Investigative Energy Audit
For

Shageluk Clinic

Prepared For

City of Shageluk

June 30, 2017

Prepared By:

ANTHC-DEHE
4500 Diplomacy Drive,
Anchorage, AK 99508

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PREFACE

The purpose of this report is to provide guidance in reducing facility operating costs and enhance the sustainability of this community. The report assesses the current energy usage of the facility, provide options for reducing the amount of energy used, and evaluate the cost vs. benefit of each option.

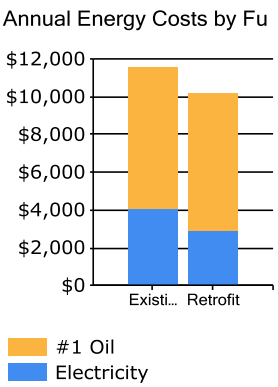
Discussions of site specific concerns, financing options, general facility information, and an Energy Efficiency Action Plan are also included in this report.

ACKNOWLEDGMENTS

The Rural Energy Initiative gratefully acknowledges the assistance of Shageluk Mayor Chevie Roach and Shageluk City Clerk Scott Wolfersheim.

OVERVIEW

This report was prepared for the City of Shageluk. The scope of the audit focused on the Shageluk Clinic and includes an analysis of building occupancy schedules, building shell, heating systems, heating and ventilations systems, domestic hot water, lighting, and other electrical loads. The Shageluk Clinic was constructed in 2010 and is approximately 1,690 square feet. The building provides medical care and treatment to the residents of the community and is owned by the City of Shageluk.



ENERGY BASELINE

Based on unsubsidized electricity and fuel oil prices in effect at the time of the audit, the total predicted energy costs are $11,577 per year. This includes $4,054 for unsubsidized electricity and $7,523 for #1 fuel oil.

The State of Alaska Power Cost Equalization (PCE) program provides a subsidy to rural communities across the state to lower electricity costs and make energy affordable in rural Alaska. In Shageluk, the cost of electricity without PCE is $0.45/kWh and the cost of electricity with PCE is $0.22/kWh. With the PCE subsidy, the electric utility cost to the City of Shageluk is $1,982 and the cost to the State of Alaska is $2,072.

Table 1 lists the predicted annual energy usage before and after the proposed retrofits for the Shageluk Clinic.

Table 1: Predicted Annual Energy Use for the Shageluk Clinic

Predicted Annual Fuel Use				
Fuel Use	**Existing Building**	**With Proposed Retrofits**	**Total Energy Savings**	**Total Cost Savings (Subsidized)**
Electricity	9,008 kWh	6,398 kWh	2,610 kWh	$574
#1 Oil	1,254 gallons	1,210 gallons	44 gallons	$264

PROPOSED ENERGY EFFICIENCY MEASURES (EEM)

Table 2 below summarizes the energy efficiency measures analyzed for the Shageluk Clinic. Listed are the estimates of the annual savings, installed costs, and two different financial measures of investment return. All costs assume that local labor will be used with no additional cost associated for travel or administrative tasks.

Table 2: Priority List – Energy Efficiency Measures

Priority	Feature	Improvement Description	Annual Energy Savings	Installed Cost	Savings to Investment Ratio, SIR[1]	Simple Payback (Years)[2]	CO_2 Savings
High	Setback Thermostat: Clinic	Install programmable thermostats and implement an unoccupied setback of 60.0 deg F for the clinic space.	$567	$1,500	5.13	2.6	1,997.5
High	Lighting: Lobby & Hallway	Replace with new, direct-wire LED equivalent lighting.	$289	$560	4.15	1.9	1,211.9
High	Lighting: Offices	Replace with new, direct-wire LED equivalent lighting.	$122	$320	3.05	2.6	512.1
Medium	Lighting: Exam Rooms (5)	Replace with new, direct-wire LED equivalent lighting	$393	$1,600	2.67	4.1	1,663.2
Medium	Air Tightening	Add weather stripping to doors, caulk windows, add window film	$64	$500	1.18	7.9	224.1
Low	Lighting: Furnace Room	Replace with new, direct-wire LED equivalent lighting	$3	$80	0.39	27.6	12.3
Low	Lighting: Storage	Replace with new, direct-wire LED equivalent lighting	$1	$80	0.20	55.1	6.2
		TOTAL	**$1,439**	**$4,640**	**3.43**	**3.2**	**5,627.5**

FACILITY DESCRIPTION

Building Occupancy Schedules

The building is occupied from 9:00 AM – 5:00 PM for seven days per week and periodically during the evenings in the event of a patient emergency.

Building Shell

The building is a wood-framed lumber construction built on elevated piles. The roof has 2x8 lumber construction.

There are 6 total windows in the building. Each window has double-pane glass with wood framing. Five of the windows are 45” x 29” and 1 of the windows is 45” x 27”.

There are two total entrances to the building. Both of the entrances are single wood doors with a half-lite window.

Heating Systems

The heating systems used in the building are:

Bock Hot Water Heater

Fuel Type: #1 Oil
Input Rating: 105,000 BTU/hr
Steady State Efficiency: 80 %
Idle Loss: 0.5 %
Heat Distribution Type: Water
Boiler Operation: All Year

Forced Air Heating System

Fuel Type: #1 Oil
Input Rating: 150,000 BTU/hr estimated
Steady State Efficiency: 80 %
Idle Loss: 0.5 %
Heat Distribution Type: Air

Space Heating Distribution Systems

Space heating is achieved through a forced-air heating system. The building set points were at 65 deg. F at the time of the site visit.

Lighting

Table 3: Lighting Information in the Shageluk Clinic

Room	Bulb Type	Fixtures	Bulbs per Fixture	Annual Usage (kWh)
Lobby & Hallway	Fluorescent T8 4ft.	7	3	1,740
Offices	Fluorescent T8 4ft.	4	3	746
Exam Rooms (5)	Fluorescent T8 4ft.	20	3	2,486
Furnace Room	Fluorescent T8 4ft.	1	2	34
Storage	Fluorescent T8 4ft.	1	2	17

Other Electrical Loads

There is a variety of office equipment and phones that are used during the day that use a small amount of energy throughout the year.

Major Equipment

Table 4: Major Electrical Equipment in the Shageluk Clinic

Equipment	Rating (Watts)	Annual Usage (kWh)
Medical Refrigerator	225	2,000
Computers (3)	75	656
TV Sets (5)	50	183
Minifridge	40	351
Dental Air Compressor	40	29

PROJECT FINANCING

The total estimated cost of the recommended EEM's $4,640. The payback for the implemented EEM's is approximately 3.2 years. ANTHC is willing to assist the community with acquiring funds to complete the scope of work recommended in this energy audit.

There are several options for financing energy efficiency projects within the State of Alaska. These include the use of grants, loans, and other funding opportunities. Below is some information on potential funding opportunities.

Energy Efficiency Revolving Loan Program – This is a loan administered by the Alaska Housing Finance Corporation (AHFC) for use by any applicant who is also the owner of the building where the work will take place. It provides a loan for permanent energy-efficiency projects with a completion window of one year.

Sustainable Energy Transmission and Supply Program – This is a loan administered by the Alaska Energy Authority (AEA) for a government, business, or other organized body of people. It provides a loan for energy-efficiency or power transmission or distribution projects.

USDA-RD Communities Facilities Direct Loan & Grant Program - This is a loan or grant provided by the US Department of Agriculture – Rural Development (USDA-RD) for any essential community facility in a rural area. It provides a loan or grant to develop essential community facilities with upgrades or equipment for improvement.

MEASUREMENT AND VERIFICATION

The results of these recommended measures can be measured through the collection of energy use data through the monthly bills provided by the local electric utility and the local fuel oil supplier. Collecting data and performing a historical comparison is the simplest method of validating the energy and cost savings seen by the measures. Additionally, active remote monitoring systems are available that can collect and store data regarding energy and fuel usage. These systems allow the user to track the usage in real time and can be shared more easily with partners across the state.

APPENDICES

Appendix A –Energy Billing Data

The table below shows the fuel and electricity data used during the energy modeling process to confirm the accuracy of the energy distribution. The fuel use distribution was estimated based on the times of each fuel delivery, which were not in a precisely monthly basis.

