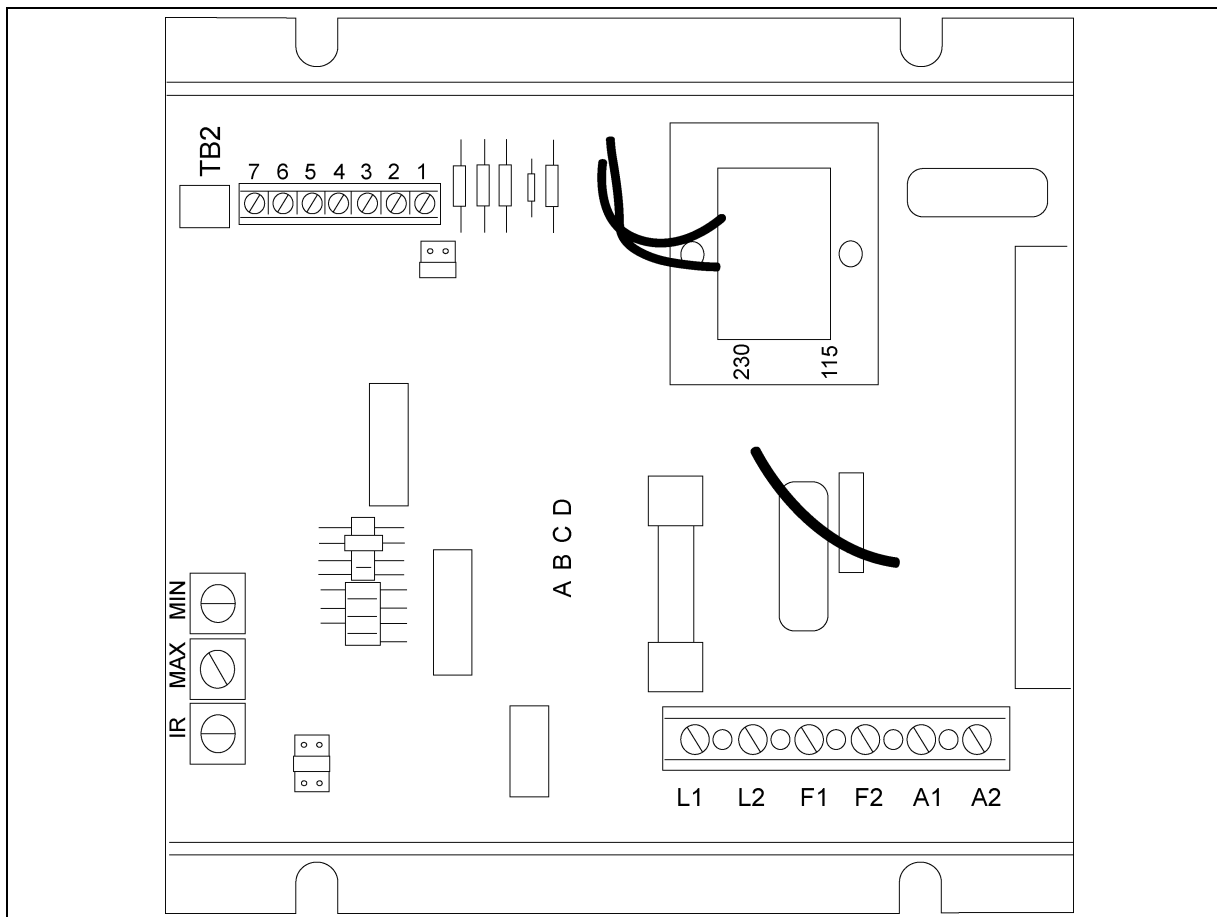


Figure 1B Woods SCR Board (Discontinued)

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) onto the DIN Rail (Vari-Trol only).
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 (Vari-Trol only).

