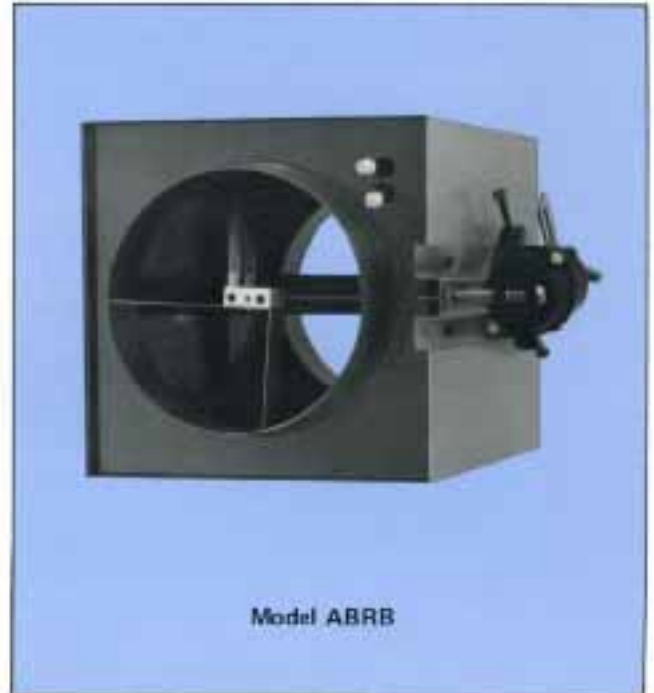


Features-

Model ABRB

- Round inlet/outlet connections – 10 sizes
- Rugged double wall galvanized steel construction
- Thermally insulated casing
- Gasketed valve seal for minimum leakage
- Damper blade shaft rotates in oil impregnated bronze bearings
- Pneumatic or electric controls
- Air flow sensor at inlet of unit
- Low pressure drop
- Low sound levels



Model ABSB

- Slide in duct design – 49 sizes
- Expanding duct seal for minimum leakage between unit and duct
- Gasketed valve seal for minimum leakage
- Damper blade shaft rotates in oil impregnated bronze bearings
- Pneumatic or electric controls
- Air flow sensor at inlet of unit
- Low pressure drop
- Low sound levels



CARNES[®] = QUALITY YOU CAN COUNT ON

Energy Conservation with VAV Retrofit

GENERAL

With the need to reduce energy consumed in a buildings environmental control system, and to conserve ever dwindling energy resources, there is a growing interest in retrofitting existing constant volume systems into a variable air volume mode of operation. There are several factors which determine the success of this conversion process.

From the owner's standpoint the cost of the conversion, system downtime with tenant inconvenience, actual savings realized, system and zone control, and tenant satisfaction, are all important factors in evaluating the success of the conversion.

To the tenant, zone control, air distribution in the zone and noise, are the criteria of success. These can be critical, because a well designed and installed constant volume system will usually meet the needs of the buildings tenants.

FAN SYSTEM

This catalog is primarily concerned with VAV conversion at the zone level, namely, air terminal units, and zone air distribution. To complete the conversion it is necessary to modify the system controls, fan performance and control, and possibly the central system configuration.

Several fan system conversions are:

- Variable volume damper on the discharge side of the fan.
- Variable inlet guide vanes in or near the fan inlet.
- Fan speed control.
- Fan blade angle change.

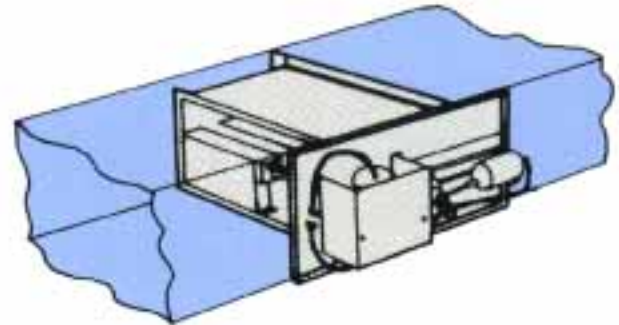
SYSTEM TYPES

The type of existing system, building perimeter design impositions, on the system, and zone requirements dictate the choice of approaches to the conversion to be taken.

LOW VELOCITY CONSTANT VOLUME REHEAT SYSTEM (Booster Coil Reheat)

This system has been very popular because of its simplicity, and once balanced properly, has good zone control performance characteristics. One major failing is that this approach has too few zones, with a single thermostat covering too large of an area with varying loads. Barring this problem, the system can be easily converted to a variable volume system-with or without reheat-depending upon the zone requirements. For most interior zones, the reheat coils can and should be disconnected.

For perimeter zones, if the central system previously provided the heating to handle the entire perimeter heat loss, then the least costly approach is to keep the reheat coils active in these zones.