Month	Fuel Oil Use (gallons)	Electricity Use (kWh)
January	200	968
February	150	731
March	125	731
April	100	882
May	75	645
June	0	740
July	0	494
August	75	547
September	100	616
October	100	781
November	150	814
December	200	865

Appendix B – Energy Audit Report – Project Summary

ENERGY AUDIT REPORT – PROJECT SUMMARY	
General Project Information	
PROJECT INFORMATION	**AUDITOR INFORMATION**
Building: Shageluk Clinic	**Auditor Company:** ANTHC-DEHE
Address: P.O. Box 110	**Auditor Name:** Kevin Ulrich
City: Shageluk	**Auditor Address:** 4500 Diplomacy Drive, Anchorage, AK 99508
Client Name: Chevie Roach	
Client Address: P.O. Box 110 Shageluk, AK 99665	**Auditor Phone:** (907) 729-3237
	Auditor FAX:
Client Phone: (907) 473-8221	**Auditor Comment:**
Client FAX:	
Design Data	
Building Area: 1,690 square feet	**Design Space Heating Load:** Design Loss at Space: 37,171 Btu/hour with Distribution Losses: 37,171 Btu/hour Plant Input Rating assuming 82.0% Plant Efficiency and 25% Safety Margin: 56,662 Btu/hour Note: Additional Capacity should be added for DHW and other plant loads, if served.
Typical Occupancy: 0 people	**Design Indoor Temperature:** 65 deg F (building average)
Actual City: Shageluk	**Design Outdoor Temperature:** -30.3 deg F
Weather/Fuel City: Shageluk	**Heating Degree Days:** 13,015 deg F-days
Utility Information	
Electric Utility: Alaska Village Electric Cooperative	**Average Annual Cost/kWh:** $0.45/kWh

Annual Energy Cost Estimate

Description	Space Heating	Water Heating	Lighting	Refrigeration	Other Electrical	Total Cost
Existing Building	$6,675	$1,192	$2,260	$900	$549	**$11,577**
With Proposed Retrofits	$6,411	$1,192	$1,086	$900	$549	**$10,138**
Savings	$264	$0	$1,175	$0	$0	**$1,439**

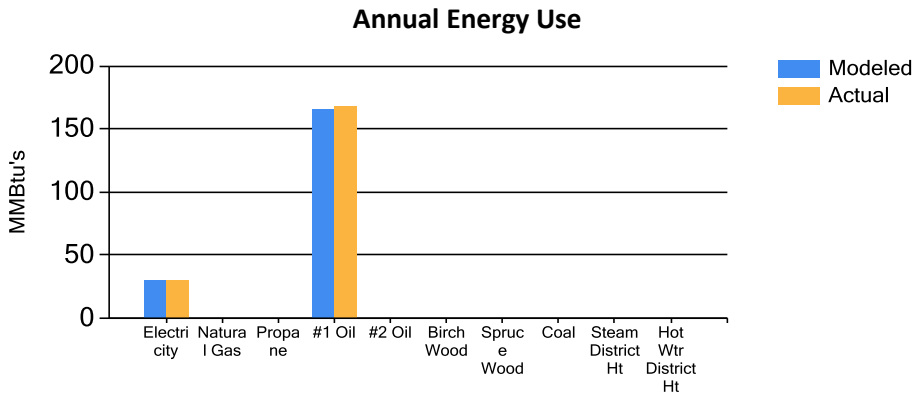
Building Benchmarks

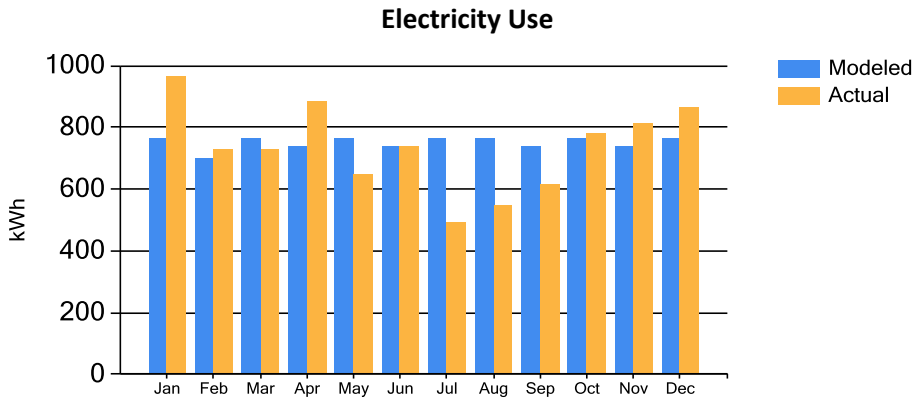
Description	EUI (kBtu/Sq.Ft.)	EUI/HDD (Btu/Sq.Ft./HDD)	ECI ($/Sq.Ft.)
Existing Building	116.1	8.92	$6.85
With Proposed Retrofits	107.4	8.25	$6.00

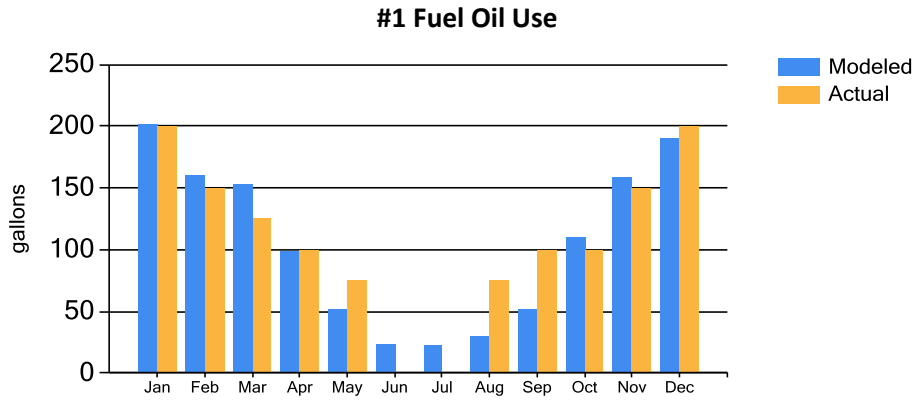
EUI: Energy Use Intensity - The annual site energy consumption divided by the structure's conditioned area.
EUI/HDD: Energy Use Intensity per Heating Degree Day.
ECI: Energy Cost Index - The total annual cost of energy divided by the square footage of the conditioned space in the building.

Appendix C – Actual Fuel Use versus Modeled Fuel Use

The graphs below show the modeled energy usage results of the energy audit process compared to the actual energy usage report data. The model was completed using AkWarm modeling software. The orange bars show actual fuel use, and the blue bars are AkWarm's prediction of fuel use.







Appendix D - EUI Calculation Details

The Alaska Village Electric Cooperative owns and operates the utility that provides electricity to the residents of the community as well as to all the commercial and public facilities.

The average cost for each type of fuel used in this building is shown below in Table 5. This figure includes all surcharges, subsidies, and utility customer charges:

Table 5: Energy Cost Rates for each Fuel Type.

Average Energy Cost	
Description	**Average Energy Cost**
Electricity	$ 0.45/kWh
#1 Oil	$ 6.00/gallons

Table 6 shows the calculated results for the building Energy Use Index (EUI), which determines the total energy usage for a type of building for comparison with other buildings of the same type. This allows the user to determine the relative energy use of a building in relation to others of the same type or use.

Table 6: EUI Building Calculations for the Shageluk Clinic

Energy Type	Building Fuel Use per Year	Site Energy Use per Year, kBTU	Source/Site Ratio	Source Energy Use per Year, kBTU
Electricity	9,008 kWh	30,745	3.340	102,688
#1 Oil	1,254 gallons	165,509	1.010	167,164
Total		**196,254**		**269,852**
BUILDING AREA		1,690	Square Feet	
BUILDING SITE EUI		116	kBTU/Ft^2/Yr	
BUILDING SOURCE EUI		160	**kBTU/Ft^2/Yr**	
* Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued March 2011.				

Table 7 shows information on common energy use benchmarks used to characterize the efficiency of a building.

Table 7: Building Benchmarks for the Shageluk Clinic

Building Benchmarks			
Description	**EUI (kBtu/Sq.Ft.)**	**EUI/HDD (Btu/Sq.Ft./HDD)**	**ECI ($/Sq.Ft.)**
Existing Building	116.1	8.92	$6.85
With Proposed Retrofits	107.4	8.25	$6.00
EUI: Energy Use Intensity - The annual site energy consumption divided by the structure's conditioned area. EUI/HDD: Energy Use Intensity per Heating Degree Day. ECI: Energy Cost Index - The total annual cost of energy divided by the square footage of the conditioned space in the building.			