1. Connect 24 VDC (+) to wire S4
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

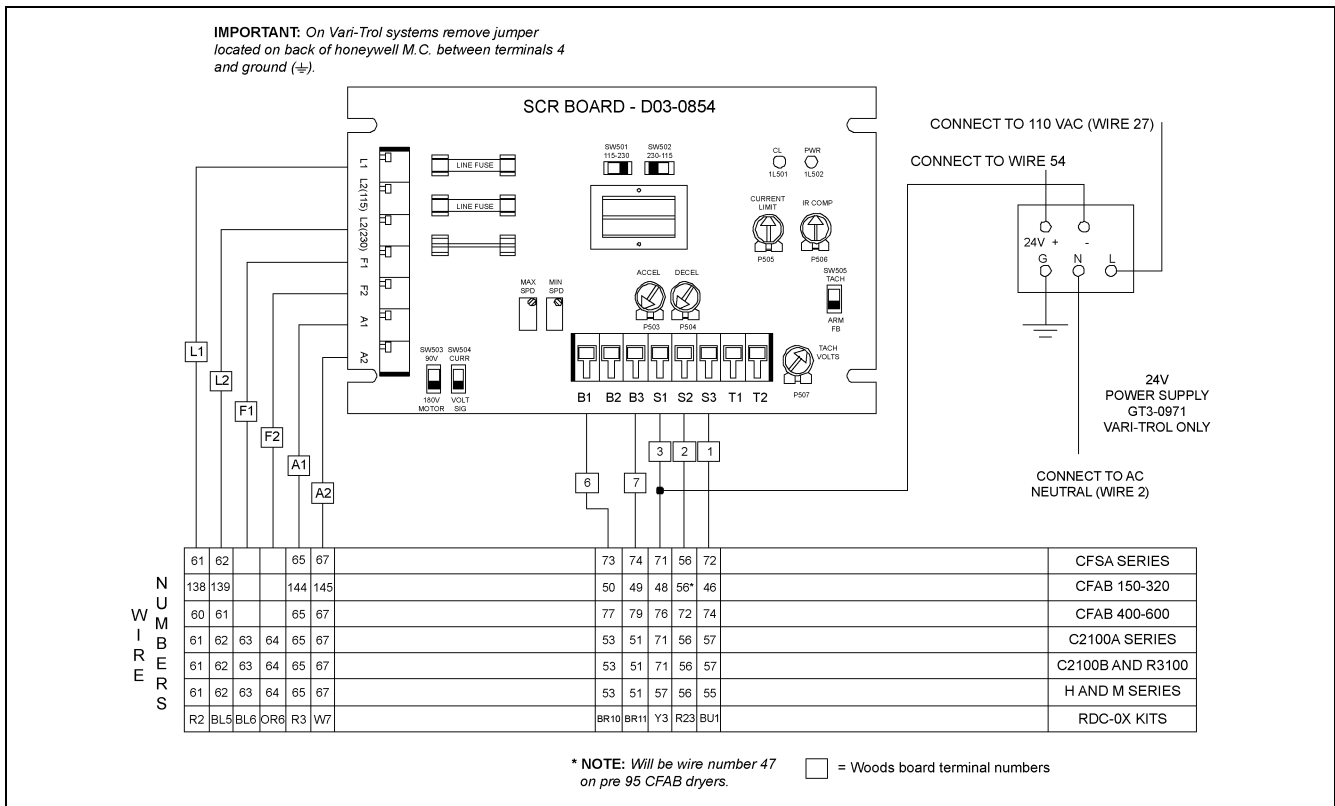


Figure 2A Wiring Diagram for all FFI Dryers

New SCR Drive Setup

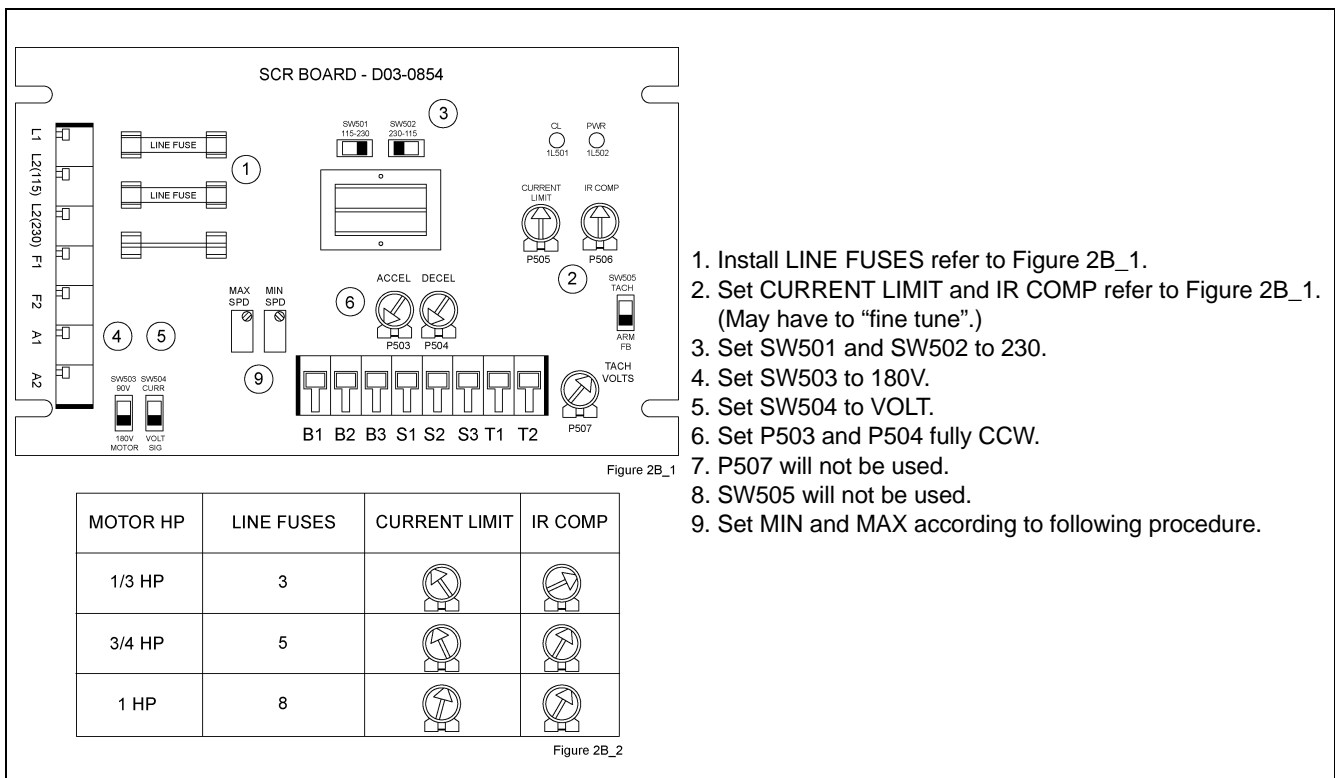


Figure 2B

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.

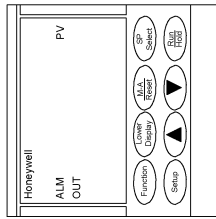
Vari-Trol Calibration

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

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
415-3828-5	Plenum Controller Assembly - 50 Hz	X
415-3828-3	Moisture Controller Assembly - 50 Hz	X
415-5046-3	Moisture Controller Assembly - 60 Hz - 2 Alarms	X

Part #	Desc #	Description
1	095-1815-1	Controller, Digital
	095-2073-7	Controller, Digital 2 Alarm



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
AC Line	L1	L1
AC Neutral	L2	L2
RTD YEL	6	6
RTD WHT	7	7
RTD WHT	8	8
4-20 mA	4	4
	2300	2500

Part #	Description	Function	SETT	SETT	SETT
415-5046-3	Moisture Controller Assembly - 60 Hz - 2 Alarm	PB	25	25	X
	Moisture Controller Assembly - 50 Hz - 2 Alarm	RATE T	0.00	0.00	X
		RPM	02	02	
		SECUR	0	0	
		LOCK	NONE/ALL	NONE/ALL	
