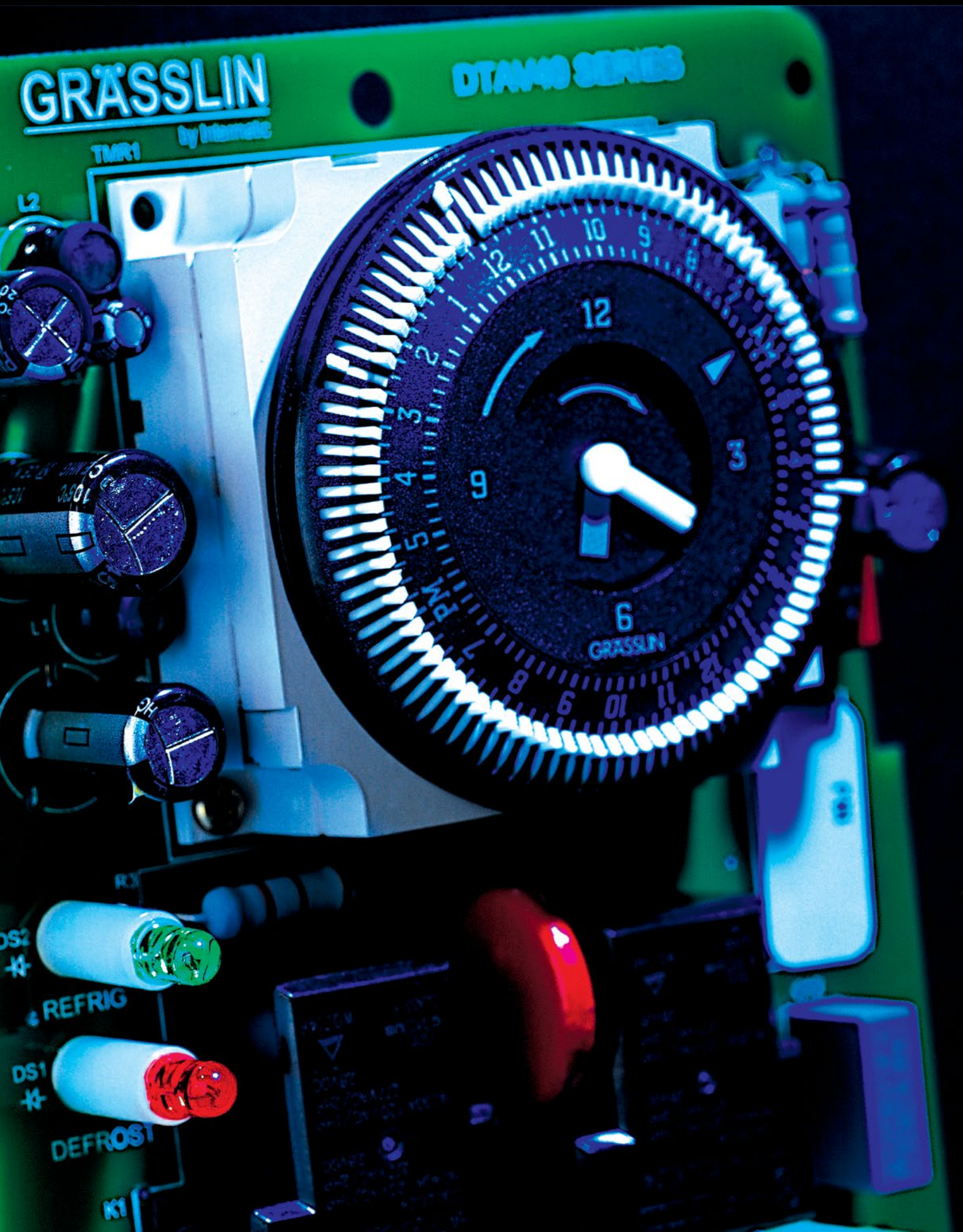

GRÄSSLIN
by Intermatic
TIMR1
L2
L1
RX
DS2
REFRIG
DS1
DEFROST
K1
12
3
6
9
GRASSLIN

Defrost Timer Controls / HVAC/R

Grässlin Defrost Timers were designed specifically for OEM or contractor integration control of various loads within commercial refrigeration systems which require systematic overriding of these loads to defrost evaporator coils in medium (cooler) or low-temperature (freezer) applications. Whether voltage specific mechanical, autovoltage electromechanical, or electronic, Grässlin Defrost Timers offer consolidated value solutions to meet the commercial refrigeration contractor or OEM's needs. Grässlin Defrost Timers are used in electric or hot gas defrost applications where the defrost is terminated when the coil is frost-free, as sensed by a temperature or pressure switch, even though the defrost programmed termination time has not been reached. The time termination functions as a fail-safe and will terminate the defrost if the temperature or pressure switch fails to do so. The temperature or pressure switch on the refrigeration coil has contacts which close on a temperature or pressure rise above freezing, indicating that frost and ice have melted from the evaporator coil.