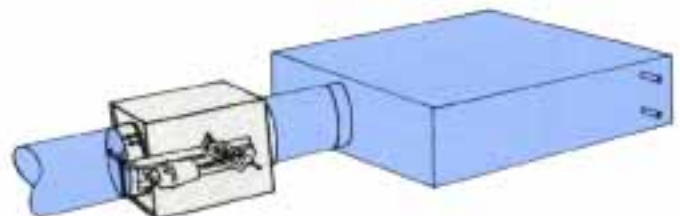


The unit used for this conversion, is the Model ABSB Retrofit Unit which is designed to be inserted into existing square or rectangular ductwork. With the installation process taking only a short amount of time, minimum tenant inconvenience is experienced.

HIGH VELOCITY CONSTANT VOLUME REHEAT UNITS

The system with constant volume reheat terminal units can be easily converted to variable air volume by adding a retrofit unit upstream of the existing terminal unit which can now serve as a sound attenuator.

If reheat is required, existing and VAV retrofit controls can be sequenced to reduce the amount of primary air by 50 to 70 percent before activating the coil.

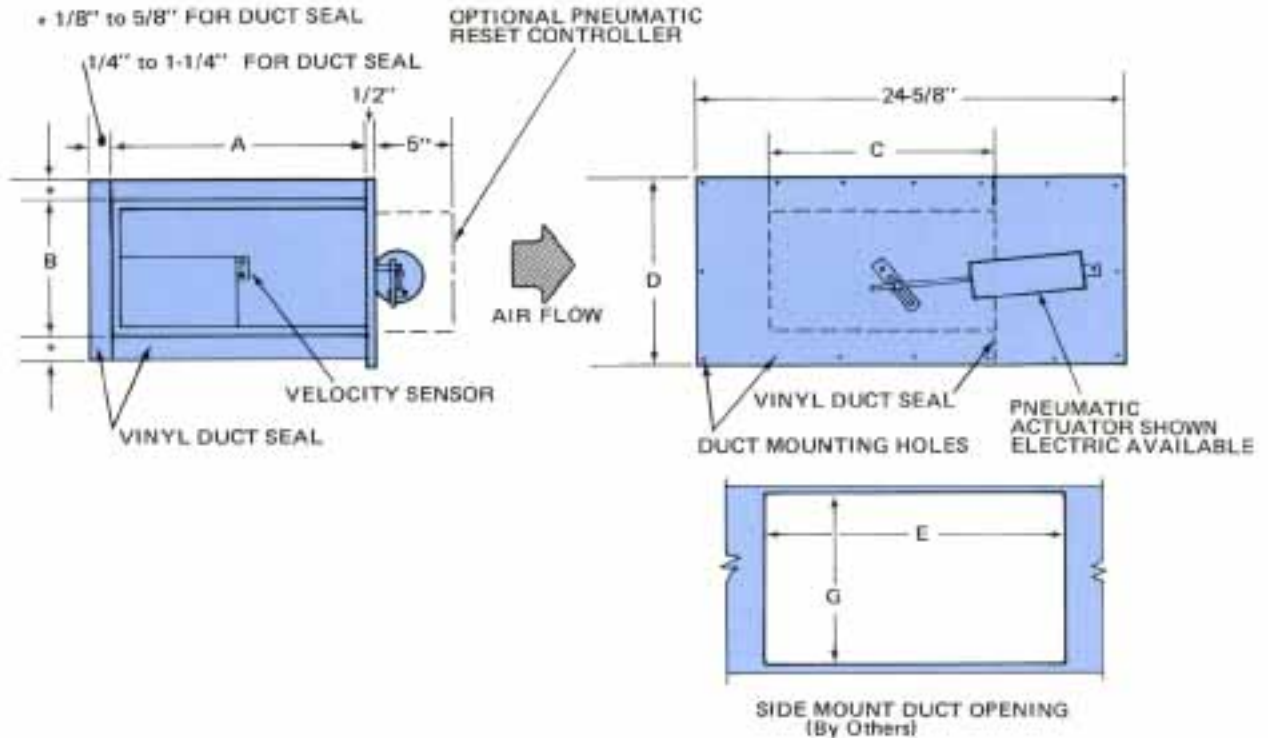


The unit for this conversion is the Model ABRB Retrofit Unit which replaces a short section of duct ahead of the terminal unit. The thermostat which formerly activated the reheat coil, can now be used to control the VAV retrofit unit and its coil when required.

DOUBLE DUCT CONSTANT VOLUME TERMINAL UNITS

Double duct systems can be converted to variable air volume by using a method similar to the reheat system.

