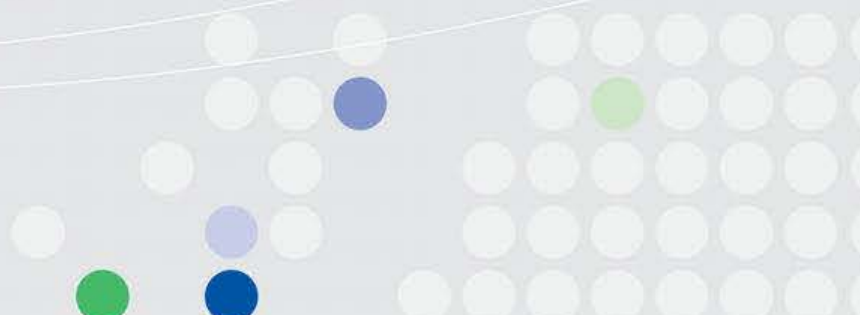




AIR DISTRIBUTION SPECIALIST



BYPASS TERMINAL UNITS



BYPASS TERMINAL UNITS (BPTU)



FLOWTECH Bypass Terminal Units handles constant supply of primary air through its inlet and uses a diverting damper to bypass part of supply air into the plenum return. The damper is directly controlled by room thermostat in the occupied space to provide the volume of air required to meet the thermal demand. The pressure requirement through the supply air path to the conditioned space is set with an inlet balancing damper. A second manual balancing damper in the bypass is field adjusted to match the resistance in the discharge duct in order to maintain minimum airflow to the space. Although variable air volume to the space in operation varies, the total airflow of the fan remains constant, so the fan power associated energy cost is not reduced. Therefore, bypass units are not energy efficient.

MATERIAL SPECIFICATIONS

- Casing
0.9mm galvanized steel sheet
- Damper Blade
1.2mm galvanized steel sheet
- Acoustic Insulation
25mm thick, 24kg/m³ with black tissue facing meeting UL 181 std.
- Brass Bush
12mm round

Features

The housing of VAV is made of galvanized sheet steel of thickness 0.9 (21g)

Damper blade is of either double wall thickness GI plate, sandwiching a closed cell neoprene gasket or 1.2mm thick galvanized sheet with full round gasket for air tight operation for high pressure systems.

The damper blade is having a precision die cast zinc alloy shaft which rotates in self lubricating brass bushes, resulting to an extremely low friction for damper operation.

Variable Air Volume units are designed to ensure airtight operations with low leakage factor of 2% of total air volume at 750Pa inlet static pressure as per international standards DW 142 Class C.

Internal walls of VAV are lined with 25mm thick, density 24 kg/m³ acoustic liner made of mineral fiber and edges are coated with adhesive or concealed with metal stiffener to seal loose fiber.

Tight closure of damper with gasket, ensure low leakage with less than 2% of total air volume at 750Pa maximum static pressure meeting international standards for erosion, casing leakage rate to Class 2 in accordance with DIN24194 and fire hazard classification 25/50 as per ASTM E 84 & UL723.

Rectangular discharge opening is designed for slip and drive cleat connection. Flanged or other end connection is optional.



ENGINEERING FEATURES

VAV systems are usually designed with diversity factor which means that the main air handler design airflow is less than the sum of the total airflow of all the VAV. This is a common design because not all of the VAV in a building will be in full load during standard operation. The unit ranges are suitable for either bypass or temperature dependent applications with a capability of handling induct pressure up to 750Pa.

VAV terminals are suitable for both constant and Variable Air Volume supplies with options in Pneumatic, Electrical Control or Automated Control Systems (ACS) to suit most of the various applications on controls.

Pneumatic Control Systems are becoming obsolete. The VAV damper is opened and closed by a controller sending air pressure to an actuator connected to the VAV damper.

Electrical Control System simply sends a signal from the thermostat in volts to an electrically operated actuator connected to the VAV damper.