Contents

Grässlin 24-Hour Electromechanical Defrost Timer 96-97
Grässlin 24-Hour and/or 7-Day Electronic Defrost Timer 98
DTAV Series Common Wiring Diagrams & Enclosure/Mounting Dimensions..... 99
24-Hour Mechanical Defrost Timer 100-101

DTAV40

DTAV40 Inside

c UL us #E10694 RoHS Compliant 2002/95/EC

Ratings	
Input Voltage	
All Models	120-240 VAC, 60 Hz
Q Model	120-240 VAC, 50/60 Hz
Switch Type	1 SPDT, 1 NC SPST
Resistive	40 A, 120-240 VAC
Motor	1 HP, 16 FLA, 96 LRA @ 120 VAC 2 HP, 12 FLA, 72 LRA @ 240 VAC
Operating Temperature	-40º F to 104º F (-40º C to 40º C)
Quartz	-4º F to 104º F (-20º C to 40º C)
Operating Humidity	0-95% RH, non-condensing
Wiring Connections	Screw box lug terminals. Up to one #8 AWG Wire
Enclosure/Mounting	UL Type 1, UL Type 3R, or Bracket
MIN ON/OFF	15 minutes
MAX ON/OFF	23 hours, 45 minutes
Electrical Life	50,000 operations at full load
Shipping Weight	3 lbs.
Warranty	1-year limited

DTAV40 Series

Time Initiated and Temperature, Pressure or Time Terminated 40 A Autovoltage Electromechanical Defrost Timer

For electric heat, hot gas or compressor shutdown defrost. The Grässlin DTAV40 Series Auto Voltage Defrost Timer is applicable to air defrost (compressor shutdown) and electric or hot gas defrost systems where the defrost cycle is terminated by the timer. If the coil is frost-free, the timer can also be terminated by temperature or pressure switches before the programmed defrost termination time has been reached. The time termination functions as a fail-safe and terminates the defrost cycle if the temperature or pressure switch fails to do so.

Applications

- Medium and low-temperature commercial refrigeration systems

Features

- DTAV40 Series replaces over 40 competitive models
- 40 A, 2 HP Rating
- Autovoltage automatically adjusts between 120 and 240 VAC
- Q model features self-recharging battery backup with 7-day carry-over
- Can mount in an existing enclosure – no tools required for installation
- Moisture resistant conformal-coated board
- LED indicators for defrost and refrigeration cycles
- Defrost cycles are programmed independently
- "Real-time" clock face for quick, easy and accurate setting
- Defrost times programmable in 15-minute intervals
- Captive trippers won't get lost
- Finger-safe box lug terminals

Model #	Enclosure	Battery Backup
DTAV40	UL Type 3R Outdoor Plastic	No
DTAV40Q	UL Type 3R Outdoor Plastic	Yes (7 Days)
DTAV40IM	UL Type 1 Metallic (Not Raintight)	No
DTAV40M	Mechanism Only	No

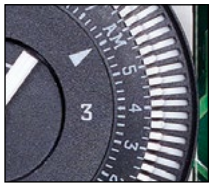
Notes: For mounting & enclosure dimensions see page 99.
For wiring examples see page 99.

Accessories/Replacements

Bracket Mount (material electrically isolated) mounting screws included	DT-B

Specification
Furnish and install a Grässlin_____Defrost Control, which will automatically adjust between 120 VAC and 240 VAC operation and shall have defrost initiation times settable in 15-minute intervals with captive trippers. The defrost timer shall be housed in a UL Type 3R indoor/outdoor plastic enclosure or UL Type 1 metallic enclosure. The relay output will be rated for 40A Resistive, 2 HP @ 240 VAC. Defrost termination to be by time (or by a remote temperature or pressure switch). For carry-over, the time controls shall have quartz a drive with (DTAV40Q) 7-Day reserve carry-over from a self-recharging battery.

