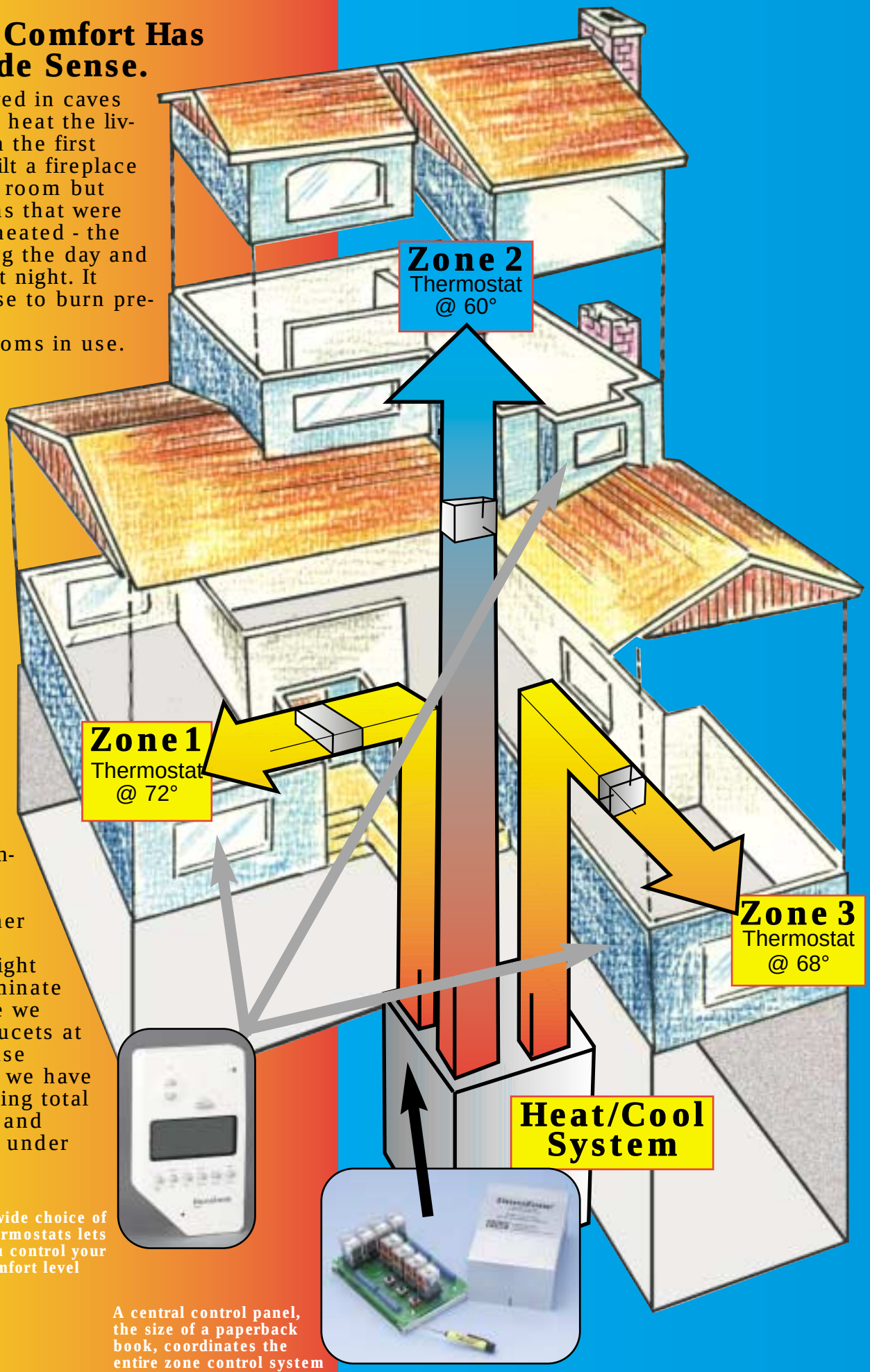

DuroZone
Designed
For
Comfort
1ST FLOOR
2 ND FLOOR
How to Seal Heating & Cooling Ducts
ZONING
DuroZone Zoning Components
DuroZone
HVAC products of tomorrow... developed today.
SMZ Zone Control Packages
HEALTHY HOUSE BUILDING
A DESIGN & CONSTRUCTION GUIDE
The book every homeowner, builder, and designer needs to reduce indoor pollution and improve health.
JOHN BOWER

Zoning for Comfort Has Always Made Sense.

When people lived in caves fire was used to heat the living space. When the first houses were built a fireplace was put in each room but only those rooms that were occupied were heated - the living area during the day and the bedrooms at night. It made good sense to burn precious wood to heat only the rooms in use.

As heating systems became more sophisticated this simple concept was forgotten. One heat source in the building controlled by one sensor (thermostat) became the standard for system design. The inefficiency of this is obvious; a single thermostat can not maintain a constant temperature throughout a building.

We zone the other systems in our buildings...like light switches to illuminate the space where we are...we have faucets at each place we use water...and now we have **DuroZone** to bring total air conditioning and heating comfort under our control.



A wide choice of thermostats lets you control your comfort level

A central control panel, the size of a paperback book, coordinates the entire zone control system

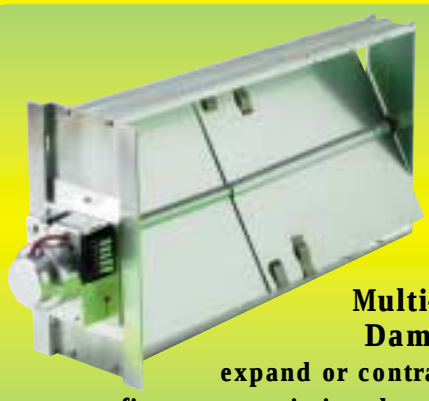
Zoning Means Comfort

As the sun beats down on any one side of a building, the rooms on that side are warmed. The opposite is true on the side exposed to wind and shade. Simply... control means comfort.

With **DuroZone** temperature in those areas are maintained at the settings of your choice!

Control Means Savings

By heating or cooling only the areas you need or are using - you save energy and that means money! Depending upon the size and utilization of the building, savings can range from 10 to 30%. For a homeowner this could amount to $200 to $300. For a building owner this could be in the thousands.



Multi-Size Dampers
expand or contract to fit any pre-existing duct work

How It's Done

DuroZone puts a separate thermostat in different areas of the home or building. In a home this may be the bedrooms, living/rec areas and kitchen/dining areas. In an commercial building individual offices and conference rooms may be zoned. Each thermostat controls a damper which directs the warm or cool air where and when you want it.

New Home or Older Home?

New construction with a **DuroZone** system has virtually no effect on its completion date and typically adds less than 1% to overall cost.

Retrofit jobs allow you to be a Comfort Specialist instead of just another heating and air conditioning contractor.

Round Dampers
for easy fitting to flexible ducting

Multi-Blade Dampers
with parallel blades for smooth operations

DuroZone®

What is zoning and why is it needed?

When you enter your home in the evening and you reach over to turn on the lights, do all the lights in your entire home come on? No! That would be ridiculous. The lights for that room, and that room only, come on. Can you imagine the expense of running all the lights in the house just to have light in one area of your home? You would have to run downstairs to turn out the lights when you're ready for bed. Not only would this be inconvenient, expensive, and uncomfortable, but it is unnecessary with today's technology. The lights in your home are zoned. This zoning allows you to receive the comfort, reliability, economy, and control that best suit your needs.

If not having zoning for the lights in your home would be ridiculous, why would you accept an unzoned heating or cooling system? If you have a forced air heating system, and it is unzoned, the whole house is heated or cooled when the single thermostat calls. Each time you desire comfort, you pay to run the equipment for the whole home. Consider the time it takes for the comfort you desire to reach you, while the areas that did not require conditioning are being over heated or over cooled. You have paid to create an uncomfortable environment in an area of your home.

With zoning, the only area to receive the condition you desire is the area you chose. It is not a case of how much you are willing to pay for zoning. It is a question of how much you are willing to pay for that which you do not want. Without zoning, each time your equipment comes on, you are paying to condition areas that do not need it.

Zoning with **DuroZone** will bring to your home "Comfort beyond your expectations" by directing comfort directly to the areas needed.

Zoning with **DuroZone** will bring control to your home by giving each area zoned its own comfort environment.

Zoning with **DuroZone** will bring reliability to your home heating and cooling system, as you experience the right temperature at the right time in all zoned areas: "Comfort how you need it, when you need it."

Zoning with **DuroZone** will bring economy to your home heating and cooling system by using less fuel and electricity as it focuses conditioning only where it is needed. Your home equipment will require less service and will last longer due to the diminished demand upon it.

What makes DuroZone so different from other zone systems ?

At **DuroZone** we have taken the time to produce zoning equipment that is easy to understand, easy to install, and easy to service. Some of our value added features are:

• NEOPRENE GASKETING ON RECTANGULAR DAMPERS FOR A PRECISE FIT •
• DAMPER CLIP TECHNOLOGY FOR SAFE, FAST INSTALLATION •
• SNAP ON/OFF MOTORS FOR EASY INSTALLATION AND SERVICE •
• SOLID ALUMINUM RECTANGULAR DAMPER CONSTRUCTION
REQUIRING NO CHANNELS OR SUPPORTS •
• DESIGN CAPABILITIES OF UP TO 800 SQ. IN. • FAN PROTECTION •
• INTERCHANGEABLE CONTROL PANEL RELAYS •

To prove our faith in the product we manufacture we offer the longest warranty in the business - three years. This is a "no hassle" warranty which fully covers all **DuroZone** products. With **DuroZone** you can now offer your customer the best and most reliable zoning product available.

RECTANGULAR DAMPER SIZING CHART

First number indicates nominal CFM @ 800 FPM Second number indicates maximum CFM @ 1200 FPM

"A"	FACE PLATE "B" DIMENSION									
	6"	**8"**	**10"**	**12"**	**14"**	**16"**	**18"**	**20"**	**22"**	**24"**
6"		245 (370)	310 (460)	370 (550)	420 (615)	470 (700)	520 (780)	570 (860)	620 (940)	670 (1000)
8"	245 (370)	340 (5160)	420 (610)	500 (740)	570 (860)	620 (960)	720 (1070)	780 (1170)	860 (1280)	920 (1400)
10"	310 (460)	420 (610)	520 (780)	620 (920)	720 (1070)	800 (1200)	900 (1350)	1000 (1500)	1100 (1650)	1180 (1780)
12"	370 (550)	500 (740)	620 (920)	750 (1125)	860 (1300)	980 (1470)	1100 (1650)	1200 (1800)	1325 (2000)	1430 (2150)
14"	420 (615)	570 (860)	720 (1070)	860 (1300)	1000 (1500)	1150 (1750)	1300 (1950)	1430 (2150)		
16"	470 (700)	620 (960)	800 (1200)	980 (1470)	1150 (1750)	1330 (2000)	1480 (2200)			
18"	520 (780)	720 (1070)	900 (1350)	1100 (1650)	1300 (1950)	1480 (2200)				
20"	570 (860)	780 (1170)	1000 (1500)	1200 (1800)	1430 (2150)					
22"	620 (940)	860 (1280)	1100 (1650)	1325 (2000)						
24"	670 (1000)	920 (1400)	1180 (1780)	1430 (2150)						

ROUND DAMPER SIZING CHART

Item #	Code:	Nom. Dia.	Nom. CFM (800 fpm)	Max. CFM (1200 fpm)
35038	RD-5	5 Inches	115	160
35039	RD-6	6 Inches	155	235
35040	RD-7	7 Inches	210	320
35041	RD-8	8 Inches	275	415
35042	RD-9	9 Inches	350	525
35043	RD-10	10 Inches	440	650
35044	RD-11	11 Inches	525	780
35045	RD-12	12 Inches	610	940
35046	RD-13	13 Inches	740	1100
35047	RD-14	14 Inches	850	1275
35057	RD-16	16 Inches	1100	1650
35058	RD-18	18 Inches	1400	2100

RECTANGULAR PRESSURE RELIEF DAMPERS

Item #	Description:	Bypass @1200 FPM
35063	**DD 12 x 8**	**700 CFM**
35064	**DD 18 x 8**	**1100 CFM**
35068	**DD 20 x 10**	**1600 CFM**
35069	**DD 20 x 12**	**1900 CFM**

ROUND PRESSURE RELIEF DAMPERS

Item #	Description:	Bypass @1200 FPM
35070	**DDRD-8**	**400 CFM**
35071	**DDRD-10**	**650 CFM**
35072	**DDRD-12**	**950 CFM**
35073	**DDRD-14**	**1300 CFM**
35074	**DDRD-16**	**1700 CFM**

Planning and installation

uroZone offers two distinct zoning systems:

SMZ Zone Control System and **ComfortMax Comfort System**.

The SMZ 2, 3, and 4 systems use a primary thermostat for Zone One that has a subbase which designates the mode of operation (Heating or Cooling). This thermostat also controls constant fan operation. All SMZ panels have switches so you can determine whether a zone participates in constant fan mode or not. The additional zones require only a three wire thermostat with R,W, and Y terminals.

The SMZ is also available in a “first come, first served” auto-changeover design called SMZ-AC. The SMZ-AC is a three zone system and is compatible with virtually any thermostat currently on the market.

ComfortMax is a proprietary communicating thermostat based Zoning system. This system is a state-of-the-art, multifunction, heat pump compatible, zone intelligent system. Each zone can control the mode of operation (Heating/Cooling), along with functions such as auto-changeover and multi-staging.

Design considerations

Designing a zone system for a new installation is slightly different than designing a zone system for a retrofit or existing structure, but the guidelines are no more difficult to apply than those for existing duct layout and design. A little common sense and preparation will resolve most problems before they occur.

While zoning can offer considerable savings in energy and equipment function costs, the main goal in zoning a home or structure is to provide greater comfort to the home owner or occupants than is achieved through a single thermostat system. When designing a new system, the following considerations should be addressed.

What are the different areas of occupancy or usage?

Establishing areas of load or occupancy allows the installer to focus or “ZONE” conditioning where people gather at different times of the day or night.

For example: The living room, dining room, and kitchen are usually occupied during the day. The bedrooms are occupied in the evening. With two zones this format not only allows for maximum comfort by matching areas of conditioning with structure occupancy, but it also establishes definite usage patterns effectively shutting down or lowering the demand for conditioning in areas of low occupancy creating energy savings. This format also maximizes the performance of setback thermostats.

Are there any areas that cause abnormal loads?

Great rooms, glass walls, cathedral ceilings, hot tub enclosures, etc. These features can put abnormal strain on the comfort system. Be sure when creating your zones and sizing your equipment and duct work, you have a handle on the usage and loads created by such additions. Depending upon the application, it could be more beneficial to put in two smaller systems and zone them, instead of putting four or five zones on a larger system.

DuroZone®
-MULTILINE®-

SMZ-SW
Zone Control Panel

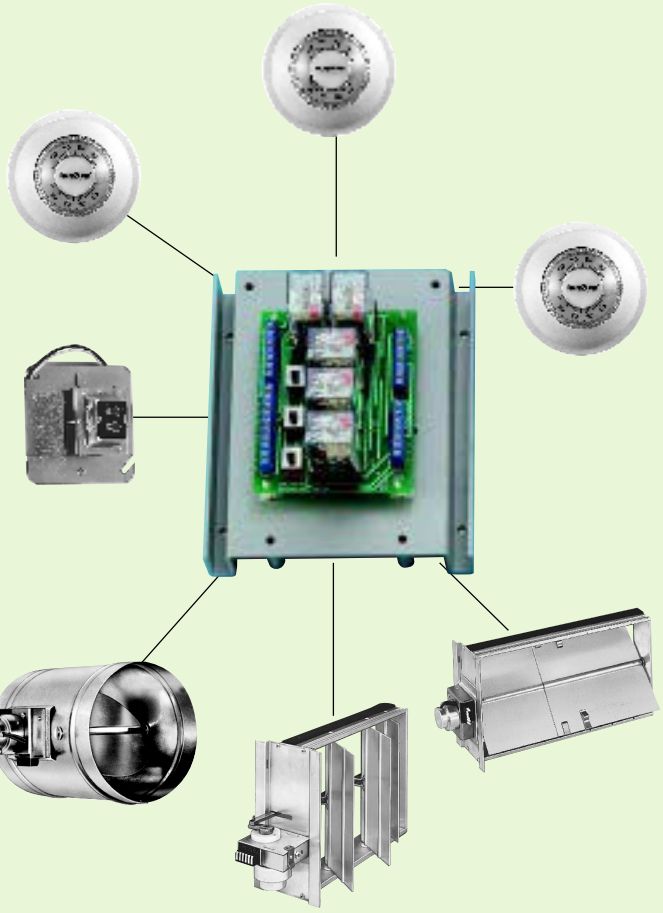
- **Low Cost**
- **Easy Wiring**
- **Compact Design**
- **Easy Installation**
- **Subbase Controlled**
- **Available for 2, 3 or 4 Zone Systems**

DuroZone's SMZ-SW Panels provide contractors with a simple, low-cost zoning system for 2, 3, or 4 zones. SMZ-SW Panels allow for the use of a switchable subbase (which must have B&O terminals) in zone 1 to act as the system's master switch for heat, cool, and fan. Moving the fan switch on the zone 1 thermostat subbase to "on", will activate the fan to enhance air circulation.

All SMZ Zone Systems are equipped with individual zone damper control switches. These switches will allow a zone damper to remain in either open or closed position when the system board is at rest. By setting the switches, the installer or home owner can choose the position of his system's dampers; to inhibit migration of air into spaces

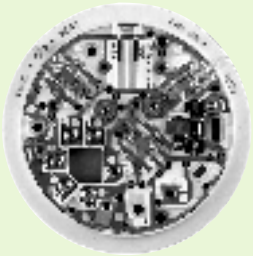
Features

The SMZ-SW controls up to 4 zones. See the ordering information below.



Easy Wiring

The terminal strips are mounted along the edges of the panel for easy wiring accessibility. The SMZ-SW is a 24 volt low amperage system. A 40 VA transformer will operate up to 4 zone dampers.



Subbase Controlled

The selection of equipment is Set by the Zone 1 Subbase heat/cool and fan switches.

Easy Installation

A screwdriver for the terminals is included with the panel. Self-adhesive backing is included for quick mounting. The compact design measures $7^{1/8}$" x $6^{1/8}$" x $3^{1/2}$".

ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
35226	SMZ2SW	2 Zone Panel
35227	SMZ3SW	3 Zone Panel
35228	SMZ4SW	4 Zone Panel
35052	3WT	Thermostat.
35214	MSSB	Subbase
35180	DRS	Round Thermostat
35181	DRSMS	Round Zone 1 Sub-base.

NOTE: If not using a DuroZone 3WT thermostat (35052), with the MSSB Subbase (35214), or DRS(35180) with DRSMS subbase (35181), the end user must provide a switchable heat/cool thermostat with B & O terminals for use in Zone 1. Thermostats such as Honeywell's T87F/Q539A are compatible.

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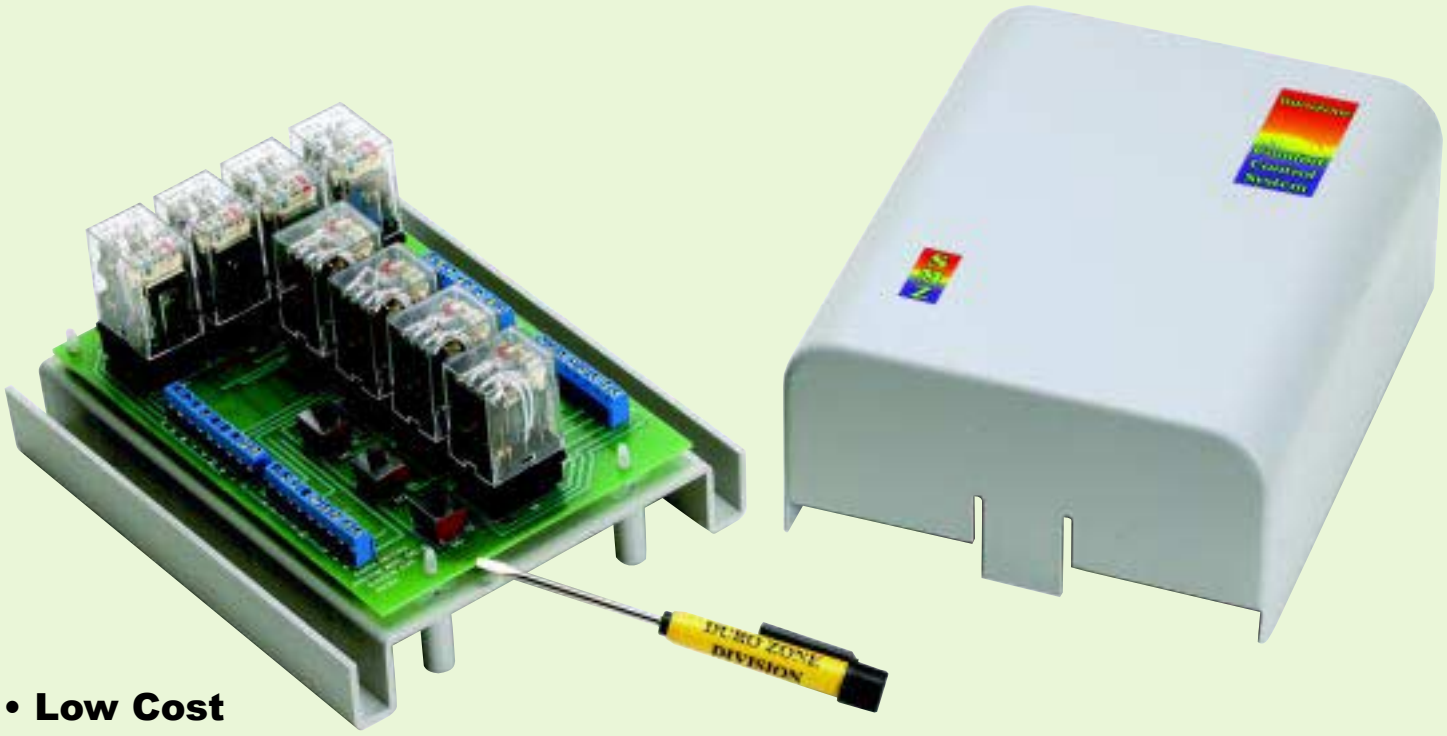
SMZ-AC Auto Changeover Zone Control Panel and Systems



- **Low Cost**
- **Easy Installation**
- **Controls Up To 3 Zones**
- **First call - First Serve Priority**
- **Easy Wiring - B And O No Longer Needed**
- **Switches Automatically Between Heating And Cooling**

DuroZone's SMZ-AC Panels provide contractors with a simple, low-cost auto changeover system for 2 or 3 zones. SMZ-AC Panels are designed for conventional heat/cooling systems and can be adapted to single stage heat pump system. Virtually all thermostats with R,W,Y, and G terminals are compatible with SMZ-AC Panels (G is required on zone 1 only). The SMZ-AC Panel utilizes a "First Call - First Serve" Protocol for determining which system (heating or cooling) is activated. While in one mode the opposite mode is locked out but can be activated after satisfaction of the prior call.

