

Eurovent Certified Product to Rating Standard EN15116



Dadanco Pty Ltd participates in the ECC programme for Active Chilled Beams. Check ongoing validity of the certificate: www.eurovent-certification.com or www.certiflash.com



Active Chilled Beam

ACB45

500mm Wide

2-way discharge cassette style Active Chilled Beam

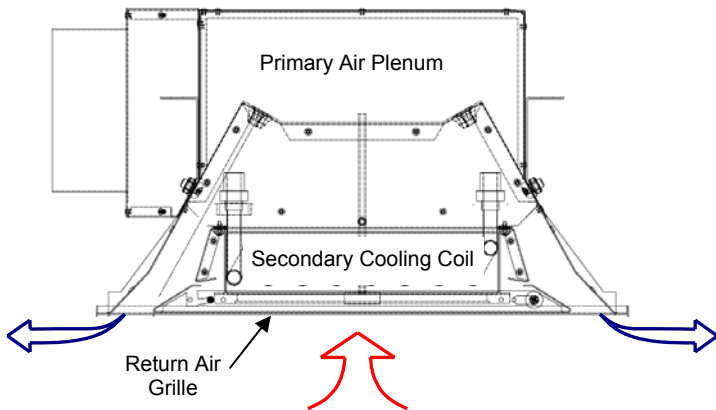
Product Information Release V.1 - January 2012



General Information

ACB45

Dadanco ACB45 2-way Active Chilled Beams incorporate new patented technologies to deliver a breakthrough for higher energy efficiency perimeter and centre zone air conditioning using lower air quantities. Dadanco Active Chilled Beams provide efficient, effective and whisper-quiet air conditioning for almost any application.



ACB45 incorporates 2-way supply air discharge with a one piece perforated return air grille and a single 2-row horizontal secondary cooling coil.

Secondary room air is induced directly from the conditioned space to provide localized cooling and eliminate cross contamination between rooms or units.

Advantages of Active Chilled Beams

- Dadanco Active Chilled Beams supply cooling, heating and the outdoor air required for ventilation in the conditioned space.
- Compact dimensions and intrinsically smaller duct sizes offer real savings in ceiling space requirements for new construction and HVAC refurbishment project.
- Fan power is dramatically reduced. The low primary air quantity is treated by the AHU and distributed at low pressure. The primary air is typically only 30-35% of the total air supplied by Dadanco Active Chilled Beams due to the use of efficient induction technology.
- Secondary air from the conditioned space is induced over the secondary heat exchanger, delivering localized sensible cooling, for **NO FAN ENERGY REQUIREMENT**
- ACB45 Active Chilled Beams provide 2-way supply air distribution for perimeter or internal zone applications
- ACB45 Active Chilled Beams are designed for 'Lay-In' installation in ceiling tile systems or for 'flush mounting' in plasterboard ceilings
- ACB45 Active Chilled Beams deliver more cooling capacity using less treated air than any all-air system.
- Active Chilled Beams offer 2-stage capacity control through control of secondary water flow separate from primary air control.
- Noise radiated from Dadanco Active Chilled Beams is very low...

Application Data – ACB45

COOLING	40 to 200 W/m ²
LENGTH	Nominal 500 x 1500mm grille to suit standard suspended ceiling tile systems or plasterboard ceilings without using a T-Bar ceiling frame.
FEATURE	Standard Side entry primary air spigot connections 2-Pipe or 4-Pipe coil configurations
HEIGHT	281mm
INSULATION	Thermal insulation for the primary air plenum is standard
GRILLE	2-way discharge profiled metal supply air grilles with one piece swing-down centre return air grille
CONTROL	ACB45 units can be controlled in groups of units or individually as required

APPLICATIONS:

Dadanco Active Chilled Beam ACB45 is suited for either perimeter or internal zone in-ceiling installations in:

- Office Buildings
- New Construction & HVAC Refurbishment Projects
- Healthcare Facilities & Laboratories
- Schools and Institutional Buildings
- Airports

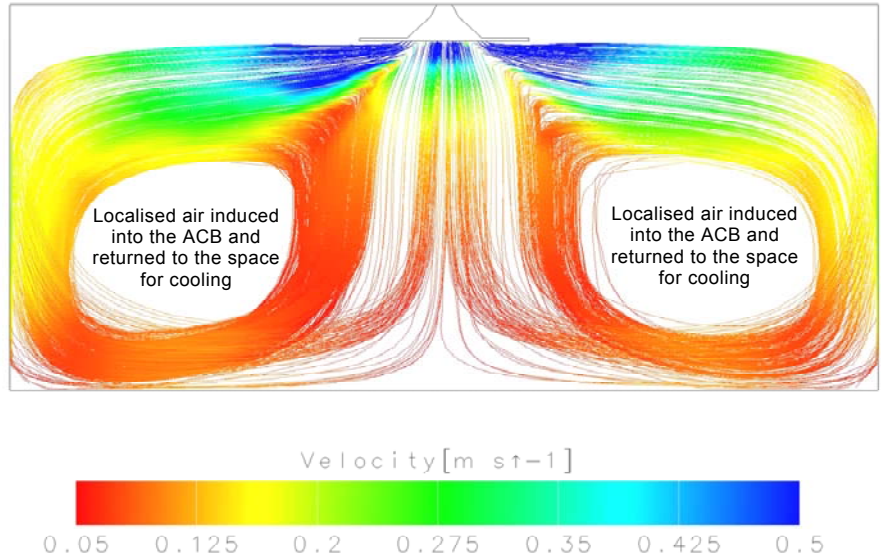
General Information ACB45

Typical ACB45 Air Distribution

The 2-way discharge air flow characteristics of Active Chilled Beam ACB45, created by the induction of secondary air through the centre of the unit, produces a unique air flow pattern resulting in thorough purging of air in the occupied space compared to most conventional all-air diffusion characteristics.

Entrainment of secondary air from within the conditioned space reduces the potential for cross-contamination between different zones within the building.

Relatively low terminal velocities can be maintained in the conditioned space.



Eurovent Certified Product to Rating Standard EN15116

General Product Technical Data

ACB45 2-Way Discharge Active Chilled Beam	
	ACB45-1350
Nominal Grille Face Size:	500 x 1500mm
Nominal Active Coil Length	1350mm
Primary Air Range $\leq 110\text{Pa}$:	25 ~ 75 L/s
Nominal Cooling Capacity Range:	805 ~ 2185 Watts
Configuration:	2-Pipe or 4-Pipe

NOTE: Nominal cooling capacities based on 2-pipe coil @ 24°C room air, 12°C primary air, 14°C Entering Secondary Water Temperature and Secondary Water Flow Rate to achieve average Leaving Water Temperature of 17°C ($\Delta T = 3^\circ\text{C}$) or minimum water flow of 0.03 L/s.

Primary Air Pressure $\leq 110\text{Pa}$.

Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air pressures.

For selections at conditions and unit sizes other than those above please refer to selection tables or contact DADANCO for further assistance.

New Technologies

Dadanco's Starline™ multi-lobe high performance induction nozzles and superior fluid dynamics design are combined into Dadanco ACB45 Active Chilled Beams for improved performance and lower noise characteristics.

Rather than relying on natural convection as with passive chilled beams, Dadanco ACB45 Active Chilled Beams use primary air to deliver ventilation air and induce secondary room air through the secondary cooling coil within the unit, delivering enhanced performance in one simple ceiling mounted package.

All Dadanco Active Chilled Beams utilize modern Computational fluid dynamics (CFD) analysis in product design and development.

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

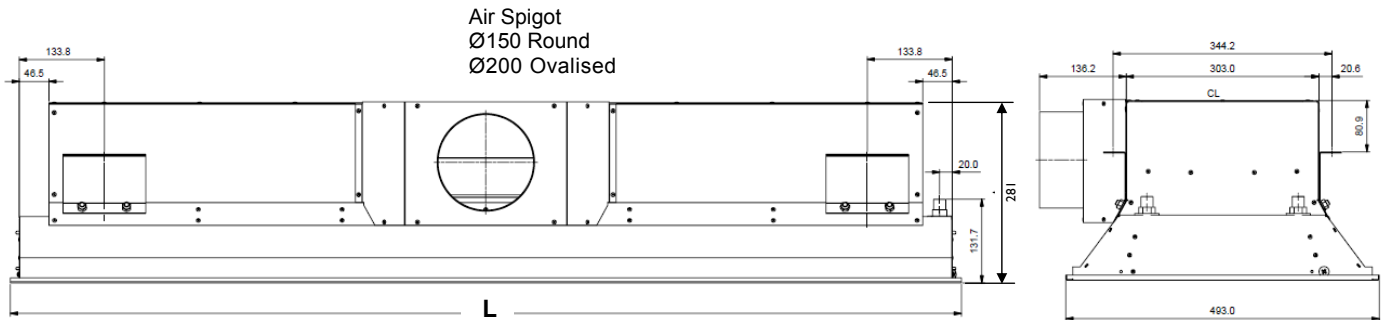


Proudly Australian
Owned, Designed, Manufactured & Supported

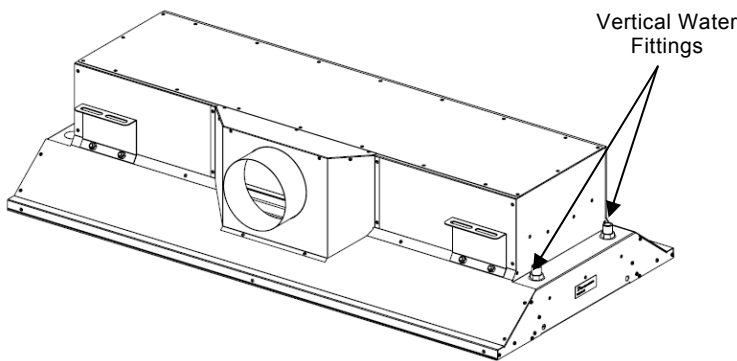
DIMENSIONS

Standard ACB45 Active Chilled Beams are dimensioned as below based on active coil length to determine overall length

Nominal Length	Active Coil Length	Overall Grille Length (L)	Unit Weight
1500mm	1350mm	1492mm	40 Kg

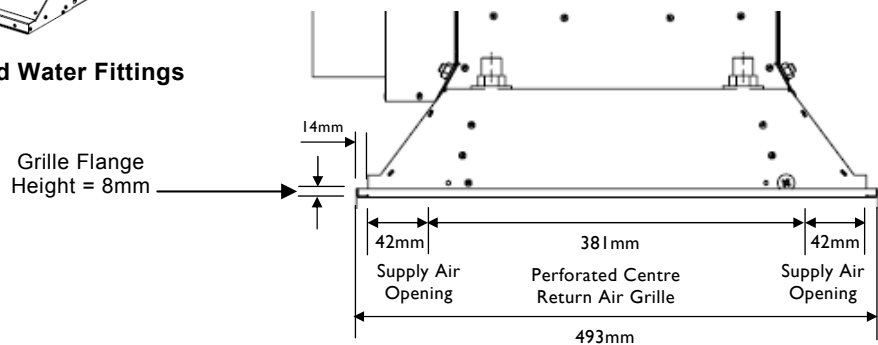


PRIMARY AIR CONNECTION



Side Entry Primary Air with Right Hand Water Fittings

GRILLE DETAILS



WATER HANDLING OPTIONS

- Side Entry Primary Air — 150mm Round Spigot & Left or Right Hand fittings as viewed from the primary air spigot side
- Side Entry Primary Air — 200mm Ovalised Spigot & Left or Right Hand fittings as viewed from the primary air spigot side

STANDARD FEATURES

- 1/2" BSP male flat face tapered thread fittings
- 2-Pipe Cooling Coil configuration
- Vertical water fittings
- One-piece perforated metal return air grille
- Ø150mm round primary air spigot
- Insulated primary air plenum
- Interpon MA124A 'Satin White' Powdercoated Grille finish

OPTIONAL FEATURES

- Plain copper connections or other brass fittings
- 4-Pipe Cooling/Heating coil configuration
- Ø200mm ovalised primary air spigot
- Un-Insulated primary air plenum
- Non-standard grille colors (on request)

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

Guide Specification ACB45

GUIDE SPECIFICATION ACB45

Scope

Provide Dadanco Multi-directional (2-way discharge) ACB45, in-ceiling Active Chilled Beam units; fitted with low-noise, high efficiency patented Starline™ nozzles, with capacities as listed in the equipment schedule. The configuration of the units is shown on the drawings.

Construction

Construct the active chilled beam casing(s) from 0.8mm galvanised steel panels to provide a compact unit with a primary air plenum, secondary air cooling coil, two air entrainment and discharge chambers and mounting support provisions.

Plenum: Fit two rows of the specified number and size of STARLINE™ induction nozzles to the primary air plenum, to discharge primary air into the air entrainment chambers. Provide a 150 or 200mm-diameter sheetmetal spigot located centrally on the longitude of the primary air plenum to permit connection of primary air flexible ductwork to the unit plenum.

Insulation (*Standard*): Self adhesive, fire retardant thermal insulation to the interior of the primary air plenum to prevent condensation forming on the outside of the unit.

Nozzles: Fit multi-lobed patented Starline™ induction nozzles of pliable fire-retardant polymer, designed for low noise generation and rapid secondary air entrainment. Provide the number and size of nozzles required to provide the primary airflow capacity specified for each unit.

