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PRECISION AIR CONDITIONER SYSTEMS

"for the comfort of your air"

alperen®

ENGINEERING

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About Us

Alperen Engineering Heating and Cooling Systems Industry&Trade Ltd.

Our company serves in the field of air conditioning of ventilation of spaces deemed as clean rooms such as operating rooms, intensive care units, laboratories and spaces in the electronics and food industry as well as meeting the requirements as to industrial air conditioning of ventilation of all indoor areas such as shopping malls, factories, hotels, offices, educational institutions and manufacturing plants.

Our company, for the first time in Turkey, has realized the production of custom-designed concrete cooling groups based on spot cooling the concrete as a result of the R & D activities conducted thereby. Our company carries out meticulously all steps germane to cost assessment, providing information, projecting, offering price quotes, manufacturing, installation, commissioning and service.

Our company, having launched the commercial operations thereof in January 2000, produces standard and hygienic air handling units, water chillers, concrete cooling groups, clean room air conditioning equipments, rooftop air conditioning systems air cleaning devices and realizes production of special orders.

Furthermore, our company, with the experienced staff thereof in its field, furnishes services such as sales, after sales service, project and contracting for air-conditioning products such as hygienic air conditioning systems, precision-controlled air-conditioning systems, package type air conditioning systems, central air conditioning systems, chiller systems, VRV air conditioning systems, split air conditioning systems, ventilation equipments, textile air ducts, polyurethane air ducts, galvanized & stainless steel air ducts, air cleaning equipments, hepa filters, coil filters, bag filters, carbon filters, fan coils, convectors, heat recovery equipments, dehumidifiers, air curtains and infrared and radiant heaters.

We aim to be closer and provide a better service by virtue of our meticulously prepared websites that are updated every moment. You can have information incident to our products, brands and models, perform computations of online capacity, can receive offer, place orders, purchase and request a delivery service thanks to sharing of information provided through our company via internet.

Our services and works are based on aesthetic appearance, high performance, affordable usage, robustness, durability, prompt service and your esteemed satisfaction.

We are constantly working with our technical services aiming at efficiency with minimum cost in our products in addition to our expert engineers closely following the latest innovations in the rapidly evolving fields of heating, cooling, ventilation and air-conditioning sectors and delivering same to you.

Our Products

- Standard Air Handling Units
- Hygienic Air Handling Units
- Package Type Hygienic Air Handling Units
- Dehumidification Units
- Precision-Controlled Air Conditioning Systems
- Laminar Air Flow Units
- VRV - VRF - VRS Air Conditioning Systems
- Rooftop Air Conditioning Systems
- Split Air Conditioning Systems
- Mono Block Air Conditioning Systems
- Water Cooling Systems
- Concrete Cooling Systems
- Fan Coil Systems
- Convector Systems
- Automatic Control Systems
- Ventilation Equipments
- Air Ducts
- Air filters

Alp Precision Air Conditioner Systems

Alp Precision Air Conditioners have been designed for acclimatization of computer rooms, temperature and humidity ratios of which are required to be kept constant, computer centers, telecommunication facilities, highly automated offices, central offices, conference halls, museums, libraries, laboratories and other similar volumes.
Desired atmospheric conditions are provided by controlling the cooling, heating, humidification, dehumidification and filtration functions of the devices, by means of a specially developed microprocessor.
Alp precision air conditioners are produced so as to be able to operate 24 hours a day, 365 days a year, in order to provide the desired temperature, humidity and filtration.

Features of Alp Precision Air Conditioner:

- Operation with ± 1°C temperature sensitivity;
- Proportional humidifier and dehumidification control by means of electronic immersed electrode;
- Hot water heating coil with three-way control valve;
- One or two-stage low thermal heater;
- Winter kit;
- pCO microprocessor;
- Three-way proportional valve;
- Electronic hot gas injection valve;
- Double-wall casing structure with 25 mm insulation;
- Humidity sensor and modulation card for humidity control;
- Timer for time setting, and chronological alarm for standard microprocessor;
- RS-485 communication card;
- Temperature alarm for active air release out of coverage.