DuroZone SMZ-AC Panels are also available in "Turn-Key" packages that include the Panel, Thermostats, and Transformer necessary for a fast and simple installation. All the contractor needs to add are the appropriate dampers. SMZ-AC packages are available in two and three zones and with setback or non setback thermostats.

SMZ-AC Zone Systems

SMZ-AC 2 Zone System consist of:

1 SMZ-AC Panel
1 PT-40 Transformer
2 DR Round Thermostat
1 DRSMS Subbase
1 DRSHCS Subbase

For 3 zone add 1 additional
DR Thermostat and DRSHCS Subbase

SMZ-AC 2 Zone Setback System consist of:

1 SMZ-AC Panel
1 PT-40 Transformer
2 Digital Setback Thermostat

For 3 zone add 1 additional
Digital Setback Thermostat

ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
35229	SMZAC	3 Zone Auto Changeover Panel
35181	DRSMS	Round Zone 1 Subbase
35182	DRSHCS	Round Heat/Cool Subbase
35191	DT3	Digital Setback Thermostat
35271	S2AP	SMZAC 2 Zone Package
35272	S3AP	SMZAC 3 Zone Package
35273	S2ASP	SMZAC 2 Zone Setback Package
35274	S3ASP	SMZAC 3 Zone Setback Package

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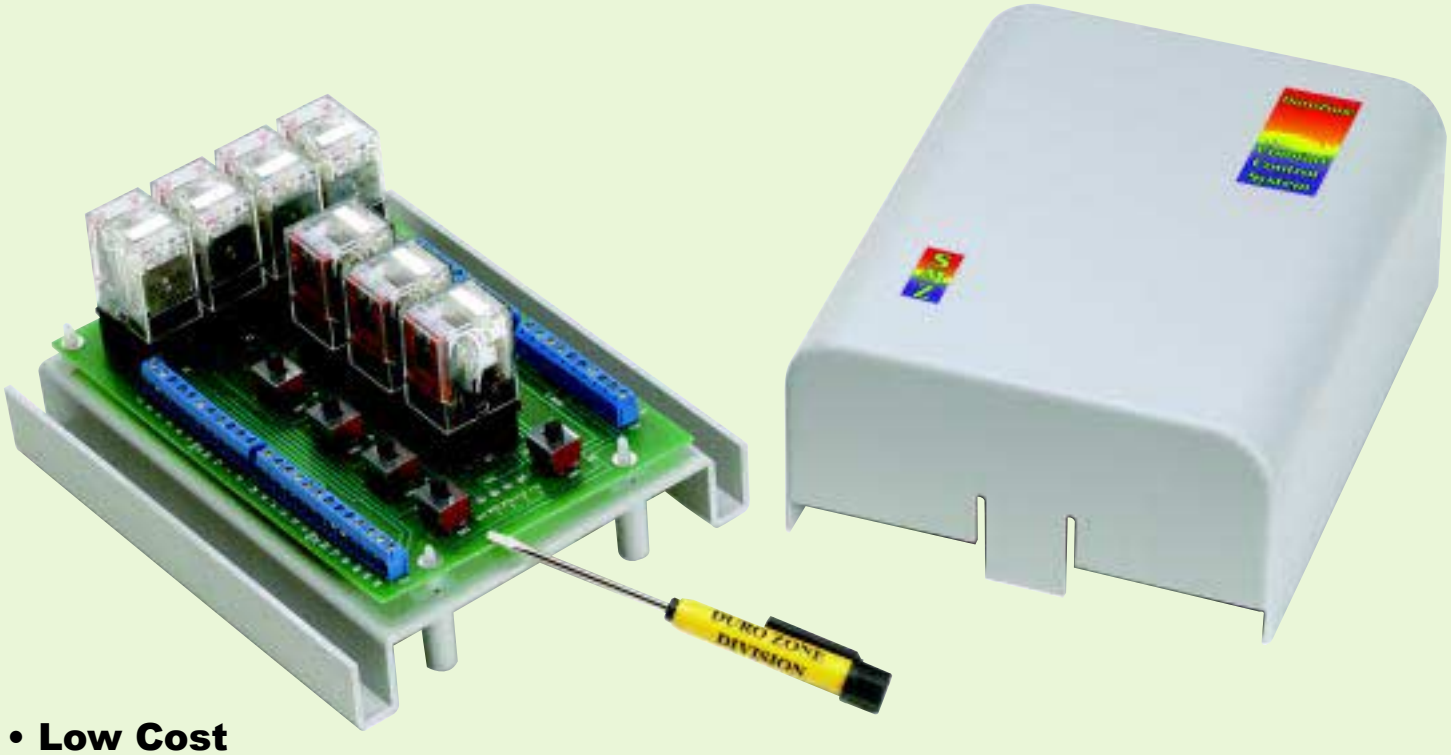
SMZ-HP

Zone Control Panel For Heat Pumps

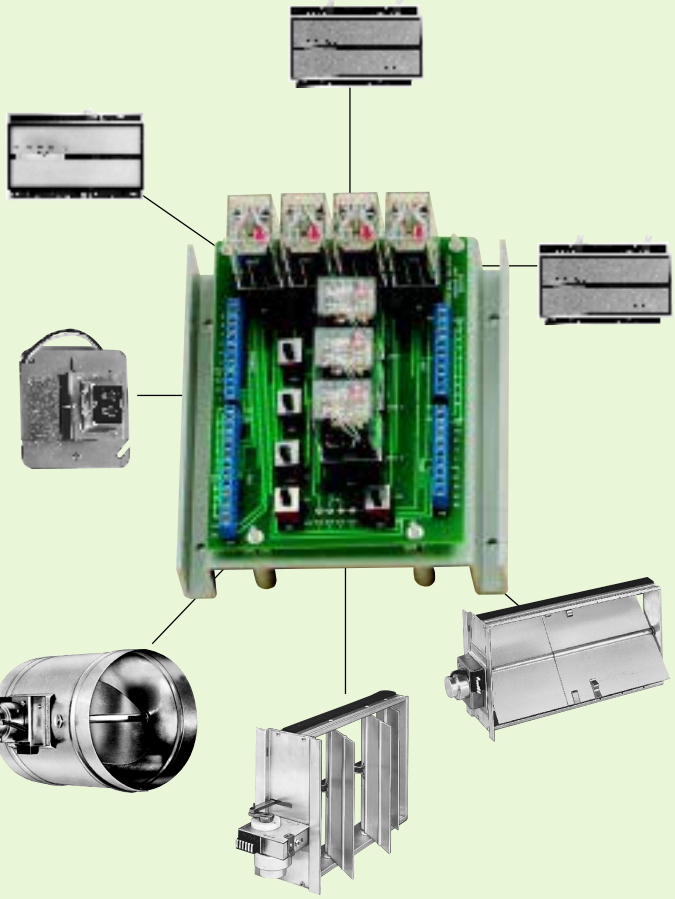


- **Low Cost**
- **Easy Wiring**
- **Compact Design**
- **Easy Installation**
- **Subbase Controlled**
- **Controls Up To 2 Or 3 Zones**
- **Supports Two Stage Compressors**

DuroZone's SMZ-HP Panels allow the contractor a low cost zoning system for heat pumps. The SMZ-HP can control up to three zones on a single unit. The switchable subbase in Zone 1 acts as the master switch for heat/cool/emergency heat and fan. When all zones are satisfied all zone dampers will be open to allow air circulation. Moving the fan switch on the Zone 1 thermostat subbase to "on" will activate the fan to enhance air circulation.
DuroZone's SMZ-HP panel has Y1 and Y2 terminals to allow operation of heat pumps with 2 stage compressors and will operate changeover valves activated in either the heat or cool mode.

Features

The SMZ-HP controls up to 3 zone systems. See the ordering information below.



Easy Wiring

The terminal strips are mounted along the edges of the panel for easy wiring accessibility. The SMZ-HP is a 24 volt low amperage system. A 40 VA transformer will operate up to 4 zone dampers.

Easy Installation

A screwdriver for the terminals is included with each panel.
Self-adhesive backing is included for quick mounting.
The compact design measures $7^{1/8}$" x $6^{1/8}$" x $3^{1/2}$".

ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
35217	SMZHPSW	3 Zone Heat Pump Panel
35176	DZHPT	SMZHP Zone 1 Thermostat
35177	DZDBT	Dual Bulb 2 Stage Thermostat

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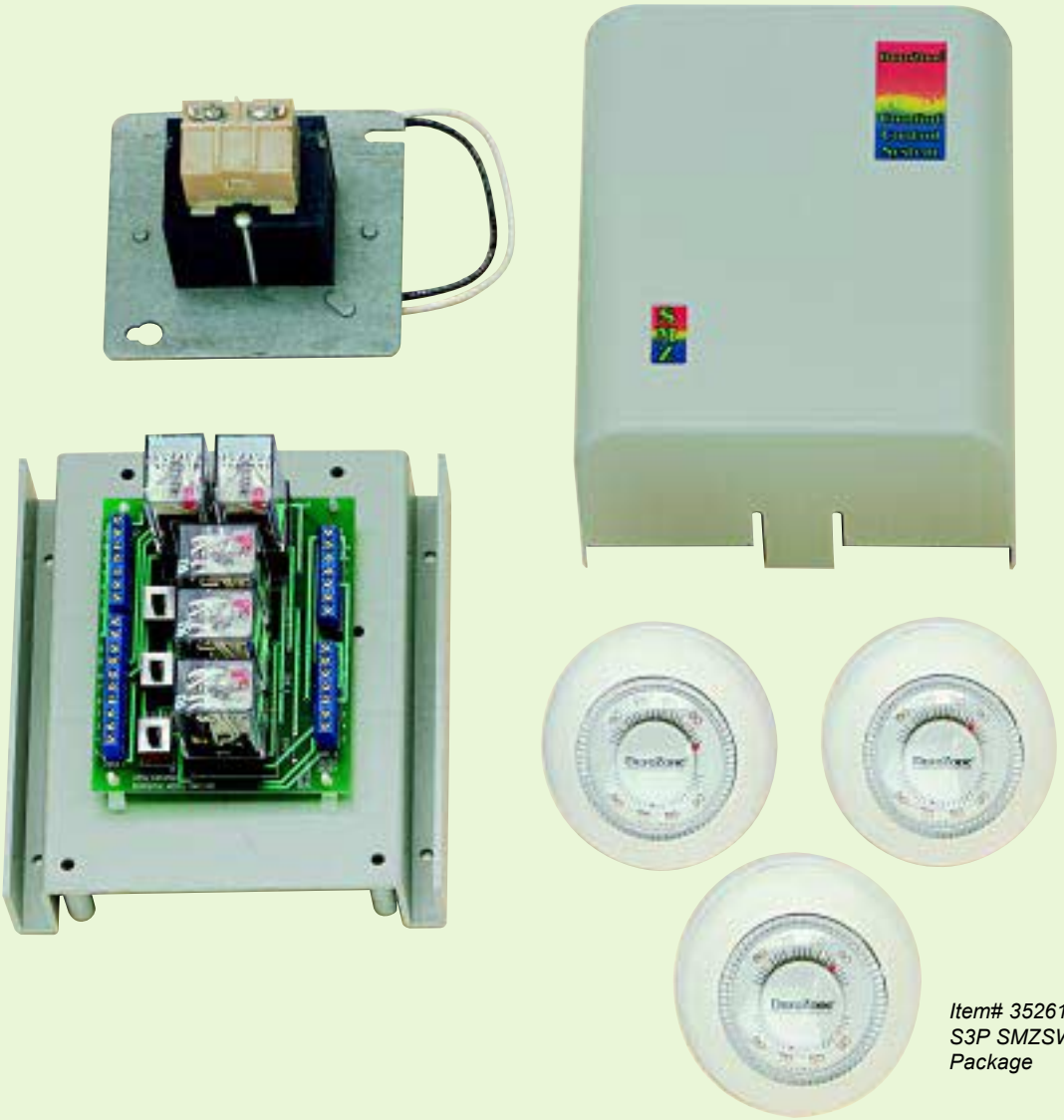
The Greatest Name in Sheet Metal Necessities.



Item# 35261
S3P SMZSW 3 Zone Package

SMZ Zone Control Packages

Putting together a zone control system is now easier than ever.

SMZ Zone Control Packages provide, in one convenient box, all the controls (less dampers) necessary to install a two or three zone SMZ system. Each box contains an SMZ control panel, a 24 volt 40va transformer, and the necessary thermostats for each zone. SMZ Zone Control Packages come in several configurations to address most two and three zone situations both for conventional Heating/Cooling Systems and for Heat Pumps.

Conventional Heating/Cooling Systems

☐ **35260** **S2P SMZ 2 Zone Package**

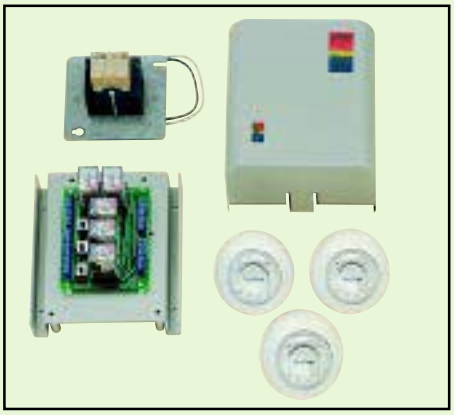
consists of:

1 each #35226 SMZ2SW 2 Zone Panel
1 each #35054 PT40 Transformer
2 each #35187 DR Round Thermostat
1 each #35181 DRSMS Zone 1 Subbase
1 each #35183 DRS3WP 3 Wire Wallplate

☐ **35261** **S3P SMZ 3 Zone Package**

consists of:

1 each #35227 SMZ3SW 3 Zone Panel
1 each #35054 PT40 Transformer
3 each #35187 DR Round Thermostat
1 each #35181 DRSMS Zone 1 Subbase
2 each #35183 DRS3WP 3 Wire Wallplate



☐ **35262** **S2SP SMZ 2 Zone Setback Package**

consists of:

1 each #35226 SMZ2SW 2 Zone Panel
1 each #35054 PT40 Transformer
2 each #35191 DT3 Setback Thermostat

☐ **35263** **S3SP SMZ 3 Zone Setback Package**

consists of:

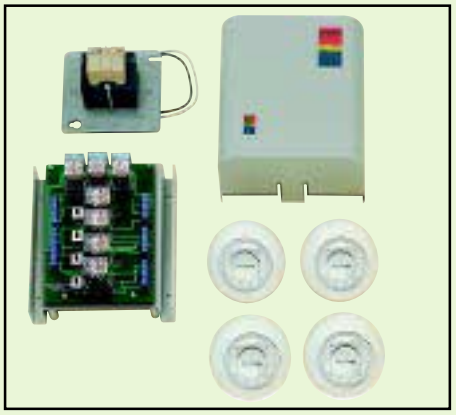
1 each #35227 SMZ3SW 3 Zone Panel
1 each #35054 PT40 Transformer
3 each #35191 DT3 Setback Thermostat

Conventional Heating/Cooling Systems

☐ **35269** **S4P SMZ 4 Zone Package**

consists of:

1 each	#35228	SMZ4SW 4 Zone Panel
1 each	#35054	PT40 Transformer
4 each	#35187	DR Round Thermostat
1 each	#35181	DRSMS Zone 1 Subbase
3 each	#35183	DRS3WP 3 Wire Wallplate



☐ **35270** **S4SP SMZ 4 Zone Setback Package**

consists of:

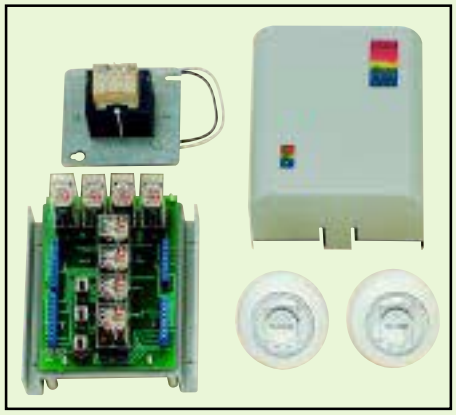
1 each	#35228	SMZ4SW 4 Zone Panel
1 each	#35054	PT40 Transformer
4 each	#35191	DT3 Setback Thermostat

Auto Changeover Systems

☐ **35271** **S2AP SMZ AC 2 Zone Package**

consists of:

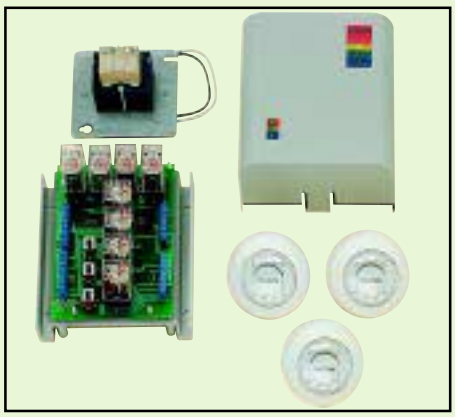
1 each #35229 SMZAC Zone Panel
1 each #35054 PT40 Transformer
2 each #35187 DR Round Thermostat
1 each #35181 DRSMS Zone 1 Subbase
1 each #35182 DRSHCS Round H/C Subbase



☐ **35272** **S3AP SMZ AC 3 Zone Package**

consists of:

1 each #35229 SMZAC Zone Panel
1 each #35054 PT40 Transformer
3 each #35187 DR Round Thermostat
2 each #35181 DRSMS Zone 1 Subbase
1 each #35182 DRSHCS Round H/C Subbase



☐ **35273** **S2AP SMZ AC 2 Zone Setback Package**

consists of:

1 each #35229 SMZAC 2 Zone Panel
1 each #35054 PT40 Transformer
2 each #35191 DT3 Setback Thermostat

☐ **35274** **S3AP SMZ AC 3 Zone Setback Package**

consists of:

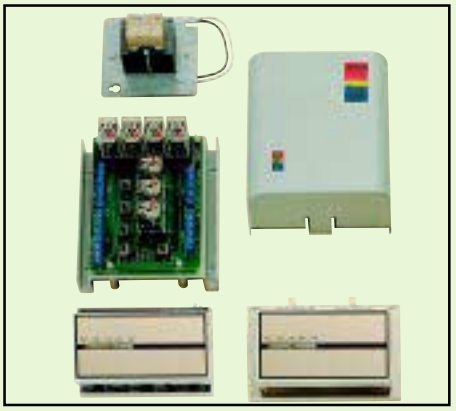
1 each #35229 SMZAC 3 Zone Panel
1 each #35054 PT40 Transformer
3 each #35191 DT3 Setback Thermostat

Heat Pump Systems

☐ **35264** **S2HP SMZHP 2 Zone Package**

consists of:

1 each #35217 SMZHPSW 2 Zone Heat Pump Panel
1 each #35054 PT40 Transformer
1 each #35176 DZHPT Zone 1 Heat Pump Thermostat
1 each #35177 DZDBT Dual Bulb Thermostat



☐ **35265** **S3HP SMZHP 3 Zone Package**

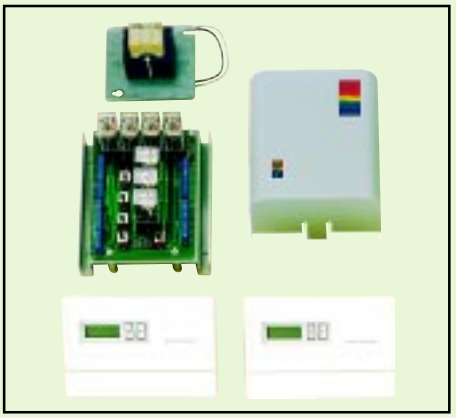
consists of:

1 each #35217 SMZHPSW 3 Zone Heat Pump Panel
1 each #35054 PT40 Transformer
1 each #35176 DZHPT Zone 1 Heat Pump Thermostat
2 each #35177 DZDBT Dual Bulb Thermostat

☐ **35266** **S2HSP SMZHP 2 Zone Setback Package**

consists of:

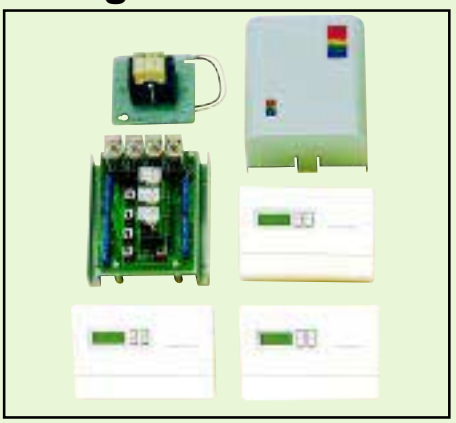
1 each #35217 SMZHPSW 2 Zone Heat Pump Panel
1 each #35054 PT40 Transformer
2 each #35192 DTAC Autochangeover Thermostat



☐ **35267** **S3HSP SMZHP 3 Zone Setback Package**

consists of:

1 each #35217 SMZHPSW 3 Zone Heat Pump Panel
1 each #35054 PT40 Transformer
3 each #35192 DTAC Autochangeover Thermostat



SMZ Zone Control Packages Easy Quote

Quantity	Item#	Description	Price (from DuroZone Trade Price Catalog)
	35260	S2P SMZ 2 Zone Package	
	35261	S3P SMZ 3 Zone Package	
	35262	S2SP SMZ 2 Zone Setback Package	
	35263	S3SP SMZ 3 Zone Setback Package	
	35264	S2HP SMZHP 2 Zone Package	
	35265	S3HP SMZHP 3 Zone Package	
	35266	S2HSP SMZHP 2 Zone Setback Package	
	35267	S3HSP SMZHP 3 Zone Setback Package	
	35269	S4P SMZ 4 Zone Package	
	35270	S4SP SMZ 4 Zone Setback Package	
	35271	S2AP SMZ AC 2 Zone Package	
	35272	S3AP SMZ AC 3 Zone Package	
	35273	S2ASP SMZ AC 2 Zone Setback Package	
	35274	S3ASP SMZ AC 3 Zone Setback Package	
		Damper RD-	
		Damper RD-	
		Damper RD-	
		Damper MB- x _____ _____	
		Damper MB- x _____ _____	
		Damper MB- x _____ _____	
		Damper MS-	
		Damper MS-	
		Damper MS-	
		Pressure Relief Damper-	

P.O.# _____ Total

to:
(Distributor)

Ship to:
(Contractor)

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Farmingdale, New York 11735
Phone: 631-249-9000 • Fax: 631-249-8346

Printed in USA 07/2001
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DuroZone®

MULTILINE®

Into the Twenty-First Century with DuroZone's new

ComfortMax Zone Control System

Features:

5+1+1 Programming

2 stage cool - 2 stage heat capable for conventional systems

Fossil fuel backup capable with heat pumps

2 stage cool - 4 stage heat capable for heat pumps

Auto changeover with master thermostat monitoring and override function

Easy universal system programming at master thermostat

Remote sensor capable

Large digital display

The ComfortMax Zone Control System is a full function, communicating thermostat, "turn key" system for light commercial and medium to high end housing. The ComfortMax System incorporates such features as Master thermostat zone monitoring and override, economy mode, 5+1+1 setback, manual or auto changeover, and simple system programming of conventional or heat pump systems.