Setting Defrost Times



Configure defrost times easily! Just scan the QR code with your smartphone or tablet for details on how to choose a defrost starting time.

DTAV40VM

40 A Autovoltage Electromechanical Defrost Timer with Voltage Monitoring and Short Cycle Protection

The Grässlin DTAV40VM Auto Voltage Defrost Timer with Voltage Monitoring and Short Cycle Protection offers all of the same features as the DTAV40 Series, plus it also includes built-in voltage monitoring and short cycle delay options to help protect the compressor and increase system life.The low-voltage monitor circuit measures the input voltage across several line cycles. A brownout condition exists if an average input voltage falls below 95 VAC (+/-2 VAC) for 120 VAC operation or 190 VAC (+/-2 VAC) for 240 VAC operation. A brownout condition triggers short cycle protection and disables normal compressor operation until normal operating voltage is restored.

DTAV40VM

DTAV40VM Inside

Applications

- Medium and low-temperature commercial refrigeration systems

Features

Same features as DTAV40 series on pg 96, plus:

- Voltage monitoring protects against low-voltage conditions (brownouts)
- Adjustable short cycle delay helps extend compressor life
- DTAV40VM replaces over 40 competitive models, including the DTMV40

Model #	Enclosure
DTAV40VM	UL Type 3R Raintight Plastic

Notes: For mounting & enclosure dimensions see page 99.
For wiring examples see page 99.

Accessories/Replacements

Bracket Mount (material electrically isolated) mounting screws included	DT-B

Specification
Furnish and install a Grässlin_____Defrost Control, which will automatically adjust between 120 VAC and 240 VAC operation. The defrost timer shall have defrost initiation times settable in 15-minute intervals with captive trippers. The defrost timer shall incorporate voltage monitoring to protect against low-voltage conditions. The defrost timer shall also incorporate a short cycle delay adjustable from 0 sec. (off), 6 sec. minimum to 10 min. max to prevent rapid compressor cycling. The defrost timer shall be housed in a UL Type 3R indoor/outdoor plastic enclosure. The relay output shall be rated for 40 A Resistive, 2 HP @ 240 VAC. Defrost termination to be by time (or by a remote temperature or pressure switch).

c UL us #E10694 RoHS Compliant 2002/95/EC

Ratings	
Input Voltage	120-240 VAC, 60 Hz
Switch Type	1 SPDT, 1 NC SPST (NC in powered state)
Resistive	40 A, 120-240 VAC
Motor	1 HP, 16 FLA, 96 LRA @ 120 VAC 2 HP, 12 FLA, 72 LRA @ 240 VAC
Voltage Protection	< 95 VAC for 120 VAC <190 VAC for 240 VAC (+/- 2 VAC)
Short Cycle Delay	0 (disabled), 6-second, 30-second, 1, 2, 4, 6, 8, 10-minute
Operating Temperature	-40° F to 104° F (-40° C to 40° C)
Operating Humidity	0-95% RH, non-condensing
Wiring Connections	Screw box lug terminals. Up to one #8AWG Wire
Enclosure/Mounting	UL Type 3R
MIN ON/OFF	15 minutes
MAX ON/OFF	23 hours, 45 minutes
Electrical Life	50,000 Operations at full load
Shipping Weight	3 lbs.
Warranty	1-year limited

Adjusting Short Cycle Time

Adjust the short cycle delay time easily! For step-by-step instructions, scan the QR code with your smartphone or tablet.

DTAV40E2

DTAV40E2 Inside

c UL us
#E10694

Ratings	
Input Voltage	120-240 VAC, 50/60 Hz
Switch Type	1 SPDT, 1 NC SPST
Resistive	40 A, 120-240 VAC
Motor	1 HP, 16 FLA, 96 LRA @ 120 VAC 2 HP, 12 FLA, 72 LRA @ 240 VAC
Operating Temperature	-13º F to 104º F (-25 ºC to 40 ºC)
Operating Humidity	0-95% RH, non-condensing
Wiring Connections	#8 AWG
Enclosure/Mounting	UL Type 3R
MIN ON/OFF	1 minute
MAX ON/OFF	23 hours, 45 minutes
Electrical Life	50,000 operations at full load
Shipping Weight	3 lbs.
Warranty	1-year limited