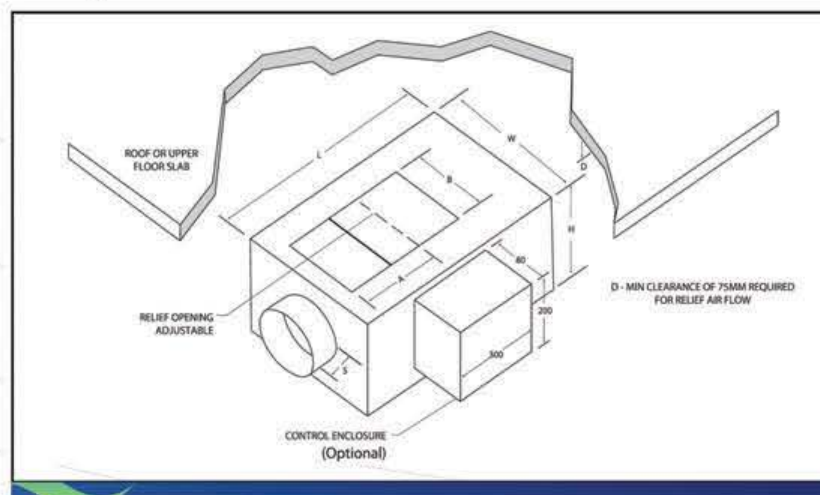
ACS works the same as electric except there is an automated system set up in the building that gets information from all the VAV and air handlers, display it in text and graphics form. VAV unit provides energy saving by maintaining constant room temperature with low-pressure drops and Variable Air Volume supplies, for the low and medium pressure package air handling or air conditioning systems.

FLOWTECH VAV is easy to install with any air conditioning units in buildings or offices and can easily relocate as interiors require.

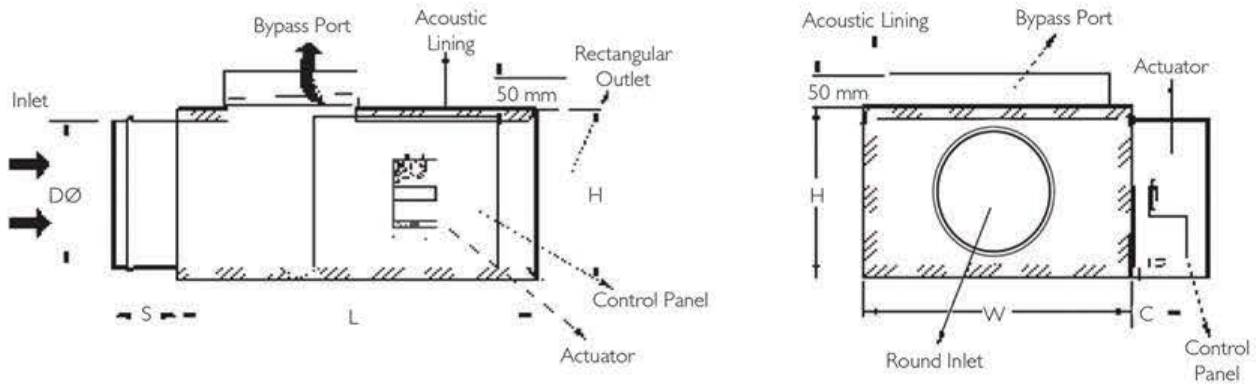
Air flow capacity ranges from 30 - 1500 LPS with minimum inlet static pressure of 100Pa. A minimum air volume of 20% can be set if required. Design air volume varies from factory set to specified value within $\pm 5\%$ of set point.

VAVs are designed to produce low NC levels with minimum pressure drop for the main system static. Units are supplied with bypass port dampers to divert the excess air flow to return duct.

FLOWTECH manufacture Zero-Maintenance VAV, quick opening access panels can be provided for easy inspection and service as optional.



