

Draft Controls

For proper operation and efficient fuel consumption in oil, gas and/or coal-fired heating appliances, draft must remain constant. When it is, combustion is more complete, fuels are utilized efficiently, and money is saved.

Field Draft Controls maintain consistent draft by counteracting the negative forces caused by changes in temperature and barometric pressure, and the effects of wind.



RC

M

MG-1

M+MG2

When to use a Draft Control

- Draft Inducers/Power Venters

With these devices, draft is increased or created, causing fluctuations in air flow through the combustion chamber. These fluctuations can be negated by the use of a barometric draft control located between the draft inducer or power venter and the furnace, boiler or water heater it services. Use a single acting control for oil and gas-fired equipment with a power vented system. A single-acting control for oil, and a double-acting control for gas-fired equipment with a draft induced system.

- Power Burners

A power burner is designed so that a fan delivers negative air pressure to the combustion chamber. A single-acting draft control for oil maintains that negative pressure.

A power burner designed to burn natural or LP gas operates in the same manner. While a draft hood (diverter) is often used on gas units fired with an atmospheric burner, a double-acting barometric draft control should be used for furnaces or boilers fired with power burners.

- Forced Draft Burners

Forced Draft installed with a stack height in excess of 30' will probably develop excessive natural draft, reducing the amount of pressure within the furnace or boiler. A barometric draft control will help eliminate this undesirable stack action and permit the unit to be pressurized.

- Dual Fuel Appliances

Burners capable of burning either gaseous fuels or oil should be equipped with a barometric draft control. We suggest using a double-acting control on units where fuels are frequently changed. The double-acting feature is important for gas-firing appliances, it allows spillage of combustion products in case of blocked flues or down-drafts. To detect flue gas spillage on dual fuel installation, a Field Thermal Safety Switch is recommended.

- Gas-Fired Appliances

Gas-fired furnaces and boilers generally require a double-acting draft control. Like a single-acting control, it opens inwardly to maintain a uniform draft. But, unlike a single-acting control, it is also free to open outwardly to spill the products of combustion, in case of blocked flues or down-drafts.

National codes often mandate the use of a draft control. Usage is generally limited to furnaces or boilers designed for use with power burners and incinerators. Draft controls are generally used when oil-fired units are converted to gas.

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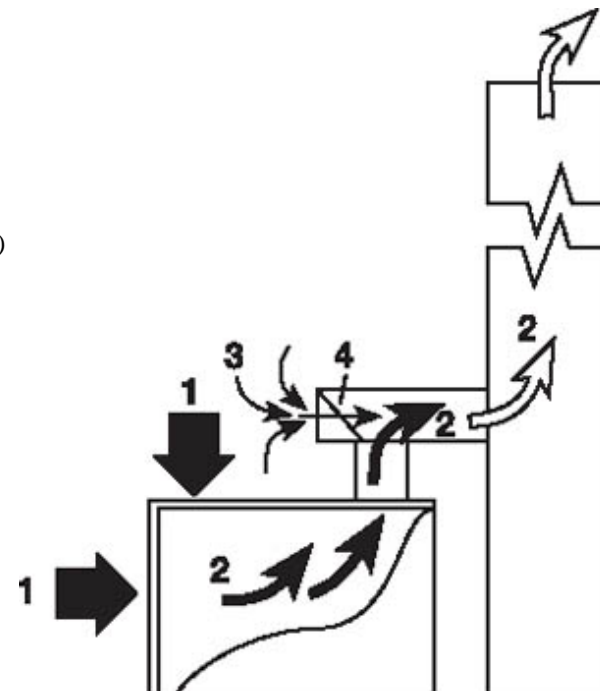
How Draft Controls Work

Static pressure of the cool air (1) exerts pressure on the outside of the furnace or boiler, the breaching, and stack.

The pressure difference between the room air and heated gas (air) causes products of combustion (2) to flow (draft) through the unit and rise through the breaching and chimney.

Room temperature air (3) enters through the barometric draft control (4) in the precise amount needed to overcome the excess drafts caused by temperature variations, wind fluctuations and barometric pressure changes.

Combustion of fuel is complete and the process is stabilized. The velocity of combustion gases through the heat exchanger is slowed so more heat is extracted. The unit operates more efficiently, reliably and requires less maintenance.