ComfortMax Components

CMT COMFORTMAX MASTER THERMOSTAT

The ComfortMax system has a “Master” thermostat that can override the individual zone thermostats. The CMT Master thermostat can monitor, change and lockout changes in any or all zones. All equipment selection is done at the CMT thermostat. Like all ComfortMax thermostats a remote bulb sensor can be used so the thermostat can be placed in a less conspicuous location. The CMT features Fan control , 5+1+1 programming, emergency heat, and unoccupied economy mode setting of up to 10 days.

CZT COMFORTMAX ZONE THERMOSTAT

Each CZT thermostat features 5+1+1 programming Heat, Cool and Auto changeover modes. Remote bulb capability, Economy mode and constant fan participation are all standard features. CZT thermostats can display in Fahrenheit or Celsius and 24 hour or 12 hour clock format.

CCB COMFORTMAX CONTROL BOARD

The ComfortMax system utilizes a “Home Base” control board to centralize all wiring. The CCB can handle up to three zones. The CCB features easily identifiable terminals for all wiring, a fuse for circuit protection, and an indicator light to verify system communication. A fault indicator can be wired to the panel. Also, an outdoor temperature sensor can be connected to the panel to monitor outside temperature at the master thermostat.

CEB-2 2 ZONE EXPANSION BOARD

The CEB-2 allows two additional zones to be added to the ComfortMax system for a total of 5 zones. Use the CEB-2 with the CCB for four and five zone systems. All wiring is the same as for the CCB.

CEB-4 4 ZONE EXPANSION BOARD

The CEB-4 allows four additional zones to be added to the ComfortMax system for a total of seven zones. Use the CEB-4 with the CCB for six and seven zone systems. All wiring is the same as for the CCB.

Typical System Hookup

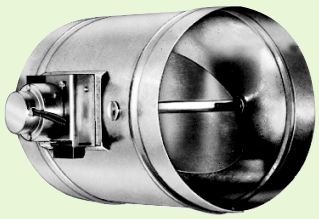
CCB ComfortMax Control Board

2 stage cooling
4 stage heating (heat pump)
or
2 stage cooling
2 stage heating (conventional)

Duro Dyne Transformer
24 VAC

To CEB2 or CEB4

Zone 3



4
2
1

DuroZone Damper

7
8
A
B

CZT Zone Thermostat

Zone 2

4
2
1

DuroZone Damper

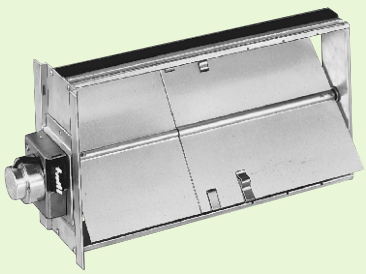
7
8
A
B

CZT Zone Thermostat

B A 8 7

CMT Master Thermostat

1 2 4 Zone 1



DuroZone Damper

System's sensor (fault indication)

Outside temperature sensor

Ordering Information

ComfortMax Systems are sold as complete 2 or 3 zone packages. Additional zone thermostats and expansion panels can be ordered to configure the system up to seven zones. Because of the communicating nature of the ComfortMax System, only ComfortMax thermostats can be used with the system.

35290 CMS-2 COMFORTMAX 2 ZONE SYSTEM

Consists of:

Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
1 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD

35291 CMS-3 COMFORTMAX 3 ZONE SYSTEM

Consists of:

Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
2 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD

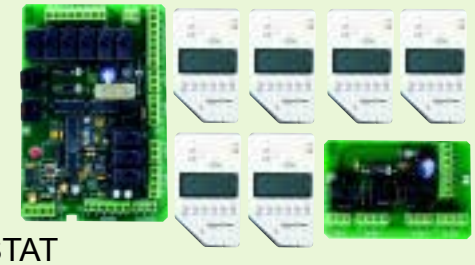
35292 CMS-4 COMFORTMAX 4 ZONE SYSTEM

Consists of:

Item #	Model	Description
1 each	35280	CMTs	COMFORTMAX MASTER THERMOSTAT
3 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1each	35283	CEB2	COMFORTMAX 2 ZONE EXPANSION BOARD

Ordering Information

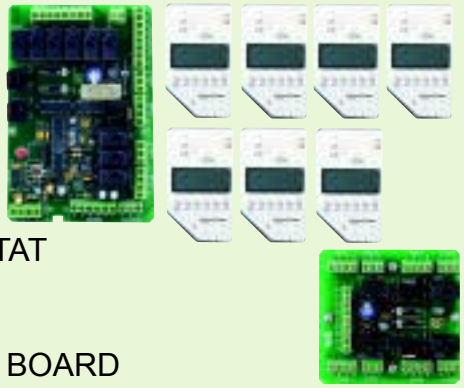
35293 CMS-5 COMFORTMAX 5 ZONE SYSTEM



Consists of:

	Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
4 each	35281	CZT	COMFORTMAX THERMOSTAT
1each	35282	CCB	COMFORTMAX CONTROL BOARD
1each	35283	CEB2	COMFORTMAX 2 ZONE EXPANSION BOARD

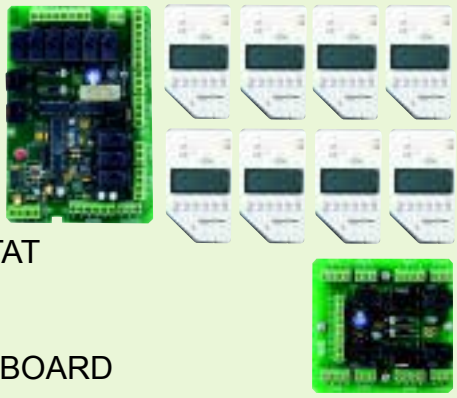
35294 CMS-6 COMFORTMAX 6 ZONE SYSTEM



Consists of:

	Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
5 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1 each	35284	CEB4	COMFORTMAX 4 ZONE EXPANSION BOARD

35295 CMS-7 COMFORTMAX 7 ZONE SYSTEM



Consists of:

	Item #	Model	Description
1 each	35280	CMT	COMFORTMAX MASTER THERMOSTAT
6 each	35281	CZT	COMFORTMAX THERMOSTAT
1 each	35282	CCB	COMFORTMAX CONTROL BOARD
1 each	35284	CEB4	COMFORTMAX 4 ZONE EXPANSION BOARD

Sold Individually

Item #	Model	Description
35280	CMT	COMFORTMAX MASTER THERMOSTAT
35281	CZT	COMFORTMAX ZONE THERMOSTAT
35282	CCB	COMFORTMAX CONTROL BOARD
35283	CEB2	COMFORTMAX 2 ZONE EXPANSION BOARD
35284	CEB4	COMFORTMAX 4 ZONE EXPANSION BOARD

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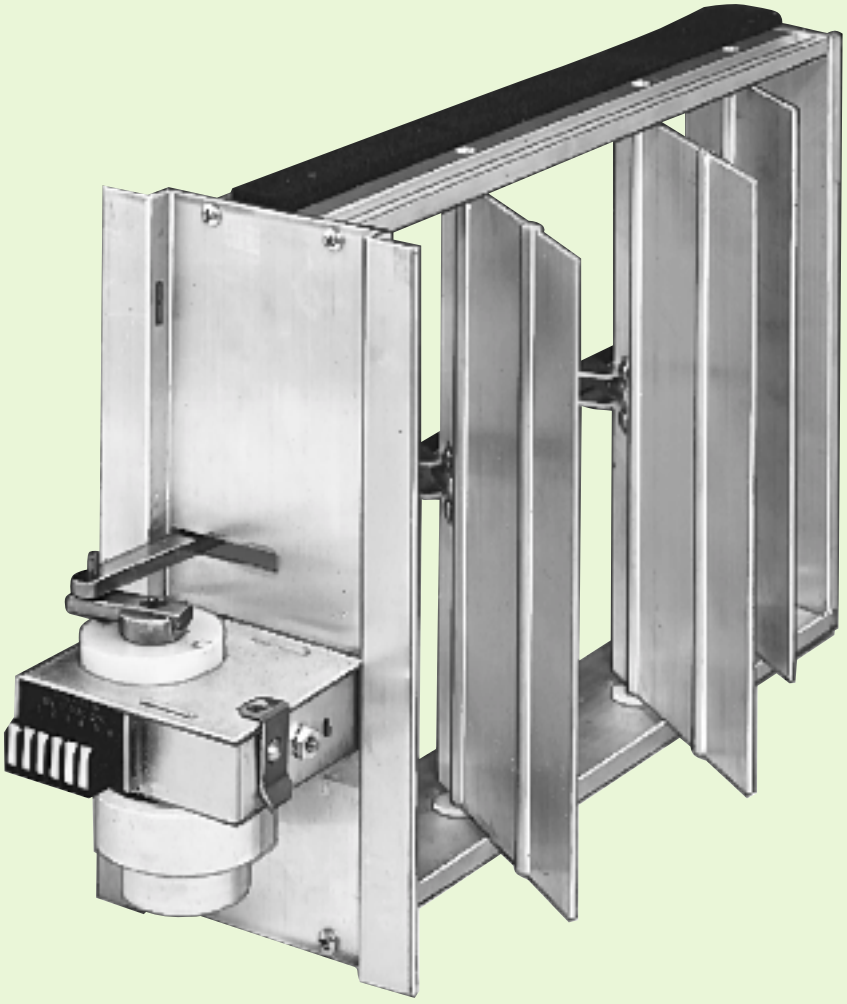
MULTILINE®

MB Damper

Multi-Blade Zone Damper



Durable Extruded Aluminum Construction
Frame and blades of extruded aluminum combine minimum weight with maximum strength for a damper of unsurpassed durability.

High-Torque Motor
Motor will work with all existing 24-volt thermostats. High-torque means reliable, trouble-free service for many years.

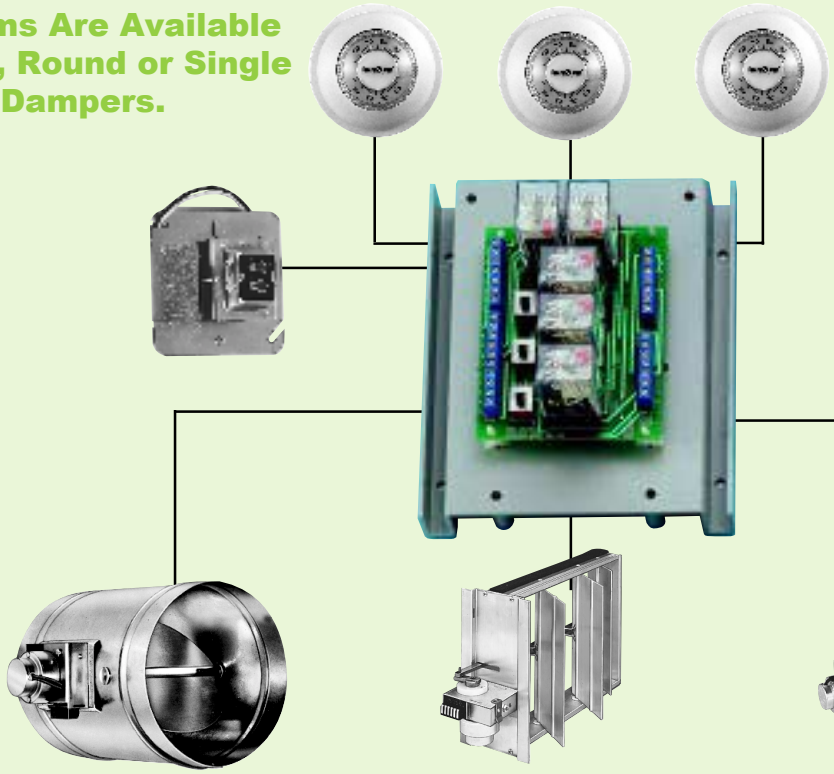
Low-Leakage, Parallel-Blade Design
Insures smooth operation and efficient sealing for maximum control of air flow.

Quick Installation & Wiring
Damper attaches to the duct by use of a new clip. No screws or screwdriver are required. Easy wiring.

Neoprene Gasketing
Minimizes leakage and reduces metal-to-metal rattle.

Three Year Limited Warranty
Damper motor guaranteed for three years after installation.

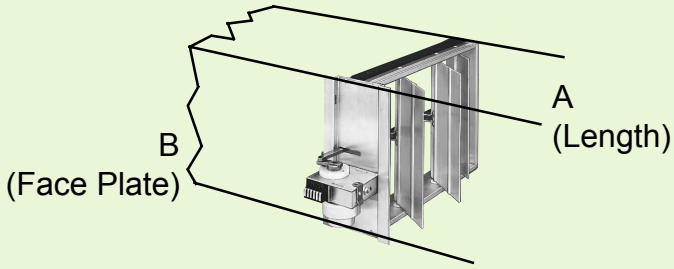
DuroZone Systems Are Available With Multi-Blade, Round or Single Blade Multi-Size Dampers.



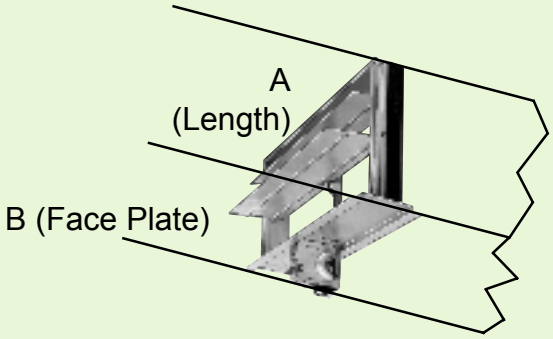
Round Damper

Multi-Blade Damper

Multi-Size Damper



Standard Damper



Bottom Mount Damper

B - FACE PLATE DIMENSION - MOTOR SIDE

A - LENGTH DIMENSION	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"
6"		37109	37119	37129	37139	37149	37159	37169	37179	37189
8"	37100	37110	37120	37130	37140	37150	37160	37170	37180	37190
10"	37101	37111	37121	37131	37141	37151	37161	37171	37181	37191
12"	37102	37112	37122	37132	37142	37152	37162	37172	37182	37192
14"	37103	37113	37123	37133	37143	37153	37163	37173		
16"	37104	37114	37124	37134	37144	37154	37164			
18"	37105	37115	37125	37135	37145	37155				
20"	37106	37116	37126	37136	37146					
22"	37107	37117	37127	37137						
24"	37108	37118	37128	37138						

LARGER SIZED OR SPECIAL SIZED DAMPERS AVAILABLE UPON REQUEST

Note: For Fresh-Air Dampers, Simply Change The First Two Digits In The Item Code From 37 to 38

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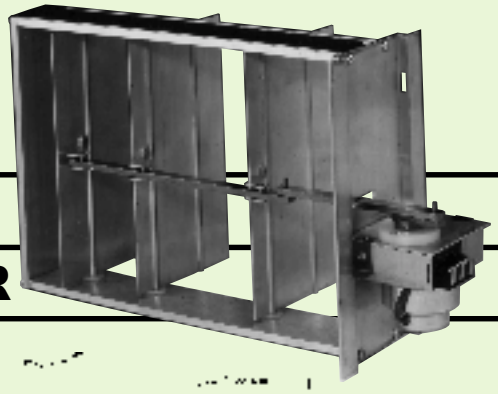
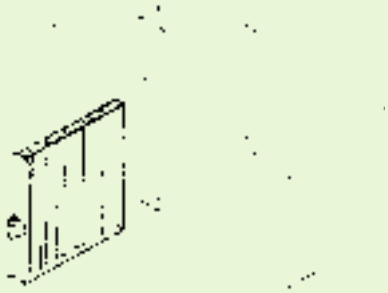
INSTALLATION INSTRUCTIONS

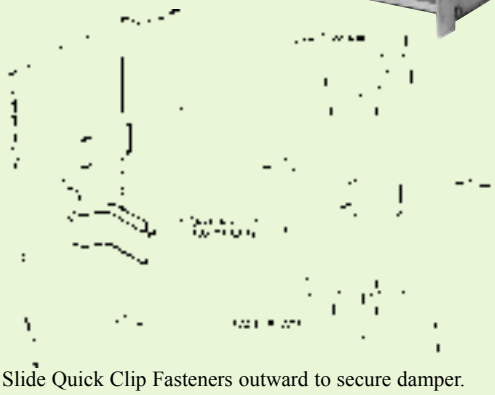
MB SERIES MULTI BLADE DAMPER



INSTALLATION



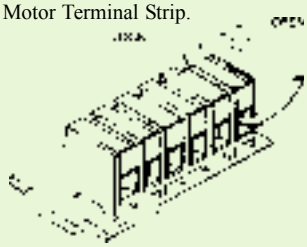
1. Cut 3 3/8" wide slot into side of sheet metal duct.
2. Slide damper into duct work.



3. Slide Quick Clip Fasteners outward to secure damper.

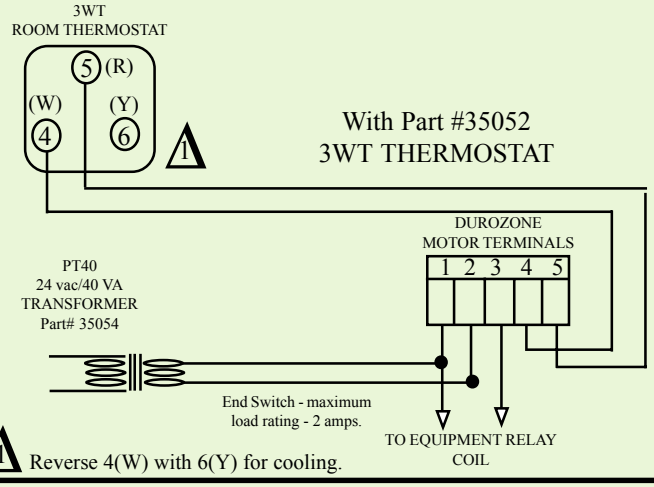
MOTOR TERMINALS

1. Trim 1/4" off the end of the Control Wiring.
2. Flip the white tab up on the Damper Motor Terminal Strip.
3. Insert the trimmed Control Wire.
4. Flip the white tab down.

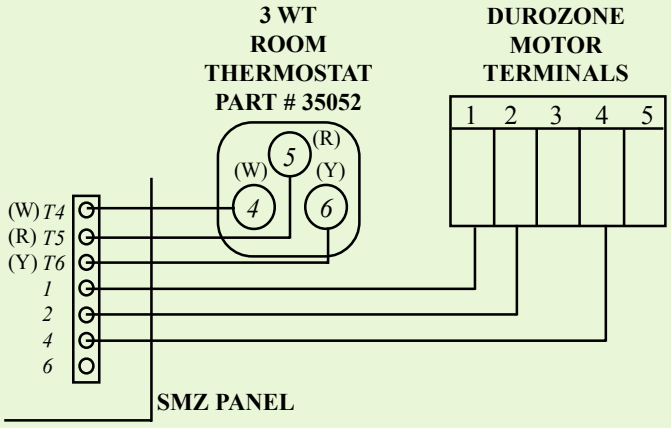


MOTOR TERMINAL IDENTIFICATION

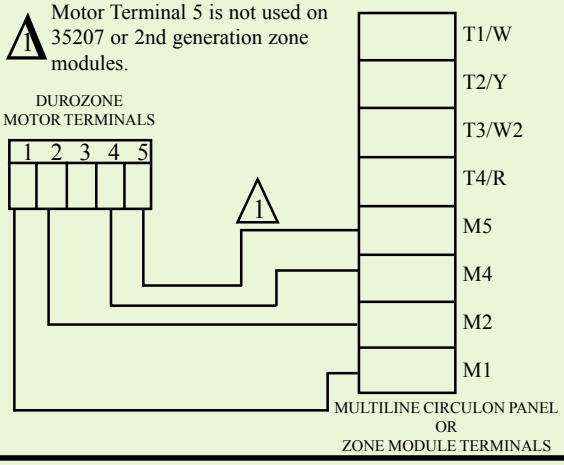
Terminals 1 & 2: 24 volt input.
Terminals 4 & 5: Thermostat Connections - Closing 4 & 5 will open damper. Opening 4 & 5 will close damper.
Terminal 3: End switch - Connecting an equipment relay across 1 & 3 of damper motor will activate relay when damper is open.



With Part# 35217/35226/35227/35228/35229



With Part# 35200/35207
Multiline Multizone 8 Circulon Panel/Multizone 8-SBC or Zone Modules



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ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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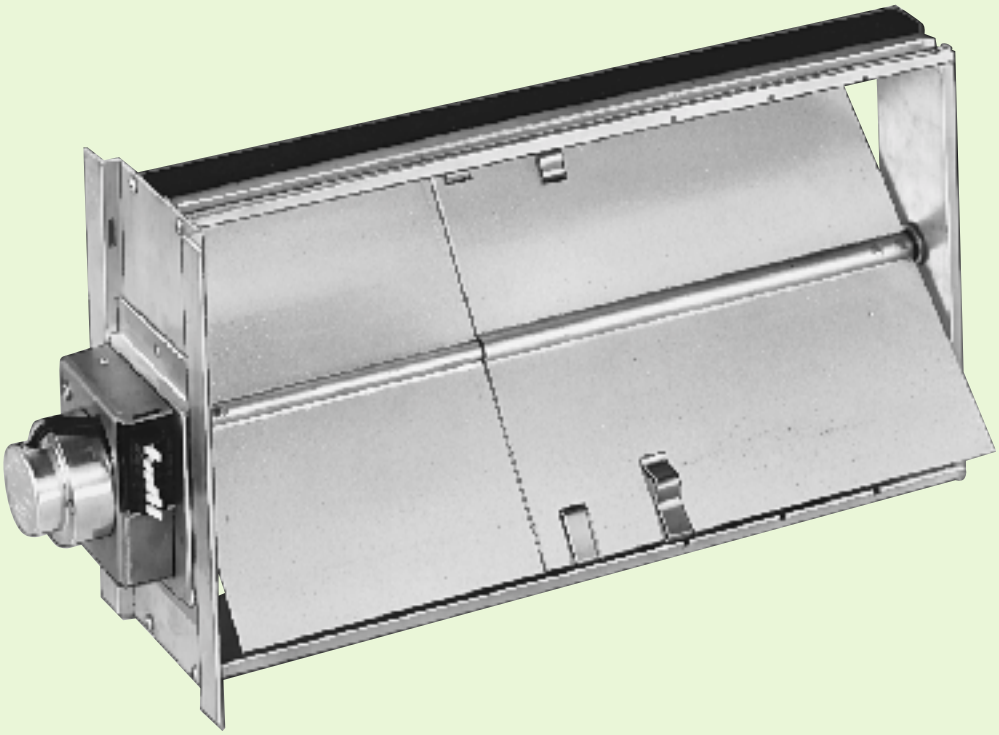
DuroZone®

MULTILINE®

MS Damper

Multi-Size Zone Damper



Durable Aluminum Construction
Extruded frame and formed blade combine minimum weight with maximum strength for a damper of unsurpassed durability.

High-Torque Motor
Motor will work with all existing 24-volt thermostats. High-torque means reliable, trouble-free service for many years.

Adjustable Aluminum Blades
Interlocking blades adjust in 2 inch increments.