Appendix E – Materials List and Labor Estimation

Table 8 & 9: Materials List and Cost Estimation for Shageluk Clinic EEM's

Energy Retrofit	Required Materials	Quantity	Cost per Item	Total Materials Cost
Setback Thermostat	Programmable Thermostat	3	150	450
LED Lighting	T8 LED Equivalent 4 ft.	66	15	990
Air Tightening	Weather Stripping, Caulking, Window Film	2	75	150

Category	Cost ($)
Labor	3,251
Travel	1,390
Materials	1,590
Freight	239
Indirect	647
Total	**$7,116**

It should be noted that the energy audit cost information in Table 2 does not consider travel or indirect costs. These would only be added if outside labor is used to perform the tasks.

Appendix F – Materials Specifications

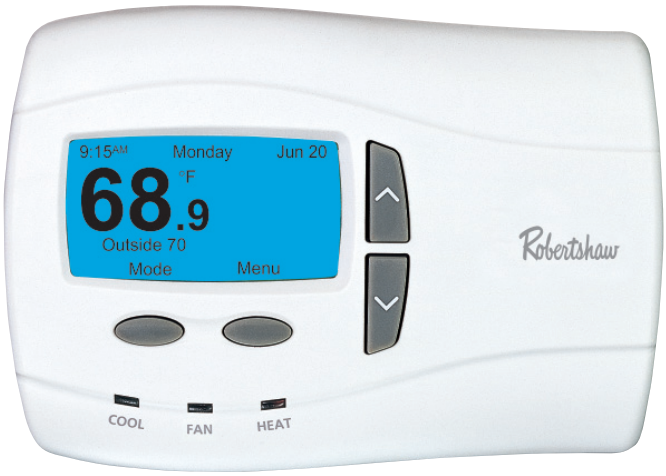
Robertshaw®

9701i2 DELUXE PROGRAMMABLE THERMOSTAT

G E O H

GAS ELECTRIC OIL HEAT PUMP

Menu Driven Display 1 Heat / 1 Cool



Programming Made Even Easier

Do you want to spend less time installing and setting up thermostats?

The new 9701i2 makes installation even easier with our new Setup Wizard. The Setup Wizard allows you to spend 50% less time setting up the thermostat over competitive models. Plus everything is in plain language so there are no complicated codes or button combinations to memorize.

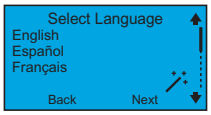
We've also made programming even easier for your customers. Menus are easier to navigate. We've even added additional convenience features such as Automated Time adjustment for Daylight Saving Time, along with new indoor air quality reminders.

The new 9701i2 is so user friendly, it sets a higher standard in efficiency and simplicity for programmable thermostats. It is truly programming made even easier.

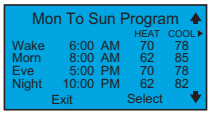
Robertshaw - *Simply the Right Choice™*

Features and Benefits

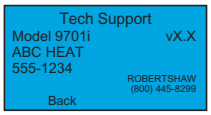
Set-up Wizard
Helps speed through the installation process with step-by-step setup and programming instructions.



Trilingual Display Option
Set to your customers' language of choice – English, Spanish or French



Convenient Displays
View a full day of programming at once for quick review or easy adjustment.



Contractor ID Feature
Set it yourself or custom order with your information pre loaded. Your name and phone number remind your customers when service is needed.

Daylight Saving Time Adjustment
Automatically adjusts to correct time regardless of seasonal changes.

Adjustable Backlighting
Choose to have backlighting on at all times or only when programming. You can also adjust the brightness and contrast for improved readability.

Time of Day Zoning
When coupled with a remote sensor (part #9020i), you can control the temperature in remote locations given different scheduled events.

Three Levels of Security
Secure protection against unwanted changes to the programming menus, temperature or set-up functions with your own 4-digit PIN.

Auto Changeover
Automatically adjusts between heating and cooling cycles to maintain optimal comfort.

Worry-Free Memory Storage
Even during power outages, the thermostat maintains set point and programmed parameters.

Adjustable Temperature Offset
Change the displayed temperature from the actual sensed temperature.

Adjustable Temperature Differential
Maintains optimal customer comfort.

Intermittent Fan
Maintains optimal air filtration and circulation with minimal energy use.

An ISO 9001 – 2008 Certified Company

California Title 24 Compliant

ENERGY STAR

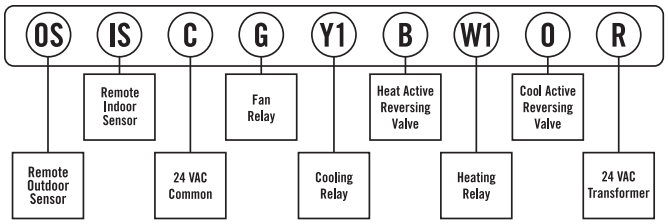
5 Year Limited Warranty

24V AC POWERED

Robertshaw®

9701i2 DELUXE PROGRAMMABLE THERMOSTAT

Terminal Designations



Optional Sensors:
9020i REMOTE INDOOR
9025i REMOTE OUTDOOR

Technical Specifications

Electrical Rating	24 Volt AC (18-30 VAC) 1 amp maximum load per terminal (relay outputs) 3 amp total maximum load (all terminals combined)
Temperature Control Range	45˚- 90˚F (7˚- 32˚C)
Accuracy	+/-1.0˚F (+/-0.5˚C)
Power Source	24 VAC
Auto Changeover Deadband	Selectable 2˚ to 8˚F
Temporary Temperature Override	3 hour maximum or next setpoint
Remote Sensor Capable	1 indoor and 1 outdoor sensor
System Configurations	Single-stage gas, oil or electric heating/cooling systems and single stage heat pump
Terminations	R, W1, Y1, B, O, G, C, IS, OS

Shipping Specifications

Indiv. Ctn. Dim.: 6.625" x 4.25" x 1.625"
Master Ctn. Qty.: 6
Master Ctn. Dim.: 9.25" x 5.625 x 7.5"
Master Ctn. Cu. Ft.: .23
Master Ctn. Wt.: 3.5 lbs.
Max. Pallet Qty.: 1260
Max. Pallet Wt.: 785 lbs.

Item 9020i and 9025i Remote Sensors
Indiv. Ctn. Dim.: 2.625" x 1.5625" x 4.4375"
Master Ctn. Qty.: 6
Master Ctn. Dim.: 5.625" x 5.125" x 5.125"
Master Ctn. Cu. Ft.: .09
Master Ctn. Wt.: .78 lbs.

Replacement Chart

9701i2	
Braeburn®	5000
Honeywell	TH8110U1003
White-Rodgers	1F95-1271, 1F90-51, 1F90-71, 1F90-371, 1F97-51, 1F97-71, 1F97-371
Carrier	TC-PAC, TC-PHP, P274-1100, P374-1100, P474-1100
Lux	PSPA711

Verify specific application requirements before substitution.

Patent Information

This product is covered by one or more of the following U.S. patents. Foreign patent rights may be pending. 4967382, 5803357, 6502758, 7000849, D301207, D462940

Feature Comparison

	Invensys i2-Series	Honeywell Vision Pro	Carrier Infinity	White-Rodgers 1F97-371
Menu Driven (Ease of Programming)	X			
Installation Wizard	X			
Displays Complete Program	X			
Adjustable Backlighting	X			
Cooling System Monitor	X			
Heating System Monitor	X			
Multi-Language	X			
1/2 Degree Resolution	X			
Time of Day Zoning	X			
5/2 Program	X			X
24 Hour Programming	X			X
7-Day Programming	X	X	X	
Large Display	X	X	X	
Adjustable Timed Override/Hold	X	X		
Automatic Daylight Saving Time Adjustment	X	X		
Adjustable Temperature Limits	X	X		
High/Low Balance Points	X	X		
LED Status Indicators	X	X		
Adjustable Differential	X	X		
Adjustable Compressor Short Cycle Protection	X	X		
Adjustable Residual Cooling	X	X		
Fossil Fuel Kit required on HP units	No	No	Yes	Yes
Battery Free Memory Retention	X		X	
Manual Override	X	X	X	X
Resume	X	X	X	X
Auto Changeover	X	X	X	X
Gas/Electric	X	X	X	X
Single Stage Heat Pump Compatible	X	X	X	X
Line Powered	X	X	X	X
Programmable Fan	X	X	X	X
Intermittent Fan	X		X	
°F and °C	X	X	X	X
12 or 24 Hour	X	X		X
Air Filter Monitor	X	X	X	X
Humidifier Pad Monitor	X	X	X	
UV Light Monitor	X	X	X	
Vacation Setting	X	X	X	X
O & B Terminals	X	X	Partial	X
Events per day	2, 4, 6	4	4	2, 4
Remote Outdoor Sensor	X	Combo	X	X
Remote Indoor Sensor	X		X	X
Energy Efficient Recovery	X	X	X	X
Pre-set Program	X	X	X	X
Hidden Service Level	X	X	X	
Security Key Pad	X			X
Temperature Recalibration	X	X	X	
Customizable Contractor ID	X			Factory Only

invensys Controls

191 E. North Avenue
Carol Stream Illinois 60188 USA
Customer Service Telephone 1.800.304.6563
Customer Service Facsimile 1.800.426.0804
HVACCustomerService@InvensysControls.com