Type RC

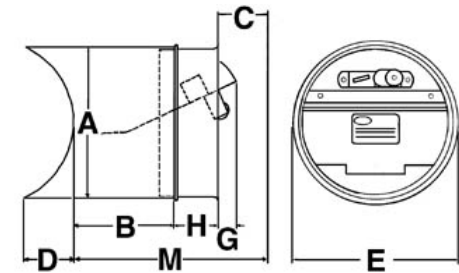
Oil or Coal – Residential and Commercial

The Field RC is furnished as standard equipment on many leading brands of oil or coal-fired heating equipment. It is calibrated to allow for easy adjustment to the furnace or boiler manufacturer's specifications. Designed for settings from .02" to .08", this control is so sensitive that instrumentation should be used when adjusting the unit during installation.

Recommended Pipe Sizes (in.)

Model	Control Size	Nominal Capacity Sq. In.	Dia.	Circum.	A	B	C	D	E	G	H	M
4" RC	4	12.6	3-4-5	9 1/2 to 15 3/4	4	2 1/2	2	2 5/16	4 9/16	1	2 1/2	7
5" RC	5	19.6	4-5-6	12 1/2 to 19	5	2 1/2	2	2 5/16	5 9/16	1	2 1/2	7
6" RC	6	28.3	5-6-7	15 3/4 to 22	6	1 7/8	3	2	6 5/8	1	2 3/4	7 5/8
7" RC	7	38.5	6-7-8	19 to 25 1/4	7	2 5/8	3 1/2	2 1/2	7 5/8	1	2 3/4	8 5/8
8" RC	8	50.3	7-8-9	22 to 28 1/8	8	4 3/8	4	3 3/8	8 11/16	1 1/8	2 5/8	11
9" RC	9	63.6	8-9-10	25 1/4 to 31 1/2	9	5 1/8	4 1/2	3 3/4	9 11/16	1 1/2	2 5/8	12 1/4

MATERIAL GAUGES			
Size	RING	GATE	COLLAR
4"	22	24	26
5"	24	24	26
6"	24	24	26
7"	22	24	26
8"	20	20	26
9"	20	20	26



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Type M

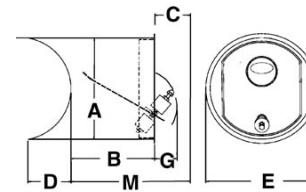
Oil or Coal - Residential

The M control lends itself ideally to conditions requiring a great deal of stability and accuracy. Designed for settings from .01" to .1", the Field M Control is recommended for oil or coal-fired residential heating applications. The Type M features an infinitely variable screw adjustment, permitting an extremely fine instrument setting. The M employs side wings to control air direction with gate curvatures designed to compensate for differences in horizontal and vertical settings.



MATERIAL GAUGES			
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Size	RING	GATE	COLLAR
6"	24	26	26
7"	22	22	26
8"	20	20	24
9"	20	20	24



Recommended Pipe Sizes (in.)											
Model	Control Size	Nominal Capacity Sq. In.	Dia.	Circum.	A	B	C	D	E	G	M
6" M	6	28.3	5-6-7	15 3/4 to 22	6	5	3	3 1/4	6 17/32	2	8
7" M	7	38.5	6-7-8	19 to 25 1/4	7	5 1/4	3 1/2	3 3/4	7 3/8	2 1/4	8 3/4
8" M	8	50.3	7-8-9	22 to 28 1/4	8	6 3/8	4	3 3/8	8 5/8	3	10 3/8
9" M	9	63.6	8-9-10	25 1/4 to 31 1/2	9	7 1/4	4 1/2	3 3/4	9 5/8	1 29/32	11 3/4

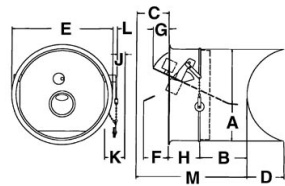
Type MG-1

Gas

A double-acting control for gas-fired furnaces and boilers is widely used for conversion burner installations, gas draft-induced appliance operation with mechanical draft inducers or sidewall power venters. It is also recommended for use on gas atmospheric appliances where a draft hood cannot be installed, and can improve combustion stability and draft on many gas atmospheric installations with venting problems.

The MG-1 provides precise, accurate control of drafts at levels higher than permitted by a standard draft diverter which is a frequent requirement with gas. Because it is double-acting, it opens out to relieve positive vent system pressures as low as .01". Draft adjustments using weights are simple and accurate from .01" to .1".