Panels

Specially extruded aluminum profiles and double-walled 45-60 mm thick panels with polyurethane filling or rock wool insulation are used in the cabin construction of Alp central-station air handling units. Exterior surfaces of the panels are produced of galvanized metal sheet coated with PVC or anti-static paint. Panels are connected to profiles with special screws; and neoprene seals are placed between the panel and profile. A smooth surface is provided, by applying liquid silicone to the joints.

Cell

Cells used in Alp central-station air handling units are produced of specially extruded aluminum profiles and double-walled 45-60 mm thick panels with polyurethane filling or rock wool insulation. On the cells, there are coarse filter, bag filter, fan, aspirator, heater, cooler, humidifier, heat recovery device, sight glass intended for control and maintenance of some elements such as fans, hinged, handled and security-controlled doors. In addition, internal lighting fixtures are used.
Cells are produced as with a structure that can be connected to each other from their insides by means of high strength fittings, with suitable bolts and nuts.

Radial Fans

EUROVENT and AMCA certified radial fans used in Alp central-station air handling units are used with optionally forward or backward curved blades depending on the required capacity. Double suction radial fans are used with additional filtering elements.
Radial fans are produced as belt-pulley driven devices with galvanized metal sheet body in spiral form. The fan rotor is statically and dynamically balanced. The electric motor is mounted on a specially designed belt tensioning mechanisms.
Pulleys are equipped with conical clamping bush. The connection between fan discharge outlet and cell panel is provided by means of a connector. Fan, motor and belt tensioning mechanism are fixed on a reinforced C profile chassis. In addition, whole the moving system is mounted on spring or rubber insulators. Radial fans used in Alp central-station air handling units can be taken out from the side. In Alp central-station air handling units, frequency converters suitable or radial fan motors can be applied separately if desired. Illumination of the fan cell is provided by controlled hermetic luminaires.

Plug Fans

In our Alp central-station air handling units, optionally plug fans are preferred because of the fact that they are easy to clean and prevent accumulation of dust on the surfaces. Depending on the characteristics of air flow rate-pressure, plug fans are applied as directly coupled or belt-pulley driven. Plug fans used in Alp central-station air handling units are fans with backward curved blades. Rotor is mounted directly on the motor shaft. Whole the moving system is mounted on spring or rubber insulators. Plug fans used in Alp central-station air handling units can be taken out from the side. In Alp central-station air handling units, frequency converters suitable or plug fan motors can be applied separately if desired Illumination of the fan cell is provided by controlled hermetic luminaires.

Intervention Doors

Intervention doors of Alp central-station air handling units are produced of specially extruded aluminum profiles and double-walled 45-60 mm thick panels with polyurethane filling or rock wool insulation. In intervention doors of all our central-station air handling unit models are equipped with strength and durable door handles and hinges with the feature of compression that provides leak-tightness. And in intervention doors of some element such as coarse filter, bag filter, fan, aspirator, heater, cooler, humidifier, heat recovery device, and fan, there is a sight glass allowing for their control and maintenance.

Filters

In our central-station air handling units, G3 and G4 class filters that can be classified as roughing filter are placed at the suction side of the fan, immediately after the assembly of the air inlet. Filters have compression equipment and frame structure that is easy to remove and assemble. Filter housings, where filter frames are placed, are equipped with sealant gaskets. Filter frames are placed in such as way as to be mounted on the gaskets.


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Heating and Cooling Coils

In Alp central-station air handling units, coils with copper pipe and aluminum fin or steel pipe and steel fin are used, depending on the requirement. Heating and cooling coils are subjected to 20 bar leakage test after their production. The frames of the coils are made of stainless Cr-Ni or galvanized metal sheet. The coils can be easily intervened by removal of the side cover. Cooling coils of our central-station air handling units are equipped with condensation tray and drift eliminator.

Mat Type Humidifiers

In mat-type humidifiers used in Alp central-station air handling units, the process is carried out by evaporation. Since droplet is not carried, situations dangerous for the health are not created. The lengths of mat-type humidifiers are between 600 and 900 mm. Depending on your desire, plenums with the length of 600 mm can be placed at the outlet sides of the humidifiers for ease of maintenance and service.