DTAV40E2 Series

Time Initiated and Temperature, Pressure or Time Terminated 40 A Autovoltage Electronic Defrost Timer

The Grässlin DTAV40E2 Electronic Autovoltage Defrost Timer has flexible 7-day scheduling and to-the-minute defrost duration control to increase system efficiency (decrease defrost scheduling during low demand periods). It is applicable to air defrost (compressor shutdown) and electric or hot gas defrost systems where the defrost cycle is terminated by the timer. If the coil is frost-free, the timer can also be terminated by temperature or pressure switches before the programmed defrost termination time has been reached. The time termination functions as a fail-safe and cancels the defrost cycle if the temperature or pressure switch fails to do so.

Applications

- Medium and low-temperature commercial refrigeration systems

Features

- 24-Hour/7-Day flexible scheduling increases system efficiency
- 40 A, 2 HP rating
- DTAV40 Series replaces over 40 competitive models
- Autovoltage automatically adjusts between 120 and 240 VAC, 50/60 Hz
- Self-recharging battery backup with 2500-hour carry-over
- Can mount in an existing enclosure – no tools required for installation
- LED indicators for defrost and refrigeration cycles
- Finger-safe box lug terminals
- Simple to program

Model #	Enclosure	Battery Backup
DTAV40E2	UL Type 3R Raintight Plastic	Yes (2500-Hour)

Notes: For mounting & enclosure dimensions see page 99.
For wiring examples see page 99.

Specification
Furnish and install a Grässlin_____Defrost Control, which will automatically adjust between 120 VAC and 240 VAC operation and shall have defrost initiation times settable in 1-minute intervals with an integrated electronic timer interface. This control shall have 24-Hour/7-Day programming, 7 ON and 7 OFF setpoint programs, and 5 preset block programs to allow a selection of any combination of days for different weekday schedules. The LCD shall display time of day in AM/PM format. A daylight Saving Time adjustment button shall also be provided. The timer shall provide a manual override button to initiate a manual defrost. The defrost timer shall be housed in a UL Type 3R indoor/outdoor plastic enclosure. The relay output will be rated for 40 A Resistive, 2 HP @ 240 VAC. Defrost terminations to be by time (or by a remote temperature or pressure switch). For carry-over, the time controls shall have 2500-Hour reserve carry-over from a self-recharging battery.

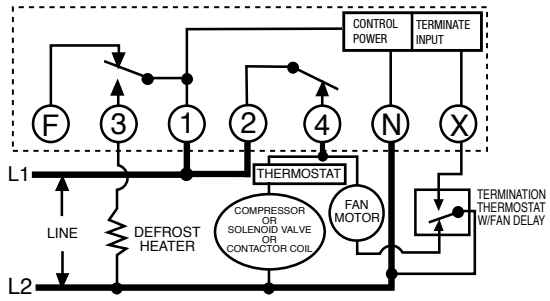
Set up system scheduling

The electronic face and programming buttons make scheduling straightforward and easy. Just scan the QR code with your smartphone or tablet for details.

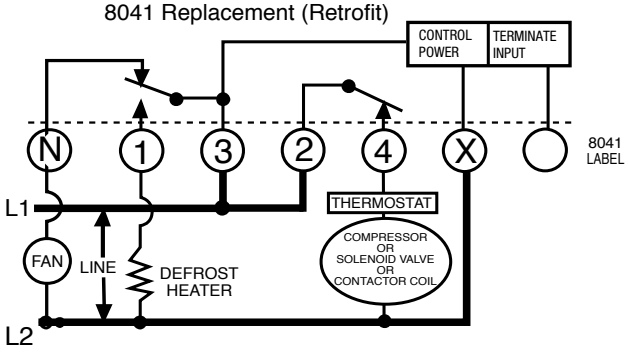
Wiring Diagrams

Wiring diagrams in powered refrigeration mode.