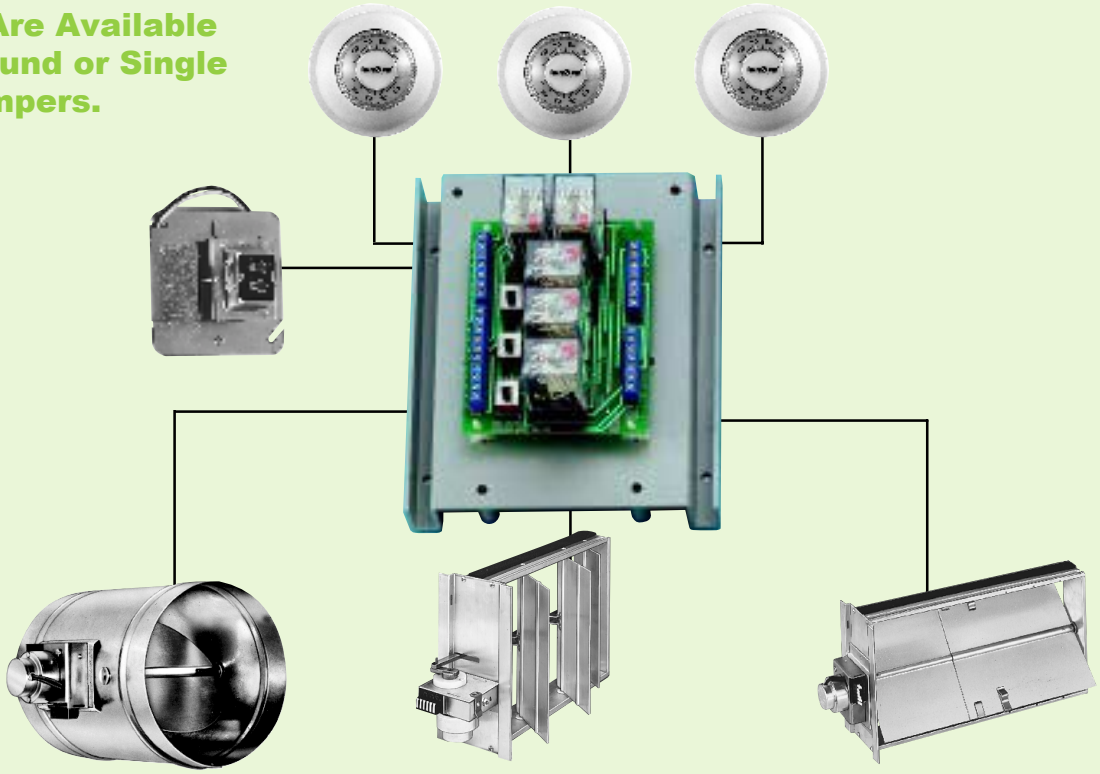
Multiple Sizes
Eight Damper Sizes cover 30 of the most common size requirements.

Quick Installation & Wiring
Damper attaches to the duct by use of a new clip. No screws or screwdriver are required. Easy wiring.

Neoprene Gasketing
Minimizes leakage and reduces metal-to-metal rattle.

Three Year Limited Warranty
Damper motor guaranteed for three years after installation.

DuroZone Systems Are Available With Multi-Blade, Round or Single Blade Multi-Size Dampers.



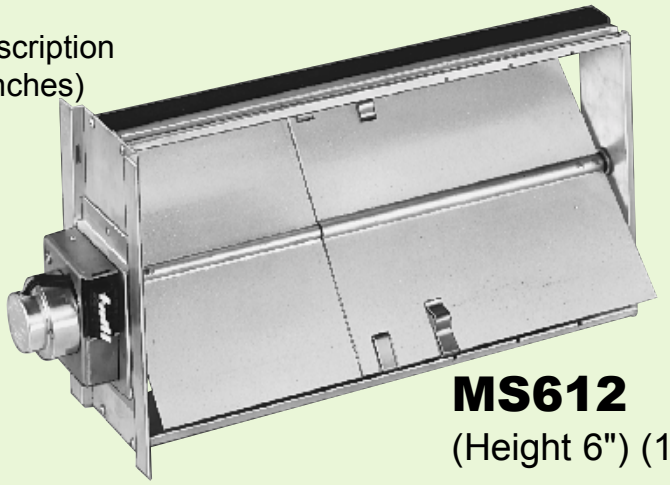
Round Damper | Multi-Blade Damper | Multi-Size Damper

WIDTH

(The last 2 digits of Product Description denote the maximum width in inches)

DUCT HEIGHT

(Available In 6", 8", 10", 12")



MS612

(Height 6") (12" Maximum Width)

Series MS Dampers Are Available For 6", 8",10", & 12" Duct Heights.
The Width Is Adjustable in 2" Increments.

Item#	Model	Duct Height	Minimum Width	Maximum Width	Approx. Weight
37200	MS612	6"	8"	12"	4lb.
37201	MS620	6"	14"	20"	5lb.
37202	MS816	8"	10"	16"	5lb.
37203	MS824	8"	18"	24"	6lb.
37204	MS1016	10"	10"	16"	5lb.
37205	MS1024	10"	18"	24"	7lb.
37206	MS1216	12"	12"	16"	6lb.
37207	MS1224	12"	18"	24"	7lb.

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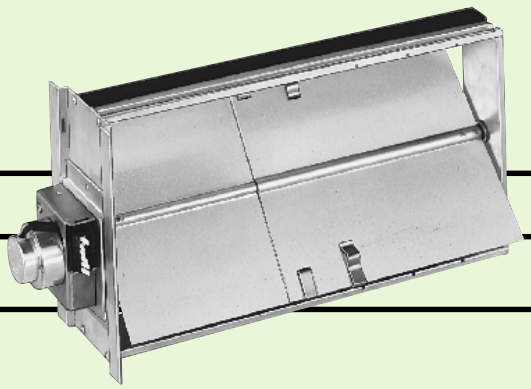
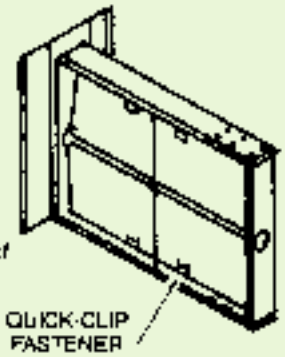
INSTALLATION INSTRUCTIONS

MS SERIES MULTI SIZE DAMPER



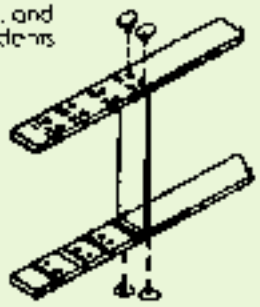
SHIPPED COMPLETE WITH DAMPER OPERATOR AND DAMPER HARDWARE.

1. Determine duct size and size of damper required.



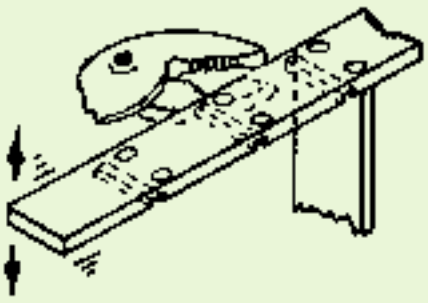
2. Remove four (4) screws from frame end.

3. Adjust damper blades to desired size, and position Quick Clip Fasteners in indents on blades to secure blade hooves.



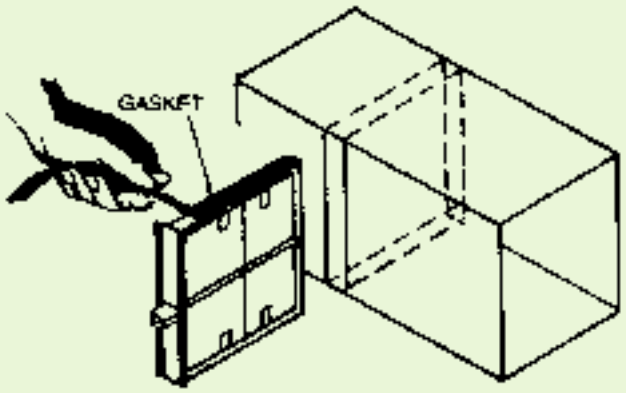
4. Replace same four (4) screws as in Step 2 tighten completely.

5. With pliers, snap off excess frame at score mark bending downward first, then upward.



CAUTION
Do not bend too far initially or the frame could be damaged.

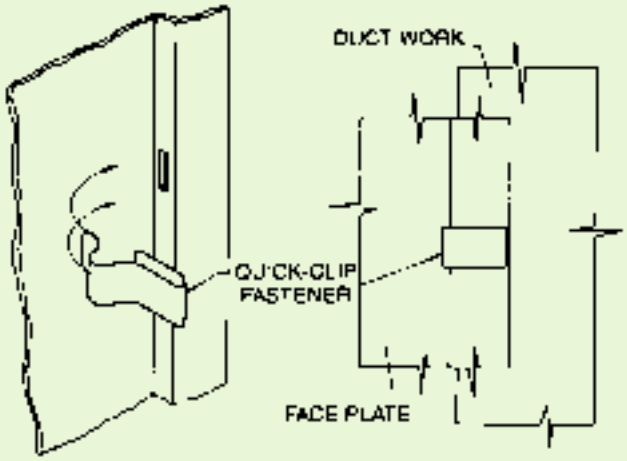
6. Fit Neoprene weatherstrip (included) to size before installing damper. (Do not cover blade pivot at end opposite motor.)



7. At selected damper location, cut a 1 3/8 inch-wide slot inside of duct.

8. Slide damper into position in duct.

9. Slide Quick Clip Fasteners outward to secure damper.



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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

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• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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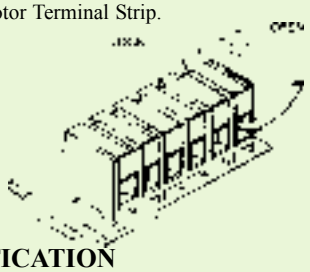
BP035409

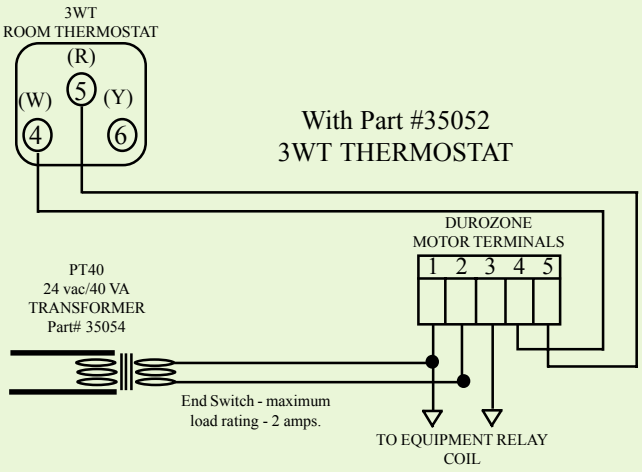
MOTOR TERMINALS

1. Trim 1/4" off the end of the Control Wiring.
2. Flip the white tab up on the Damper Motor Terminal Strip.
3. Insert the trimmed Control Wire.
4. Flip the white tab down.

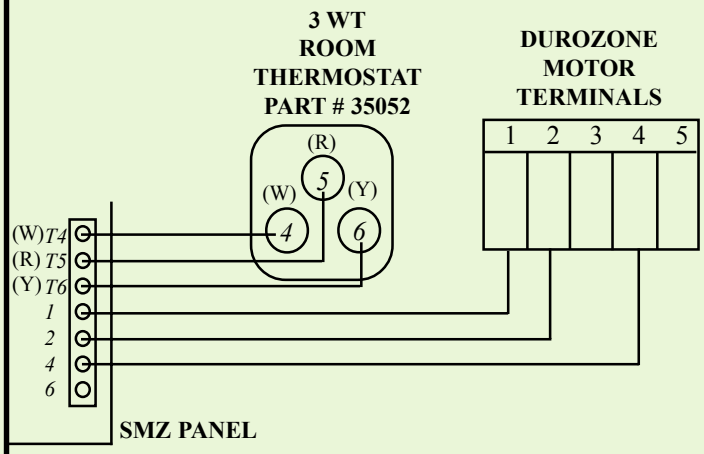


MOTOR TERMINAL IDENTIFICATION

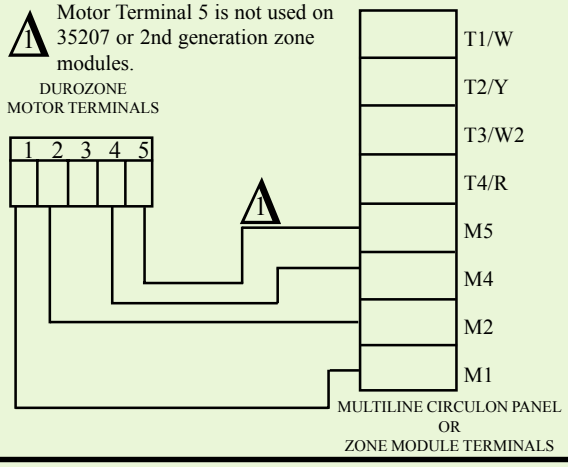
Terminals 1 & 2: 24 volt input.
Terminals 4 & 5: Thermostat Connections - Closing 4 & 5 will open damper. Opening 4 & 5 will close damper.
Terminal 3: End switch - Connecting an equipment relay across 1 & 3 of damper motor will activate relay when damper is open.



With Part# 35217/35226/35227/35228/35229



With Part# 35200/35207
Multiline Multizone 8 Circulon Panel/Multizone 8-SBC or Zone Modules



ITEM#	CODE	DUCT HEIGHT	MINIMUM WIDTH	MAXIMUM WIDTH
37200	MS612	6"	8"	12"
37201	MS620	6"	14"	20"
37202	MS816	8"	10"	16"
37203	MS824	8"	18"	24"
37204	MS1016	10"	10"	16"
37205	MS1024	10"	18"	24"
37206	MS1216	12"	12"	16"
37207	MS1224	12"	18"	24"

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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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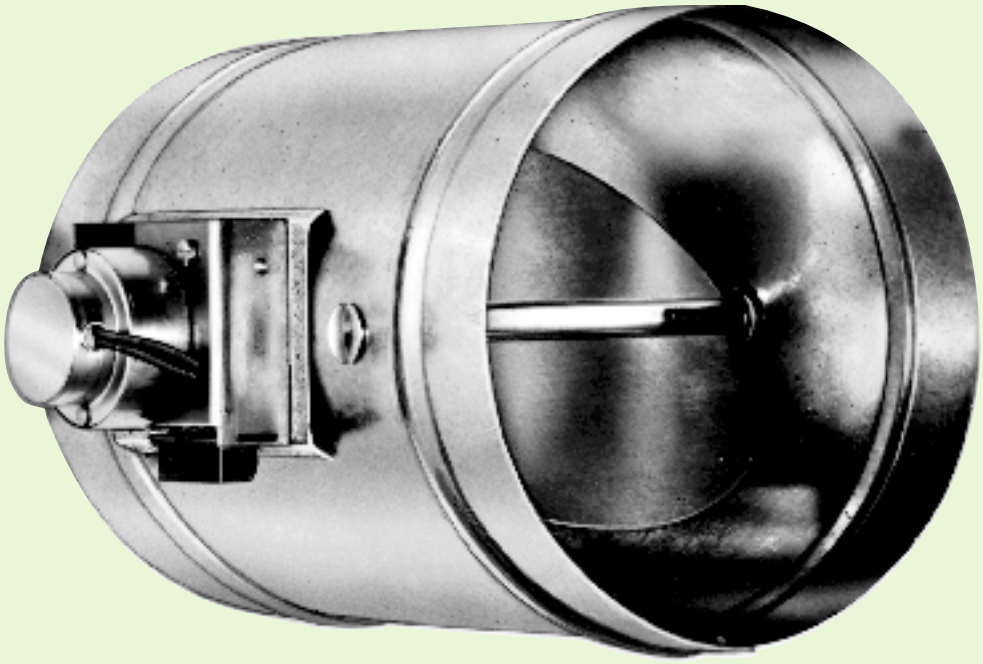
DuroZone®

MULTILINE®

RD Damper

Round Zone Damper



Durable Galvanized Steel Construction
Housing and blade made of galvanized steel with reinforcing beads for maximum durability.

High-Torque Motor
Motor will work with all existing 24-volt thermostats. High-torque means reliable, trouble-free service for many years.

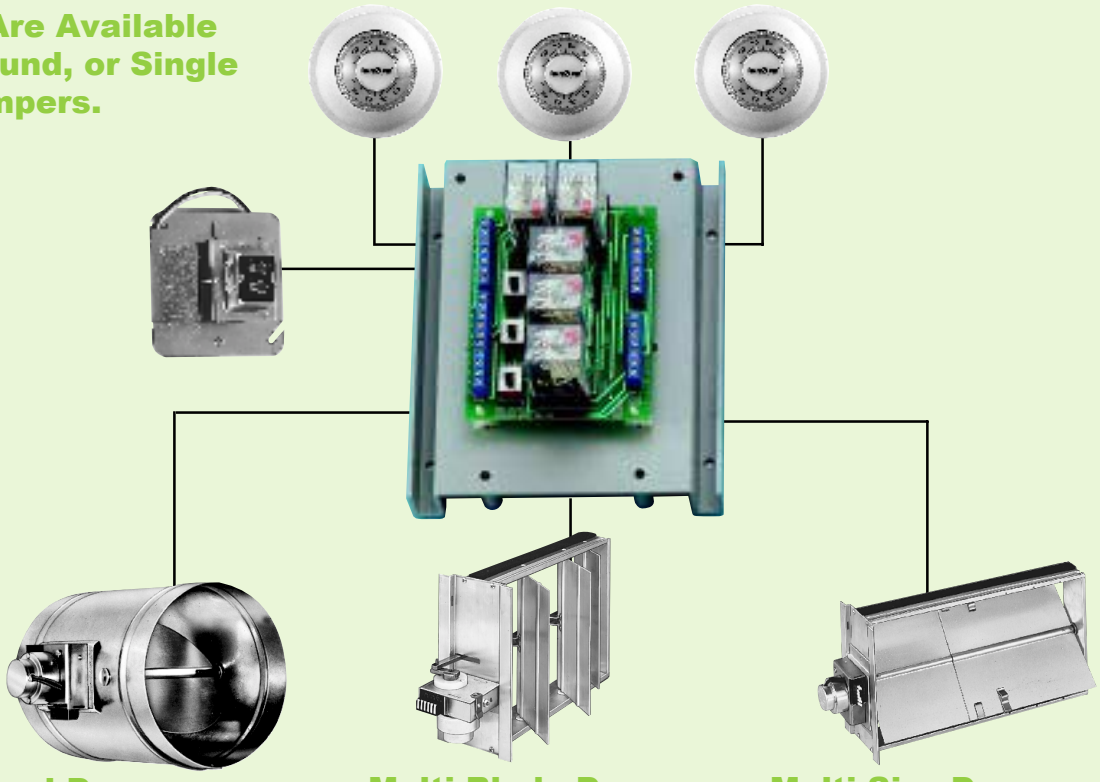
Low-Leakage, Single-Blade Design
Insures smooth operation and efficient sealing for maximum control of air flow.

Quick Installation & Wiring
Damper attaches to the duct by use of nylon ties or screws. Easy wiring, no screwdriver required.

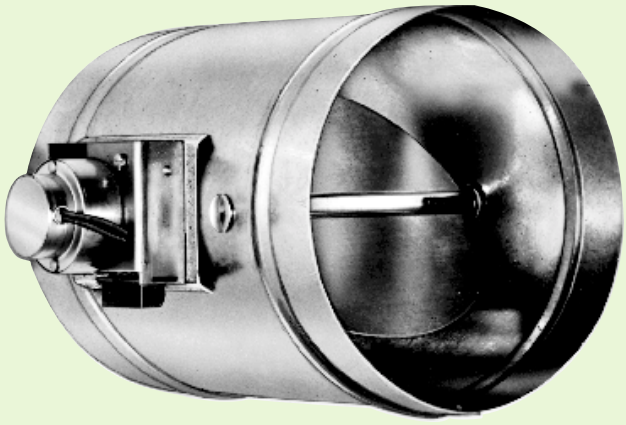
Round Housing
Designed for use with flexible ducting or round duct.

Three Year Limited Warranty
Damper motor guaranteed for three years after installation.

DuroZone Systems Are Available With Multi-Blade, Round, or Single Blade Multi-Size Dampers.



Round Damper | Multi-Blade Damper | Multi-Size Damper



Round Style (RD) Series Dampers.

Item #	Model	Approximate Diameter	Approximate Length Of Housing	Gauge Of Steel (For Housing)
35038	RD5	5”	9”	24
35039	RD6	6”	9”	24
35040	RD7	7”	9”	24
35041	RD8	8”	9”	24
35042	RD9	9”	11”	22
35043	RD10	10”	11”	22
35044	RD11	11”	11”	22
35045	RD12	12”	14”	22
35046	RD13	13”	14”	22
35047	RD14	14”	14”	22
35057	RD16	16”	16”	22
35058	RD18	18”	19”	22

NOTE: For Fresh-Air Dampers, Simply Change The First Two Digits of the Item# From 35 to 38

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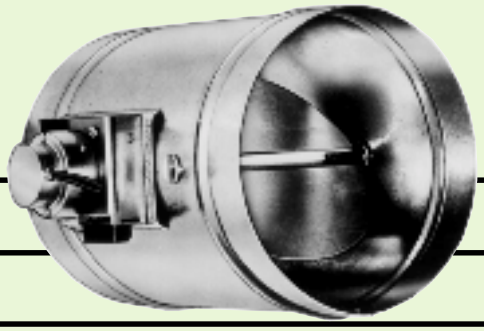
DuroZone®



INSTALLATION INSTRUCTIONS

RD SERIES ROUND DAMPER

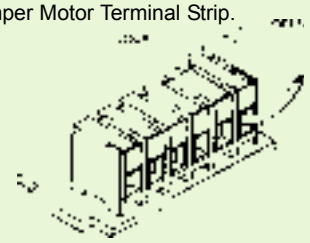
INSTALLATION

In flexible round duct
Slip the duct over the ends of the DuroZone section & strap it into place.

In rigid round duct
Slip the duct over the DuroZone section & screw it into place.

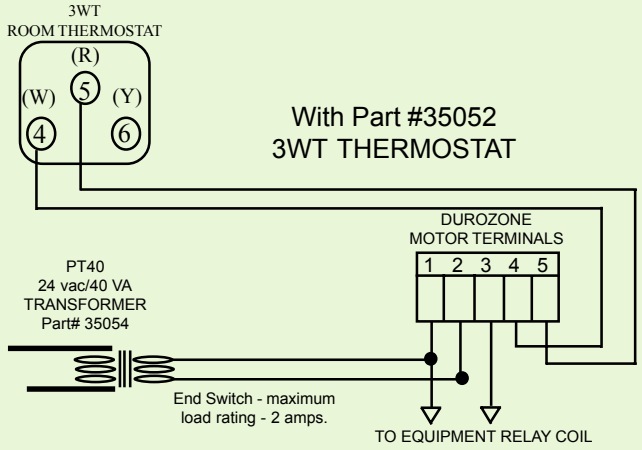
MOTOR TERMINALS

1. Trim 1/4" off the end of the Control Wiring.
2. Flip the white tab up on the Damper Motor Terminal Strip.
3. Insert the trimmed Control Wire.
4. Flip the white tab down.