Steam Type Humidifiers

Steam humidifiers used in Alp central-station air handling units are classified in two types, as the ones producing the steam by themselves and the ones using the existing steam. If there is a sufficient amount of steam in the place to be acclimatized is available, the condensed water in the steam is separated and sprayed in the form of dry steam to the acclimatized air, and thus, the humidification process is carried out. With a 2-way motorized valve mounted on the steam injection nozzle, the desired humidity level is controlled proportionally or in two positions. The lengths of steam humidifiers vary between 600 mm and 1200 mm, depending on the desired efficiency and weather conditions. And in the places where steam is not available, humidifiers that can produce their own steam by evaporating the water through the electrodes can be used.

Dampers

Air dampers used in Alp central-station air handling units are produced of specially extruded aluminum profile cases and fins having an aerodynamic structure. Structure of damper fin and cassette are made of aluminum. Air leaks are minimized by using gaskets at the fin edges. Damper fins are connected to fiber glass reinforced plastic gears. Dampers work sensitively and without space. They are controlled manually or by servomotor.

Damper gears used in Alp central-station air handling units have been designed in such a way as not to contact the air and hidden with special aluminum profiles, for protection against the external factors such as dust, contamination etc.

Electric Motors

Three-phase asynchronous squirrel cage electric motors with the protection class IP55 are used in Alp central-station air handling units. Generally the motors used are single-speed motors but two-speed motors can be used as well, upon special demands. Electric motors are placed on special motor bases with tension mechanism.

Electric Heaters

Electric heaters used in Alp central-station air handling units are used for support purpose or for low heating loads. Electric heaters are preferred particularly in the places where it is difficult to heat the air by known methods or where the filters and serpentines are required to be protected against freezing. Electric heater elements used in Alp central-station air handling units are made of stainless steel sheet, and their frame is made of galvanized steel sheets. As a standard, electric heaters are equipped with automatic-reset limit thermostat and manual-reset safety thermostat. Their protection class is IP43. Electric heater is energized only when the fan runs. The required measures have been taken to cut energy when the fan does not run. In our electric heaters with a capacity higher than 30 kW, the fan runs for 2-3 minutes after any power failure, and reduces the heat remained on the electric heater, in order to eliminate the risk of any possible fire.

Selection Program for Alp Central-Station Air Handling Units

As the software intended for the selection of Alp central-station air handling units, ALPAIRCOMFORT allows for selecting the central-station air handling units and designing their all kinds of applications in a Windows-based process. With the software ALPAIRCOMFORT intended for the selection of central-station air handling units, it is extremely easy and fast to select the central-station air handling that has the desired features.

Manufacturing Process of Alp Central-Station Air Handling Units

After selected by the software ALPAIRCOMFORT, Alp central-station air handling units are designed in the projects in line with the customer's demands, principles of the specifications, technical data and standards, with the collaboration of the R & D and production departments, for starting the production. Alp central-station air handling units are completely produced on computer-aided precision and speed CNC benches. During the production and assembly stages, Alp central-station air handling units are controlled and tested in accordance with the quality plan of the related product. In this way, performances of the central-station air handling units can be continuously monitored, and their conformity with the related standards is ensured. Central-station air handling units, productions of which have been completed in the factory, and which have been subjected to the required inspections and tests are transferred to the assembly area, by taking all the safe transport criteria as a basis. For your all kinds of technical inquiries related to our central-station air handling units, you all need to contact our technical service department.

Alp Automatic Control Systems

Alp automatic systems is offering Engineering services in hospitals, shopping centers, educational establishments, sport complexes, factories, warehouses, energy installations and every place which needs air comforts in addition to software and hardwaresolutions including programing.

It is possible to provide comfortable and safe atmosphere with less energy and work power by handling an automation technology. With Alp automation systems temperature, flow, pressure, humidity and air quality can be easily controlled and the required reports tables or graphics could be supplied.

Alp automatic control systems comprises software and hardware solutions in order to run all HVAC equipment's automatically that needed in cooling heating, air ventilations and air conditionings and all related systems.