Secondary cooling coil: Fit a single two-row (2-Pipe or 4-Pipe) secondary air coil of the specified length as required to achieve the specified secondary cooling capacity. Coil shall be constructed of galvanised steel end plates and frames with ½" copper tubes mechanically expanded into 0.145mm thickness rippled edge aluminium fins.

Provide ½" BSP male flat face tapered thread fittings on all coil connections. Water fittings are to be in a vertical arrangement to ensure no water pipes or connections overhang the overall length of the unit.

Secondary coil maximum recommended site test pressure not to exceed 2500 kPa (25 Bar) with continuous maximum recommended operating pressure of 1680 kPa (16.8 Bar). Coil to be factory pressure tested to 2500 kPa and conform to a burst pressure rating of 13,000 kPa (130 Bar) at 50°C.

Grille: Provide an integral powder coat satin white finished combination supply/return air grille for each unit. The supply air grilles are to be 1-active slot formed sheetmetal grille along each longitudinal side and a pivot hinged one-piece perforated metal return air grille panel in the centre to provide ready access to the lint screen (*if required*) and secondary cooling coil. Provide for a captive return air grille panel openable by swinging the grille panel down on hinge pins secured to the unit return air opening frame.

The unit shall incorporate a commissioning tube to measure the static pressure in the plenum. The tube is to be made from flexible plastic, sealed air tight into the plenum and accessible through the return air grille opening for commissioning purposes.

Lint screen (*if required*): Fit a serviceable lint screen with frame to the face of the secondary heat exchanger above the openable return air grille. Fabricate the lint screen from fine plastic fabric mesh retained in a rectangular aluminium extrusion frame. Provide fixing clips to secure the lint screen frame to the secondary coil.

Installation

To ensure the performance of the Active Chilled Beam, allow for the following:

- Ensure that the unit is level and the fixing is secure. Do not support weight of unit on T-Bar ceiling members.
- Connect to the main primary air duct with straight or gently radiused flexible duct. Make all joints airtight.
- Connect the secondary chilled water flow and return piping to the secondary air coil, including the supply and installation of the isolating and control valves as shown on the piping schematic.

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

ACB45 Active Chilled Beam Selection Tables

The following tables provide selection data for ACB45 unit sensible cooling performance across a range of primary air pressures and air quantities, primary air ΔT and secondary air to entering water ΔT for fixed value secondary water ΔT of 3K or 4K.

Selections where primary air quantity and operating parameters are known

Step 1: Choose 2-Pipe or 4-Pipe ACB45 Active Chilled Beam and locate the correct table

Step 2: Determine the design secondary chilled water temperature differential (3K or 4K) — locate tables based on this value

Step 3: Determine the design primary air quantity and choose the value from one of the selection tables

Step 4: Determine the design primary air ΔT_{PA} (Room Air—Primary Air) from the Primary Air Cooling header row and select the value where primary air quantity from Step 3 and primary air ΔT_{PA} from Step 4 intersect.

Steps 3 & 4 will determine the primary air sensible cooling capacity (W)

Step 5: Determine the value where primary air quantity from Step 3 and primary air ΔT_{PA} from Step 4 intersect.

Step 5 will determine the primary air sensible cooling capacity (W)

Step 6: Determine the design Room Air—Entering Secondary Water ΔT_{SCA} from the correct water ΔT table header row.

Move vertically from the selected water ΔT_{SCA} value to the horizontal row corresponding to the primary air quantity and sensible cooling capacity selections in Steps 3 and 5 to determine Secondary Air Sensible Cooling (Coil Cooling) at that value.

NOTE: Secondary chilled water flow rate appears below the coil cooling capacity as the value in smaller font

Chilled Beam sensible cooling is the sum of Primary Air Cooling and Secondary Coil Cooling (600 + 897 = 1497W)

Example:

ACB45-1350.282 1500x500 2-way Active Chilled Beam 2-pipe Step 1																					
Primary Air	Supply Air	Static Pressure	Step 2												Q_s (W)	Secondary Water $\Delta T = 3K$					Q_s (W)
			Primary Air Cooling (W)						Secondary Air Cooling (W)							Secondary Air Cooling (W)					
			ΔT_{PA} (T _{Room} - T _{Primary Air})						ΔT_{SCA} (T _{Room} - T _{Entering Secondary Water})							ΔT_{SCA} (T _{Room} - T _{Entering Secondary Water})					
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	8	9	10	11	12		
Configuration: 70-SN																					
40	158	126	-388	-437	-485	-534	-582	-631	-679	-596	-710	-822	-933	-1043	-1404	-489	-601	-718	-833	-947	
										0.048	0.057	0.066	0.075	0.083		0.03*	0.036	0.043	0.05	0.057	
45	180	158	-437	-491	-546	-600	-655	-710	-764	-696	-824	-949	-1074	-1198	-1604	-579	-711	-842	-971	-1098	
										0.056	0.066	0.076	0.086	0.096		0.035	0.043	0.05	0.058	0.066	
Configuration: 78-SN																					
40	152	102	-388	-437	-485	-534	-582	-631	-679	-555	-663	-770	-876	-980	-1352	-462	-556	-666	-776	-884	
										0.044	0.053	0.062	0.07	0.078		0.03*	0.033	0.04	0.047	0.053	
45	178	128	-437	-491	-546	-600	-655	-710	-764	-655	-777	-897	-1016	-1134	-1552	-540	-666	-790	-914	-1036	
										0.052	0.062	0.072	0.081	0.091		0.032	0.04	0.047	0.055	0.062	
50	195	157	-485	-546	-606	-667	-728	-788	-849	-743	-877	1140	-1271	-1737	-624	-763	-900	-1036	-1169		
										0.059	0.07	0.081	0.091	0.101		0.037	0.046	0.054	0.062	0.07	

Water flow value of 0.03* = minimum allowed water flow rate for all ACB models

Quick Select Values

Q_s value in bold font = Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary water design ΔT of 3K or 4K

NOTE: Higher or lower secondary coil capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice



ACB45 Active Chilled Beam Selection Tables

ACB45-1350.282 1500x500 2-way Active Chilled Beam 2-pipe

Primary Air L/s	Supply Air L/s	Static Pressure Pa	Primary Air Cooling (W) $\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Water $\Delta T = 3K$					Secondary Water $\Delta T = 4K$						
										Secondary Air Cooling (W) Secondary Water Flow (L/s) $\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$					Qs (W)	Secondary Air Cooling (W) Secondary Water Flow (L/s) $\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$					Qs (W)
			8	9	10	11	12	13	14	8	9	10	11	12		8	9	10	11	12	
Configuration: 50-SN																					
25	105	97	-243	-273	-303	-334	-364	-394	-425	-326 0.03*	-376 0.03*	-448 0.036	-519 0.042	-590 0.047	-812	-301 0.03*	-351 0.03*	-401 0.03*	-451 0.03*	-501 0.03*	-765
30	130	138	-291	-328	-364	-400	-437	-473	-509	-471 0.038	-567 0.045	-663 0.053	-757 0.061	-851 0.068	-1100	-408 0.03*	-476 0.03*	-563 0.034	-660 0.04	-757 0.045	-1000
Configuration: 62-SN																					
25	97	64	-243	-273	-303	-334	-364	-394	-425	-273 0.03*	-315 0.03*	-357 0.03*	-409 0.033	-470 0.038	-721	-252 0.03*	-294 0.03*	-336 0.03*	-378 0.03*	-420 0.03*	-700
30	120	91	-291	-328	-364	-400	-437	-473	-509	-392 0.031	-477 0.038	-561 0.045	-645 0.052	-728 0.058	-998	-357 0.03*	-416 0.03*	-476 0.03*	-550 0.033	-636 0.038	-913
35	143	123	-340	-382	-425	-467	-509	-552	-594	-529 0.042	-634 0.051	-737 0.059	-839 0.067	-940 0.075	-1246	-446 0.03*	-528 0.032	-634 0.038	-740 0.044	-845 0.051	-1143
40	166	159	-388	-437	-485	-534	-582	-631	-679	-646 0.052	-766 0.061	-885 0.071	-1003 0.08	-1120 0.089	-1467	-531 0.032	-656 0.039	-779 0.047	-901 0.054	-1022 0.061	-1361
Configuration: 70-SN																					
25	93	51	-243	-273	-303	-334	-364	-394	-425	-244 0.03*	-282 0.03*	-319 0.03*	-357 0.03*	-403 0.032	-683	-225 0.03*	-263 0.03*	-301 0.03*	-338 0.03*	-376 0.03*	-665
30	114	72	-291	-328	-364	-400	-437	-473	-509	-355 0.03*	-424 0.034	-502 0.04	-580 0.046	-657 0.052	-939	-328 0.03*	-382 0.03*	-437 0.03*	-491 0.03*	-566 0.034	-874
35	136	97	-340	-382	-425	-467	-509	-552	-594	-480 0.038	-579 0.046	-675 0.054	-771 0.062	-866 0.069	-1184	-414 0.03*	-483 0.03*	-574 0.034	-673 0.04	-771 0.046	-1083
40	158	126	-388	-437	-485	-534	-582	-631	-679	-596 0.048	-710 0.057	-822 0.066	-933 0.075	-1043 0.083	-1404	-489 0.03*	-601 0.036	-718 0.043	-833 0.05	-947 0.057	-1300
45	180	158	-437	-491	-546	-600	-655	-710	-764	-696 0.056	-824 0.066	-949 0.076	-1074 0.086	-1198 0.096	-1604	-579 0.035	-711 0.043	-842 0.05	-971 0.058	-1098 0.066	-1497
Configuration: 78-SN																					
30	110	59	-291	-328	-364	-400	-437	-473	-509	-327 0.03*	-378 0.03*	-450 0.036	-521 0.042	-593 0.047	-887	-302 0.03*	-352 0.03*	-402 0.03*	-452 0.03*	-504 0.03*	-839
35	131	79	-340	-382	-425	-467	-509	-552	-594	-439 0.035	-532 0.043	-623 0.05	-714 0.057	-803 0.064	-1132	-388 0.03*	-453 0.03*	-524 0.031	-617 0.037	-709 0.043	-1033
40	152	102	-388	-437	-485	-534	-582	-631	-679	-555 0.044	-663 0.053	-770 0.062	-876 0.07	-980 0.078	-1352	-462 0.03*	-556 0.033	-666 0.04	-776 0.047	-884 0.053	-1248
45	173	128	-437	-491	-546	-600	-655	-710	-764	-655 0.052	-777 0.062	-897 0.072	-1016 0.081	-1134 0.091	-1552	-540 0.032	-666 0.04	-790 0.047	-914 0.055	-1036 0.062	-1445
50	195	157	-485	-546	-606	-667	-728	-788	-849	-743 0.059	-877 0.07	-1009 0.081	-1140 0.091	-1271 0.101	-1737	-624 0.037	-763 0.046	-900 0.054	-1036 0.062	-1169 0.07	-1628
Configuration: 88-SN																					
35	125	63	-340	-382	-425	-467	-509	-552	-594	-396 0.032	-481 0.038	-567 0.045	-651 0.052	-734 0.059	-1076	-360 0.03*	-420 0.03*	-479 0.03*	-556 0.033	-642 0.038	-988
40	145	81	-388	-437	-485	-534	-582	-631	-679	-512 0.041	-615 0.049	-716 0.057	-816 0.065	-914 0.073	-1298	-435 0.03*	-510 0.03*	-614 0.037	-717 0.043	-820 0.049	-1196
45	166	102	-437	-491	-546	-600	-655	-710	-764	-614 0.049	-730 0.058	-845 0.067	-958 0.077	-1070 0.085	-1500	-501 0.03*	-621 0.037	-740 0.044	-857 0.051	-974 0.058	-1395
50	187	124	-485	-546	-606	-667	-728	-788	-849	-703 0.056	-832 0.066	-958 0.077	-1084 0.087	-1209 0.097	-1686	-586 0.035	-719 0.043	-850 0.051	-980 0.059	-1109 0.066	-1578
55	208	149	-534	-600	-667	-734	-801	-867	-934	-783 0.063	-922 0.074	-1060 0.085	-1197 0.096	-1334 0.106	-1861	-662 0.04	-807 0.048	-950 0.057	-1091 0.065	-1230 0.074	-1751

ACB45-1350.282 Selection Tables continued on next page

Water flow value of 0.03* = minimum allowed water flow rate for all ACB models

Qs value in bold font = Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary water design ΔT of 3K or 4K

NOTE: Higher or lower secondary coil capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