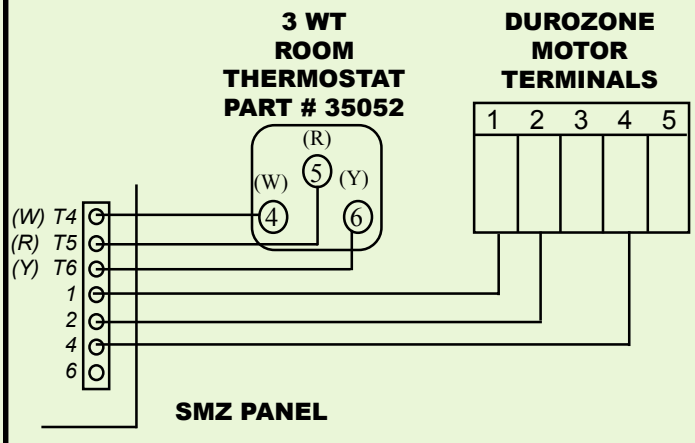


MOTOR TERMINAL IDENTIFICATION

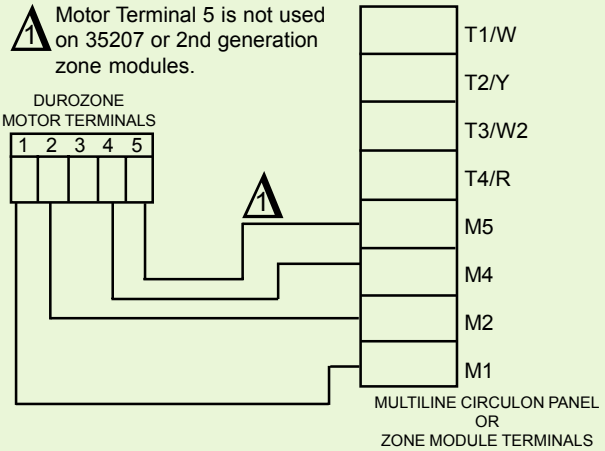
Terminals 1 & 2: 24 volt input.
Terminals 4 & 5: Thermostat Connections - Closing 4 & 5 will open damper. Opening 4 & 5 will close damper.
Terminal 3: End switch - Connecting an equipment relay across 1 & 3 of damper motor will activate relay when damper is open.



With Part# 35217/35226/35227/35228/35229



With All
Multiline Multizone 8 Circulon Panel/Multizone 8-SBC or Zone Modules



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ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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DuroZone®
MULTILINE®

SPRD Damper
Round Spring Return Damper

Durable Galvanized Steel Construction
Housing and blade made of galvanized steel with reinforcing beads for maximum durability.

Multiple Styles
Available in both 24 volt (SPRD024) and 110 volt (SPRD110). Reversible high torque motor that can mount on either side of the housing for spring open or spring close operation.

Low Leakage, Single-Blade Design
Insures smooth operation and efficient sealing for maximum control of air flow.

Quick Installation & Wiring
Damper attaches to duct by use of nylon ties (supplied) or screws. Easy wiring, no screwdriver required.

Adjustable Stop
Allows air flow adjustment by limiting amount of opening.

Three Year Limited Warranty
Damper motor guaranteed for three years after installation.

SPRD024 & SPRD110
Round Spring Return Dampers

DuroZone Spring-Return Round Dampers come in sizes 5 to 12 inches in diameter. A powerful spring closes or opens the damper blade. The damper blade will remain open or closed, as long as power is supplied to the motor. When closed, the blade stops against a vinyl nitrile gasket for a near-airtight seal. Dampers are shipped with 4 locking Dyn-O-Ties for flexible duct installations.

Ordering Information

UL Listed

Spring Return Damper 24 Volt
SPRD024 (Spring Return) Round Dampers

ITEM#	MODEL	DIAMETER
37046	SPRD024-5	5 inches
37047	SPRD024-6	6 inches
37048	SPRD024-7	7 inches
37049	SPRD024-8	8 inches
37050	SPRD024-9	9 inches
37051	SPRD024-10	10 inches
37052	SPRD024-11	11 inches
37053	SPRD024-12	12 inches

Spring Return Damper 110 Volt
SPRD110 (Spring Return) Round Dampers

ITEM#	MODEL	DIAMETER
37076	SPRD110-5	5 inches
37077	SPRD110-6	6 inches
37078	SPRD110-7	7 inches
37079	SPRD110-8	8 inches
37080	SPRD110-9	9 inches
37081	SPRD110-10	10 inches
37082	SPRD110-11	11 inches
37083	SPRD110-12	12 inches

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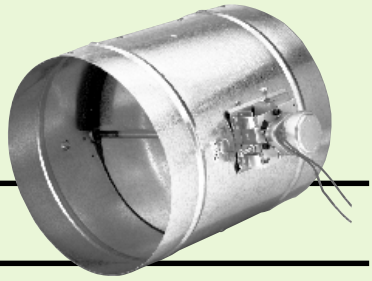


INSTALLATION INSTRUCTIONS

SPRD024 SPRING RETURN DAMPER (24 volt)

DuroZone SPRD024 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD024 dampers are shipped in the Spring Closed (S.C.) position. To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION

Blue leads: 24 volt input AC Only

- IMPORTANT -

This motor is designed for use with 24 VAC power source.

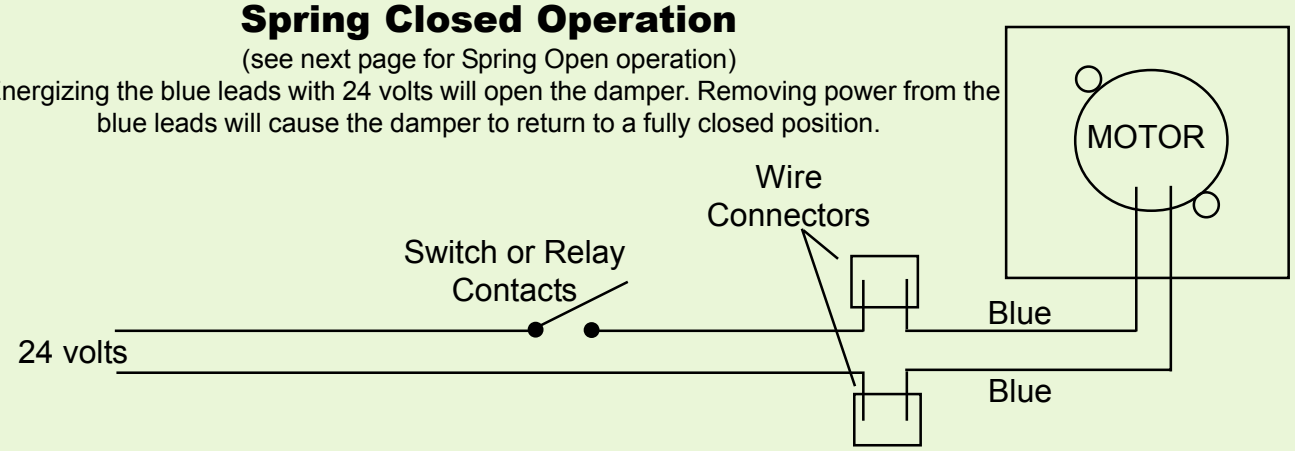
All DuroZone Spring Return Dampers are Listed with Underwriters Laboratories (UL); File# 2C54 & Canadian Standard Association (CSA); File# LR78550.

- WIRE ACCORDING TO LOCAL CODE -

Spring Closed Operation

(see next page for Spring Open operation)

Energizing the blue leads with 24 volts will open the damper. Removing power from the blue leads will cause the damper to return to a fully closed position.



SPRD024 dampers are equipped with a Flow Adjustment Screw to limit the opening of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position. This screw and locknut is located between the two mounting clips.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the closing of the damper. Adjustment is the same as above.

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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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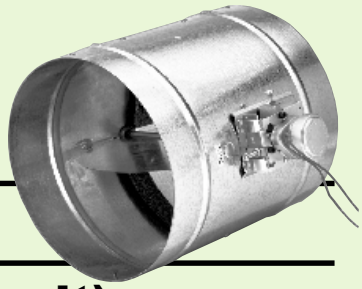


INSTALLATION INSTRUCTIONS

SPRD024 SPRING RETURN DAMPER (24 volt)

DuroZone SPRD024 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD024 dampers are shipped in the Spring Closed (S.C.) position. To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION

Blue leads: 24 volt input AC Only

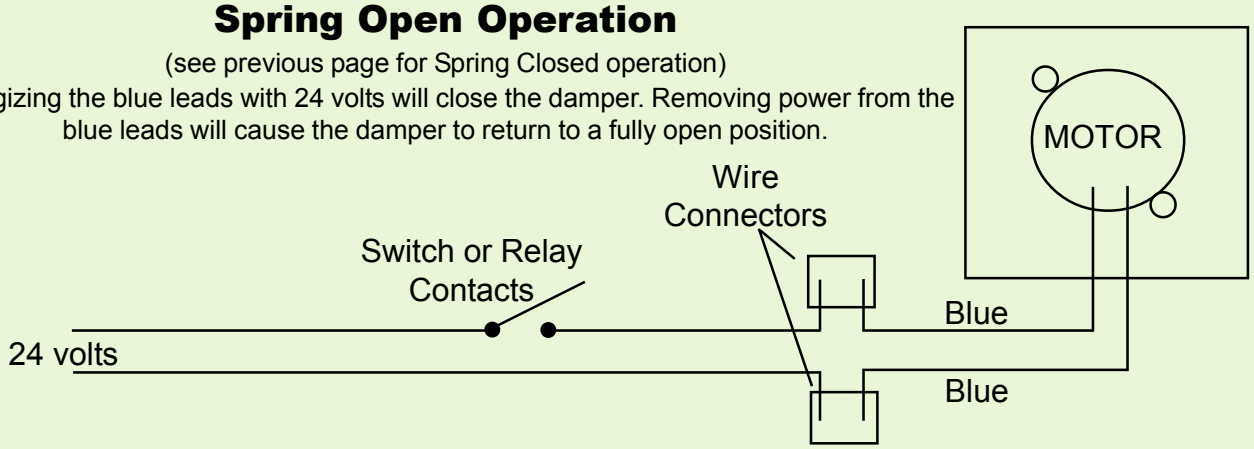
- IMPORTANT -

This motor is designed for use with 24 Volt VAC power source.
All DuroZone Spring Return Dampers are Listed with Underwriters Laboratories (UL); File# 2C54 & Canadian Standard Association (CSA); File# LR78550.

- WIRE ACCORDING TO LOCAL CODE -

Spring Open Operation

(see previous page for Spring Closed operation)
Energizing the blue leads with 24 volts will close the damper. Removing power from the blue leads will cause the damper to return to a fully open position.



SPRD024 dampers are equipped with a Flow Adjustment Screw to limit the closing of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position.This screw and locknut is located between the two mounting clips.

To adjust:
1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the open position of the damper. Adjustment is the same as above.

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ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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DuroZone®

INSTALLATION INSTRUCTIONS

SPRD110 SPRING RETURN DAMPER (110 volt)

DuroZone SPRD110 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD110 dampers are shipped in the Spring Closed (S.C.) position.To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION

Black and White leads: 110 volt input (Black = hot / White = common)Green lead: Ground

- IMPORTANT -

This motor is designed for use with 110 - 120 VAC power source.

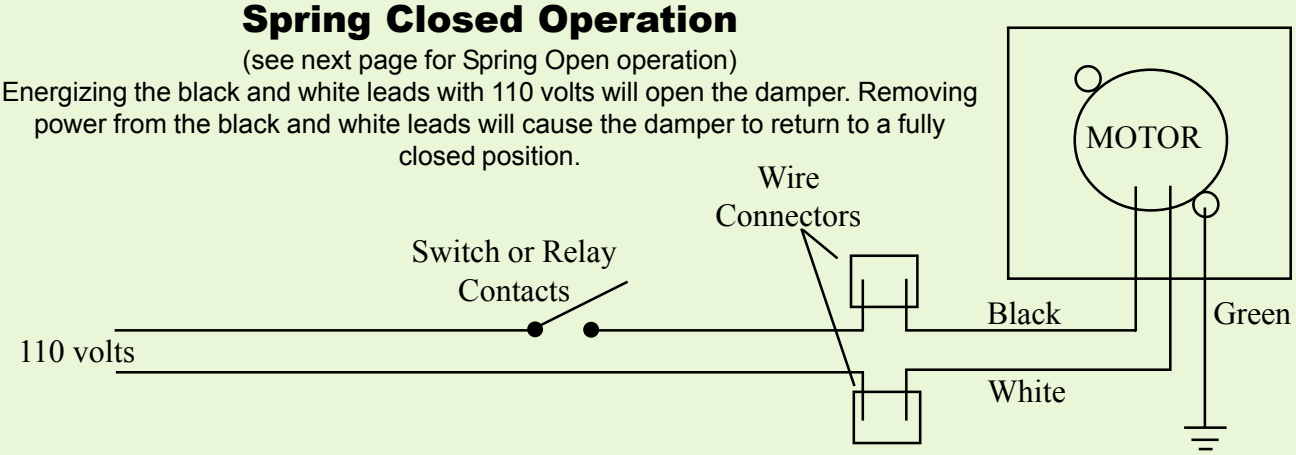
All DuroZone Spring Return Dampers are Listed with UnderWriters Laboratories (UL); File# 2C54 & Canadian Standard Association (CSA); File# LR78550.

- WIRE ACCORDING TO LOCAL CODE -

Spring Closed Operation

(see next page for Spring Open operation)

Energizing the black and white leads with 110 volts will open the damper. Removing power from the black and white leads will cause the damper to return to a fully closed position.



SPRD110 dampers are equipped with a Flow Adjustment Screw to limit the opening of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the closing of the damper. Adjustment is the same as above.

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Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:

• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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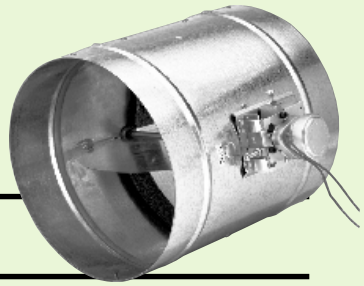
DuroZone®



INSTALLATION INSTRUCTIONS

SPRD110 SPRING RETURN DAMPER (110 volt)

DuroZone SPRD110 Spring Return Dampers can be configured for either Spring Open or Spring Closed operation. A mounting plate, with quick release clips is attached to both sides of the damper. The Spring Closed side is identified S.C. and the Spring Open side is identified S.O. All SPRD110 dampers are shipped in the Spring Closed (S.C.) position.To change to Spring Open (S.O.) operation, simply unclip motor from damper housing, open damper blade and then clip the motor on the Spring Open (S.O.) side mounting bracket.

MOTOR LEAD IDENTIFICATION

Black and White leads: 110 volt input (Black = hot / White = common) Green lead: Ground

- IMPORTANT -

This motor is designed for use with 110 - 120 VAC power source.

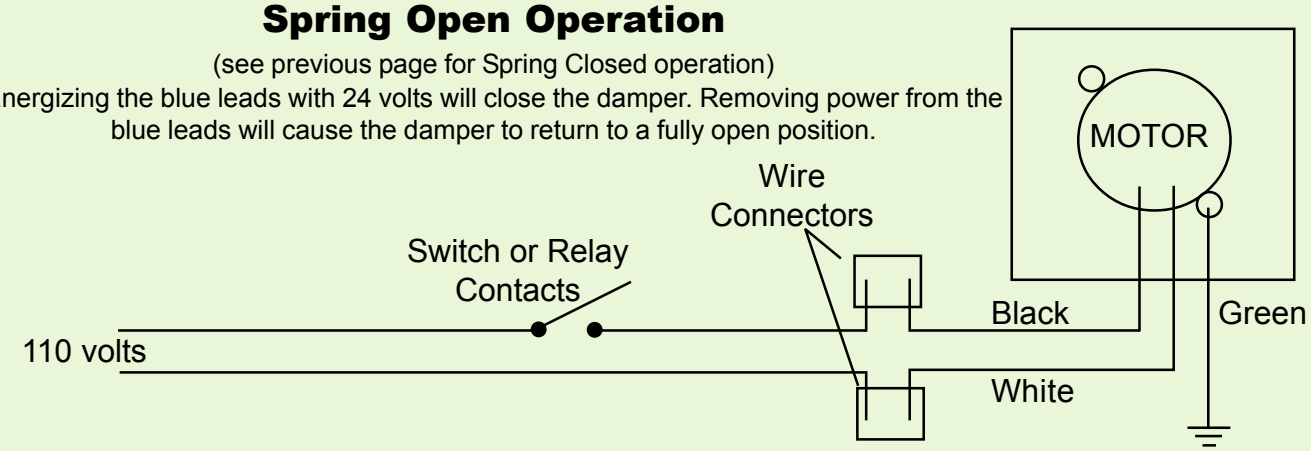
All DuroZone Spring Return Dampers are Listed with UnderWriters Laboratories (UL); File# 2C54 & Canadian Standard Association (CSA); File# LR78550.

- WIRE ACCORDING TO LOCAL CODE -

Spring Open Operation

(see previous page for Spring Closed operation)

Energizing the blue leads with 24 volts will close the damper. Removing power from the blue leads will cause the damper to return to a fully open position.



SPRD110 dampers are equipped with a Flow Adjustment Screw to limit the opening of the blade, thus limiting air flow. The Adjustment Screw is factory set to the full (open) position.

To adjust:

1. Loosen the adjustment screw locknut.
2. Turn the adjustment screw clockwise to desired setting.
3. Tighten the adjustment screw locknut.
4. Subsequent adjustments can be made by turning the adjustment screw clockwise to decrease air flow or counterclockwise to increase air flow. A second screw, located on the side of the damper motor, allows limited adjustment of the open position of the damper. Adjustment is the same as above.

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ALL DuroZone DAMPERS FEATURE:

• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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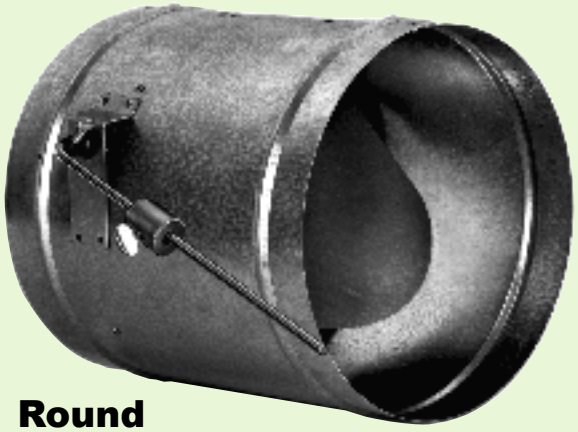
DuroZone®
MULTILINE®

Pressure Relief Dampers

"Dumper Dampers"

Rectangular Pressure Relief Dampers



Round Pressure Relief Dampers

DuroZone Pressure Relief Dampers are used to relieve duct systems of pressure build up created, as zones are satisfied and zone dampers travel to a closed position. The DuroZone Pressure Relief Dampers do this in a simple and reliable fashion; based on barometric/static pressure in the duct system.

A weighted arm is attached to a damper blade. This weight is set to keep the damper closed when the system is off or all zones are calling. When pressure builds up in the duct system due to satisfied zones, the pressure opens the damper blade and "by-passes" to an unconditioned area or back to the return air duct.

DuroZone Pressure Relief Dampers are available in both rectangular and round configurations.

Rectangular Pressure Relief Dampers

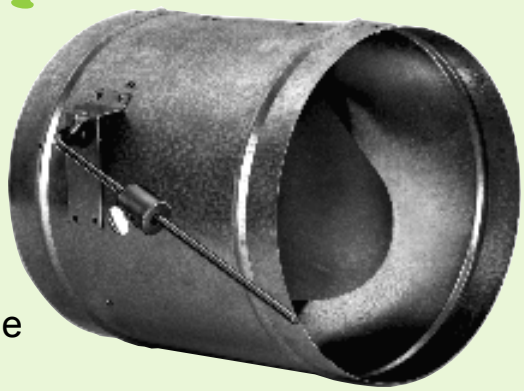
- Plated Steel Counterbalance Rod & Weight
- Sintered Bronze Oil Impregnated Bushings
- Thumb Screws For Easy Adjustment
- Extruded Aluminum Frame
- Aluminum Blade
- Hardware & Brackets For Either Flush Or In Line Mounting

Ordering Information

ITEM#	MODEL	BYPASS AT 1200 FPM
35063	DD 12x8	700 CFM
35064	DD 18x8	1100 CFM
35068	DD 20x20	1600 CFM
35069	DD 20x12	1900 CFM

Round Pressure Relief Dampers

- Plated Steel Counterbalance Rod & Weight
- Sintered Bronze Oil Impregnated Bushings
- Thumb Screws For Easy Adjustment
- Galvanized Steel Construction
- Ability To Mount Counterbalance Rod On Either Side



Ordering Information

ITEM#	MODEL	BYPASS AT 1200 FPM
35070	DDRD-8	400 CFM
35071	DDRD-10	650 CFM
35072	DDRD-12	950 CFM
35073	DDRD-14	1300 CFM
35074	DDRD-16	1700 CFM

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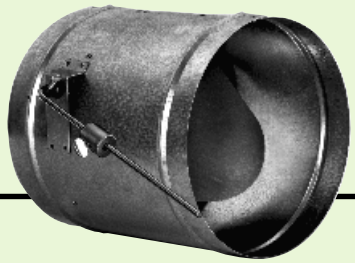
DuroZone®



INSTALLATION INSTRUCTIONS

ROUND PRESSURE RELIEF DAMPERS (DUMPER DAMPERS)

DuroZone Pressure Relief Dampers are used to automatically relieve Duct Systems of the pressure build up created, as zones are satisfied and dampers travel to a closed position. The Duro Zone Pressure Relief Damper provides a simple and reliable means for accomplishing this.

One common practice is the passing of "Dumped" air from the supply duct to the return duct. Should you elect this method of bypass, the connection from the supply should attach to the return duct a minimum of 10 feet away from the blower. This will allow sufficient mixing of the air streams to prevent too cold or too hot air passing over the heat exchanger or air conditioning coil. Dampers are available in standard sizes. Proper size is to be determined by the installer based on standard practice for duct sizing. The dampers can be doubled up where a discharge in excess of standard sizes is required. You will find that sizing is not critical.

ROUND PRESSURE RELIEF DAMPERS

Special care should be exercised when using Round Pressure Relief Dampers.

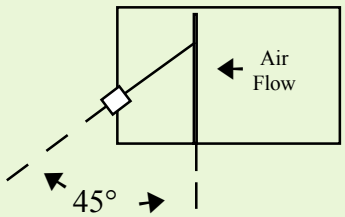
1-The Damper should be fully supported wherever it is mounted. It should not be just suspended between two pieces of Flexible Ducting.

2-The pivot axis of the counterbalance arm and weight must be parallel with the ground. Failure to do so may prevent the damper from fully closing.

Setting The Damper For Operation

1-Install the counterbalance rod by slipping the short end into the 1/4" hole in the end bearing. Set the rod angled approximately 45° above the plane of the damper blade. Lock the rod into position with the thumb screw in the damper bearing.