MATERIAL GAUGES			
Size	RING	GATE	COLLAR
4"	24	24	26
5"	24	24	26
6"	24	24	26
7"	22	22	26
8"	20	20	26
9"	20	20	26

Recommended Pipe Sizes (in.)																
Model	Control Size	Nominal Capacity Sq. In.	Dia.	Circum.	A	B	C	D	E	F	G	H	J	K	L	M
4" MG1	4	12.6	3 - 4	9 1/2 to 12 1/2	4	2 1/2	2	2 5/16	4 9/16	1 1/2	1/4	2 1/2	1/2	1 1/4	3/8	7
5" MG1	5	19.6	4 - 5	12 1/2 to 15 3/4	5	2 1/2	2	2 5/16	5 9/16	2	5/8	2 1/2	1/2	1 1/4	1/2	7
6" MG1	6	28.3	5 - 6	15 3/4 to 19	6	2 11/16	3	3 1/4	6 5/8	2 1/8	13/16	2 3/4	3/4	1 3/4	5/8	8 7/16
7" MG1	7	38.5	6 - 7	19 to 22	7	3 3/8	3 1/2	3 3/4	7 5/8	2 3/8	1 1/8	2 3/4	3/4	2	1/4	9 5/8
8" MG1	8	50.3	7 - 8	22 to 25 1/4	8	4 3/8	4	3 3/8	8 11/16	3	1 1/2	2 5/8	3/4	2 1/4	3/8	11
9" MG1	9	63.6	8 - 9	25 1/4 to 28 1/4	9	5 1/8	4 1/2	3 3/4	9 11/16	3 1/2	1 3/4	2 5/8	3/4	2 1/2	3/8	12 1/4

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10", 12", 14" models



Type M+MG2

Solid, Oil or Gas Commercial/Industrial

This is a series of compact, rugged, heavy-duty controls for use on large residential, commercial, and industrial applications. The Field Type M+MG2 Draft Control provides precise draft regulations for solid fuels, oil, gas, or oil/gas appliances requiring only the simplest, on-the-job adjustments depending on which fuel is to be utilized. In a gas installation, the double-acting Type M+MG2 is specified instead of a draft hood to give the appliance the assistance of the chimney. In a dual fuel oil/gas or a gas-fired only application, use the M+MG2 as

a double acting draft control with the optional Field Thermal Switch accessory. Use the M+MG2 as a single acting draft control for oil or solid fuel applications. For any installation with 10" or larger diameter smoke pipe,

specify our standard M+MG2 Draft Control, the unit that can be adapted to any fuel.

The moving part (gate) rests on a long, thin, stainless steel knife edge which, in turn, is supported by self-aligning and self-cleaning bearings. When the heavy gauge gate moves, only the knife edge rests on the bearing for minimum friction and maximum sensitivity to draft changes.

Recommended Pipe Sizes (in.)

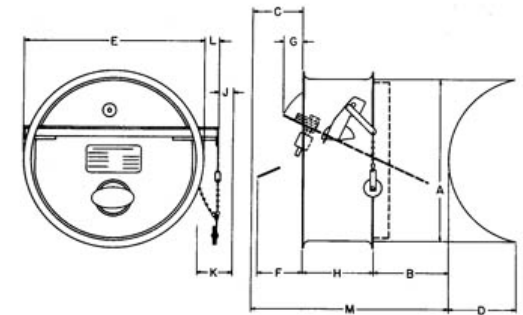
Model	Control Size	Nominal Capacity Sq. In.	Dia.	Circum.	A	B	C	D	E	F	G	H	J	K	L	M
10" M+MG2*	10	78.5	9 - 10	28 1/4 to 31 1/2	10	4 3/8	5	4 1/4	11	3 3/8	1 1/8	4 3/4	1	3 1/2	1	14 1/8
12" M+MG2*	12	113	11 - 12	34 1/2 to 37 3/4	12	5 3/4	6	5	13 1/4	4 5/8	1 3/4	4 3/4	1	3 1/2	7/8	16 1/2
14" M+MG2*	14	154	13 - 14	40 3/4 to 44	14	7 1/8	7	5 3/4	15 1/2	5 3/8	2 1/8	5 1/8	1	3 1/2	5/8	19 1/4
16" M+MG2	16	201	15 - 16	47 to 50 1/4	16	8 3/8	8	6 1/2	17 1/2	6 1/8	2 3/8	5 5/8	1 1/2	4	5/8	22
18" M+MG2	18	255	17 - 18	53 1/2 to 56 1/2	18	8 1/4	9	7 1/2	19 1/2	6 7/8	2 3/4	7 3/8	1 1/2	5 1/4	1 5/8	24 5/8
20" M+MG2**	20	314	19 - 21	59 3/4 to 66	20	9 5/8	10	8 1/8	22	7 5/8	3	7 3/4	1 1/2	6 1/4	1 1/4	27 3/8
24" M+MG2**	24	452	22 - 25	69 to 78 1/2	24	12 3/8	12	10 1/2	26	9 1/4	3 5/8	8 5/8	2	6 1/4	1 1/4	33
28" M+MG2**	28	616	26 - 30	81 3/4 to 94 1/4	28	13 1/8	14	-	30 1/2	10 3/4	4 1/8	11 3/8	2	6 1/4	7/8	38 1/2
32" M+MG2**	32	804	31 - 34	97 1/2 to 107	32	15 3/8	16	-	35	12 1/4	4 3/4	12 1/8	2	6 1/4	5/8	43 1/2