		• RALVD	DIS	DIS	
		• AUTOMA	DIS	DIS	
		SP SEL	DIS	DIS	
		SPRAMP	DIS	DIS	
		TUNE	DIS	DIS	
		FUZZY	DIS	DIS	
		AT ENB	DIS	DIS	
		ERRC	DIS	DIS	
		CTRFG	PIDA	PIDA	
		TIMER	DIS	DIS	
		SET	CUR	CUR	
		CRANGE	4-20	4-20	
		INI TYP	100L	100L	
		INI HI	300	300	
		INI LO	-300	-184	
		BALS 1	0	0	
		BALS 2	0	0	
		FILTR 1	0	2	
		FILTR 2	0	2	
		BURNOUT	NONE	NONE	
		PIDSET	ONE	ONE	
		LSP S	ONE	ONE	
		SP TRK	NONE	NONE	
		PMR UP	ALSP	ALSP	
		SP LO	0	0	
		SP HI	0	0	
		ACTION	DIR	DIR	
		OUT HI	80	80	
		OUT LO	0	0	
		FAILSF	38	38	
		PB OR GN	PB	PB	
		MIN RPM	RPM	RPM	
		ALSYA	15	15	
		ALSYA	15	15	
		A3S1VA	0.1	0.1	
		A3S1TY	DE	DE	
		A3S2TY	DE	DE	
		A3S2TY	NONE	NONE	
		A3S1HL	LOW	LOW	
		A3S2HL	LOW	LOW	
		A3S1HL	LOW	LOW	
		ALHYST	0.1	0.1	
		ALARM 1	NOL	NOL	
		BLOCK	DIS	DIS	
		DECIMAL	NONE	NONE	
		UNITS	F	F	
		FREQ	0	0	
		PRY	PRY	PRY	
		ENGL7	ENGL	ENGL7	

*NOTE: To change A TUNE and RV ALD 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

NOTES

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	
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.

G S I G R O U P



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