The goal of Alp automatic control systems is to carry out the services of automatic observing, operating , control and reporting, energy productivity works with energy saving in connection with air-conditioning equipment's inside the building. Additionally handling the integration of the available systems via the protocols in the automatic systems.

Taking the using of energy saving as a fundamental in Alp automatic systems a data input and output can be obtained. To reach the required comfortable level the system integration is brought to the needed cycle. Our automatic systems provide the maximum level in energy saving in cooling and heating centrals , cooling groups, boilers, pumps and similar all HVAC systems in summer and winter conditions. In the meantime it provides the easy handling to the operator. When the system is handled the adjustment of temperature and time programing to the real using time and when it was not handled putting the system off will save a large scale of energy.

Alp control systems has control units and a large scale of production of a modular designs which are in compliance with applications of all HVAC that shows diversities according to the need of the comfortable atmosphere. Alp automation systems plans the control systems of HVAC of multi direction, low cost and that provides energy saving and also provides to put these systems in a quick cycle. The sensitive controls in our automation systems will provide an ideal temperature atmosphere and will remove the unnecessary processing adjustment for the set values. It should be kept in mind a decrease of only 1 ^{o}C in set value will save energy in the percentage of 5% - 6% .

In the result of long experience and comprehensive research our automatic systems are showing a great evolution. Alp automation systems have a long lasting using infrastructure. If necessary unlimited joints can be added to our automation systems or can be integrated with different technologies. Alp automation systems is in a characteristics that carry your requirements for long lasting years.

Alp air conditioning centrals are applicable in automatic control systems of all models.

AIR COOLED

ALP PRECISION AIR CONDITIONER SYSTEMS TECHNIAL SPECIFICATIONS

SIZES		ALP HS20	ALP HS30	ALP HS40	ALP HS50	ALP HS60	ALP HS70	ALP HS80	ALP HS90	ALP HS100	ALP HS130	ALP HS150	ALP HS170	ALP HS190	ALP HS200	ALP HS300	ALP HS400
Cooling Capacity	**Kcal / h**	9125	15295	19150	21950	26670	31400	35170	39700	43700	53900	69300	79400	86600	94600	143300	193200
Comp Power Input	**Kw**	2.56	4.05	5.40	6.20	7.10	7.90	9.90	10.80	11.60	13.80	13.30	22.20	23.90	24.50	33.60	42.40
Heating Capacity Heatpump	**Kcal / h**	9950	16670	20870	23900	29000	34200	38300	43200	47600	58700	75500	86600	94300	103100	156200	210500
Hot Water 90 /70 C^0	**Kcal / h**	9100	15300	20600	20600	25400	30800	35200	35200	42800	50800	65200	80700	80700	90100	135800	175700
Steam	**Kcal / h**	11000	18000	23000	23000	29000	46000	46000	46000	46000	56000	72000	93000	93000	105000	153000	197000
Electrical	**Kw**	5	7.5	7.5	10	10	15	15	15	20	25	30	37.5	37.5	40	45	60
Fan Section Air Flow	**m3/h**	2450	3200	4150	5300	6450	7350	8200	9400	10350	13600	15700	17150	19250	21400	30300	40900
Section Pressure	**Pa**	200	250	300	350	350	350	400	400	400	400	450	450	500	500	550	600
Fan Motor Power	**Kw**	0.40	0.89	1.30	1.45	1.75	2.25	2.80	2.90	3.10	3.95	5.20	5.90	6.30	7.05	11.60	16.60
Humidifiers Capacity	**Kg/h**	5	5	9	9	9	10	10	10	13	13	13	15	15	20	30	40
Humidifiers Power Input	**Kw**	4	4	6.8	6.8	6.8	7.2	7.5	7.5	10.3	10.3	10.3	13	13	15	22.5	30
Condenser Capacity	**Kw**	11100	18700	23200	26600	32100	37600	41700	47500	51600	64300	83700	94800	105100	112200	168300	224600
Condenser Air Flow	**m3/h**	3850	6400	7950	9900	11200	12300	14100	16500	17800	21600	28300	32400	35800	38900	56200	75400
Fan Quantity	**Ad./Pcs.**	1	2	3	3	3	3	3	3	3	3	3	4	4	4	6	8
Fan Motor Power	**Kw**	0.19	0.42	0.49	0.49	0.57	0.78	0.83	0.83	2.68	2.68	2.68	3.95	3.95	3.95	4.65	6.50

The values gives in the table may show variations in thhe stage of production.
An information data could be demanded from our compan for the equipments of definite values or in different capacity.

