

Comparison Between GB/T and ARI Standards

S. No.	Parameters	Application	GB/T 18430.1-2001	ARI 550/590-2003	Remarks
1	Equipment Covered	Water Cooled	Applicable to the unit whose cooling capacity is greater than 50 KW (14.21 TR)	Applicable to Chillers between 703-3517 KW (200TR-1000TR)	GB/T standard is applicable for all Capacities of both Air & Water Cooled Chillers
		Air Cooled	Applicable to the unit whose cooling capacity is greater than 50 KW (14.21TR)	Not Applicable for 50 Hz.	
2	Inlet Temperature / Outlet Temperature / Flow Rate per TR	Chiller Side	12°C / 7°C / - Equivalent of above in FPS [53.6°F / 44.6°F / -]	- / 6.7°C / 2.4 USGPM Equivalent of above in FPS [- / 44°F / 2.4 USGPM]	Inlet Temp. & ΔT (which are more critical to Chiller Performance) are not specified in ARI
3	Inlet Temperature / Outlet Temperature / Flow Rate per TR	Condenser Side	30°C / 35°C / - Equivalent of above in FPS [86°F/ 95°F / -]	29.4°C / - / 3 USGPM Equivalent of above in FPS [85°F / - / 3 USGPM]	Outlet Temp. & ΔT (which are more critical to Chiller Performance) are not specified in ARI
4	Entering Air DBT	Condenser - Air Cooled	35°C Equivalent of above in FPS [95°F]	35°C Equivalent of above in FPS [95°F]	It is same in both the cases
5	Fouling Factor	Chiller	0.086 m ² K/kW Equivalent of above in FPS [0.005 h ft ² F / BTU]	0.018 m ² K/kW Equivalent of above in FPS [0.0001 h ft ² F/BTU]	Cooler to be designed for approx. 5 times higher Fouling Factor than ARI in case of GB/T std. which suits Indian Conditions.
6	Fouling Factor	Condenser	0.086 m ² K/kW Equivalent of above in FPS [0.005 h ft ² F / BTU]	0.044m ² K/kW Equivalent of above in FPS [0.00025 h ft ² F/BTU]	Condenser to be designed for approx. 2 times higher Fouling Factor than ARI in case of GB/T std. which suits Indian Conditions.
7	Rated Atmospheric Pressure	Water Cooled / Air Cooled	101 kPa	Not Specified	-
8	Rated Voltage(Three Phase AC)	Water Cooled	Upto 10000V	Upto 5000V	Higher Range of Test Voltage
		Air Cooled	Upto 10000V	Upto 600V	
9	C.O.P.	Water Cooled	Specified based on Capacity of Chiller	Not Specified	Min. COP value for Chillers is not specified in ARI.
		Air Cooled		Not Specified	
10	Safety Standards & Code Requirements to be followed	Water Cooled / Air Cooled	Yes	No	ARI is a general standard. It does not specify other tests as mentioned.
11	Additional Test Requirements (Apart from Capacity Test)	Water Cooled / Air Cooled	Yes	Not Specified	
11a	- Air-Tightness Characteristics Test	Water Cooled / Air Cooled	Yes	Not Specified	
11b	- Vacuum Test & Liquid Pressure Test	Water Cooled / Air Cooled	Yes	Not Specified	
11c	- Running Test	Water Cooled / Air Cooled	Yes	Not Specified	

11d	- Insulation Test & Electric Strength Test	Water Cooled / Air Cooled	Yes	Not Specified	ARI is a general standard. It does not specify other tests as mentioned	
11e	- Humidity Resistance Performance	Water Cooled / Air Cooled	Yes	Not Specified		
11f	- Maximum Load Conditions Test	Water Cooled / Air Cooled	Yes	Not Specified		
11g	- Low Temperature Test	Water Cooled / Air Cooled	Yes	Not Specified		
11h	- Noise Measure	Water Cooled / Air Cooled	Yes	Not Specified		
11i	- Vibration Measure	Water Cooled / Air Cooled	Yes	Not Specified		
11j	- Safety Test of Electrical Appliance	Water Cooled / Air Cooled	Yes	Not Specified		
11k	- Voltage Fluctuation Test	Water Cooled / Air Cooled	Yes	Not Specified		
11l	- Temperature Limit Test	Water Cooled / Air Cooled	Yes	Not Specified		
11m	- Insulation Resistance Test	Water Cooled / Air Cooled	Yes	Not Specified		
11n	- Start Current Test	Water Cooled / Air Cooled	Yes	Not Specified		
11o	- Start Voltage Test	Water Cooled / Air Cooled	Yes	Not Specified		
12	Microprocessor - Good Restraint Characteristics	Water Cooled / Air Cooled	Yes	Not Specified	This test is critical to prevent disturbance of Radio and other communication signals due to Micro Processor of Chiller.	
13	Warranty to Customer	From manufacturer's consignment date	Specified	Not Specified	A manufacturer has to provide minimum Warranty as specified in GB/T standard to the customer, thus protecting customer's interests.	
		Date of starting at customer's date	Specified	Not Specified		
14	Maximum Deviation	For Cooler & Condenser Water Flow Rate	5%	5%	Same as in ARI	
		Rated Frequency	2%	1%	More deviation means better Electrical Performance	
15	Unit Performance at Standard Rating Conditions	Cooling Capacity	All Tolerances- 5%	Allowable Tolerance, at 100% Load - 5% at 75% load - 7.25% at 50% load - 10% at 25% load - 14.75%	More tolerance in Cooling Capacity & COP is permitted at Part Load conditions in ARI std.	
		C.O.P	All Tolerances- 8%			
		Gross Power Consumption	Should not exceed 110%	Allowable Tolerance in kW/TR, at 100% Load - 5% at 75% load - 7.25% at 50% load - 10% at 25% load - 14.75%	More tolerance in Gross Power Consumption is permitted at Part Load conditions in ARI std.	
		Pressure Drop	Should not exceed 115%		Should not exceed 115%	Same in both cases
		Start Current	Should be less than 115%		Not Specified	ARI doesnot specify maximum deviation permitted in starting current.