ACB45 Active Chilled Beam Selection Tables

ACB45-1350.282 Selection Tables continued from previous page

ACB45-1350.282 1500x500 2-way Active Chilled Beam 2-pipe

Primary Air L/s	Supply Air L/s	Static Pressure Pa	Primary Air Cooling (W)							Secondary Water $\Delta T = 3K$					Secondary Water $\Delta T = 4K$						
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W)					Secondary Air Cooling (W)						
			8	9	10	11	12	13	14	Q_s					Q_s						
$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$							Secondary Water Flow (L/s)					Secondary Water Flow (L/s)									
$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$							Q_s					Q_s									
$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$							(W)					(W)									
8	9	10	11	12	8	9	10	11	12	8	9	10	11	12	8	9	10	11	12		
Configuration: 96-SN																					
35	122	53	-340	-382	-425	-467	-509	-552	-594	-369 0.03*	-447 0.036	-528 0.042	-609 0.049	-688 0.055	-1037	-340 0.03*	-397 0.03*	-454 0.03*	-515 0.031	-596 0.036	-963
40	141	68	-388	-437	-485	-534	-582	-631	-679	-482 0.039	-580 0.046	-677 0.054	-773 0.062	-868 0.069	-1259	-415 0.03*	-484 0.03*	-576 0.035	-675 0.04	-773 0.046	-1158
45	161	86	-437	-491	-546	-600	-655	-710	-764	-584 0.047	-696 0.056	-807 0.064	-916 0.073	-1024 0.082	-1462	-481 0.03*	-588 0.035	-703 0.042	-816 0.049	-928 0.056	-1358
50	181	105	-485	-546	-606	-667	-728	-788	-849	-674 0.054	-798 0.064	-921 0.074	-1043 0.083	-1163 0.093	-1649	-558 0.033	-687 0.041	-814 0.049	-940 0.056	-1065 0.064	-1542
55	202	126	-534	-600	-667	-734	-801	-867	-934	-754 0.06	-890 0.071	-1024 0.082	-1156 0.092	-1289 0.103	-1825	-634 0.038	-775 0.046	-915 0.055	-1051 0.063	-1186 0.071	-1716
60	223	149	-582	-655	-728	-801	-873	-946	-1019	-827 0.066	-972 0.078	-1116 0.089	-1260 0.101	-1403 0.112	-1989	-704 0.042	-856 0.051	-1004 0.06	-1151 0.069	-1297 0.078	-1877
Configuration: 76-MN																					
40	130	57	-388	-437	-485	-534	-582	-631	-679	-391 0.031	-476 0.038	-560 0.045	-644 0.051	-727 0.058	-1142	-356 0.03*	-416 0.03*	-475 0.03*	-549 0.033	-634 0.038	-1057
45	147	72	-437	-491	-546	-600	-655	-710	-764	-487 0.039	-586 0.047	-684 0.055	-780 0.062	-875 0.07	-1339	-418 0.03*	-488 0.03*	-582 0.035	-682 0.041	-781 0.047	-1237
50	164	88	-485	-546	-606	-667	-728	-788	-849	-572 0.046	-683 0.055	-792 0.063	-899 0.072	-1006 0.08	-1520	-474 0.03*	-575 0.034	-688 0.041	-800 0.048	-910 0.055	-1416
55	182	105	-534	-600	-667	-734	-801	-867	-934	-648 0.052	-769 0.061	-889 0.071	-1006 0.08	-1124 0.09	-1690	-534 0.032	-658 0.039	-783 0.047	-905 0.054	-1026 0.061	-1584
60	199	124	-582	-655	-728	-801	-873	-946	-1019	-717 0.057	-848 0.068	-976 0.078	-1104 0.088	-1231 0.098	-1849	-599 0.036	-734 0.044	-868 0.052	-1000 0.06	-1130 0.068	-1741
65	217	145	-631	-710	-788	-867	-946	-1025	-1104	-780 0.062	-919 0.073	-1056 0.084	-1193 0.095	-1329 0.106	-2002	-659 0.04	-804 0.048	-946 0.057	-1086 0.065	-1225 0.073	-1892
70	235	167	-679	-764	-849	-934	-1019	-1104	-1189	-838 0.067	-984 0.079	-1130 0.09	-1275 0.102	-1420 0.113	-2149	-714 0.043	-867 0.052	-1018 0.061	-1166 0.07	-1313 0.079	-2037
Configuration: 82-MN																					
45	143	62	-437	-491	-546	-600	-655	-710	-764	-461 0.037	-557 0.044	-651 0.052	-744 0.059	-836 0.067	-1306	-402 0.03*	-469 0.03*	-551 0.033	-647 0.039	-742 0.044	-1206
50	160	76	-485	-546	-606	-667	-728	-788	-849	-546 0.044	-654 0.052	-760 0.061	-864 0.069	-967 0.077	-1488	-457 0.03*	-547 0.033	-656 0.039	-765 0.046	-872 0.052	-1384
55	177	91	-534	-600	-667	-734	-801	-867	-934	-622 0.05	-740 0.059	-856 0.068	-970 0.078	-1084 0.087	-1657	-509 0.03*	-630 0.038	-750 0.045	-869 0.052	-987 0.059	-1551
60	195	107	-582	-655	-728	-801	-873	-946	-1019	-691 0.055	-818 0.065	-943 0.075	-1067 0.085	-1190 0.095	-1816	-574 0.034	-706 0.042	-836 0.05	-964 0.058	-1091 0.065	-1709
65	212	125	-631	-710	-788	-867	-946	-1025	-1104	-754 0.06	-889 0.071	-1023 0.082	-1156 0.092	-1288 0.103	-1969	-634 0.038	-775 0.046	-914 0.055	-1051 0.063	-1186 0.071	-1860
70	229	144	-679	-764	-849	-934	-1019	-1104	-1189	-811 0.065	-955 0.076	-1096 0.088	-1237 0.099	-1379 0.11	-2115	-689 0.041	-838 0.05	-985 0.059	-1130 0.068	-1273 0.076	-2004
75	233	122	-728	-819	-910	-1001	-1092	-1183	-1274	-806 0.064	-949 0.076	-1090 0.087	-1230 0.098	-1370 0.109	-2182	-684 0.041	-833 0.05	-979 0.059	-1123 0.067	-1265 0.076	-2071

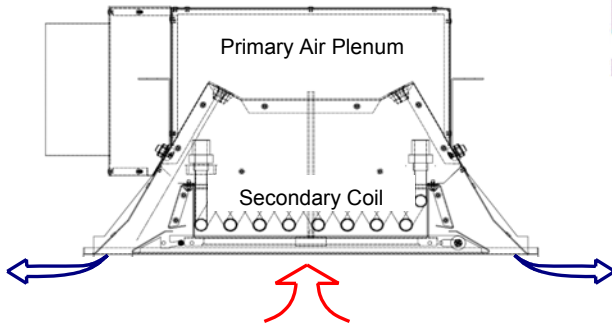
Water flow value of 0.03* = minimum allowed water flow rate for all ACB models

Q_s value in bold font = Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary water design ΔT of 3K or 4K

NOTE: Higher or lower secondary coil capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice



Product Information ACB45

ACB45 2-Pipe Secondary Cooling Coil water pressure drop, kPa

Unit	Water Flow in L/s												
	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14	0.15
ACB45-1350.282 (1500x500mm)	2.6	4.3	6.3	8.7	11.4	14.5	17.8	21.4	25.4	29.6	34.1	38.9	43.9

Acoustic Data

ACB45 Summary - October 2011										
	63	125	250	500	1K	2K	4K	8K	Guidance Lp	
									NR	dB(A)
1350mm coil length - 150mm spigot	Lw - Sound Power level (zero weighted) dB									
Primary Air - L/s										
30		44	36	33	32	20	24	26	26	32
35		45	40	34	32	21	25	26	26	32
40		44	37	35	35	22	25	26	29	33
45		44	41	36	36	27	25	26	30	34
50		45	40	39	37	30	25	26	31	35
55		44	44	41	38	31	27	26	32	37
60		44	45	44	43	35	30	26	37	41
1350mm coil length - 200mm spigot	Lw - Sound Power level (zero weighted) dB									
Primary Air - L/s										
50		40	39	38	37	27	25	25	31	34
55		40	40	40	37	29	25	25	31	35
60		40	41	41	38	31	25	25	32	36
65		42	43	42	38	33	27	25	32	37
70		47	44	43	40	34	29	26	34	38
75		47	45	44	42	36	30	27	36	40
Measured Reverberation Time (Sec)		0.77	0.93	1.15	1.15	1.19	1.11	0.65		

Date: 28th June 2011

Room Dimensions: 8.72 x 3.92 x 2.7 (92.3m³)

Room Conditions: 23C, 42% RH, 1013 hPa

All measurements recorded in position "A" 1.2 m from both rear and side wall with microphone position 1.2m above floor level.