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LOSS OF FILTERS PRESSURE

Filter class	Loss of starting	Maximum loss
G-2	25 Pa	150 Pa
G-3	40 Pa	150 Pa
G-4	50 Pa	150 Pa

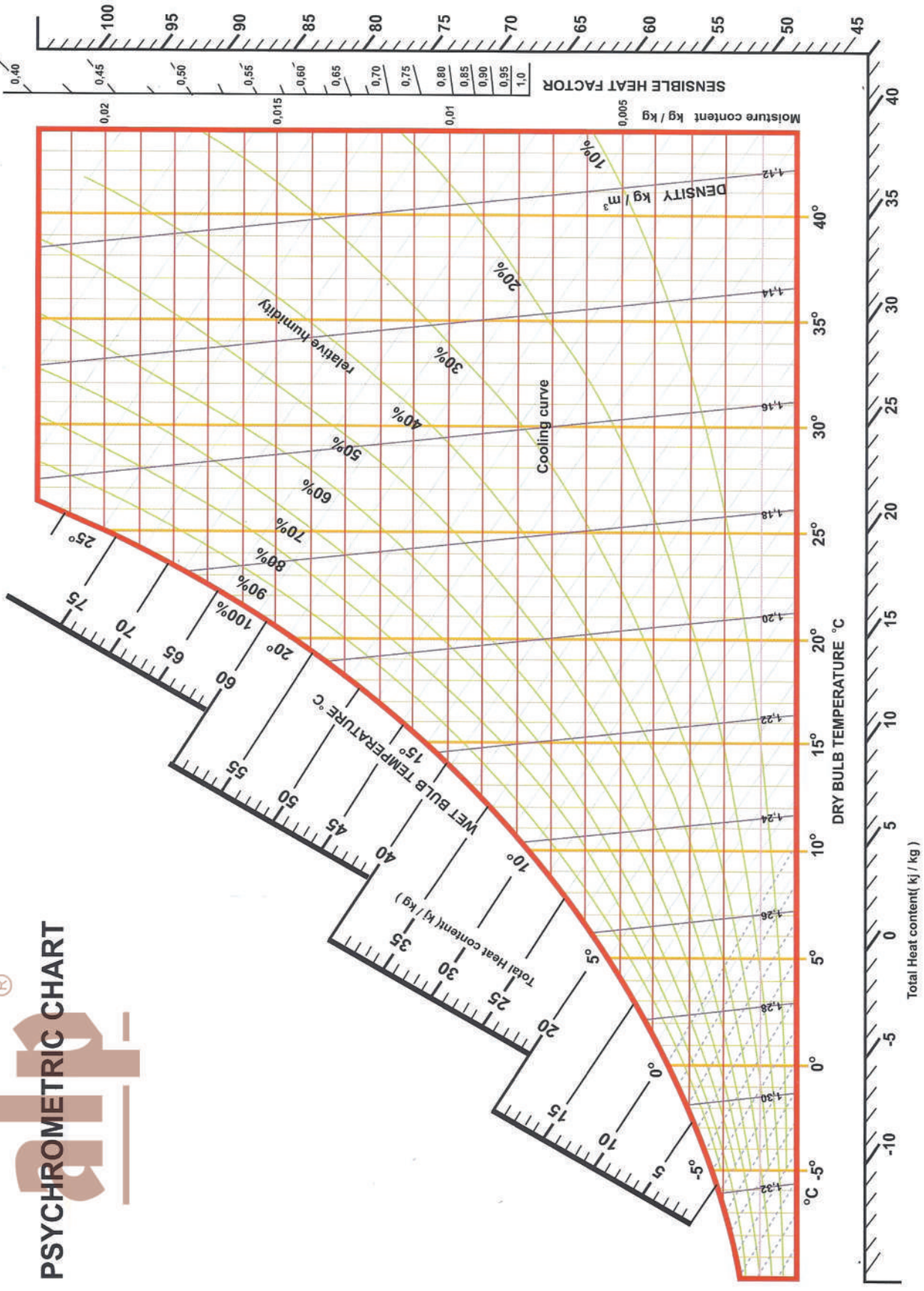
BAG OF FILTERS PRESSURE

Filter class	Loss of starting	Maximum loss
G-4	65 Pa	150 Pa
F-5	55 Pa	250 Pa
F-6	60 Pa	250 Pa
F-7	115 Pa	250 Pa
F-8	165 Pa	350 Pa
F-9	165 Pa	350 Pa

1) The initial pressure losses are the average values calculated based on the input rate of 2.5m/sec.

TABLE OF CHANNEL DAIMETERS

OTHER SIDE (b) mm	100	125	150	175	200	225	250	275	300	350	400	450	500	550	44	650	700	750	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
100	109																												
125	122	137																											
150	133	150	164																										
175	143	161	177	191																									
200	152	172	189	204	219																								
225	161	181	200	216	232	246																							
250	169	190	210	228	244	259	271																						
275	176	199	220	238	256	272	285	301																					
300	183	207	229	248	265	283	299	314	328																				
350	195	222	245	267	285	305	322	339	354	383																			
400	207	235	260	283	305	325	343	361	378	408	437																		
450	213	247	274	299	321	343	363	382	400	433	464	492																	
500	223	258	287	313	337	360	383	401	420	455	488	518	543																
550	236	269	299	326	352	375	394	419	439	473	511	543	571	601															
600	245	279	310	339	365	390	414	436	457	496	533	567	598	628	656														
650	253	289	321	351	378	404	429	452	474	515	553	589	622	653	781	711													
700	261	298	331	362	391	418	441	468	490	533	573	610	644	677	708	737	765												