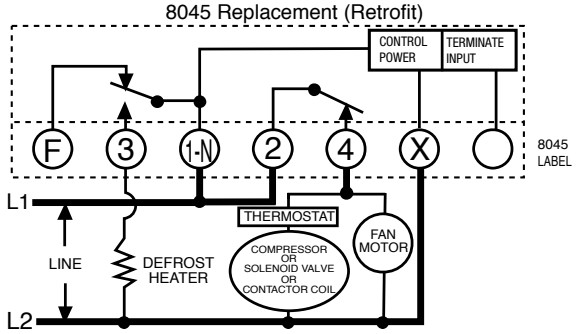
8145 Replacement (Retrofit)
DTAV40 Default Out of Box



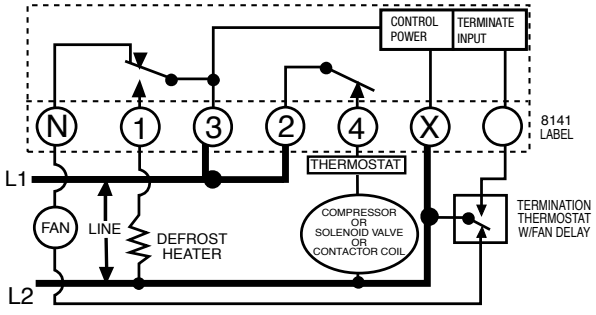
8041 Replacement (Retrofit)



8045 Replacement (Retrofit)

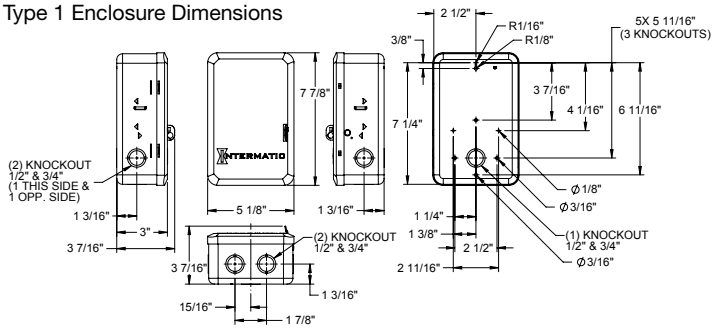


8141 Replacement (Retrofit)

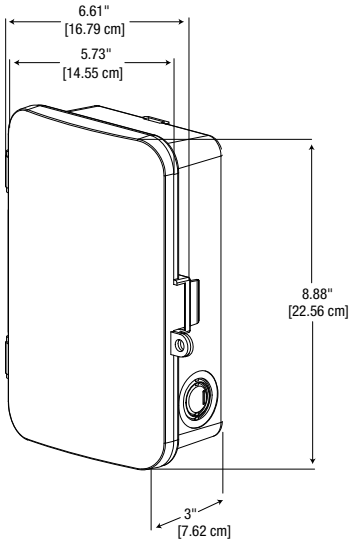


Dimensions

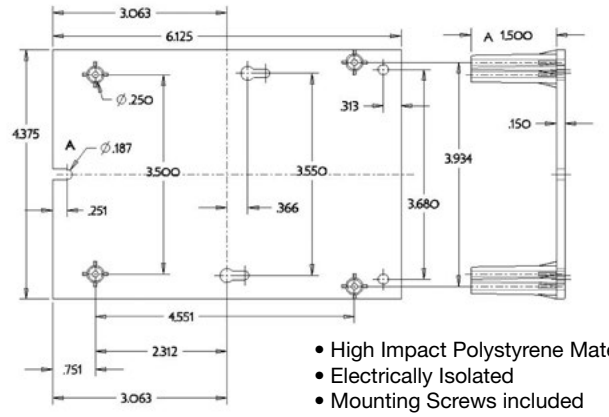
Type 1 Enclosure Dimensions



Type 3R Enclosure Dimensions



DT-B Bracket Dimensions



Note: All dimension in inches. Drawing not to scale.

- High Impact Polystyrene Material
- Electrically Isolated
- Mounting Screws included
- UL94HB Flame Class Rating

Universal Replacement (See wiring diagrams for examples)				
Grässlin	Paragon		Precision	
DTAV40 =	8141-00	8143-20	6141-00	6143-20
	8143-00	8145-20	6143-00	6145-20
	8145-00	8041-20	6145-00	6041-20
	8041-00	8045-20	6041-00	6045-20
	8043-00	8047-20	6043-00	6047-20
	8045-00	8245-20	6045-00	6245-20
	8047-00	8247-20	6047-00	6247-20
	8141-20		6141-20	

Note: Equivalent in function, terminal identification, and wiring allows for quick and easy installation.