DIMENSIONAL DATA—Model ABSB



UNIT SIZE	FOR DUCT SIZES (W x H)	SIZES LISTED IN INCHES				DUCT OPENING		WEIGHT LBS. (Less Controls)	UNIT SIZE	FOR DUCT SIZES (W x H)	SIZES LISTED IN INCHES				DUCT OPENING		WEIGHT LBS. (Less Controls)
		A	B	C	D	E	G				A	B	C	D	E	G	
0906	6x6 to 7x8	5-1/2	5-3/4	13	7	18-1/8	6	7	2012	20x12 to 21x14	19-1/2	11-3/4	15	13	19-1/8	12	20
0906	8x6 to 9x8	7-1/2	5-3/4	13	7	18-1/8	6	8	2212	22x12 to 23x14	21-1/2	11-3/4	15	13	19-1/8	12	21
1006	10x6 to 11x8	9-1/2	5-3/4	13	7	18-1/8	6	9	2412	24x12 to 25x14	23-1/2	11-3/4	15	13	19-1/8	12	23
1206	12x6 to 13x8	11-1/2	5-3/4	13	7	18-1/8	6	10	1414	14x14 to 15x16	13-1/2	13-3/4	21	15	22-1/8	14	22
1406	14x6 to 15x8	13-1/2	5-3/4	13	7	18-1/8	6	11	1614	16x14 to 17x16	15-1/2	13-3/4	21	15	22-1/8	14	24
1606	16x6 to 17x8	15-1/2	5-3/4	13	7	18-1/8	6	12	1814	18x14 to 19x16	17-1/2	13-3/4	21	15	22-1/8	14	25
1806	18x6 to 19x8	17-1/2	5-3/4	13	7	18-1/8	6	13	2014	20x14 to 21x16	19-1/2	13-3/4	21	15	22-1/8	14	27
0908	8x8 to 9x10	7-1/2	7-3/4	13	9	18-1/8	8	10	2214	22x14 to 23x16	21-1/2	13-3/4	21	15	22-1/8	14	28
1008	10x8 to 11x10	9-1/2	7-3/4	13	9	18-1/8	8	11	2414	24x14 to 25x16	23-1/2	13-3/4	21	15	22-1/8	14	30
1208	12x8 to 13x10	11-1/2	7-3/4	13	9	18-1/8	8	12	2614	26x14 to 27x16	25-1/2	13-3/4	21	15	22-1/8	14	31
1408	14x8 to 15x10	13-1/2	7-3/4	13	9	18-1/8	8	13	1616	16x16 to 17x18	15-1/2	15-3/4	21	17	22-1/8	16	26
1608	16x8 to 17x10	15-1/2	7-3/4	13	9	18-1/8	8	14	1816	18x16 to 19x18	17-1/2	15-3/4	21	17	22-1/8	16	27
1808	18x8 to 19x10	17-1/2	7-3/4	13	9	18-1/8	8	15	2016	20x16 to 21x18	19-1/2	15-3/4	21	17	22-1/8	16	29
2008	20x8 to 21x10	19-1/2	7-3/4	13	9	18-1/8	8	16	2216	22x16 to 23x18	21-1/2	15-3/4	21	17	22-1/8	16	31
1010	10x10 to 11x12	9-1/2	9-3/4	13	11	18-1/8	10	12	2416	24x16 to 25x18	23-1/2	15-3/4	21	17	22-1/8	16	32
1210	12x10 to 13x12	11-1/2	9-3/4	13	11	18-1/8	10	13	2616	26x16 to 27x18	25-1/2	15-3/4	21	17	22-1/8	16	34
1410	14x10 to 15x12	13-1/2	9-3/4	13	11	18-1/8	10	14	2816	28x16 to 29x18	27-1/2	15-3/4	21	17	22-1/8	16	35
1610	16x10 to 17x12	15-1/2	9-3/4	13	11	18-1/8	10	15	1818	18x18 to 19x20	17-1/2	17-3/4	21	19	22-1/8	18	30
1810	18x10 to 19x12	17-1/2	9-3/4	13	11	18-1/8	10	16	2018	20x18 to 21x20	19-1/2	17-3/4	21	19	22-1/8	18	31
2010	20x10 to 21x12	19-1/2	9-3/4	13	11	18-1/8	10	17	2218	22x18 to 23x20	21-1/2	17-3/4	21	19	22-1/8	18	33
2210	22x10 to 23x12	21-1/2	9-3/4	13	11	18-1/8	10	18	2418	24x18 to 25x20	23-1/2	17-3/4	21	19	22-1/8	18	34
1212	12x12 to 13x14	11-1/2	11-3/4	15	13	19-1/8	12	16	2618	26x18 to 27x20	25-1/2	17-3/4	21	19	22-1/8	18	36
1412	14x12 to 15x14	13-1/2	11-3/4	15	13	19-1/8	12	17	2818	28x18 to 29x20	27-1/2	17-3/4	21	19	22-1/8	18	38
1612	16x12 to 17x14	15-1/2	11-3/4	15	13	19-1/8	12	18	3018	30x18 to 31x20	29-1/2	17-3/4	21	19	22-1/8	18	40
1812	18x12 to 19x14	17-1/2	11-3/4	15	13	19-1/8	12	19									