For Technical Service
Telephone 1.800.445.8299
Facsimile 1.630.260.7294
TechnicalService@InvensysContrtols.com

www.RobertshawTstats.com
www.InvensysControls.com

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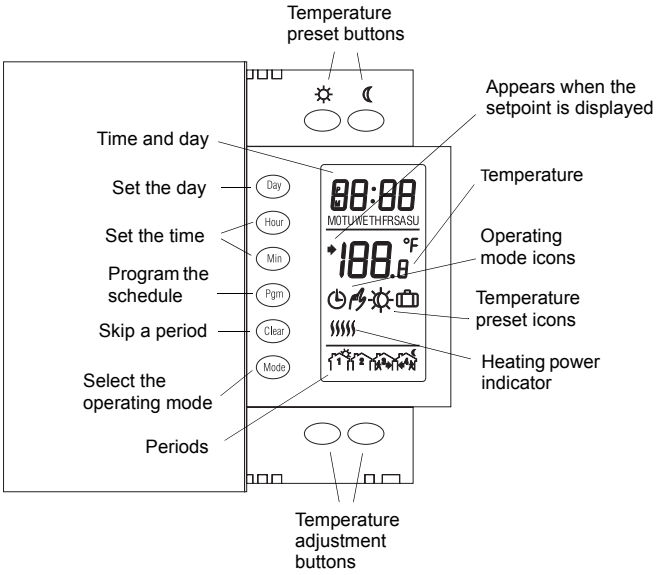
TH106

User Guide

Programmable Thermostat



❶ Description

This programmable thermostat can be used to control an electric heating system such as an electric baseboard heater, a radiant ceiling, a radiant floor, a convector, etc.

The thermostat cannot be used under the following conditions:

- The resistive load is greater than 16.7 A
- The resistive load is less than 2 A
- The system is driven by a contactor or relay (inductive load)
- The system is a central heating system

SUPPLIED PARTS:

- One (1) thermostat
- Two (2) 6-32 screws
- Two (2) solderless connectors

❷ Installation

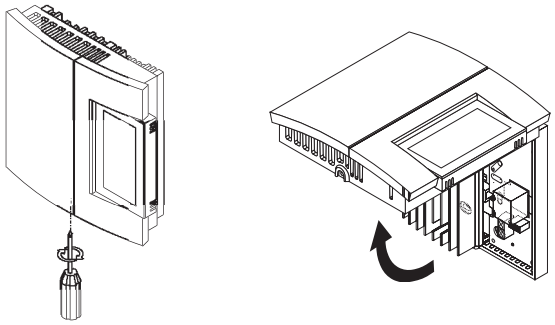
TURN OFF POWER TO THE HEATING SYSTEM AT THE MAIN POWER PANEL TO AVOID ELECTRICAL SHOCK.

THE INSTALLATION MUST BE PERFORMED BY AN ELECTRICIAN.

- All cables and connections must conform to the local electrical code.
- Special CO/ALR solderless connectors must be used when connecting with aluminum conductors.
- Install the thermostat onto an electrical box.
- Install the thermostat about 5 feet high, on an inside wall facing the heater.
- Avoid locations where there are air drafts (such as the top of a staircase or an air outlet), dead air spots (such as behind a door), or direct sunlight.
- Do not install the thermostat on a wall that conceals chimney or stove pipes.
- The thermostat wires are not polarized; either wire can be connected to the load or to the power supply.

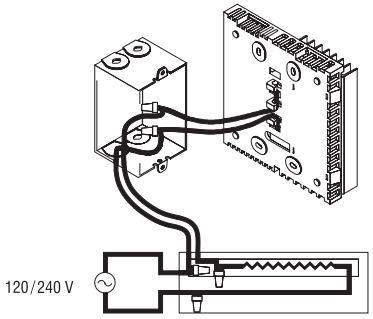
***NOTE:** Always keep the thermostat's vents clean and unobstructed.*

❶

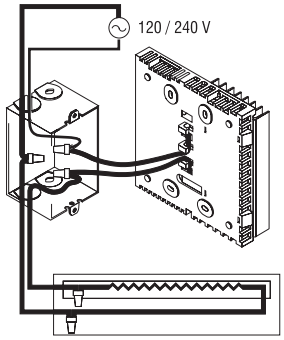


❷ Connect the thermostat wires to the line wires and to the load wires using solderless connectors for copper wires.

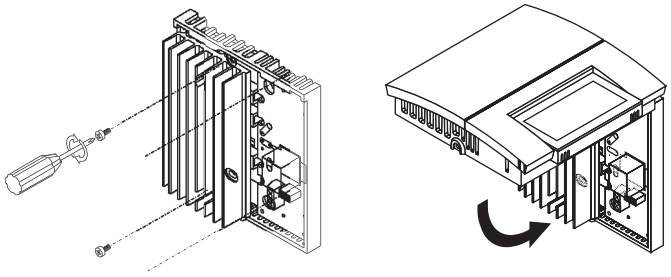
2-wire installation



4-wire installation



❸ Push any excess wire back into the electrical box.

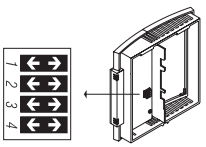


***NOTE:** If necessary, before re-installing the front component, configure the thermostat (see section 3).*

❹ Return power to heating system.

3 Configuration

The configuration switches are on the back of the thermostat. The factory settings are indicated by the gray cells in the following table.



SW1	Early Start [a]	Off	On
SW2	Temperature / time format [b]	°C / 24-hour	°F / 12-hour
SW3	Cycle length [c]	15 seconds	15 minutes
SW4	Not used	-	-

a. Early Start can be used in Automatic mode only. When this function is enabled, the thermostat calculates the optimal time to start heating in order to obtain the desired temperature by the set time. The thermostat re-assesses the start time daily based on the previous day's performance.
b. If you change the temperature display format, the preset temperatures (☼, ☾ and 💼) will return to their default settings.
c. 15-second cycles should be selected in most cases as it provides better temperature control. 15-minute cycles must be selected if you have a fan-equipped heater or if 15-second cycles causes light flickering (especially in rural regions).

4 Power-up

Upon power-up, the thermostat is in manual mode (✋) and displays the actual (ambient) temperature.

❶ Press the **Hour** and **Min** buttons to set the thermostat's clock.

❷ Press the **Day** button to set the day.

5 Temperature Setting

Setpoint

The thermostat normally displays the actual temperature. To view the setpoint, press the ▲ or ▼ button briefly. The setpoint will appear for the next 5 seconds.

To change the setpoint, press the ▲ or ▼ button until the desired temperature is displayed. To scroll faster, hold the button.

Using a preset temperature

The thermostat has 3 preset temperatures:

- Comfort temperature ☼
- Economy temperature ☾
- Vacation temperature 💼

Icon	Intended use	Factory setting
☼	Comfort (when at home)	21°C (70°F)
☾	Economy (when asleep or away from home)	16.5°C (62°F)
💼	Vacation (during prolonged absence)	10°C (50°F)

- To use the Comfort or Economy temperature, press the ☼ or ☾ button respectively. The corresponding icon will be displayed.
- To use the Vacation temperature, press both ☼ and ☾ buttons simultaneously. The 💼 icon will be displayed.

Storing a preset temperature

To store the Comfort or Economy temperature:

Set the desired temperature using the ▲ or ▼ button. Press and hold the appropriate button (☼ or ☾) for approximately 3 seconds until the corresponding icon is displayed. Press the **Mode** button.

To store the Vacation temperature:

Set the desired temperature using the ▲ or ▼ button. Press and hold both ☼ and ☾ buttons simultaneously for approximately 3 seconds until the 💼 icon is displayed. Press the **Mode** button.

6 Operating Modes

◷ **Automatic** - The temperature is set according to the programmed schedule. To place the thermostat in this mode, press **Mode** until ◷ is displayed. The icons of the current period and preset temperature are also displayed.