Sound Level Meter CEL 621C s/n 471171

Microphone CEL 251 s/n 877

Last calibration: 28th June 2011

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

ACB45 Active Chilled Beam 4-Pipe Cooling & Heating Selection Tables

The following tables provide selection data for ACB45 4-Pipe unit sensible cooling and heating performance across a range of primary air pressures and air quantities, primary air ΔT and secondary air to entering water ΔT for fixed value secondary water ΔT of 3K and heating water ΔT of 10K.

Selections where primary air quantity and operating parameters are known

Step 1: Choose 4-Pipe ACB45 Active Chilled Beam selection table

Step 2: Determine the design primary air quantity and choose the value from the selection tables

Step 3: Determine the design primary air ΔT_{PA} (Room Air—Primary Air) from the Primary Air Cooling header row. and move vertically from the ΔT_{PA} value to the value where primary air quantity from Step 2 and primary air ΔT_{PA} from Step 3 intersect.

Steps 3 & 4 will determine the primary air sensible cooling capacity (W)

Step 4: Move vertically from Step 3 ΔT_{PA} value to the value where primary air quantity from Step 2 and primary air ΔT_{PA} from Step 3 intersect.

Step 4 will determine the primary air sensible cooling capacity (W)

NOTE: For 4-pipe cooling selections the 4-Pipe selection tables contain cooling capacity de-rates and must be used. Do not use cooling capacity values from 2-Pipe selection tables where 4-pipe cooling & heating operation is being selected.

Step 5: For Cooling Selection: Determine the design Room Air—Entering Secondary Cooling Water ΔT_{SCA} from the Secondary Water ΔT table header row.

Move vertically from the selected ΔT_{SCA} value to the horizontal row corresponding to the primary air quantity in Step 2 to determine Secondary Air Sensible Cooling Capacity at that primary air quantity.

NOTE: Secondary chilled water flow rate appears below the coil cooling capacity as the value in smaller font size

Step 6: For Heating Selection: Determine the design Entering Heating Water—Room Air ΔT_{SHA} from the Heating Water ΔT table header row.

Move vertically from the selected ΔT_{SHA} value to the horizontal row corresponding to the primary air quantity in Step 2 to determine Air Heating (Coil Heating) at that primary air quantity.

NOTE 1: Heating selections assume primary air temperature is thermally neutral to room air temperature. If heating room air to primary air temperature differential exists, calculate primary air heating or cooling offset value and add or subtract that value to or from heating coil capacity value to determine unit total heating performance.

NOTE 2: Heating water flow rates appear below the coil heating capacity as the value in smaller font size

Chilled Beam sensible cooling is the sum of Primary Air Cooling and Secondary Coil Cooling (600 + 664 = 1264W)

Chilled Beam heating is the sum of Coil Heating and any Primary Air offset value (1046 + 0 = 1046W)

Example:

ACB45-1350.482 1500x500 2-way Active Chilled Beam 4-pipe Step 1																					
Primary Air	Supply Air	Static Pressure	Primary Air Cooling (W)							Secondary Water $\Delta T = 3K$					Heating Water $\Delta T = 10K$						
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$							Secondary Air Cooling (W)					Secondary Air Heating (W)						
			$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$							Secondary Water Flow (L/s)					Heating Water Flow (L/s)						
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	Qs (W)	20	25	30	35	40	Qs (W)
Configuration: 96-SN																					
35	122	53	-340	-382	-425	-467	-509	-552	-594	-313	-361	-423	-492	-561	-932	450	600	770	935	1174	750
40	141	68	-388	-437	-485	-534	-582	-631	-679	0.03*	0.03*	0.034	0.039	0.045	-1134	520	693	844	1157	1440	884
45	161	86	-437	-491	-540	-589	-638	-684	-728	0.031	0.037	0.044	0.051	0.057	-1319	582	776	1046	1360	1677	1046
50	181	105	-485	-546	-606	-665	-723	-778	-849	0.038	0.045	0.053	0.061	0.068	-1491	638	859	1194	1541	1887	1194
										0.044	0.053	0.061	0.069	0.078		0.02*	0.021	0.025	0.033	0.04	

Quick Select Values

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

ACB45 Active Chilled Beam 4-Pipe Cooling & Heating Selection Tables

Notes for all 4-Pipe ACB45 Selection Tables

Cooling Water flow value of 0.03* = minimum allowed cooling water flow rate for all ACB models

Heating Water flow value of 0.02* = minimum allowed heating water flow rate for all ACB models

Q_s value in bold font = Cooling Quick Select value based on Room Air—Primary Air ΔT of 12°C & Room Air - Entering Secondary Water ΔT of 10°C for the corresponding primary air quantity and secondary cooling water design ΔT of 3K

Q_H value in bold font = Heating Quick Select value based on thermally neutral Primary Air & Entering Heating Water—Room Air ΔT_{SHA} of 30°C for the corresponding primary air quantity and heating water design ΔT of 10K

NOTE 1: Higher or lower secondary coil cooling and heating capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT. For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

NOTE 2: Heating values are coil heating values only and DO NOT include any primary air positive or negative heating contribution. Determine any positive or negative primary air heating contribution based on room air to primary air temperature differential and add or subtract that value to or from coil heating value to determine total unit heating performance.