2-Slip the counterweight to the top of the rod and tighten the thumb screw by hand to temporarily fasten the counterweight.



3-Set all thermostats so that all zones call for heat. Relocate the pressure relief damper counterweight to a point which keeps damper closed without flutter.

4-Reset the thermostats to the desired system settings. When less than all zones call, the pressure relief damper should open to relieve excess pressure. When all zones call, the pressure relief damper should be closed.

NOTE: The Pressure Relief Damper adjustments are sufficient to take care of most conditions encountered. In rare cases it may be necessary to add or reduce weight. To add weight, slide several 1/4" washers onto the rod above the weight. You may want to reduce weight by cutting off a section of the counterbalance rod.

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Duro Dyne Midwest • Fairfield, OH 45011 • Phone: 513-870-6000 • Fax: 513-870-6005
Duro Dyne West • Santa Fe Springs, CA 90670 • Phone: 562-926-1774 • Fax: 562-926-5778
Duro Dyne Canada • Lachine • Quebec • Canada • Phone: 514-422-9760 • Fax: 514-636-0328

ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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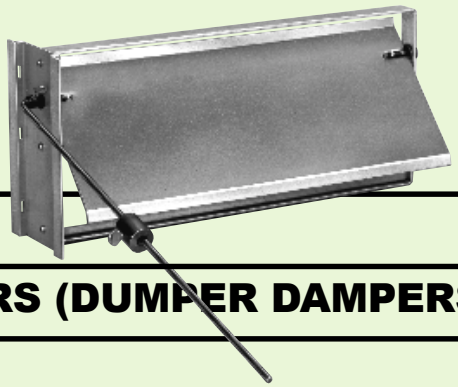
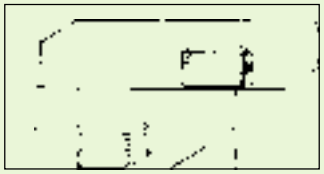


INSTALLATION INSTRUCTIONS

RECTANGULAR PRESSURE RELIEF DAMPERS (DUMPER DAMPERS)

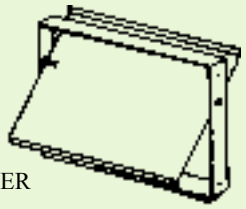
TWO COMMON METHODS OF DISCHARGING AIR



Mount the damper flush on the side of the duct and discharge air into the equipment room.

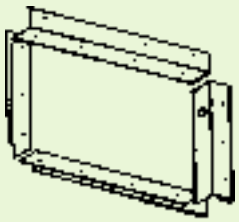
Install a take off in the side of the duct to direct "dumped air" to some specific area. The damper is installed through a 3 3/8" slot cut into the ductwork.

DUROZONE DUMPER DAMPERS INCLUDE:



DAMPER

COUNTERBALANCE ROD AND WEIGHT

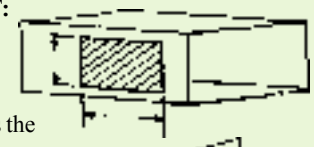


4 FLANGES FOR FLUSH MOUNTING

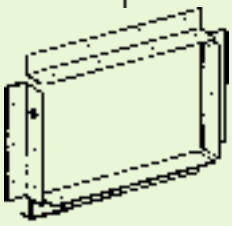
NOTE: Use necessary installation screws provided. For in line screws you must use #6x3/8" sheet metal screws to mount the plate to the duct. Longer screws will interfere with proper damper operation.

FACE PLATE FOR "IN LINE" MOUNTING

INSTALLATION - FLUSH MOUNT:



1. Cut a hole in the duct the same size as the damper ordered.



2. Slip the flanges on the damper frame and secure the flanges to the duct using the screws provided. Keep the damper centered on the hole to prevent interfering with the damper operation.

SETTING DAMPER FOR OPERATION

1-Install the counterbalance rod by slipping the short end into the 1/4" hole in the end bearing. Set the rod angled approximately 45° above the plane of the damper blade. Lock the rod into position with the thumb screw in the damper bearing.

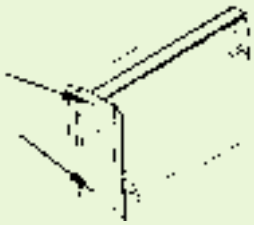
2-Slip the counterweight to the top of the rod and tighten the thumb screw by hand to temporarily fasten the counterweight.

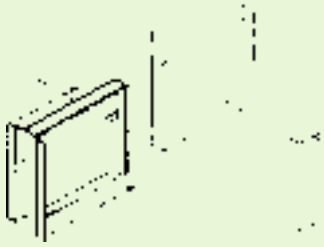
3-Set all thermostats so that all zones call for heat. Relocate the pressure relief damper counterweight to a point which keeps damper closed without flutter.

4-Reset the thermostats to the desired system settings. When less than all zones call, the pressure relief damper should open to relieve excess pressure. When all zones call, the pressure relief damper should be closed.

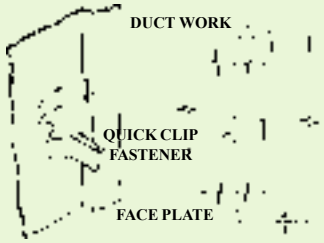
INSTALLATION - IN-LINE MOUNT:

1. Mount the face plate on the damper by means of the screws supplied. Be sure that the bearing extending through the face plate clears the hole in the face plate.





2. Cut a 3-3/8" slot in the discharge duct. Be careful to cut the slot on the correct side of the duct so the damper will open away from the main duct. This is important as the damper swings open in one direction only.



3. Slide the Quick Clip fasteners outward to secure damper.

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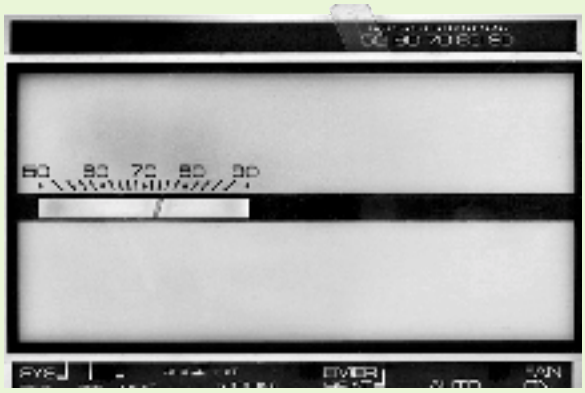
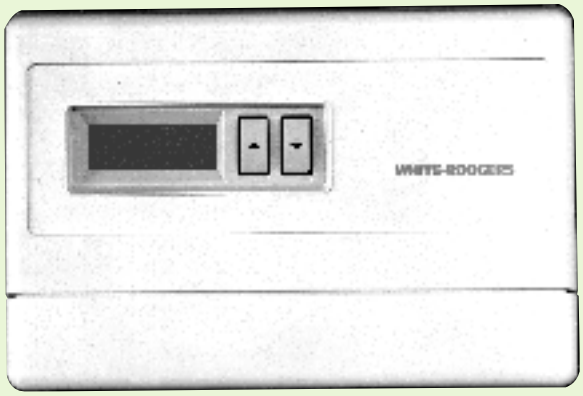
Thermostats





The best Zone Control System in the world is useless without reliable thermostats. DuroZone offers a full line of thermostats specifically tested for operation with DuroZone control panels and dampers. All DuroZone thermostats feature standard terminal identification for easy hookup to any DuroZone control panel.

HEATING/COOLING ZONE THERMOSTATS

3WT Three Wire Thermostat
Item# 35052

3 wire SPDT thermostat.
Hermetically sealed, reed switch construction.
Use on Zones 2 and above on SMZ Panels.
Use with MSSB (#35214) for Zone 1.
Terminals: R, W, Y.

MSSB Switching Subbase
Item# 35214

6 wire subbase with Heat - Off - Cool & Fan Auto - On switches.
For use with 3WT thermostat. 3WT & MSSB combination used for system control of SMZ panels on Zone 1.
Terminals: R, W, Y, G, B, O.

DRS Round Thermostat
Item# 35180

Honeywell T87F style thermostat. 3 wire SPDT mercury bulb.
DuroZone logo printed on face.
Terminals: R, W, Y.
Use on Zones 2 and above on SMZ Panels.
Use with DRSMS (#35181) for Zone 1.
Supplied with 3 wire wallplate.

DRSMS Round Zone 1 Subbase
Item# 35181

6 wire subbase with Heat - Off - Cool & Fan Auto - On switches.
For use with DRS thermostat. DRS & DRSMS combination used for system control of SMZ panels on Zone 1.
Terminals: R, Y, W, G, B, O.

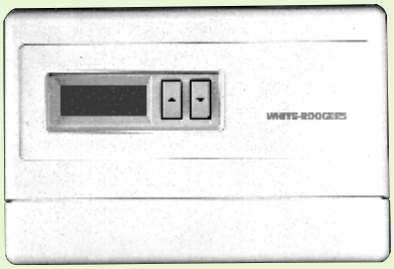
DT-4 Digital Thermostat
Item# 35190

Non programmable battery powered.
Terminals: R, W, Y, G, B, O.
Use on SMZ Panels.

DT-3 Digital Set Back Thermostat
Item# 35191

5+1+1 programmable battery powered
Terminals: R, W, Y,G,B,O.
Use on SMZ Panels.

Set Back Thermostat
Item# 35173



Electronic clock thermostat. Heat - Off - Cool & Fan Auto - On switches. Battery powered. 24 volts not needed at thermostat. 5 + 1 + 1 programming.
Terminals: R, W, Y, G, B, O. Use on all SMZ Panels.

DT-AC Auto Changeover Thermostat
Item# 35192

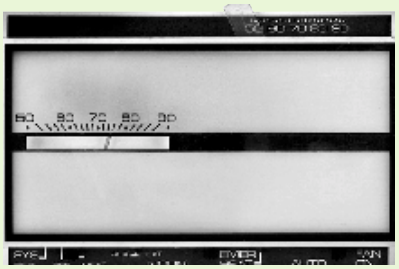
5 +2 programming. Auto Changeover
Electronic clock thermostat. Heat - Off - Cool & Fan Auto - On switches. Battery powered. 24 volts not needed at thermostat.
Terminals: R, W, Y, G, B, O. Use on all SMZ Panels.

HEAT PUMP ZONING THERMOSTATS

Zone 1 Heat Pump Set Back Thermostat
Item# 35174

Electronic clock thermostat. 2 stage heat, 1 stage cool. 5 + 1 + 1 programming. Emergency Heat - Heat - Off - Cool and Fan Auto - On switches. 24 volt powered.
Terminals: R, C, W1, W2, Y, G, B, O, E, L, P.
Use on Zone 1 of SMZ-HP Panels.

Zone 1 Heat Pump Thermostat
Item# 35176



2 stage heat, 1 stage cool. Emergency Heat - Heat - Off - Cool and Fan Auto - On switches.
Terminals: R, W1, W2, Y, G, B, O, E.
Use on Zone 1 of SMZ-HP Panels.

Dual Bulb Thermostat Item# 35177

2 stage heat, 2 stage cool thermostat. No switching.
Terminals: Rc, Rh, Y1, Y2, W1, W2. Use on Zone 2 and up on SMZ-HP Panels.

DT-AC Auto Changeover Thermostat
Item# 35192

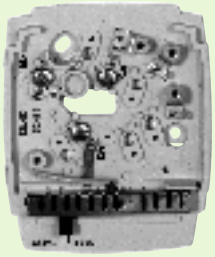
5 + 2 programming. Auto Changeover Electronic clock thermostat. Heat - Off - Cool & Fan Auto - On switches. Battery powered. 24 volts not needed at thermostat.
Terminals: R, W, Y, G, B, O. Use on all SMZ Panels.

ACCESSORY THERMOSTATS

Wall Thermostat with Subbase
Item# 35061

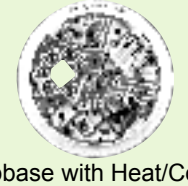
Convenient combination of 3WT thermostat and SB-1 subbase. Allows for control of damper for both heating & cooling situations.
*Not for use with Zone systems.
Terminals: R, W, Y.

SB-1 Subbase
Item# 35056



3 wire subbase with Heat/Cool switch.
For use with 3WT thermostat.
When set for “Heat”, damper will open on temperature fall.
When set for “Cool”, damper will open on temperature rise.
*Not for use with Zone systems.
Terminals: R, W, Y.

DRSHCS
Round Heat/Cool Subbase
Item# 35182



3 wire subbase with Heat/Cool switch for use with DRS thermostat. When set for “Heat”, damper will open on temperature fall. When set for “Cool”, damper will open on temperature rise.
*Not for use with Zone systems.
Terminals: R, W, Y.

Remote Bulb Thermostat
Item# 35172

SPDT remote bulb thermostat for sensing temperature changes. Use for auto changeover to switch system from heating to cooling.
Terminals: R, W, Y.

DRS3WP
Round 3 Wire Wallplate
Item# 35183

Replacement 3 wire wallplate for DRS. Adds Y terminal to DRS to allow control of heating & cooling.
Terminals: R, W, Y.

APPLICATION CHART

	DESCRIPTION	SMZ ZONE 1	SMZ ZONE 2+	SMZ-HP ZONE 1	SMZ-HP ZONE 2+	SMZ-AC
35052	3WT Three Wire Thermostat	X w/35214	X			X
35061	3TSB Wall Thermostat with Subbase	*Not for use with zone systems.*				
35056	SB-1 Subbase	*Not for use with zone systems.*				
35172	Outdoor Thermostat					
35214	MSSB Switching Subbase	X w/35052				X w/35052
35173	Set Back Thermostat	X	X			X
35174	Zone 1 Heat Pump Set Back Thermostat			X		
35176	Zone 1 Heat Pump Thermostat			X		
35177	Dual Bulb Thermostat				X	
35190	DT-4 Digital Thermostat	X	X			X
35191	DT-3 Digital Set Back Thermostat	X	X			X
35180	DRS Round Thermostat	X w/35181	X			X w/35181
35181	DRSMS Round Zone 1 Subbase	X w/35180				X w/35180
35182	DRSHCS Round Heat/Cool Subbase	*Not for use with zone systems.*				
35183	DRS3WP Round 3 wire Wallplate		X w/35180			
35192	DTAC Auto Changeover Thermostat	X	X	X	X	X

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DT-3

Electronic Programmable Thermostat

TYPICAL APPLICATIONS
ALL ZONES: SMZ-2SW, SMZ-3SW, SMZ-4SW, SMZ-AC

PREPROGRAMMED
Energy Saving 5-1-1 Schedule
Four Time Periods Per Day

BATTERY OPERATED
Allows Maximum System Compatability
Two "AA" (LR6) Batteries Included

EASY INSTALLATION
Separate Base Plate To Aid Installation
Detailed Wiring Diagrams And Instructions

ADJUSTABLE TEMPERATURE SWINGS
Cycle Rate Adjustment For Maximum Comfort
Temperature Differential User Adjustable

ENERGY USAGE MONITOR
Keeps Track Of Actual Operational Time
Separately Stores Running Totals For Today, Yesterday, This Week, Last Week, And Two Weeks

HOLD MODE OPERATION
Allows For Manual Operation
May Be Used For Vacation Setback

TEMPORARY OVERRIDE
Changes Set Temperature Until Next Time Period

COMFORT OVERRIDE
Changes Set Temperature A Set Amount Of Time

FILTER CHANGE REMINDER
Adjustable Change Time From 1 to 999 Hours
Can Be Reset Back To Zero At Any Time

LOW BATTERY INDICATOR
Display Changes To Show Low Battery Condition
45 Seconds Power Hold While Changing Batteries

INFORMATIVE DISPLAY
Time And Temperature Constantly Displayed
Shows Program Period And Set Temperature
Heat And Cool Indicators Light When Unit Is On

ELECTRICAL LOAD LIMIT
1.0 Amps At 24 VAC

COMPRESSOR PROTECTION DELAY
4 Minutes

TEMPERATURE DISPLAY
Selectable Celsius Or Fahrenheit

TIME DISPLAY
Selectable 12 Or 24 Hour

HEATING UNIT SWITCH
E - Fan Controlled By Thermostat
G - Fan Controlled By Heating Unit

SYSTEM SWITCH
3 Position (COOL - OFF - HEAT)

FAN SWITCH
2 Position (ON- AUTO)

TERMINALS
RC, RH, W, Y, G, B, O

PROGRAMMING RESOLUTION
10 Minute Steps (Factory Option 5 Min.)

PROGRAMMING PERIODS
Monday - Friday: 4 Periods Per Day
Saturday: 4 Periods Per Day
Sunday: 4 Periods Per Day

ORDERING INFOMATION

ITEM#	MODEL	DESCRIPTION
35191	DT-3	Digital Setback Thermostat

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DT-4

Electronic Programmable Thermostat

TYPICAL APPLICATIONS
GAS FURNACE - *Standing Pilot*
GAS FURNACE - *Electronic Ignition*
GAS FIRE BOILER
GAS FIRED MILLIVOLT SYSTEM
OIL FIRED BOILER
OIL FIRED FURNACE
ELECTRIC FORCED AIR FURNACE
ELECTRIC AIR CONDITIONER
GAS AIR CONDITIONER
SINGLE STAGE HEAT PUMP
SINGLE TRANSFORMER SYSTEMS
DUAL TRANSFORMER SYSTEMS

LOW BATTERY INDICATOR
Display Changes To Show Low Battery Condition
45 Seconds Power Hold While Changing Batteries

INFORMATIVE DISPLAY
Both Set And Room Temperatures Displayed
Heat And Cool Indicators Light When Unit Is On

EASY INSTALLATION
Separate Base Plate To Aid Installation
Detailed Wiring Diagrams And Instructions

BATTERY OPERATED
Allows Maximum System Compatability
Two "AA" (LR6) Batteries Included

MINIMAL TEMPERATURE SWINGS
Temperature Differential Optional

PHYSICAL DIMENSIONS
3 1/2" (89mm) x 5 1/2" (143mm) x 1 1/4" (36mm)

ELECTRICAL LOAD LIMIT
1.0 Amps At 24 VAC

COMPRESSOR PROTECTION DELAY
3 Minutes

TEMPERATURE DISPLAY
Selectable Celsius Or Fahrenheit

DISPLAY RANGE
32° to 99° F ±2° F
0° to 37° C ±1° C

CONTROL RANGE
40° to 95° F
5° to 35° C

TEMPERATURE ADJUSTMENT
1° Steps

TEMPERATURE DIFFERENTIAL FAHRENHEIT
Preset = 2° : 1° Above, 1° Below Setpoint

TEMPERATURE DIFFERENTIAL CELSIUS
Preset = 1° : 0.5° Above, 0.5° Below Setpoint

HEATING UNIT SWITCH
E - Fan Controlled By Thermostat
G - Fan Controlled By Heating Unit

SYSTEM SWITCH
3 Position (COOL - OFF - HEAT)

FAN SWITCH
2 Position (ON- AUTO)

SAMPLING RESOLUTION
1 Minute Interval

ORDERING INFOMATION

ITEM#	MODEL	DESCRIPTION
35190	DT-4	Digital Thermostat

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DT-AC

Digital Multi-Stage Thermostat

The DT-AC Series Multi-Stage (two stage heat and two stage cool) thermostats with Automatic Changeover offer a unique dual power option. If common (neutral) is available, attach it to terminal C to power the thermostat. If common is not available, the thermostat will use the AA batteries for power. No need to pull a new wire! The thermostat features contemporary styling and Classic White coloring to blend with any room decor.

TYPICAL APPLICATIONS

ALL ZONES: SMZ-2SW, SMZ-3SW, SMZ-4SW, SMZ-AC

FEATURES

- Dual Power Option: Thermostat may be powered using system hot and common from 24 volt transformer, or battery powered (no common required).
- 5+2 Day programming.
- Simultaneous heating and cooling program storage eliminates the need to reprogram each season.
- Time and temperature settings are pre-programmed and easy to change.
- LCD displays setpoint temperature continuously and alternately shows actual time and temperature.
- Automatic changeover.
- Temporary temperature override until next program period.
- Hold temperature button allows manual program override for an indefinite period without changing programming.
- Keypad lockout.
- Selectable °F/°C display.
- Adjustable anticipation.
- Five-minute compressor short cycle protection.
- Temperature display recalibration feature allows user to modify room temperature display to suit individual needs.
- Program reset button.

SPECIFICATIONS

Electrical Rating: 20 to 30 VAC (50/60 Hz) or D.C. 0.05 to 1.5 Amps (load per terminal) 1.5 Amps max. total load (all terminals combined)

Terminals: R, C, G, W, W2, Y, Y2, O, B

ORDERING INFOMATION

ITEM#	MODEL	DESCRIPTION
35192	DT-AC	Digital Multi-Stage Thermostat

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Farmingdale, New York 11735
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DuroZone®

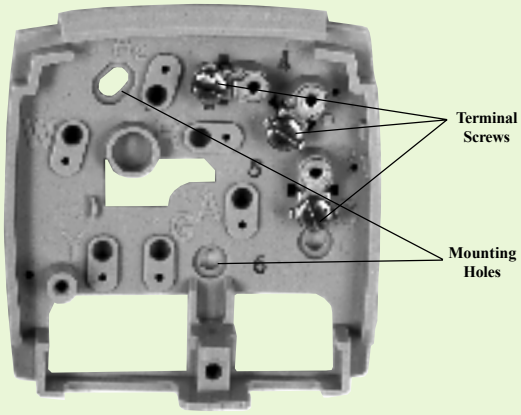
INSTALLATION INSTRUCTIONS

3WT THREE WIRE THERMOSTAT and SB-1 SUBBASE

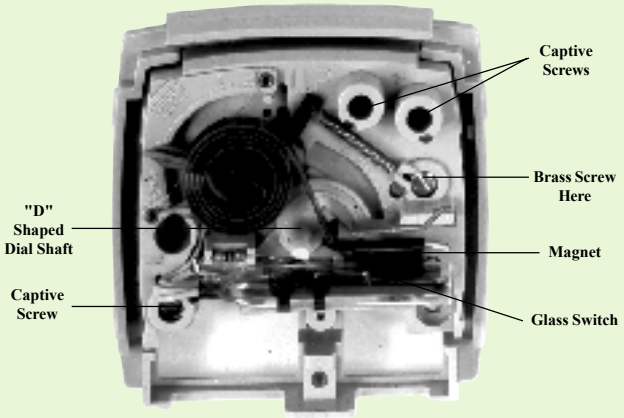
General Description: A wall mounted, low voltage, room temperature controller designed for use with Duro Zone Damper Systems.

Features: Magnetically operated, hermetically sealed electronic switch insures a long service life, unaffected by moisture and dust. Does not require leveling.

Specifications: Model 3WT 3 wire (SPDT) fixed anticipation. Low voltage 30 V.A.C., 1.5 amp. maximum. Setting range 55-85° F. Thermometer range 44-96° F. Dimensions 3-1/4" wide, 3-5/8" high, 1-1/2" deep. Mounting direct wall or pre-mounting plate (supplied).