Temporary Bypass: If you modify the setpoint (by pressing the ▲, ▼, ☼ or ☾ button) when the thermostat is in automatic mode, the new setpoint will be used until the end of the current period. When the next period starts, the temperature set for that period becomes the new setpoint.

✋ **Manual** - The programmed schedule is not used. The temperature must be set manually. To place the thermostat in this mode:

❶ Press **Mode** until ✋ is displayed.

❷ Set the temperature using the ▲, ▼, ☼ or ☾ button.

7 Schedule

The schedule consists of 4 periods per day which represents a typical weekday. You can program the thermostat to skip the periods that do not apply to your situation. For example, you can skip periods 2 and 3 for the weekend.

Period	Description	Associated temperature preset
	Wake	☼
	Leave	☾
	Return	☼
	Sleep	☾

The Comfort (☼) temperature is used in periods 1 and 3 and the Economy (☾) temperature is used in periods 2 and 4. For example, when the period changes from 1 to 2, the setpoint automatically changes from Comfort setting (☼) to Economy setting (☾).

You can have a different program for each day of the week; i.e., each period can start at different time for each day of the week. The thermostat has been programmed with the following schedule.

Period	Setting	MO	TU	WE	TH	FR	SA	SU
	☼	6:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM	6:00 AM
	☾	8:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	--:--	--:--
	☼	6:00 PM	6:00 PM	6:00 PM	6:00 PM	6:00 PM	--:--	--:--
	☾	10:00 PM	10:00 PM	10:00 PM	10:00 PM	10:00 PM	10:00 PM	10:00 PM

To modify the schedule:

❶ Press **Pgm** to access the programming mode. Period 1 is selected.

❷ Press **Day** to select the day to program (hold for 3 seconds to select the entire week).

❸ Press **Hour** and **Min** to set the start time of the selected period, or press **Clear** if you want to skip the period (--:-- is displayed).

❹ Press **Pgm** to select another period, or press **Day** to select another day. Then repeat step 3.

❺ Press **Mode** to exit the programming mode.

NOTE: If no button is pressed for 60 seconds, the thermostat will automatically exit the programming mode.

❽ Power Outage

During a power outage, the settings are stored in memory. However, only the thermostat's clock must be re-adjusted if the power failure lasts more than 2 hours. When power comes back, the thermostat will return to the operating mode that was active prior to the power failure.

❾ Troubleshooting

PROBLEM	SOLUTIONS
Thermostat is hot.	This condition is normal. Under normal operation, the thermostat housing can reach a temperature between 35°C (95°F) and 40°C (104°F).
Heater is always On.	The thermostat has not been correctly wired.
Thermostat indicates that heating is On, but the heater is not On.	The thermostat has not been correctly wired.
Wrong temperature is displayed.	The thermostat is exposed to air draft. Eliminate the draft. The sticker on the thermostat's screen has not been removed.
Wrong time is displayed.	The thermostat was without power for more than 2 hours.
Temperature does not change according to the programmed schedule.	Check that the thermostat is in Automatic mode. Check the schedule and clock settings.
Display disappears and reappears after a few minutes.	The thermal protection device on the heater is open. This can happen after a power failure or if the heater is obstructed by furniture or curtains.
Display looks faded when heating is activated	The heating system is less than the required minimum load. This thermostat cannot be used below that rating.

❿ Technical Specifications

Power: 120/240 VAC, 50/60 Hz

Minimum load: 2 A (resistive only)
500 W @ 240 VAC
250 W @ 120 VAC

Maximum load: 16.7 A (resistive only)
2000 W @ 120 VAC
4000 W @ 240 VAC

Display range: 0°C to 60°C (32°F to 140°F)

Display resolution: 0.5°C (1°F)

Setpoint range: 5°C to 30°C (40°F to 86°F)

Setpoint interval: 0.5°C (1°F)

Storage: -20°C to 50°C (-4°F to 120°F)

Approval: c UL us

☑ Warranty

Aube warrants this product, excluding battery, to be free from defects in the workmanship or materials, under normal use and service, for a period of three (3) years from the date of purchase by the consumer. If at any time during the warranty period the product is determined to be defective or malfunctions, Aube shall repair or replace it (at Aube's option).

If the product is defective,

(i) return it, with a bill of sale or other dated proof of purchase, to the place from which you purchased it, or

(ii) contact Aube. Aube will make the determination whether the product should be returned, or whether a replacement product can be sent to you.

This warranty does not cover removal or reinstallation costs. This warranty shall not apply if it is shown by Aube that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer.

Aube's sole responsibility shall be to repair or replace the product within the terms stated above. AUBE SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. Some provinces and states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not apply to you.

THIS WARRANTY IS THE ONLY EXPRESS WARRANTY AUBE MAKES ON THIS PRODUCT. THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IS HEREBY LIMITED TO THE THREE-YEAR DURATION OF THIS WARRANTY. Some provinces and states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This warranty gives you specific legal rights, and you may have other rights which vary from province or state to another.

☎ Customer Assistance

If you have any questions about the product installation or operation, or concerning the warranty, contact us at:

705 Montrichard
Saint-Jean-sur-Richelieu, Quebec
J2X 5K8
Canada

Tel.: (450) 358-4600
Toll-free: 1-800-831-AUBE
Fax: (450) 358-4650
Email: aube.service@honeywell.com

For more information on our products, go to
www.aubetech.com

As an ENERGY STAR® partner, Aube Technologies has determined that this product meets the ENERGY STAR guidelines for energy efficiency.

LED T8 | T12

Notify Me when Available

Large Project? Click here to get a volume quote.



DESCRIPTION | SPECIFICATIONS | REVIEWS

EarthLED Total Product Insight

PERFORMANCE SPECIFICATIONS

REPLACEMENT FOR:	T8 OR T12 4 FOOT FLUORESCENT TUBE
BRIGHTNESS (LUMENS):	2000
COLOR TEMPERATURE:	4000K | 5000K
COLOR ACCURACY (CRI):	80
DIMENSIONS	1.02" X 47.2"
POWER CONSUMPTION:	18 WATTS
VOLTAGE:	120-277 VOLTS
DIMMABLE:	NO