ACB45-1350.482 1500x500 2-way Active Chilled Beam 4-pipe

Primary Air L/s	Supply Air L/s	Static Pressure Pa	Primary Air Cooling (W)							Secondary Water ΔT = 3K					Q _s (W)	Heating Water ΔT = 10K					Q _H (W)
			ΔT _{PA} (T _{Room} - T _{Primary Air})							Secondary Air Cooling (W) Secondary Water Flow (L/s)						Secondary Air Heating (W) Heating Water Flow (L/s)					
			8	9	10	11	12	13	14	8	9	10	11	12		ΔT _{SHA} (T _{Entering Heating Water} - T _{Room})	20	25	30	35	
Configuration: 50-SN																					
25	105	97	-243	-273	-303	-334	-364	-394	-425	-276 0.03*	-319 0.03*	-361 0.03*	-416 0.033	-476 0.038	-725	413 0.02*	550 0.02*	688 0.02*	825 0.02*	1035 0.025	688
30	130	138	-291	-328	-364	-400	-437	-473	-509	-375 0.03*	-457 0.037	-540 0.043	-621 0.05	-702 0.056	-977	513 0.02*	684 0.02*	867 0.021	1136 0.027	1414 0.034	867
Configuration: 62-SN																					
25	97	64	-243	-273	-303	-334	-364	-394	-425	-231 0.03*	-267 0.03*	-303 0.03*	-338 0.03*	-374 0.03*	-667	367 0.02*	490 0.02*	612 0.02*	734 0.02*	868 0.021	612
30	120	91	-291	-328	-364	-400	-437	-473	-509	-328 0.03*	-380 0.03*	-452 0.036	-524 0.042	-595 0.048	-889	465 0.02*	621 0.02*	776 0.02*	984 0.024	1232 0.029	776
35	143	123	-340	-382	-425	-467	-509	-552	-594	-424 0.034	-514 0.041	-604 0.048	-692 0.055	-779 0.062	-1113	548 0.02*	731 0.02*	958 0.023	1251 0.03	1549 0.037	958
40	166	159	-388	-437	-485	-534	-582	-631	-679	-525 0.042	-630 0.05	-732 0.059	-834 0.067	-934 0.075	-1314	620 0.02*	827 0.02*	1148 0.028	1484 0.036	1820 0.044	1148
Configuration: 70-SN																					
25	93	51	-243	-273	-303	-334	-364	-394	-425	-207 0.03*	-239 0.03*	-270 0.03*	-302 0.03*	-334 0.03*	-634	342 0.02*	456 0.02*	570 0.02*	684 0.02*	798 0.02*	570
30	114	72	-291	-328	-364	-400	-437	-473	-509	-301 0.03*	-347 0.03*	-401 0.032	-467 0.037	-534 0.043	-838	438 0.02*	584 0.02*	730 0.02*	898 0.021	1129 0.027	730
35	136	97	-340	-382	-425	-467	-509	-552	-594	-383 0.031	-467 0.037	-550 0.044	-633 0.051	-715 0.057	-1059	519 0.02*	692 0.02*	881 0.021	1156 0.028	1437 0.034	881
40	158	126	-388	-437	-485	-534	-582	-631	-679	-482 0.039	-581 0.046	-678 0.054	-774 0.062	-868 0.069	-1260	590 0.02*	786 0.02*	1065 0.025	1385 0.033	1704 0.041	1065
45	180	158	-437	-491	-546	-600	-655	-710	-764	-569 0.045	-679 0.054	-788 0.063	-895 0.072	-1001 0.08	-1443	651 0.02*	887 0.021	1232 0.029	1586 0.038	1938 0.046	1232
Configuration: 78-SN																					
25	90	41	-243	-273	-303	-334	-364	-394	-425	-182 0.03*	-210 0.03*	-239 0.03*	-267 0.03*	-295 0.03*	-603	317 0.02*	423 0.02*	529 0.02*	635 0.02*	740 0.02*	529
30	110	59	-291	-328	-364	-400	-437	-473	-509	-277 0.03*	-320 0.03*	-362 0.03*	-417 0.033	-478 0.038	-799	414 0.02*	551 0.02*	689 0.02*	827 0.02*	1038 0.025	689
35	131	79	-340	-382	-425	-467	-509	-552	-594	-357 0.03*	-427 0.034	-505 0.04	-583 0.047	-660 0.053	-1014	494 0.02*	659 0.02*	824 0.02*	1076 0.026	1343 0.032	824
40	152	102	-388	-437	-485	-534	-582	-631	-679	-447 0.036	-540 0.043	-632 0.051	-724 0.058	-814 0.065	-1214	564 0.02*	752 0.02*	999 0.024	1302 0.031	1608 0.039	999
45	173	128	-437	-491	-546	-600	-655	-710	-764	-533 0.043	-639 0.051	-743 0.059	-845 0.068	-946 0.076	-1398	626 0.02*	834 0.02*	1163 0.028	1503 0.036	1842 0.044	1163
50	195	157	-485	-546	-606	-667	-728	-788	-849	-610 0.049	-725 0.058	-839 0.067	-952 0.076	-1064 0.085	-1567	681 0.02*	947 0.023	1311 0.031	1682 0.04	2049 0.049	1311

ACB45-1350.482 Selection Tables continued on next page...