Thermostat back plate - Fig. 1



Thermostat body (front view) Fig. 2

LOCATION:

When selecting the thermostat location, consideration must be given to the following:

1. **Locate approximately 5 feet above the floor** in a location accessible for wiring and setting.
2. **Locate on an inside wall.**
3. **Do NOT** locate where influenced by abnormal heat such as: in sunlight, close to a radio, TV, lamps, over registers on radiators, or over internal wall heat.
4. **Do NOT** locate where influenced by abnormal cold such as: on an outside wall or wall separating an unheated room, in drafts from stairwell or doors, close to windows.
5. **Do NOT** locate where air circulation is poor such as: behind open doors, in corners or alcoves, over or close to furniture.

INSTALLATION: See Wiring Diagram

1. Remove the cover (friction fit) from the thermostat body by gripping at the top and the bottom and lifting from the back plate; use extreme care not to damage working parts.
2. Remove the back plate from the thermostat body by loosening the captive screws (See Fig. 2).
3. Pull approximately 3 inches of wire through the wall and thread the wire through the center of the back plate (Fig. 1).
4. Mount the back plate on the wall using the mounting holes.
5. Connect the wires to the applicable terminal screws (See the schematic diagrams on the next page).
6. Push the excess wire back into the wall and mount the thermostat body on the back plate with the captive screws.
7. Replace the thermostat cover being careful to align the "D" shaped dial shaft with the matching shaped hole in the hub of the setting dial, then press the cover carefully on the

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ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

Printed in USA 07/2001
BP035402

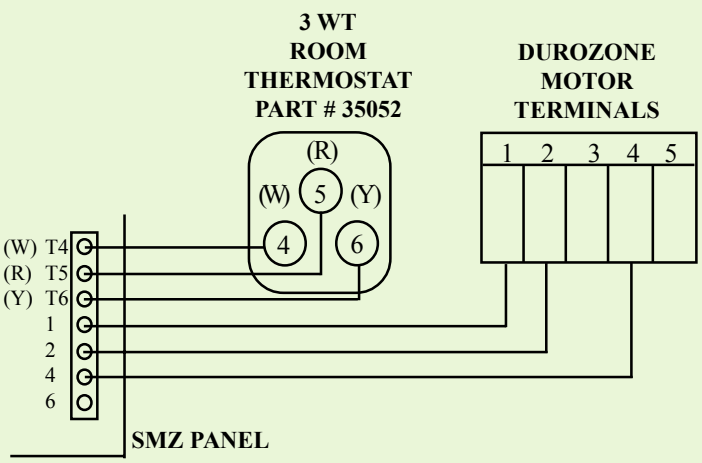
SB-1 SUBBASE

USE TO CONVERT 3WT THERMOSTAT TO HEATING/COOLING THERMOSTAT. (3TSB)

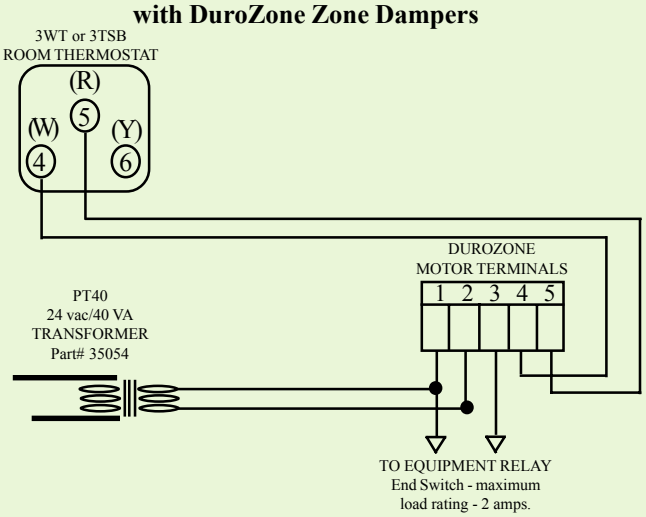
INSTALLATION:

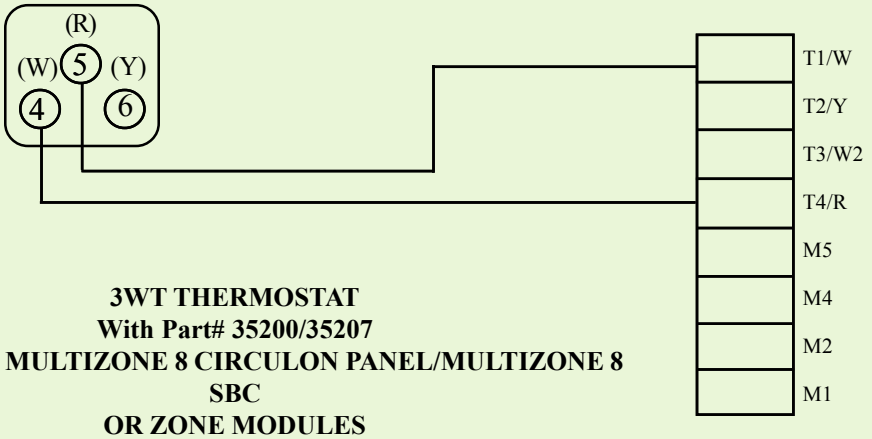
1. Locate the thermostat as indicated on the previous page side of the instructions.
2. Pull approx. 3" of each of the 3 wires through the center of the subbase.
3. Mount the (SB-1) Subbase on the wall using the mounting holes.
4. Connect the wires to the applicable terminal screws 4 (W), 5 (R), and/or 6 (Y).
5. Remove the cover carefully from the thermostat body.
6. Unscrew the captive screws and discard the back plate.
7. Mount the body of the thermostat to the (SB-1) subbase using the captive screws. This will automatically make the correct connections for the heating and cooling cycles.
8. Replace the cover carefully. Replace the thermostat cover being careful to align "D" shaped dial shaft with the matching shaped hole in the hub of setting dial, then press the cover carefully on the thermostat body.

3WT Thermostat with SMZ Control Panels
Part# 35226/35227/35228



3WT Thermostat or 3 TSB Thermostat with DuroZone Zone Dampers



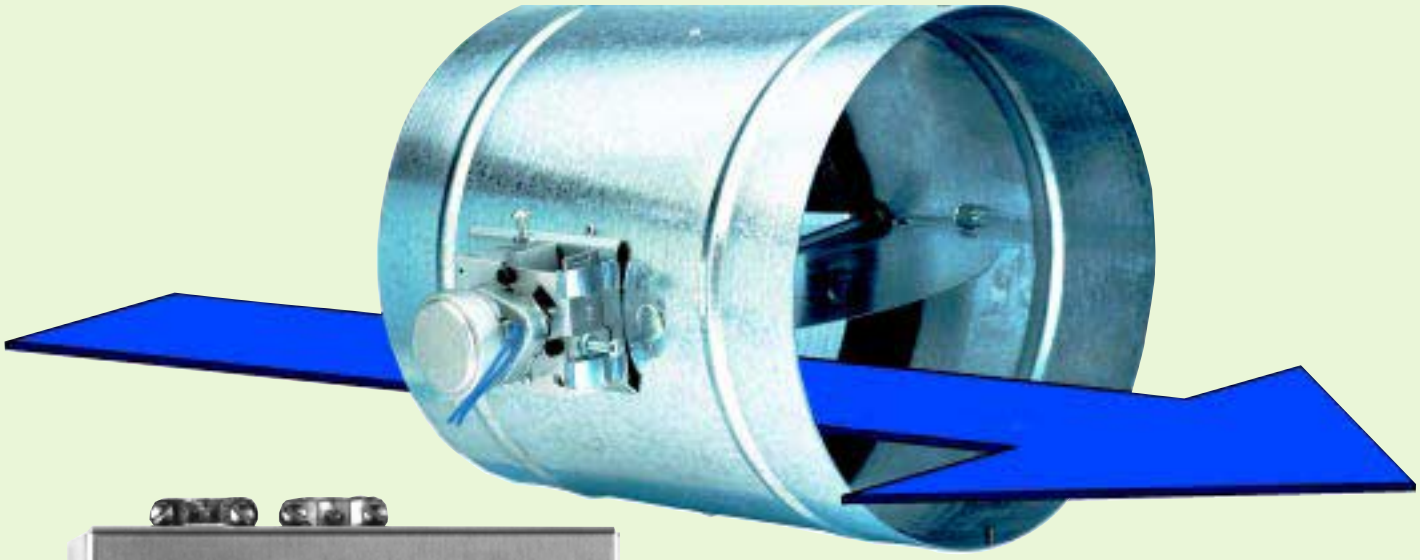


3WT THERMOSTAT
With Part# 35200/35207
MULTILINE MULTIZONE 8 CIRCULON PANEL/MULTIZONE 8 SBC
OR ZONE MODULES

The DuroZone®

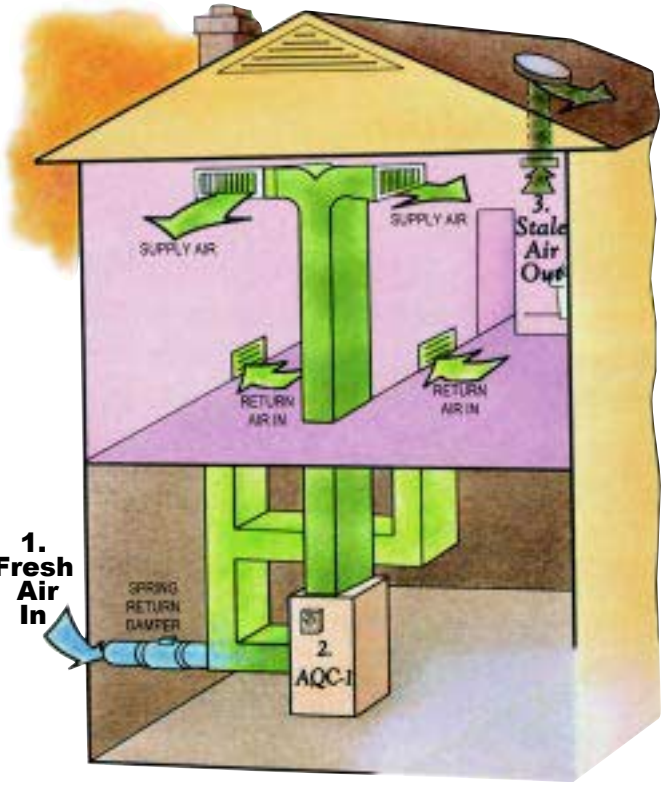
Dyna-*Fresh*®

Air Quality Control System



CONSTANT ENERGY CONSERVATION emphasis and local building code changes over the past several years have resulted in efforts to make buildings and homes more weather tight and draft free. While these efforts have been successful, eliminating outside air leakage has created another potential problem: air quality of the interior atmosphere.

Many state and local governments have become concerned that the relatively stagnant indoor air is showing increasing levels of carbon monoxide and carbon dioxide. Some states have required periodic introduction of outdoor air into the indoor environment. The **Dyna-*Fresh*®** Air Quality Control Center coupled with a Model SRRD or SPRD Spring Return Damper was designed for this purpose.



SPRD/SRRD
SPRING RETURN DAMPERS
Available in 24 volt and 110 volt models
Sizes from 5 to 12 inch diameter
Low leakage gasket design
UL and CSA Listed

Dyna-*Fresh*®
Item# 35220
AQC AIR QUALITY CONTROL CENTER
24 Hour clock timer
Simple compact design
Manual over-ride switch
Compatible with 24 or 110 volt Spring Return Damper
UL and CSA Listed

LISTED
2C30

1. Fresh air is drawn in from the outside and mixed with return air to be distributed by the air handling equipment.
2. The **Dyna-*Fresh*®** AQC Control Panel coordinates the blower, exhaust fan, and damper to introduce fresh air and remove stale air at user selectable 15 minute intervals.
3. Stale air is exhausted by the independent exhaust fan.

CONTROL CENTER

The **Dyna-*Fresh*®** AQC has a programmable (in 15 minute intervals) 24 hour timer which is wired to control a DuroZone Spring Return Damper (110 volt or 24 volt), an exhaust fan, and the air handler fan. Once the timer has been programmed a call from the **Dyna-*Fresh*®** AQC for fresh air will:

- **Open the Spring Return Damper to allow fresh air into the return duct.**
- **Turn on the air handler fan to distribute the fresh air into the home.**
- **Activate an exhaust fan to remove the stale air in the home or office.**

Dyna-*Fresh*®

AQC Air Quality Control Center

Item# 35220

- **Listed to UL and CSA Standards for Safety**
- **24 Hour Clock Timer**

UL LISTED 2C30

- **Programmable in 15 Minute Intervals**

SP®

- **Controls Either a 24 Volt or 110 Volt Damper**
- **Eliminates the Need for a Low Voltage Transformer to Power the Fresh Air Damper**
- **Installs Quickly**
- **Compact Design**
- **Manual Over-ride Switch for Continuous Fresh Air**

SPRD DAMPERS

LISTED BY UNDERWRITERS LABORATORIES

DURABLE STEEL CONSTRUCTION

Housing and blade made of galvanized steel with reinforcing beads for maximum durability.

REVERSIBLE HIGH TORQUE, SPRING RETURN MOTOR

Motor opens when powered, closes when deactivated.

LOW LEAKAGE GASKET DESIGN

Vinyl Nitrile Gasket abutting the damper blade ensures minimal leakage.

QUICK INSTALLATION & WIRING

Damper attaches to duct by use of nylon ties or screws. Easy wiring: strip the motor leads and splice them to power.

TWO POWER OPTIONS AVAILABLE

Low voltage 24 volt powered dampers are available as well as 110 volt units.

ROUND HOUSING

Designed for use with flexible ducting or round duct.

ADJUSTABLE STOP

Allows air flow adjustment by limiting amount of opening.

THREE YEAR LIMITED WARRANTY

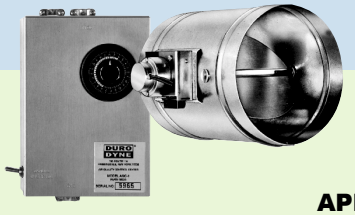
Damper Motor Guaranteed for Three Years After Installation.

ITEM#	MODEL	APPROXIMATE DIAMETER	APPROXIMATE LENGTH OF HOUSING	GAUGE OF STEEL (FOR HOUSING)
37046	SPRD024-5 24 VOLT	5"	9"	24
37047	SPRD024-6 24 VOLT	6"	9"	24
37048	SPRD024-7 24 VOLT	7"	9"	24
37049	SPRD024-8 24 VOLT	8"	9"	24
37050	SPRD024-9 24 VOLT	9"	11"	22
37051	SPRD024-10 24 VOLT	10"	11"	22
37052	SPRD024-11 24 VOLT	11"	11"	22
37053	SPRD024-12 24 VOLT	12"	14"	22

UL LISTED 2C54

ORDERING INFORMATION FOR SPRD 24 VOLT SPRING RETURN DAMPER

SPRD024 SERIES



SPRD110 SERIES

ITEM#	MODEL	APPROXIMATE DIAMETER	APPROXIMATE LENGTH OF HOUSING	GAUGE OF STEEL (FOR HOUSING)
37076	SPRD110-5 110 VOLT	5"	9"	24
37077	SPRD110-6 110 VOLT	6"	9"	24
37078	SPRD110-7 110 VOLT	7"	9"	24
37079	SPRD110-8 110 VOLT	8"	9"	24
37080	SPRD110-9 110 VOLT	9"	11"	22
37081	SPRD110-10 110 VOLT	10"	11"	22
37082	SPRD110-11 110 VOLT	11"	11"	22
37083	SPRD110-12 110 VOLT	12"	14"	22

UL LISTED 2C54

ORDERING INFORMATION FOR SPRD 110 VOLT SPRING RETURN DAMPER

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Farmingdale, New York 11735
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BE035413

DuroZone®

LISTED

35220/35221 AQC Dyna-Fresh®

USE

The DuroZone **Dyna-*Fresh*®** Air Quality Control Center was designed to periodically introduce outdoor air into the indoor environment. A programmable (in 15 minute intervals) 24 hour timer allows flexibility in customizing fresh air intake to various seasonal and geographical conditions.

APPLICATION

The DuroZone **Dyna-*Fresh*®** was designed for use with DuroZone 24 volt Spring Return Dampers - Series SPRD or 110 Volt spring return dampers - SRRD Series. The Dyna-*Fresh*® meets the requirements for fresh air intake as outlined by the Washington State Energy Code.

OPERATION

The **Dyna-*Fresh*®** is supplied with both a user programmable timer and a manual over-ride switch. To set the timer, simply rotate the dial in a clockwise manner lining up the current time with the white arrow.

To set an "ON" cycle, gently push the appropriate black indicator towards the center of the timer. A small click will be heard and felt to confirm a positive setting. Every "ON" setting will keep the circuit energized for a period of fifteen minutes.

When the **Dyna-*Fresh*®** is put into an "ON" state, either by the timer setting or the manual over-ride switch, the following occurs:

1) 24 volts is sent to terminals D1 and D4 - opening a spring return damper.

2) 110 volts is sent to terminals F1 and F2 - activating an exhaust or whole house fan.

3) R makes to G1 - activating the equipment fan.

4) G1 to G2 is broken - disabling the possibility of a backfeed through the thermostat turning on the compressor.

5) C makes to NO and breaks from NC.

INSTALLATION

The **Dyna-*Fresh*®** should be located in a convenient location where access to the timer mechanism and manual over-ride switch is not impaired. The **Dyna-*Fresh*®** cabinet has two keyhole slots at the top to facilitate mounting.

WIRING

Wire the **Dyna-*Fresh*®** as follows:
110 volt 60hz supply to L1 and L2.
Whole house Fan to F1 and F2.
(Maximum contact rating = 16 amps @ 120VAC)
24 volt DuroZone Spring Return Damper (SPRD), to D1 and D4.
R on the **Dyna-*Fresh*®** to R on the equipment.
G1 on the **Dyna-*Fresh*®** to G on the equipment.
G2 on the **Dyna-*Fresh*®** to G on the thermostat.
Wire all other equipment as per normal installation.
If using a 110 volt Spring Return Damper, such as DuroZone's Series SRRD, wire the damper to F1 and F2 in conjunction with the exhaust or whole house fan.

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Farmingdale, New York 11735
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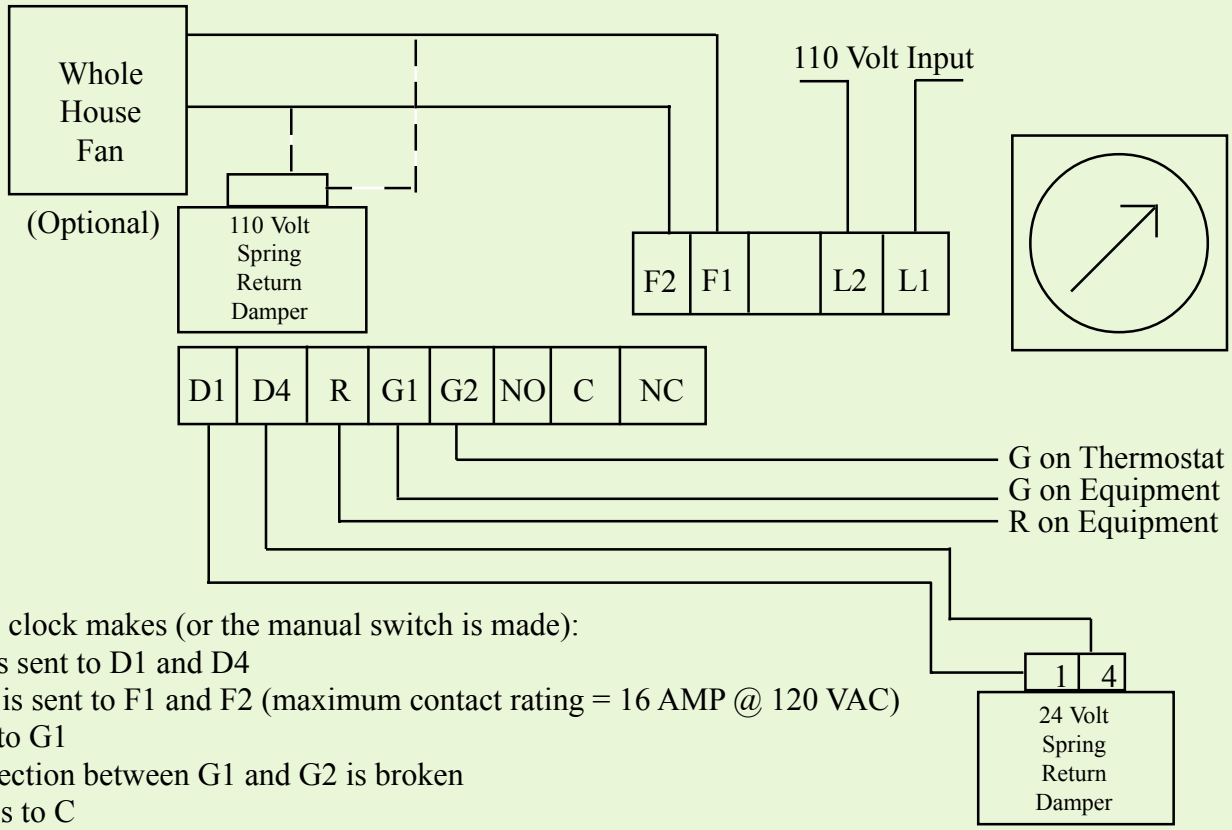
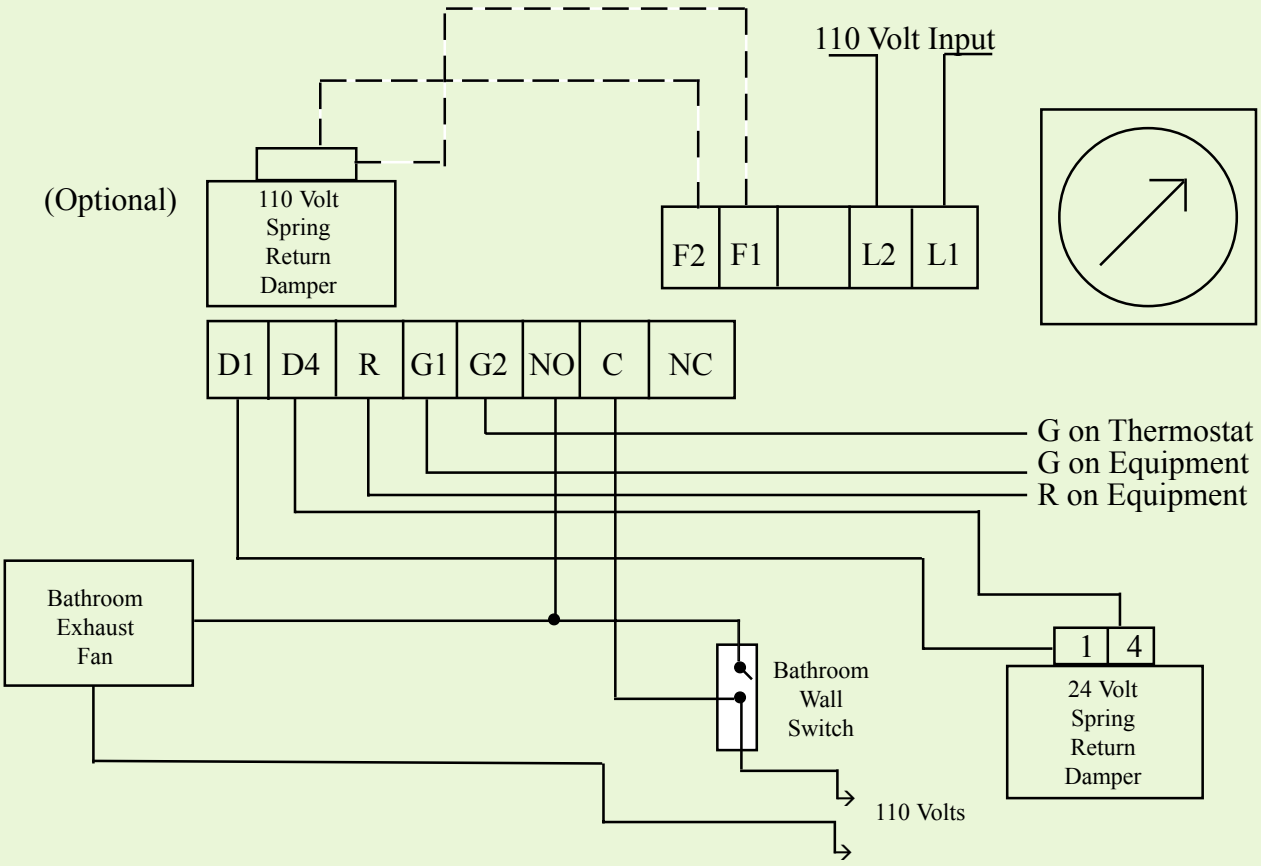
Dyna-Fresh® AIR QUALITY CONTROL CENTER



When the clock makes (or the manual switch is made):
24 volts is sent to D1 and D4
110 volts is sent to F1 and F2 (maximum contact rating = 16 AMP @ 120 VAC)
R makes to G1
The connection between G1 and G2 is broken
NO makes to C
When using 110 volt damper, wire the motor to F1 and F2 with whole house fan (if used), and leave D1 and D4 blank.