* CSA certified

** An increaser or reducer may be necessary in order for the Barometric Draft Control to adapt to off-sized pipe.

MATERIAL GAUGES			
Size	RING	GATE	COLLAR
10"	20	18	24*
12"	20	16	24*
14"	20	16	22*
16"	18	16	20*
18"	18	16	20*
20"	18	16	18*
24"	18	14	18*
28"	16	14	14**
32"	16	14	14**

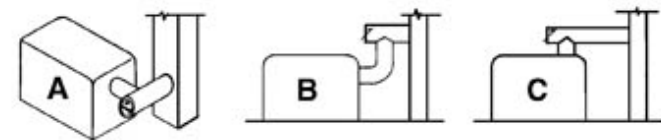
* Galvanized **HRPO with Enamel Finish



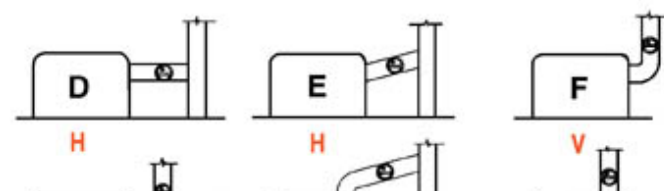
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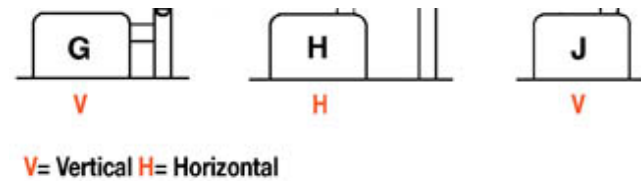
Draft Controls (Installation Options)

Gas-Fired Systems



Oil or Solid Fuel Systems





Recommended Locations for Field Draft Controls

For gas-fired equipment, the preferred location of the control is on the bull head tee. This location provides maximum relief of downdrafts with minimum positive pressure. (See Fig. 1, Dia. A-C)

With oil or solid fuels, the bull head tee is not recommended, so instead, locate the control as shown. (See Fig. 1, Dia. D-J)

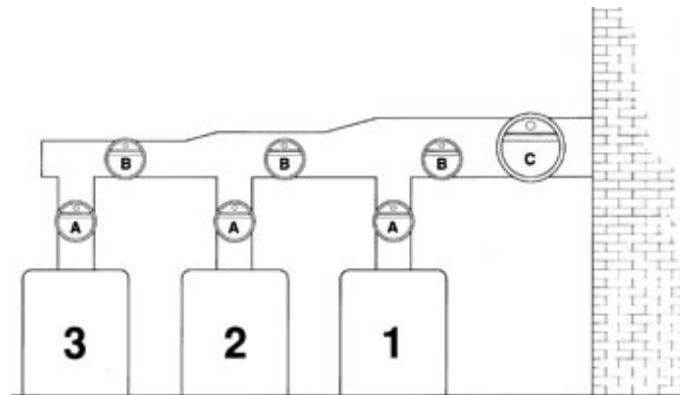
These locations are acceptable for gas units as well. Except on forced draft systems, locate the control as close as possible to the furnace or boiler, at least 12" beyond a stack switch on oil-fired units, and at least 18" from a combustible ceiling or wall.