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice

ACB45-1350.482 Selection Tables continued from previous page

ACB45-1350.482 1500x500 2-way Active Chilled Beam 4-pipe

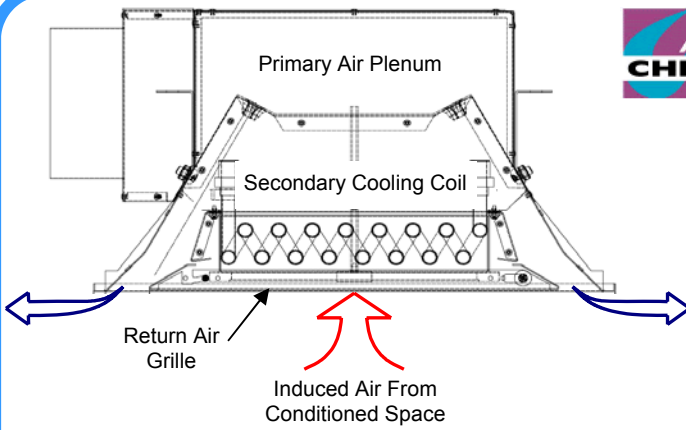
Primary Air	Supply Air	Static Pressure	Primary Air Cooling (W)												Secondary Water $\Delta T = 3K$					Heating Water $\Delta T = 10K$						
			$\Delta T_{PA} (T_{Room} - T_{Primary Air})$												Secondary Air Cooling (W)					Q_s	Secondary Air Heating (W)					Q_H
			$\Delta T_{SCA} (T_{Room} - T_{Entering Secondary Water})$												Secondary Water Flow (L/s)						Heating Water Flow (L/s)					
L/s	L/s	Pa	8	9	10	11	12	13	14	8	9	10	11	12	(W)	20	25	30	35	40	(W)					
Configuration: 88-SN																										
35	125	63	-340	-382	-425	-467	-509	-552	-594	-330	-383	-456	-529	-601	-965	468	624	780	992	1242	780					
40	145	81	-388	-437	-485	-534	-582	-631	-679	-410	-498	-585	-672	-757	-1167	538	718	931	1218	1510	931					
45	166	102	-437	-491	-546	-600	-655	-710	-764	-497	-598	-697	-795	-892	-1352	600	801	1094	1419	1746	1094					
50	187	124	-485	-546	-606	-667	-728	-788	-849	-575	-686	-795	-903	-1010	-1523	656	896	1244	1600	1955	1244					
55	208	149	-534	-600	-667	-734	-801	-867	-934	-644	-764	-883	-1001	-1117	-1684	706	1000	1380	1763	2142	1380					
Configuration: 96-SN																										
35	122	53	-340	-382	-425	-467	-509	-552	-594	-313	-361	-423	-492	-561	-932	450	600	750	935	1174	750					
40	141	68	-388	-437	-485	-534	-582	-631	-679	-384	-468	-552	-635	-717	-1134	520	693	884	1157	1440	884					
45	161	86	-437	-491	-546	-600	-655	-710	-764	-471	-569	-664	-759	-852	-1319	582	776	1046	1360	1677	1046					
50	181	105	-485	-546	-606	-667	-728	-788	-849	-550	-657	-763	-868	-972	-1491	638	859	1194	1541	1887	1194					
55	202	126	-534	-600	-667	-734	-801	-867	-934	-619	-737	-852	-966	-1079	-1653	688	963	1331	1704	2075	1331					
60	223	149	-582	-655	-728	-801	-873	-946	-1019	-682	-808	-932	-1054	-1176	-1805	734	1059	1456	1853	2246	1456					
Configuration: 76-MN																										
40	130	57	-388	-437	-485	-534	-582	-631	-679	-327	-379	-451	-523	-594	-1033	465	620	775	982	1231	775					
45	147	72	-437	-491	-546	-600	-655	-710	-764	-388	-473	-557	-641	-723	-1212	523	697	892	1168	1452	892					
50	164	88	-485	-546	-606	-667	-728	-788	-849	-461	-557	-651	-744	-836	-1379	575	766	1027	1336	1648	1027					
55	182	105	-534	-600	-667	-734	-801	-867	-934	-527	-632	-735	-837	-937	-1536	622	829	1152	1489	1827	1152					
60	199	124	-582	-655	-728	-801	-873	-946	-1019	-587	-700	-811	-921	-1029	-1684	665	914	1268	1629	1988	1268					
65	217	145	-631	-710	-788	-867	-946	-1025	-1104	-641	-762	-880	-997	-1113	-1826	704	996	1374	1757	2135	1374					
70	235	167	-679	-764	-849	-934	-1019	-1104	-1189	-691	-818	-943	-1067	-1190	-1962	740	1073	1474	1875	2271	1474					
Configuration: 82-MN																										
45	143	62	-437	-491	-546	-600	-655	-710	-764	-369	-448	-529	-610	-689	-1184	508	677	852	1118	1393	852					
50	160	76	-485	-546	-606	-667	-728	-788	-849	-440	-532	-624	-714	-803	-1352	559	746	986	1286	1590	986					
55	177	91	-534	-600	-667	-734	-801	-867	-934	-505	-607	-707	-806	-903	-1508	606	808	1110	1437	1766	1110					
60	195	107	-582	-655	-728	-801	-873	-946	-1019	-565	-674	-783	-889	-995	-1656	648	880	1224	1577	1928	1224					
65	212	125	-631	-710	-788	-867	-946	-1025	-1104	-619	-736	-851	-965	-1078	-1797	688	962	1331	1704	2074	1331					
70	229	144	-679	-764	-849	-934	-1019	-1104	-1189	-669	-793	-915	-1035	-1155	-1934	724	1038	1428	1821	2209	1428					

NOTE 1: Higher or lower secondary coil cooling and heating capacities can be achieved for all ACB models for higher or lower secondary water flow rates and resulting changes in water ΔT . For alternative or more detailed selections at different conditions, primary air quantities or secondary water flow rates; contact Dadanco for assistance.

NOTE 2: Heating values are coil heating values only and DO NOT include any primary air positive or negative heating contribution. Determine any positive or negative primary air heating contribution based on room air to primary air temperature differential and add or subtract that value to or from coil heating value to determine total unit heating performance.

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice



2-Way Discharge Active Chilled Beam

Product Information

ACB45

ACB45 4-Pipe Secondary Coil (Cooling Circuit) water pressure drop, kPa

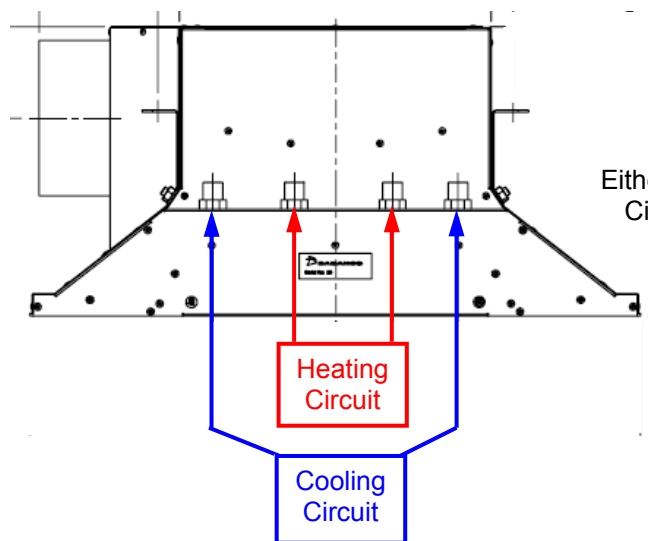
Unit	Water Flow in L/s												
	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13	0.14	0.15
ACB45-1350.482 (1500x500mm)	1.9	3.2	4.7	6.5	8.6	10.8	13.3	16.1	19.0	22.2	25.6	29.1	32.9

ACB45 4-Pipe Secondary Coil (Heating Circuit) water pressure drop, kPa

Unit	Water Flow in L/s												
	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14
ACB45-1350.482 (1500x500mm)	0.3	0.6	1.1	1.6	2.2	2.9	3.6	4.4	5.4	6.3	7.4	8.5	9.7

Acoustic Data—See page 9

Water Circuit Connections



Either fitting on Cooling or Heating Circuits can be Flow or Return

DISCLAIMER

While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice



Proudly Australian
Owned, Designed, Manufactured & Supported



For more information on Active Chilled Beams,
or other Dadanco solutions delivery products,
contact:



Head Office

Dadanco Pty Ltd
89 South Road
Hindmarsh SA 5007
Australia
P. +61 8 8346 3588
F. +61 8 8346 7822
e. info@dadanco.com.au

New South Wales Sales

e. nsw@dadanco.com.au

Brisbane Sales

e. qld@dadanco.com.au

Perth Sales

e. wa@dadanco.com.au

UK Sales Office

e. uksales@dadanco.com.au



Dadanco Pty Ltd participates in the ECC
programme for Active Chilled Beams.
Check ongoing validity of the certificate:
www.eurovent-certification.com or
www.certiflash.com