G8045-00

SA33993 151753
UL873,UL917,CSA24,CSA117 Refrigeration Controller

Ratings	
Input Voltage	120 or 208-240 VAC, 60Hz
G8045-00, G8145-00	120 VAC, 60 Hz
G8045-20, G8145-20	208-240 VAC, 60 Hz
Switch Type	1 NO, 1 NC
Resistive	40 A, 120-240 VAC
Pilot Duty	1000 V
Motor	2 HP, 120-240 VAC
Operating Temperature	-40° F to 104° F (-40°C to 40°C)
Operating Humidity	0-95% RH, non-condensing
Wiring Connections	
Large	#14-8 AWG
Small	#18-12 AWG
MIN ON/OFF	4 minutes
MAX ON/OFF	110 minutes
Electrical Life	30,000 operations at full load
Shipping Weight	2.75 lbs.
Warranty	2-year limited

G8000 Series

Time Initiated and Temperature, Pressure or Time Terminated 40 A Mechanical Defrost Timer

The Grässlin G8000 Series Mechanical Defrost Timer is applicable to air defrost (compressor shutdown) and electric or hot gas defrost systems where the defrost cycle is terminated by the timer. If the coil is frost-free, the timer can also be terminated by temperature or pressure switches before the programmed defrost termination time has been reached. The time termination functions as a fail-safe and terminates the defrost cycle if the temperature or pressure switch fails to do so. The encapsulated design prevents dust and dirt build-up to ensure reliable and lasting performance. The G8000 easily snaps into competitive enclosures and is equivalent in function, terminal identification and wiring, allowing a quick and easy installation.

Applications

- Medium and low-temperature commercial refrigeration systems

Features

- Exceeds UL873 Refrigeration standard for 30,000 cycle switch design
- Heavy-duty welded and silver-plated 40 A contacts
- Mounts in existing enclosures, no tools required
- Encapsulated timer module design prevents dust and dirt build-up
- Heavy-duty synchronous motor for accurate timekeeping
- Defrost durations programmable in 2-minute increments
- Up to 6 defrost cycles per day
- Works with external temperature or pressure switches
- Includes 4 trippers and spare tripper holder is built-in
- MIN defrost time: 4 minutes
- MAX defrost time: 110 minutes

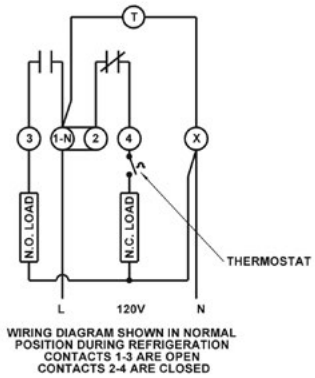
Model #	Description
G8045-00	Time Initiated, Time Terminated, 120 VAC, Type 1 Enclosure
G8045-20	Time Initiated, Time Terminated, 208-240 VAC, Type 1 Enclosure
G8145-00	Time Initiated. Temperature, Pressure, or Time Terminated, 120 VAC, Type 1 Enclosure
G8145-20	Time Initiated. Temperature, Pressure, or Time Terminated, 208-240 VAC, Type 1 Enclosure

Optional bracket-mount, "mechanism only" model available in bulk packs of 20; To order, add a "B" suffix to model number (i.e. G8045-00B).

Specification
Furnish and install a Grässlin_____Defrost Control, which shall have up to 6 defrost cycles per day with initiation times settable in 2 minute increments from 4 to 110 minutes. The defrost timer shall be housed in a UL Type 1 indoor metallic enclosure or be supplied with a suitable bracket mount. The contacts shall be 1 NO, 1 NC and rated for 40 A Resistive, 2 HP @ 240 VAC. Defrost termination to be by time (or by a remote temperature or pressure switch). Defrost Time Switch shall comply with UL Refrigeration standard UL873.