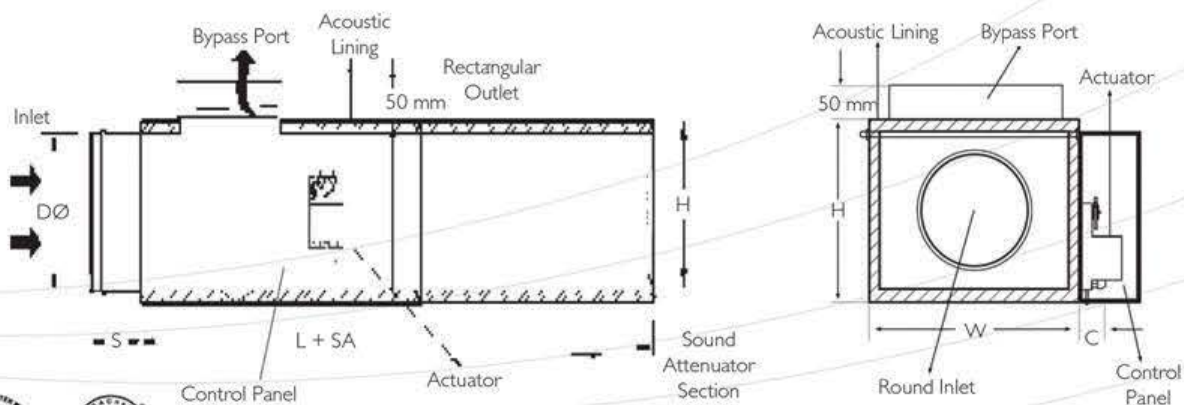
BYPASS TYPE VAV



DIMENSIONAL DATA

Model	Air flow Range(LPS)	Air flow Range (CFM)	Inlet D(mm)	Length L(mm)	Width W(mm)	Height H(mm)	L+SA (mm)	Spigot "S"(mm)	Control Panel Depth "C"(mm)
BPTU-15	47-189	100-400	150 Ø	400	350	250	1000	150	100
BPTU-20	236-378	500-800	200 Ø	450	400	300	1050	150	100
BPTU-25	283-519	600-1100	250 Ø	500	450	350	1100	150	100
BPTU-30	378-755	800-1600	300 Ø	550	500	400	1150	200	100
BPTU-35	519-991	1100-2100	350 Ø	600	550	450	1200	200	100
BPTU-40	755-1321	1600-2800	400 Ø	650	600	500	1250	200	100

BYPASS TYPE VAV WITH SOUND ATTENUATOR



BYPASS TYPE VAV SELECTION TABLE

Performance Chart

Model	Airflow		Discharge-Basic		Minimum S.P.				By-Pass		Discharge		Radiated
	L/S	CFM	Pa	in.wg	Pa	in.wg	Pa	in.wg	Pa	in.wg	NC(1)	NC(2)	NC
BPTU - 15	47	100	2	0.01	4	0.02	6	0.03	2	0.01	--	--	--
	94	200	12	0.05	18	0.08	25	0.10	10	0.04	--	21	--
	142	300	27	0.11	39	0.16	52	0.21	22	0.09	--	33	--
	189	400	50	0.20	70	0.28	91	0.36	40	0.16	--	40	24
BPTU - 20	236	500	17	0.07	37	0.15	58	0.23	32	0.13	--	25	--
	283	600	25	0.10	56	0.22	85	0.34	50	0.20	--	31	--
	330	1000	37	0.15	78	0.31	118	0.48	72	0.29	--	36	20
	378	800	50	0.20	100	0.40	152	0.61	97	0.39	--	40	24
BPTU - 25	283	600	10	0.04	26	0.10	41	0.17	7	0.03	--	--	--
	330	700	20	0.08	48	0.19	75	0.30	17	0.07	--	27	--
	425	900	32	0.13	74	0.30	116	0.47	27	0.11	--	34	--
	519	1100	50	0.20	109	0.44	169	0.68	42	0.17	--	40	24
BPTU - 30	378	800	12	0.05	47	0.19	82	0.33	25	0.10	--	21	--
	472	1000	20	0.08	71	0.29	121	0.49	40	0.16	--	27	--
	614	1300	32	0.13	111	0.45	189	0.76	67	0.27	--	36	--
	755	1600	50	0.20	169	0.68	286	1.15	100	0.40	--	40	24
BPTU - 35	519	1100	12	0.50	47	0.19	81	0.33	25	0.10	--	21	--
	661	1400	22	0.90	74	0.30	126	0.51	40	0.16	--	28	--
	802	1700	32	0.13	105	0.42	177	0.72	60	0.24	--	34	--
	991	2100	50	0.20	146	0.59	241	0.97	92	0.37	--	40	25
BPTU - 40	775	1600	17	0.70	52	0.21	86	0.35	27	0.11	--	25	--
	944	2000	25	0.10	76	0.30	126	0.51	45	0.18	--	31	--
	1133	2400	37	0.15	106	0.43	175	0.71	65	0.26	--	36	23
	1321	2800	50	0.20	140	0.56	229	0.92	87	0.35	--	40	27

Performance Notes

1. Test data obtained in accordance with ARI Standard 880-98 and ASHRAE Standard 130-1996.
2. Airflow is given in litres per second, L/S; and cubic feet per minute, CFM.
3. Pressure is given in Pascals, Pa; and inches of water gauge, in.wg.
4. Listed minimum static pressure discharge is the static pressure loss through the unit with 100% airflow through the discharge outlet.
5. Listed minimum static pressure by-pass is the static pressure loss through the unit with 100% airflow through the by-pass outlet.
6. NC values are not ARI certified.
7. Blanks (--) indicate values less than NC20
8. NC values are calculated based on procedures outlined in Appendix E, ARI Standard 885-1998, "A Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets."