DIMENSIONS / ADDITIONAL DATA

CERTIFICATIONS:	UL, DESIGNLIGHTS (DLC)
PRODUCT/ORDER CODE:	4000K - 18WT8P-4F-40K-BYP 5000K - 18WT8P-4F-50K-BYP

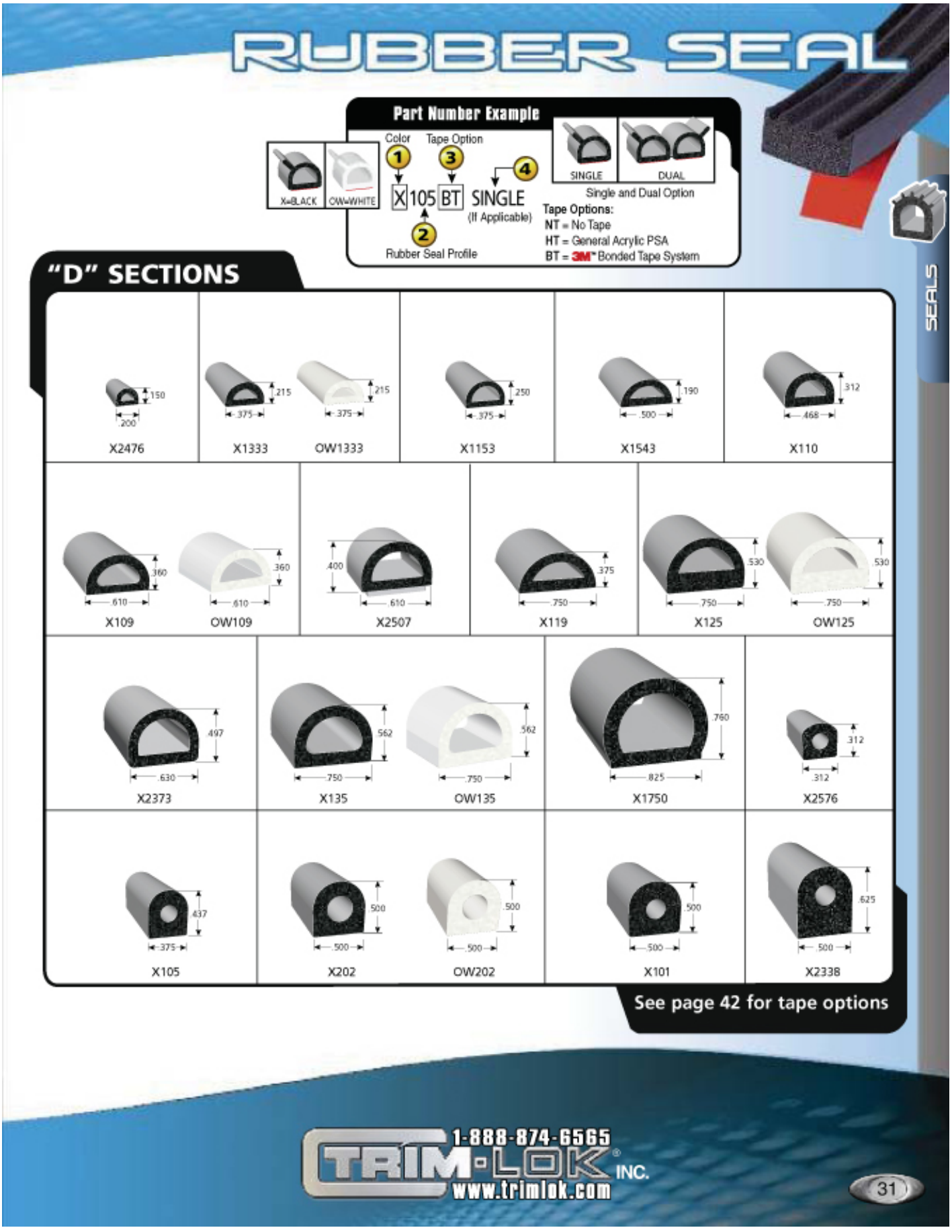
LIFESPAN / COST TO RUN

PROJECTED LIFE: @3 HRS/DAY	50,000 HRS
YEARLY ENERGY COST: 3 HRS/DAY @ .11 KWH	$2.17

WARRANTY

5 YEAR THINKLUX LIGHTING LIMITED WARRANTY
EARTHLED PRODUCT PROTECTION PLAN IS AVAILABLE

Window Jambs and Light-Duty Door Jambs



RUBBER SEAL

SEALS

"D" SECTIONS

Part Number Example

Color (1) Tape Option (3)

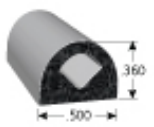
X105 BT SINGLE (4)

(2) Rubber Seal Profile

(If Applicable)

Single and Dual Option

Tape Options:
NT = No Tape
HT = General Acrylic PSA
BT = 3M™ Bonded Tape System



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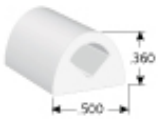

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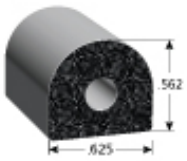

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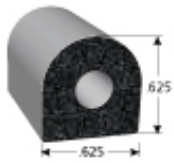

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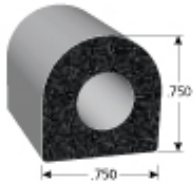

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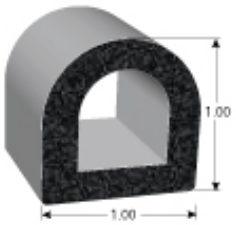

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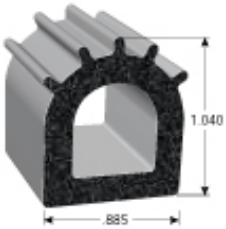

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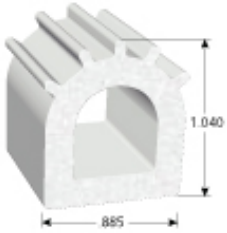

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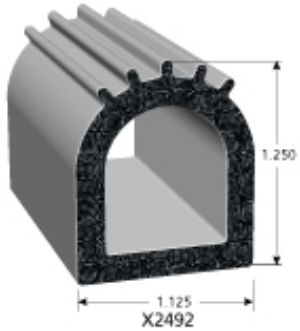

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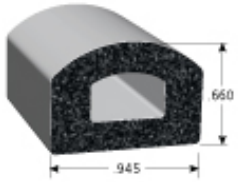

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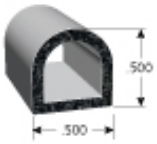

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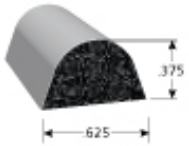

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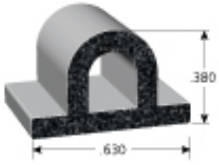

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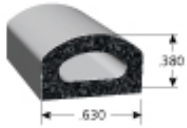

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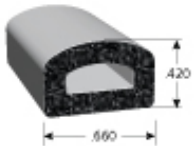

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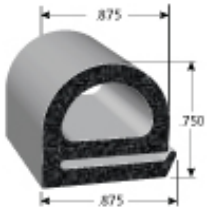

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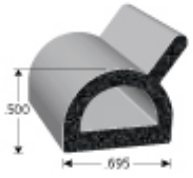

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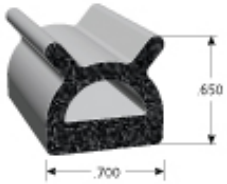

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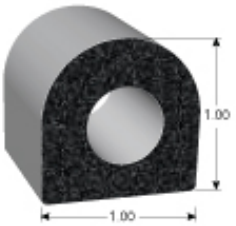
RUBBER SEAL



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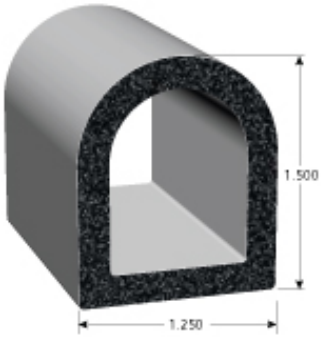

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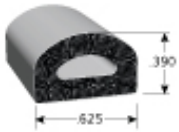

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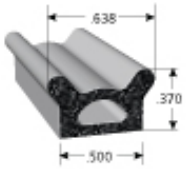

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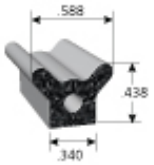
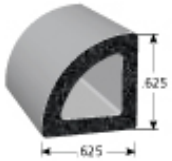


X2529

See page 42 for tape options

TRIANGLE SECTIONS



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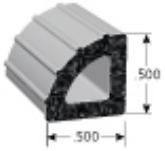

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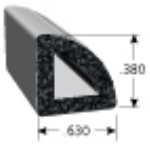

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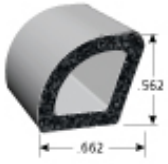

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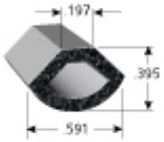


X1923

Adhesive Options –
Choose the tape that fits your needs

"HT" GENERAL PURPOSE PRESSURE SENSITIVE ADHESIVE

This acrylic based adhesive is best used to hold the rubber seal in place while installed in a static application or compressed between two stationary objects. May be used in some light duty dynamic applications against a variety of substrates. Good heat performance -20˚F. to +158˚F.
Please Note: During application ambient temperature must be above 60˚ F.

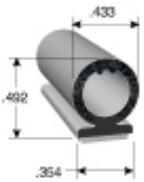
"BT" 3M™ HIGH STRENGTH TAPE SYSTEM

The ultimate bond between the rubber and substrate. Creates a moisture barrier and air tight seal between rubber and substrate. Highest peel and shear resistance, can be used under high loads of stress and force. Has low initial tack for easy re-positioning during installation and requires 72 hours of cure time for full bond strength. Good heat performance -20˚F. to +158˚F.