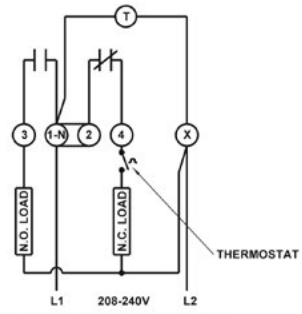
G8000 Series Wiring Diagrams

G8045-00



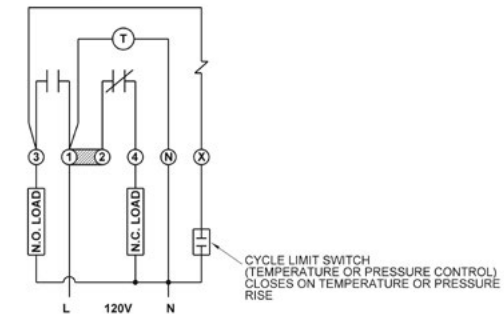
WIRING DIAGRAM SHOWN IN NORMAL POSITION DURING REFRIGERATION
CONTACTS 1-3 ARE OPEN
CONTACTS 2-4 ARE CLOSED

G8045-20



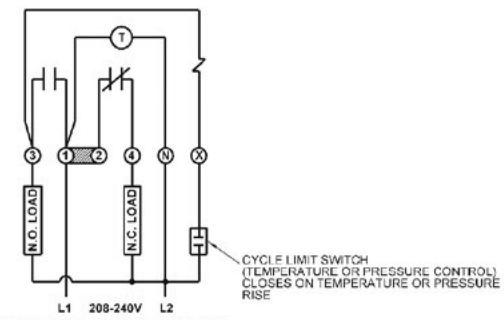
WIRING DIAGRAM SHOWN IN NORMAL POSITION DURING REFRIGERATION
CONTACTS 1-3 ARE OPEN
CONTACTS 2-4 ARE CLOSED

G8145-00

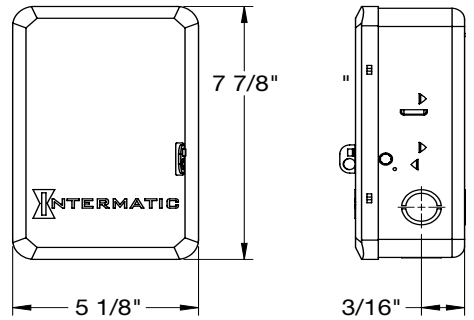
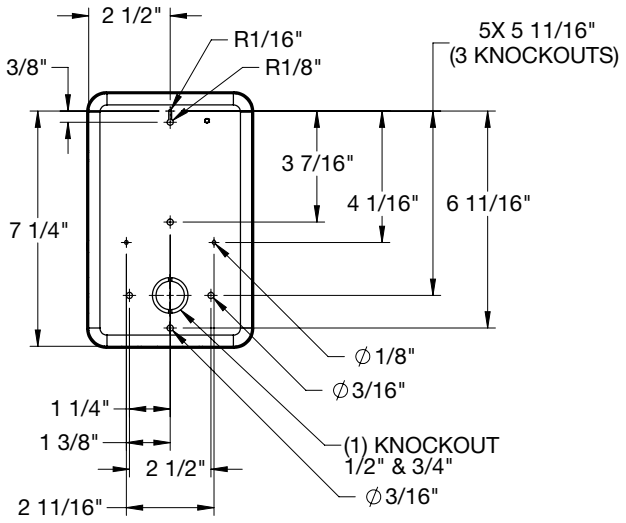
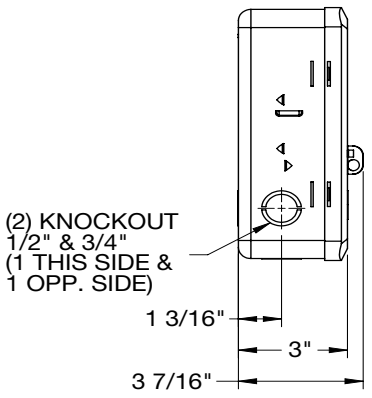
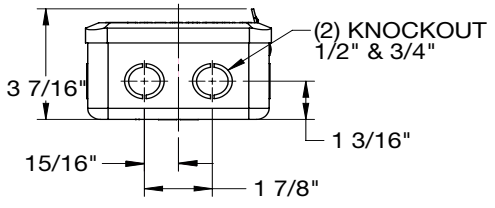


WIRING DIAGRAM SHOWN IN NORMAL POSITION DURING REFRIGERATION
CONTACTS 1-3 ARE OPEN
CONTACTS 2-4 ARE CLOSED

G8145-20



WIRING DIAGRAM SHOWN IN NORMAL POSITION DURING REFRIGERATION
CONTACTS 1-3 ARE OPEN
CONTACTS 2-4 ARE CLOSED

G8000 Series Dimensions

Type 1 Enclosure Dimensions