Internal 24 volt transformer is fused on primary and secondary sides.

Dyna-Fresh® ALTERNATIVE WIRING USING EXISTING BATHROOM FAN TO EXHAUST STALE AIR

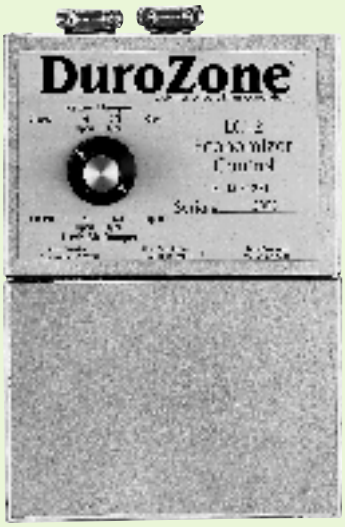


DuroZone®

-MULTILINE®-

EC-1 & EC-2

Fresh Air Intake & Economizer Control Centers



- **Allows use of “Free Air” for cooling**
- **Simple centralized wiring**
- **Integrated 24 volt transformer**
- **Simplified wiring**
- **Plug-in relays**

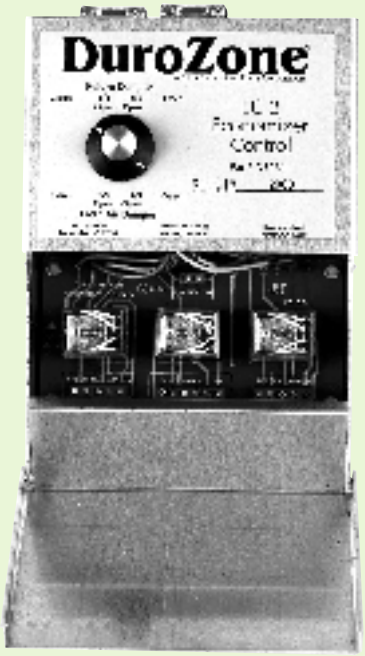
Many large commercial buildings have A/C units which utilize an economizer circuit to use fresh air to satisfy cooling requirements. Basically what happens is this:

An Enthalpy Control (a sensor of both humidity and temperature) senses that outside conditions are conducive to cooling. Upon a call for cooling, the Economizer locks out the compressor and the air handler draws fresh air from outside to cool the building. Dampers are installed in the fresh air intake and the return air duct to control the flow of air.

The EC-1 and EC-2 now allow the economies of “Free Cooling” technology for commercial buildings to be installed in residential and light commercial construction.

EC-1

The EC-1 is used in conjunction with two Duro Zone zone dampers and an Enthalpy control.
At rest, (outside conditions not conducive for cooling), the return air damper will be open, the fresh air damper will be closed, and the compressor will function normally.
When correct Enthalpy is attained, (outside conditions conducive for cooling), the EC-1 will close the return air damper and open the fresh air damper. At the same time the compressor will shut down, but the fan will continue to run, drawing fresh air from outside to satisfy the cooling demand.



EC-2

The EC-2 is used in conjunction with two Duro Zone fresh air 4 position dampers and an Enthalpy control. The EC-2 incorporates a 4 position rotary switch to allow mixing of the outside air with return air.
At rest, (outside conditions not conducive for cooling), the return air damper and fresh air damper will be in the position indicated on the switch, the compressor will function normally.
When correct Enthalpy is attained, (outside conditions conducive for cooling), the return air damper and the fresh air damper will change positions. At the same time, the compressor will shut down, but the fan will continue to run, drawing fresh air from the outside to satisfy the cooling demand.

ORDERING INFORMATION

ITEM #	MODEL	DESCRIPTION
#35230:	EC-1	Economizer Control - Two position Controller
#35231:	EC-2	Economizer Control - Four position Controller
#35170:	DZEC	Enthalpy Control

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Farmingdale, New York 11735
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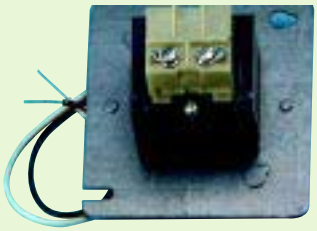
BE035401

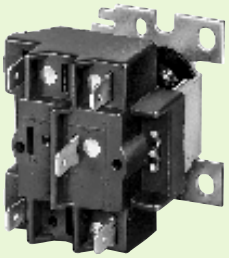
Accessories

35054 PT40 Plate Mounted Transformer



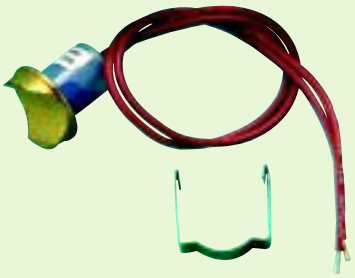
The DuroZone PT40 Plate Mounted Transformer is a full power 120 volt input, 24 volt output, 40va rated step down transformer. Easily installs on a typical 4 x 4 electrical box. One PT40 transformer can operate up to 4 DuroZone dampers.

35055 RR1 Relay



The DuroZone RR1 Relay is a 24 volt single pole, double throw, multi-purpose relay. Typically used for applications when isolation or protection of circuits is desired. When more than one relay is required use 35233 DRP2 Universal Relay Pack.

35059 FPS Freeze Protection Sensor



The DuroZone FPS Freeze Protection Sensor is a low cost control designed to be put on the suction line outside the evaporator coil. At a preset temperature it will break the circuit to the compressor relay (Y) preventing a freeze-up. The FPS can be used with any of the DuroZone control systems.

35062 DS11 Remote Damper Switch

The DuroZone DS11 remote Damper Switch is a remote, wall mounted switch for manually opening and closing standard DuroZone dampers. Generally used for special applications for ventilation control. Installs in a standard 2 x 4 electrical switch box.

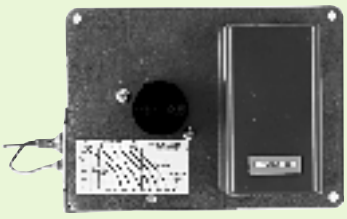
35066 MPS4 Multi-Position Switch (formally FAS-4)

The DuroZone MPS4 switch is a remote, wall-mounted switch for manual control of DuroZone 4 position dampers - models MPRD, MPMS and MPMB. Easy to install, this 4 position switch allows the dwelling occupant greater comfort and flexibility in controlling air into the space. Typically used for fresh air intake purposes. Installs in a standard 2 x 4 electrical switch box.

.

35170 DZEC Enthalpy Control

The DuroZone DZEC Enthalpy Control senses temperature and humidity and closes a set of contacts at a user determined level. The DZEC is typically used with the DuroZone EC-1 and EC-2 Economizer Panels.



35075 DDW Pressure Relief Damper Weight/Arm

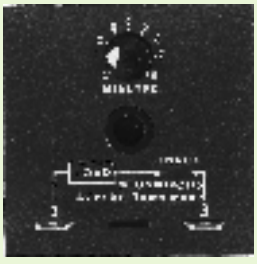
The DuroZone DDW replacement arm & weight for DuroZone Pressure Relief Dampers can be used to add more weight to the Damper Arm for higher pressure settings.

37199 DZDBF Duct Board Damper Frames

The DuroZone DZDBF Duct Board Damper Frames allow easy mounting of standard DuroZone dampers into the Duct Board with no tools. It consists of two pieces which clip onto the edge of a slot cut into the duct board. Order the damper for the inside dimension of the duct.

35215 TDT1 Time Delay Timer

The DuroZone TDT1 Timer is a Delay on make for energizing 2nd stage heating or cooling without the need of a 2 stage thermostat. The time setting is adjustable from 1 to 8 minutes. It operates with voltages from 19 to 240 AC.



35233 DRP-2 Universal Relay Pack

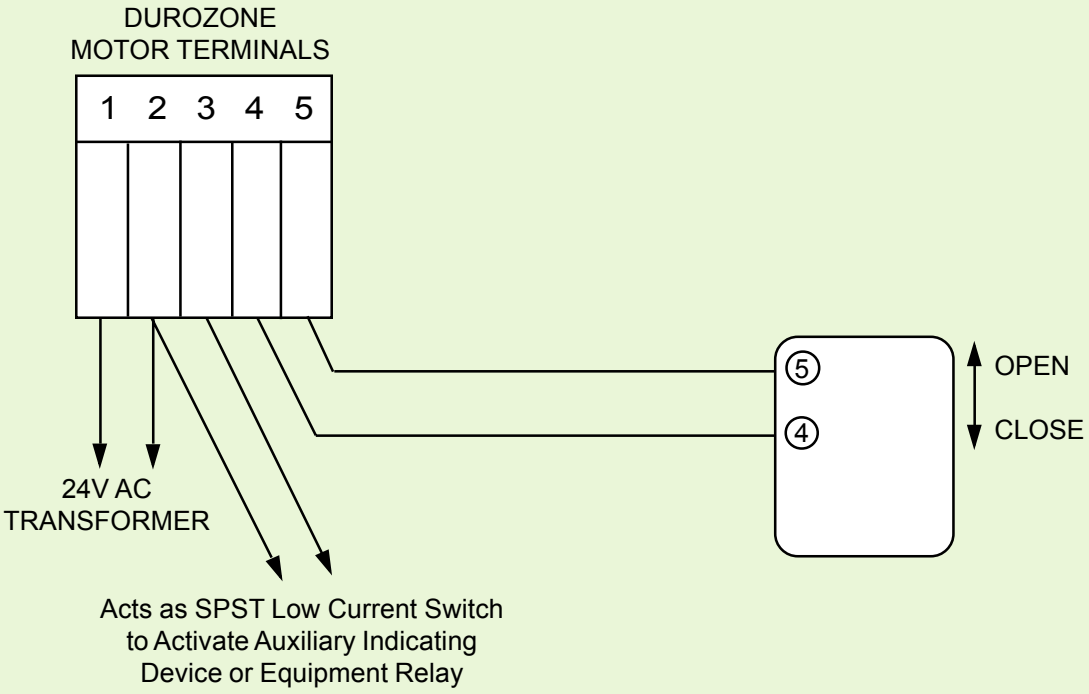
The DuroZone DRP-2 Universal Relay Pack consists of two 24 volt 4PDT Plug-In Relays mounted on a circuit board. The circuit board has convenient terminal strips to make wiring easy and it is enclosed in a plastic enclosure for protection. The DRP-1 can be used in a variety of situations and applications where two or more isolation relays are needed.

DuroZone®

INSTALLATION INSTRUCTIONS

DS-11 SWITCH

This is a wall mounted SPDT toggle used for remote opening and closing of a **DuroZone Damper** where Switch operation rather than thermostat control is desired.



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ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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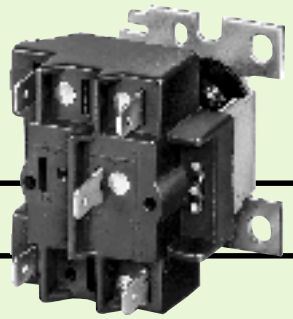
BP035420

DuroZone®

INSTALLATION INSTRUCTIONS

RR-1 RELAY

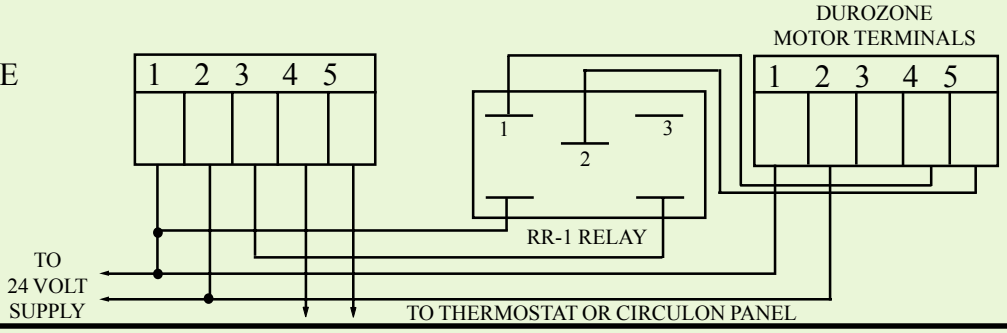


DuroZone's RR-1 Relay is a 24-volt, single pole, double throw (SPDT) Relay. Numbered Terminals make connections easy, and all RR-1 Relay contacts are housed in a plastic enclosure to afford maximum protection from dirt and other contaminants. The two most popular uses for the RR-1 Relay is for wiring two DuroZone dampers out of phase with each other and for end switch protection. The RR-1 Relay may also be used to interface two-wire thermostats with DuroZone's Heat/Cool Panel (formally Circulon Series II). These diagrams are outlined below.

TERMINAL IDENTIFICATION

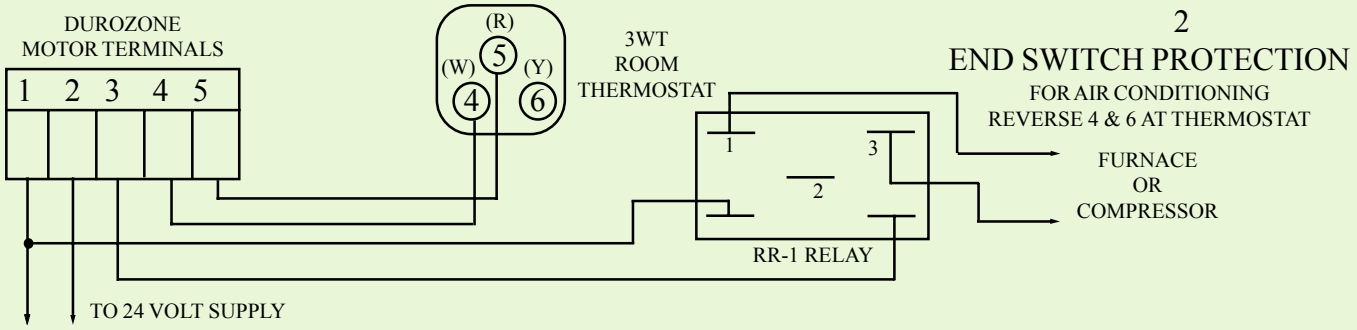
Unmarked	Terminals Relay Coil
Terminal 3:	Normally-Open Contact(NO)
Terminal 1:	Common (C)
Terminal 2:	Normally-Closed Contact (NC)

1 2 DAMPERS OUT OF PHASE



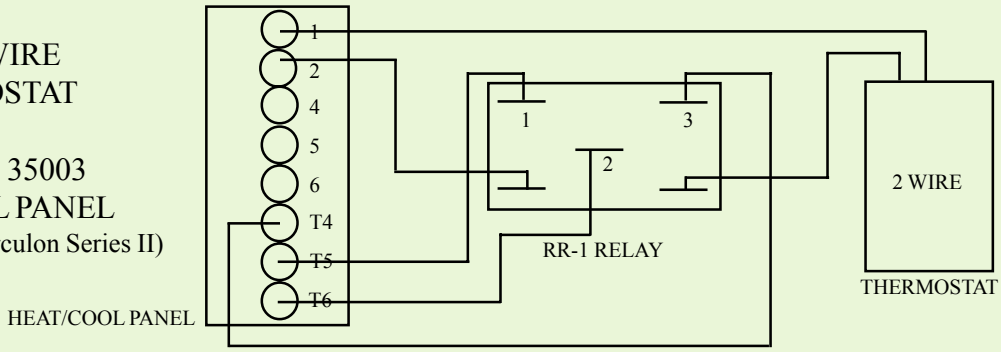
2 END SWITCH PROTECTION

FOR AIR CONDITIONING
REVERSE 4 & 6 AT THERMOSTAT



3 THE 2 WIRE THERMOSTAT

With Part# 35003
HEAT/COOL PANEL
(Formally called Circulon Series II)



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ALL DuroZone DAMPERS FEATURE:
• 3 year limited warranty • Controlled bypass • Maintenance free operation • Quick install mounting clips (except Round Dampers) • 100% factory testing • Screwless terminals • Custom dampers and special controls are available on request.

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BP035421

DuroZone®

M-4000 DIGITAL HVAC ANALYZER

One hand-held, easy-to-use instrument can be used to measure :

BTU,
AIR VELOCITY,
TEMPERATURE,
CFM, AND
HUMIDITY.

BATCH it with the M-4000 HVAC Analyzer!

The M-4000 measures the humidity, temperature, and air velocity (with inputted inlet/outlet dimensions) and analyzes this information to calculate CFM and BTU's. Custom designed solid state circuitry ensures high accuracy.

Batch together all of the functions and features, and the HVAC analyzer adds up to a fantastic investment.

The M-4000 helps contractors and engineers make intelligent decisions on balancing and/or maintaining HVAC systems.

- **Hand-held, lightweight, simple to use**
- **Quick response <5 seconds**
- **Digital-quick, easy readings**
- **Low cost!**

Applications:

The M-4000 series is a full, five function instrument which measures room conditions and the performance of HVAC equipment - heaters, blowers, furnaces, air conditioners, fume hoods, clean rooms, etc.

Contractors, quality assurance staff, operating engineers, and building inspectors now have an easy-to-use instrument which will quickly evaluate system design and equipment performance.

The M-4000 can be used for a wide range of applications, from simple temperature, humidity, and air velocity readings to complex multi-outlet computations of BTU's, system balancing, or total outlet/output calculations.

Best of all, the HVAC Analyzer is extremely easy to use when compared to most air velocity and CFM instruments.

The M-4000 is a hand-held instrument and eliminates the need for cumbersome hoods or carrying multiple measurement instruments.

It comes with a high impact plastic carrying case and a Limited One Year Warranty.

Specifications:

Instrument case:	**High impact plastic**
Display:	**Large easy to read LCD (4 digit 3/4" h)**
Touch Pad:	**Large push buttons**
Operating Voltage:	**9 V DC (alkaline battery 9 volts)**
Battery Life:	**Approx. 8 hours continuous use**
Temperature Range:	**32° F to 149° F (0° C to 65° C)**
Temp. Accuracy:	**+/- 2° F**
Temp. Response Time:	**5 Seconds**
Humidity Range:	**10% to 95%**
Humidity Accuracy:	**+/- 3%**
Humidity Response Time:	**10 Seconds**
Air Velocity Range:	**1.0 to 49 ft/sec.**
Air Velocity Accuracy:	**+/- 3% or +/- 1 digit**
Velocity Response Time:	**Instantaneous**
Weight:	**15 Ounces (430 G)**
Dimensions:	
Digital Instrument:	**8"x3.5"x2" (20.3x8.9x5 cm)**
Probe (Sensor):	**6.75"x3"x2" (17.1x7.6x5 cm)**

Ordering Information

Part#	Model	Description	Features	Dimensions
35268	M-4000	Batch Analyzer	Measures BTU / Air Velocity / Temp. / CFM / Humidity	14"x3-1/4"x12-1/2"

DuroZone®
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“How do I size my Ductwork?”

This is probably the number one question asked of contractors when discussing zoning. There are no hard and fast rules regarding this. There is no magic formula that always works. What we can provide are some guidelines -“rules of thumb” and alert you to some common pitfalls.

Objective: Maintain constant airflow through the HVAC when only one zone calls and still provide sufficient airflow if all zones call.

On Two and Three zone systems, adequate airflow can be maintained by sizing the trunk line to each zone to handle 60 to 70% of the available cfm. If you then run five 6 inch takeoffs from these trunks, adequate airflow is maintained. Below is a simple chart to guide you for systems of 800 to 2000 cfm.

When designed this way, a by-pass damper may not be necessary but it never hurts to have one, so we recommend installing one if only for future alterations and/or balancing purposes.

On systems of four or more zones the 60% rule will not work. For systems of this configuration lay out your duct work as if it was not zoned. Now, increase each trunk to handle 20% more of your designed cfm. For example, if you determine that Zone One would require 500 cfm under normal conditions, install a trunk duct capable of 600 cfm. Repeat this for each zone.

On systems of four zones or more a by-pass damper is almost always required. The by-pass damper should be sized to “dump” the difference between the total available cfm and the smallest zone.

The biggest pitfall in designing four or more zones is not keeping all the zones approximately the same size.Try to avoid having one zone of 100 cfm and another of 600 cfm. Try to keep all zones within 20% to 30% of each other. If this is unavoidable, install adequate by-pass or consider splitting the system into two smaller zoned systems.

System CFM	Trunk Duct	Branch Duct
800	12 x 8 or 12” round	5 - 6” round
1000	14 x 8 or 12” round	5 - 6” round
1200	16 x 8 or 12” round	5 - 6” round
1400	18 x 8 or 14” round	5 - 7” round
1600	20 x 8 or 14” round	5 - 7” round

What do I do with by-passed air?

The by-passed air can be ducted into non-critical temperature areas such as entry ways, basements, recreation rooms, cathedral ceilings, etc. Do not by-pass this air into attics or crawl spaces as this may cause a negative pressure situation and/or condensation in the house.

Ideally the air should be ducted back into the HVAC system through the return air. If this is done, the air should be ducted into the return duct as far as possible from the air handler to allow adequate mixing of the airstreams. If space does not allow this, controls such as an anti-freezeup control (FRP) should be installed to protect the equipment.

Remember The Four C's:

COMFORT

Rooms are kept at the temperature you want - when you want.

CONSERVATION

Realize energy savings up to 30%.

CONTROL

Heating and cooling controlled like lighting and plumbing.

CASH

Zoning saves money as well as adding resale value.

Contact the HVAC Distributor below and request a quote

Comfort Beyond Your Expectations

DuroZone®

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