BPTU

Radiated NC is based on a 5/8" mineral fiber tile ceiling and the environmental effect. The radiated attenuation deductions are as follows:

Radiated	<u>Octave Band Mid Frequency, HZ.</u>					
Attenuation	2	3	4	5	6	7
Total Deductions	18	19	20	26	31	36

Discharge NC(1) is based on environmental effect, duct lining effect, end reflection, flex duct effect and sound power division per ARI 885-1998 typical attenuation factors. The total discharge NC(1) attenuation deductions are as follows:

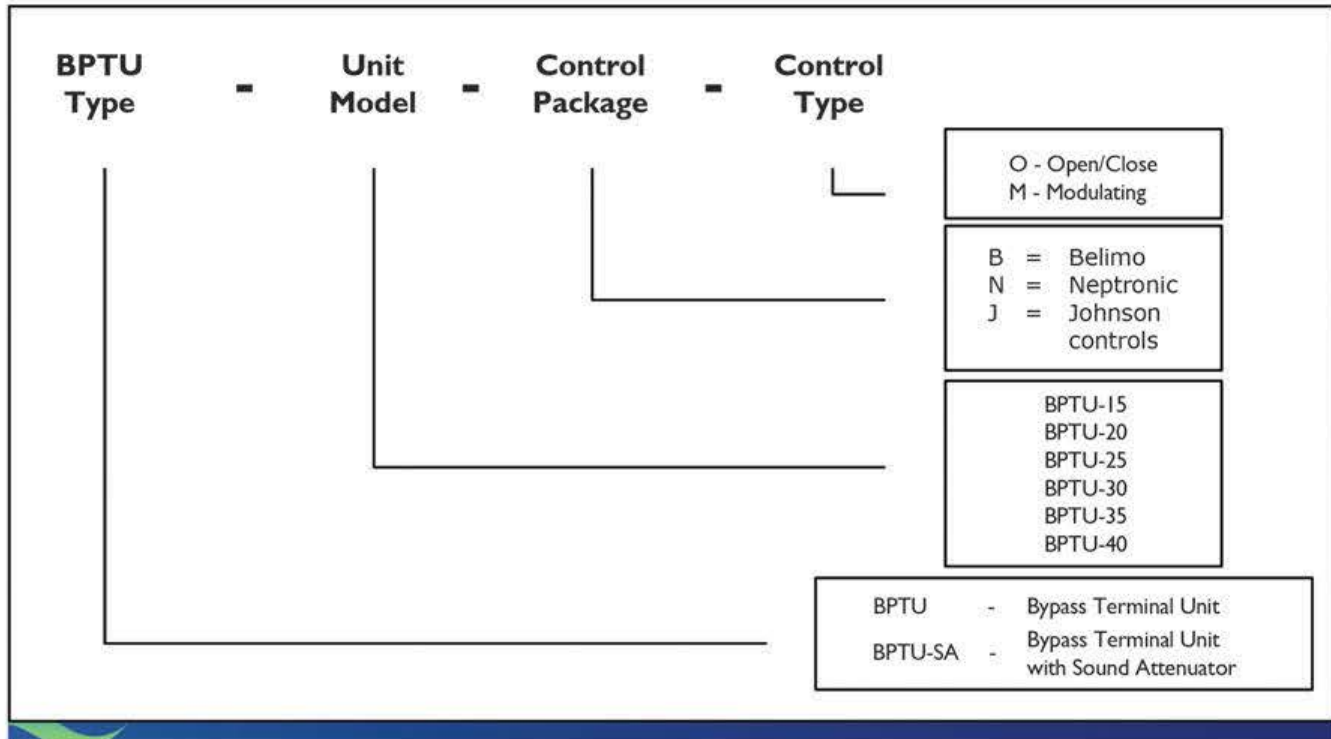
Discharge	<u>Octave Band</u>					
Attenuation	2	3	4	5	6	7
<400 CFM	24	28	39	53	59	40
400-800 CFM	27	29	40	51	53	39
>800 CFM	29	30	41	51	52	39

Discharge NC(2) is based on environmental effect and space effect with no attenuation for downstream duct work. Space effect is based on a room with a volume of 5000 cubic feet and the sound source is 5 feet away from the occupant. The total discharge NC(2) attenuation deductions are as follows:

Discharge	<u>Octave Band Mid Frequency, HZ.</u>					
Attenuation (NC2)	2	3	4	5	6	7
Total Deductions	9	9	9	9	10	11



ORDERING SYSTEM



ORDERING EXAMPLE

BPTU-20-B-M

Refers to Bypass Terminal Unit, Unit Model 20 with Belimo Actuator, Modulating Type