See our How to Install video at:
www.rubber-seal-install.info

PEDESTAL SEALS

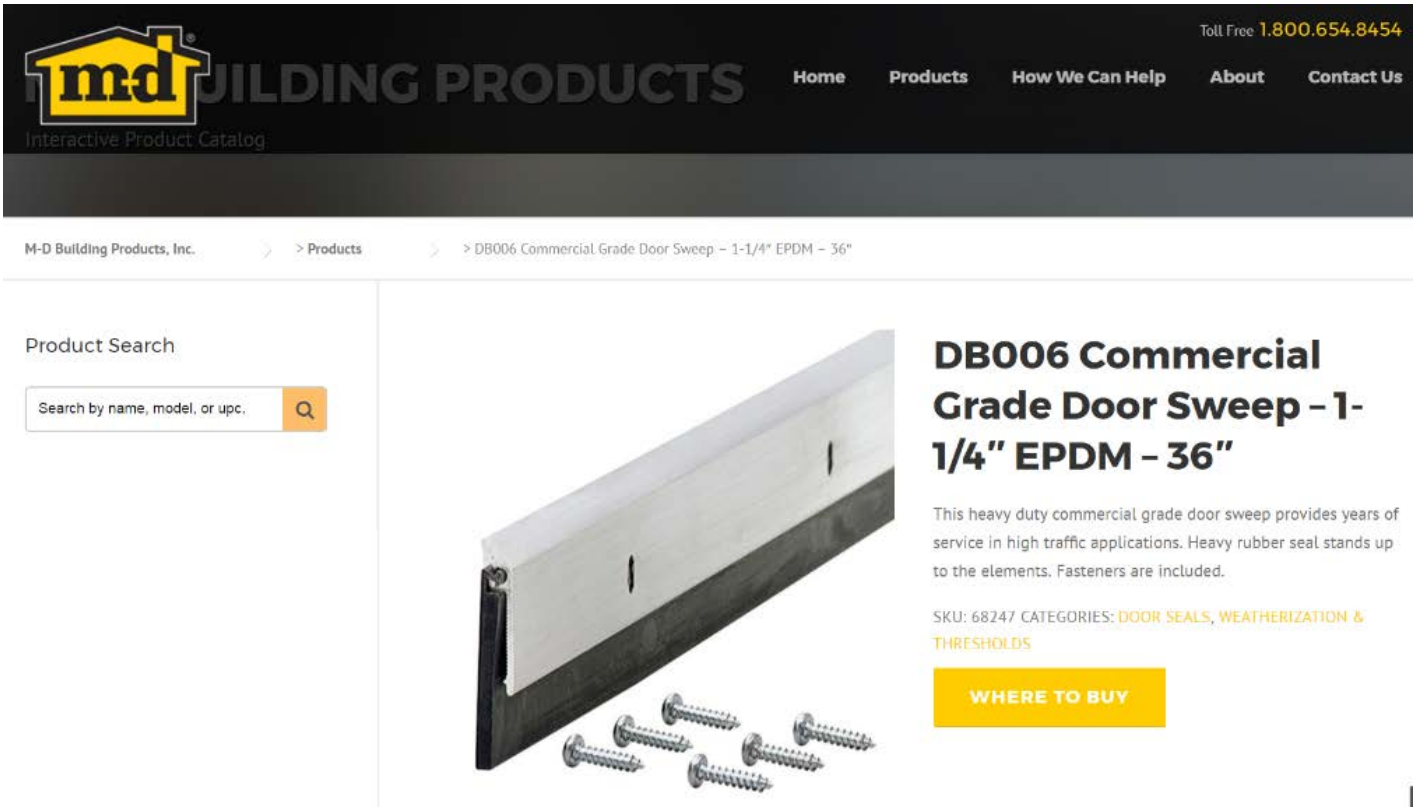
DD6109



DD1604

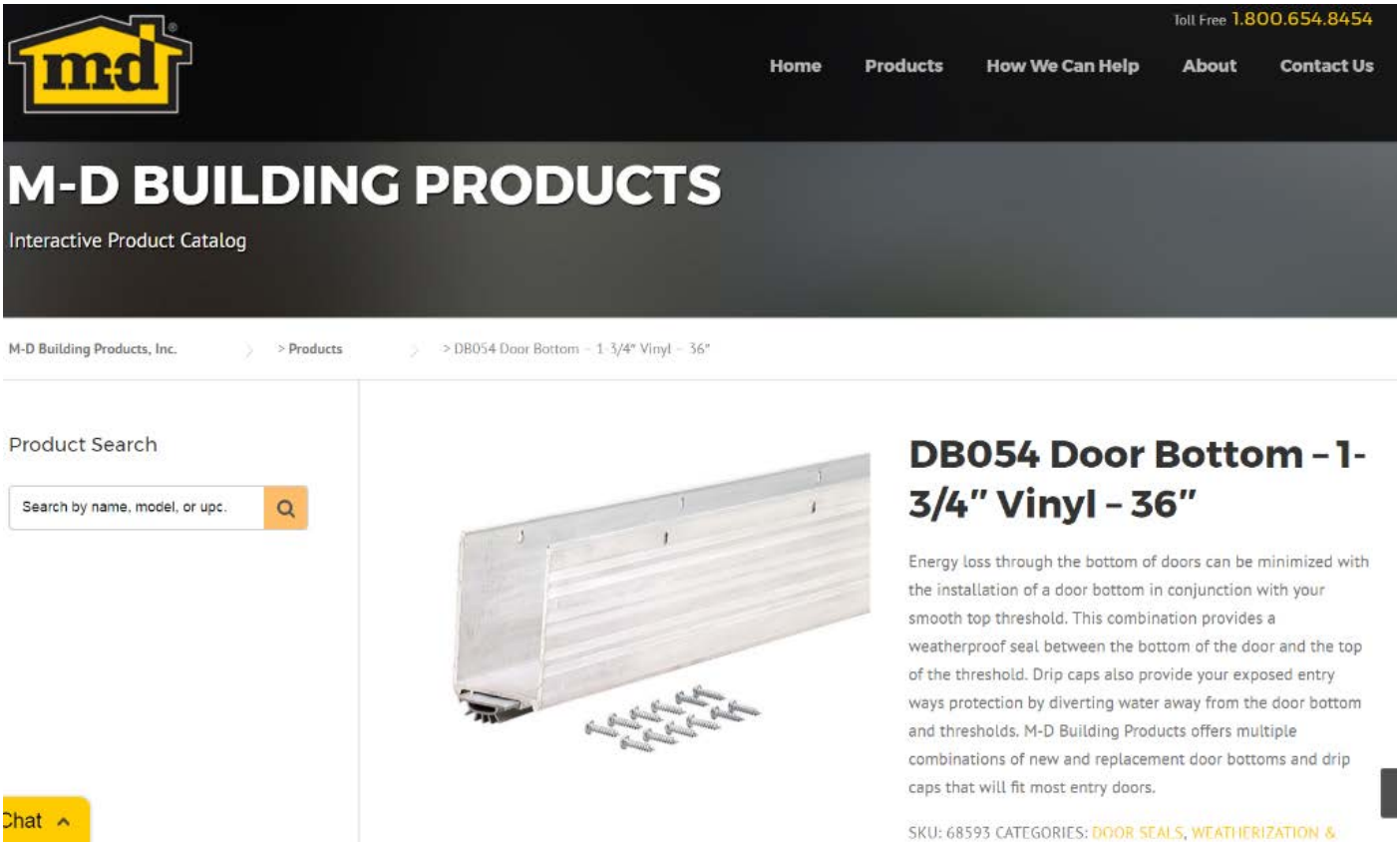
Door Bottom Sweep

(Replacement for Damaged Brush Sweep)