Commercial and industrial furnaces and boilers are frequently installed in multiples.

(See Fig. 2)

Use a draft control for each boiler located on the uptake between the smoke outlet and the breaching (location A). When this uptake is too short to permit the installation of a control, locate a separate control for each boiler on the main breaching (location B). If neither of these locations is possible, use a single large control in the breaching between the chimney and the nearest boiler (location C).

Where several units are vented into a common breaching, the most draft-critical should vent highest in, or be placed closest to the chimney. Incinerators should generally be placed farthest from, or vented lowest in the chimney.



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Choosing The Right Size

(Sizing the Control)

Simple rules of thumb to guide size selections:

1. Use a draft control the same size as the flue pipe, that is, a 6" control for a 6" round pipe, a 12" control for a 12" pipe, etc.
2. For intermediate sizes of smoke pipe, use the next larger size draft control to provide ample capacity. It is a simple matter to install a round control on a pipe an inch or so larger or smaller than the control.
3. If the flue pipe or breaching is square, use the round equivalent. For example - on a 14" x 14" breaching use a 14" control. Little flow occurs in the corners of a square pipe so its capacity is approximately the same as a round pipe of the same diameter.
4. If the breaching is rectangular or oval, compute its cross-sectional area and select a draft control having the same or a greater nominal cross-sectional area. A breaching 14" high x 10" wide would have a cross-sectional area of 140 square inches. From the table, select a 14" control with a cross-sectional area of 154 square inches.
5. Where a control larger than 32" is required, use more than one regulator with combined cross-sectional areas equal to or greater than that of the breaching. When chimneys are of an unusual height or if the draft to be maintained is either very high or very low, it is advisable to deviate from the rules of thumb outlined here. Refer to the larger table.

Control Size	Nominal Cross-Sectional Area (Sq. In.)
6"	28
7"	38
8"	50
9"	63
10"	78
12"	113
14"	154
16"	201
18"	255
20"	314
24"	452
28"	616
32"	804

Diameter of Flue or Breaching	If Chimney Height is	Use This Size Control	If Chimney Height is	Use This Size Control	If Chimney Height is	Use This Size Control
4	15' or less	4"	16' or more	5"		
5	15' or less	5"	16' or more	6"		
6	15' or less	6"	16' or more	7"		
7	15' or less	7"	16' or more	8"		
8	15' or less	8"	16' or more	9"		
9	15' or less	9"	16'-30'	10"	31' or more	12"
10	20' or less	10"	21'-40'	12"	41' or more	14"
11	20' or less	12"	21'-40'	12"	41' or more	14"
12	20' or less	12"	21'-40'	14"	41' or more	16"
13	22' or less	14"	23'-45'	16"	46' or more	18"
14	22' or less	14"	23'-45'	16"	46' or more	18"
15	22' or less	16"	23'-45'	16"	46' or more	18"

16	30' or less	16"	31'-50'	18"	51' or more	20"
17	30' or less	18"	31'-50'	20"	51' or more	20"
18	30' or less	18"	31'-50'	20"	51' or more	20"
19	30' or less	20"	31'-50'	20"	51' or more	24"
20	30' or less	20"	31'-50'	20"	51' or more	24"
21	30' or less	20"	31'-50'	24"	51' or more	24"
22	30' or less	24"	31'-50'	24"	51' or more	24"
23	35' or less	24"	36'-60'	24"	61' or more	28"
24	35' or less	24"	36'-60'	24"	61' or more	28"
25	35' or less	28"	36'-60'	28"	61' or more	28"
26	40' or less	28"	41'-70'	28"	71' or more	28"
27	40' or less	28"	41'-70'	28"	71'-100'	28"
28	50' or less	28"	51'-100'	32"	100' or more	32"
29	50' or less	28"	51'-100'	32"	100' or more	32"
30	50' or less	32"	51'-100'	32"	100' or more	32"
31	50' or less	32"	51'-100'	32"	100' or more	Two 24"
32	50' or less	32"	51'-100'	32"	100' or more	One 24" One 28"
33	50' or less	32"	51'-100'	One 32" One 20"	100' or more	One 32" One 24"
34	50' or less	32"	51'-100'	One 32" One 24"	100' or more	One 32" One 24"

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FIELD CONTROLS
Solutions for the Great Indoors®