750	268	306	341	373	402	430	457	482	506	550	592	630	666	700	732	761	792	820											
800	279	314	350	383	414	442	470	496	520	567	609	649	687	722	755	783	818	847	873										
900	289	330	367	402	435	465	494	522	548	597	643	686	726	761	799	833	856	897	923	984									
1000	301	344	384	420	454	486	517	546	574	626	674	719	762	802	840	876	911	944	976	1037	1091								
1100	313	358	399	438	473	506	538	569	598	652	703	751	793	838	878	916	953	988	1022	1086	1146	1202							
1200	324	370	413	455	490	525	558	590	620	677	730	780	827	872	914	954	993	1030	1066	1131	1196	1256	1312						
1300	334	382	426	468	506	543	577	610	642	71	757	808	857	904	948	990	1031	1069	1107	1177	1244	1306	1363	1421					
1400	344	394	439	482	522	559	595	629	662	724	781	835	886	934	980	1024	1066	1107	1146	1220	1289	1354	1416	1473	1530				
1500	353	404	452	495	536	575	612	648	681	743	805	860	913	963	1011	1057	1100	1143	1183	1260	1330	1400	1464	1526	1584	1640			
1600	362	415	463	508	551	591	629	665	700	766	827	885	939	991	1041	1088	1133	1177	1219	1298	1371	1444	1511	1574	1635	1693	1749		
1700	371	425	474	521	564	606	644	682	718	785	849	908	964	1018	1069	1118	1164	1209	1253	1335	1413	1486	1555	1621	1684	1745	1803	1858	
1800	379	434	785	533	577	619	660	698	735	804	869	930	988	1043	1096	1146	1193	1241	1286	1371	1451	1523	1598	1667	1732	1794	1854	1912	1968
1900	385	444	496	544	590	632	674	713	752	823	889	952	1012	1068	1122	1174	1224	1271	1318	1405	1488	1566	1640	1710	1778	1842	1904	1964	2021
2000	393	453	506	555	602	646	688	728	767	840	908	973	1034	1092	1147	1200	1252	1301	1348	1438	1523	1604	1680	1753	1822	1889	1952	2014	2073



PSYCHROMETRIC CHART

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