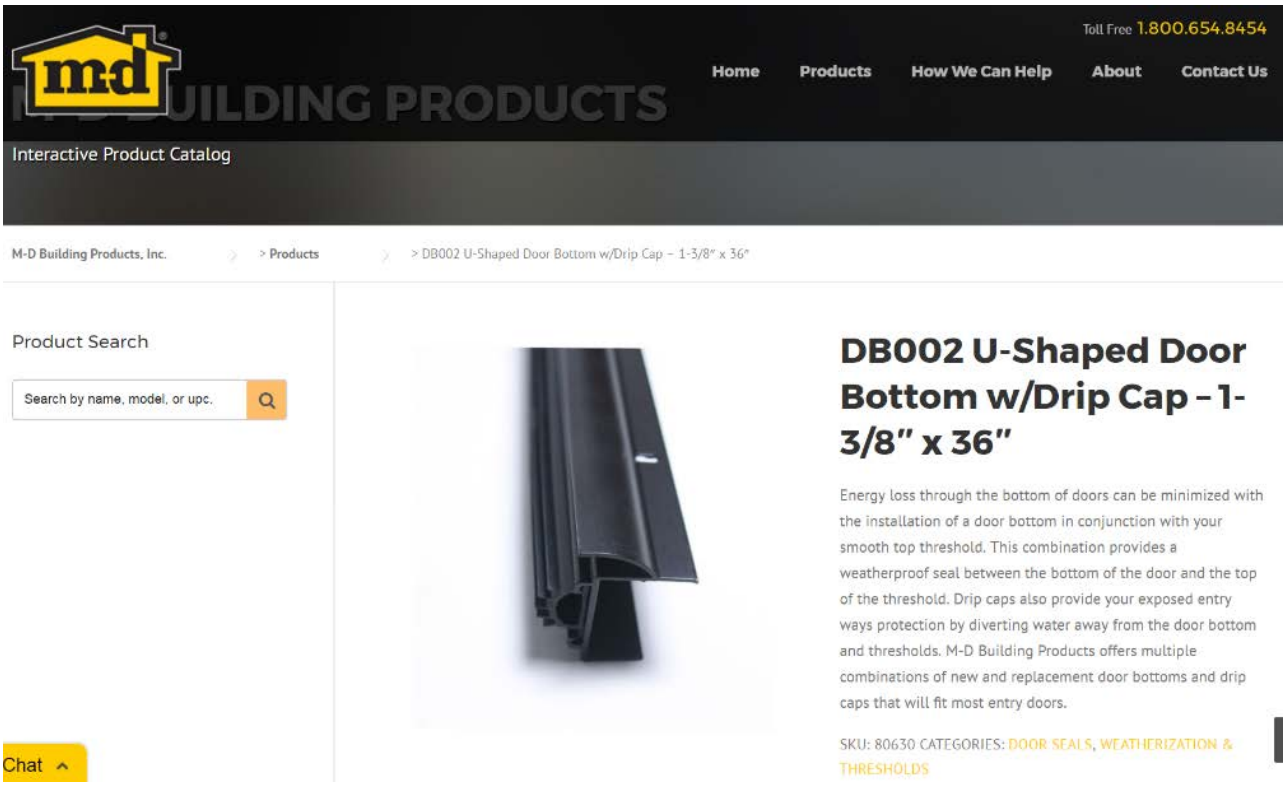
Door Bottom Sweep

(For Doors w/ Very Large Gaps and/or Damaged Bottom Edges)

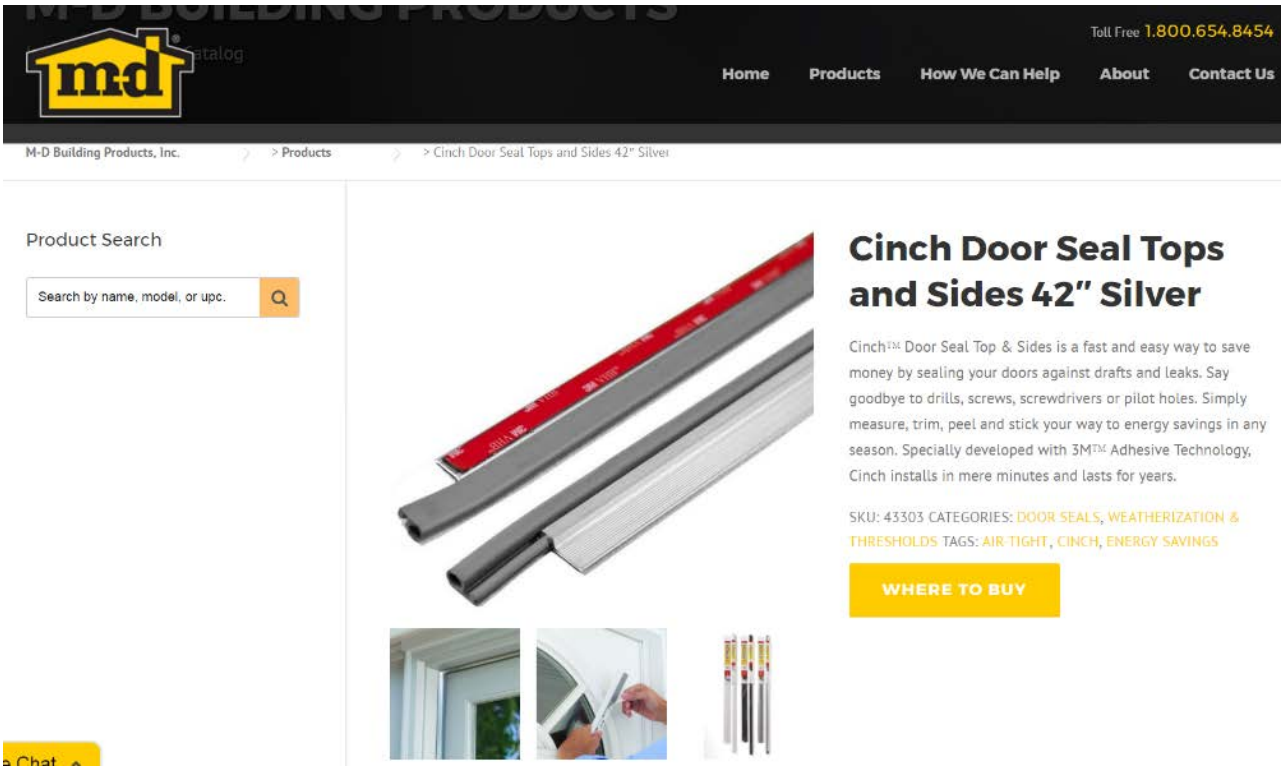


Door Bottom Sweep

(Lower Profile)



Door Top and Side Jambs



Bottom of Garage Doors

GARAGE PRO
A Division of Auto Care Products, Inc.

For Questions or Concerns, Please Call

(800) 992-2018

ProSeal™
U-shaped Garage Door Bottom Seal
Installation Instructions

1. Remove existing garage door bottom seal. Some garage door manufacturers will pinch the aluminum track to hold the bottom seal in place. To open a pinched track, insert a flathead screw driver, into the end of the track, and gently pry open the end, just enough to allow removal of the old door seal. Both ends of the track may need to be opened.

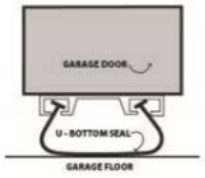
2. Make sure any debris in the track has been removed and that it is clean and dry. Straighten out any cramps in the track.

   Quick Tip: Mix a bucket of water with some liquid dish soap or liquid laundry detergent. Place the seal in the soapy water and pull it out as you install it into the track.

3. Starting at either end of the garage door, insert the ¼" T-ends, attached to the ProSeal™ Garage Door Bottom Seal, into the track. Next, slide the ProSeal™ into the track, until it reaches the opposite side. Continue to pull the seal until you have approximately 2" protruding beyond the end of the track.

4. Leave 2" protruding on both sides, then use scissors to trim off the excess ProSeal™. If your door seal track was pinched and you wish to pinch it back together, use pliers to gently pinch the track back into place. Now tuck the 2" of excess seal back into the U-shaped opening. This will lock the seal in place.

MADE IN THE USA



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Top and Sides of Garage Doors

Roll over image to zoom in

Pemko Brush Gasketing/Door Bottom, 45-degree, Clear Anodized Aluminum with 0.625" Gray Nylon Brush insert, 0.31" width, 0.25" Height, 72" Length

Be the first to review this item

Price: $23.35 & FREE Shipping on orders over $25—or get **FREE Two-Day Shipping** with prime

Usually ships within 1 to 2 months.
Ships from and sold by Amazon.com.

New (1) from $23.35 & FREE shipping on orders over $25.00. Details

Specifications for this item

Part Number	45061CNB72
Number of Items	1
UPC	086787113621
Brand Name	Pemko

Height	0.25 inches
Length	72 inches
Material	Aluminum
Model Number	45061CNB72
Width	0.31 inches

Product features

- All brush seals greatly reduce the infiltration of light, air, wind, rain, and snow; prevent heat loss; control the penetration of smoke and fumes.
- The dense nylon filaments conform to the contours of every sealing surface, providing a superior seal with extremely low closing force.
- Brush remains flexible down to -40°F and has a melting point above 400°F.
- UV stabilized, dependable, long-lasting, cost-effective.
- All clear anodized brush products are supplied with gray brush

Product description

Brush Perimeter seals are designed to seal the gap between the door and the door jamb. They are surface mounted to the frame and are usually supplied with an angled flange. The angled flange provides the best contact between the brush and the surface of the door.

Product details

Shipping Weight: 9.6 ounces (View shipping rates and policies)

Domestic Shipping: Currently, item can be shipped only within the U.S. and to APO/FPO addresses. For APO/FPO shipments, please check with the manufacturer regarding warranty and support issues.

International Shipping: This item is not eligible for international shipping. Learn More

ASIN: B00BU8TLNS

Item model number: 45061CNB72

Average Customer Review: Be the first to review this item

Amazon Best Sellers Rank: #754,396 in Industrial & Scientific (See Top 100 in Industrial & Scientific)
#144 in Industrial & Scientific > Commercial Door Products > Commercial Door Hardware > **Trims, Seals & Gaskets**

Manufacturer's warranty can be requested from customer service. Click here to make a request to customer service.