thermo Q

# Air Cooled Srew Chiller

## for Heavy Duty use

**Capacity : 105 ~ 1400 KW**

### Unequaled Reliability :

- ❑ High cooling capacity , low power consumption
- ❑ Silent and low vibration
- ❑ High – efficiency profile Compressor , durable and easy maintenance
- ❑ Long life bearing with pressure unloading and Optimized oil management
- ❑ Intelligent electrics protection
- ❑ Suitable for R 22 ; R 134a , R 407C

***thermo Q*** presents the complete line of Air cooled packaged type Screw Water Chiller . Ranging from 40 RT to 400 RT

Economical , easy installation and operation in a complete packaged design. Ideal for modern cooling applications in high rise building , commercial building , shopping mall , hotel , hospital , and industrial plant.

All units are compact , completely factory assembled , shape and modular system to be installed. its can reach on site easy to handling on transportation .

The unit is pressure tested , evacuated and fully oil charge .

Charge with Refrigerant 134a ; R 404A , R 407A or other Ozone Friendly refrigerant Type .

## ▪ Unique Floating Coil and Low Noise Condenser Fan

Floating coil concept prevents the refrigerant carrying tubes from coming into contact with the tube sheets. This concept allows for thermal expansion and contraction of the tubes without the risk of tube damage at the tube sheets, thereby reducing the chances of refrigerant leaks.

The highly efficient and compact Cross finned coil type are designed with Outdoor fan with best quality fan made convenience with low noise level , saving energy and high ambient resistance temperature use until 60 ○C .

## Man Component

### ○ Durable Screw Compressor

New 5 to 6 rotor profile with multi-nations' patents (Taiwan, US,UK, Japan, China…) that has not only with the high volume efficiency profile designed dedicatedly as refrigerants' characteristics, but also with high precise CNC machining centers, CNC rotor milling machines, ZEISS 3D coordinate measuring machines etc those high precision machining machines, inspection equipments and strict process control to render RC compressors with low vibration, low noise and high efficiency for all the customers of Hanbell worldwide

**Multi-national Patens**

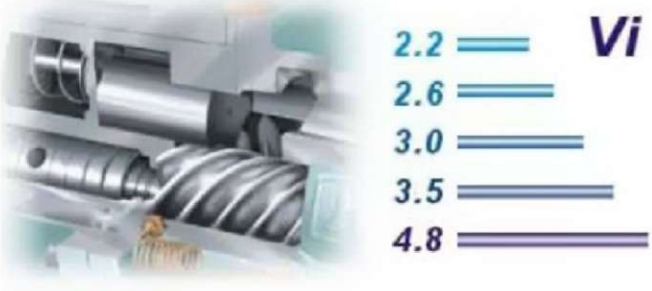
High Efficiency Motor

## High Efficiency Motor

Premium-grade low-loss core steel with the special slot design for RC motors, and avail of an overall inner & outer guide design to pilot the suction gas flow with an equal distribution to pass the motor and gain the highest efficiency no matter what running capacity the compressor will be at.

**Overall Range of Volume Ratio (Vi)**

For different working conditions as water-cooled, air-cooled, refrigeration, cold room. Thermal storage…etc and different refrigerants like R22, R134a, R404A, R407C…etc, there are lots of various built-in volume ratio (Vi=2.2, 2.6, 3.0, 3.5, 4.8) offered for customers' applications. It is very economical for the customers to save the running cost due to the avoidance of compressor' over-compression or less-compression.




Comprehensive Vi

## Evaporator

Shell and tube type Evaporator, compact and height efficiency heat transfer.
All evaporator complete with anti freeze protection and chilled water temperature sensor to reduce precision chilled water temperature . Manufacture standard TEMA , ASTM .

## GENERAL DATA

# AIR COOLED SCREW SEMI HERMETIC WATER CHILLER

TECHNICAL SPECIFICATION DATA

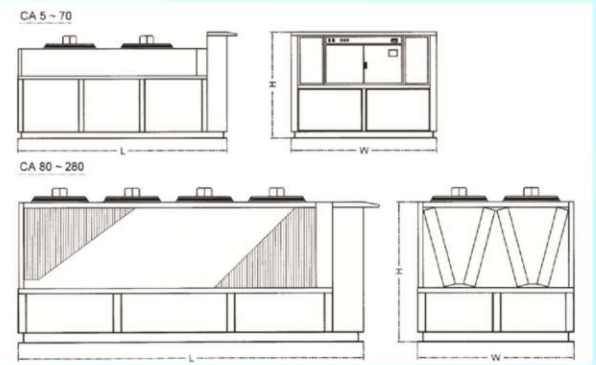
| CA SERIES | | 50 ASC | 60 ASC | 70 ASC | 80 ASC | 90 ASC | 110 ASC | 125 ASC | 140 ASC | 160 ASC | 180 ASC | 220 ASC2 | 250 ASC2 | 280 ASC2 | 320 ASC2 | 360 ASC2 | 440 ASC2 | 480 ASC3 | 540 ASC3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COOLING CAPACITY | kW | 105.6 | 133.8 | 150.9 | 199.8 | 235.5 | 256.3 | 290.3 | 321.2 | 366.1 | 428.0 | 501.9 | 580.6 | 642.4 | 732.2 | 856.0 | 1.003.8 | 1.098.3 | 1.284.0 |
| | TR | 30 | 38 | 43 | 57 | 67 | 73 | 83 | 91 | 104 | 122 | 143 | 166 | 182 | 208 | 244 | 286 | 312 | 366 |
| COMPRESSOR Type | | Semi Hermetic Screw Compressor | | | | | | | | | | | | | | | | | |
| Motor Size | HP | 50 | 60 | 70 | 80 | 90 | 110 | 125 | 140 | 160 | 180 | 220 | 250 | 280 | 320 | 380 | 440 | 480 | 560 |
| RPM | 1/min | 2.900 | | | | | | | | | | | | | | | | | |
| Qty | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | Qty |
| Power Input | kW | 36.1 | 45.5 | 50.2 | 67.2 | 75.7 | 81,7 | 94.6 | 104.7 | 122.2 | 135.5 | 155.3 | 189.2 | 209.4 | 233.4 | 271 | 310.6 | 366.6 | 406.5 |
| Capacity Control | % | 25 – 50 – 75 -- 100 | | | | | | | | | | | | | | | | | |
| Oil Charge | L | 7 | 8 | 14 | 14 | 16 | 16 | 18 | 18 | 23 | 23 | 32 | 36 | 36 | 46 | 46 | 64 | 69 | 69 |
| CONDENSER COIL | | | | | | | | | | | | | | | | | | | |
| Material | | Copper Tubes – Aluminum Fins | | | | | | | | | | | | | | | | | |
| Tubes Diameter | Inch (mm) | 3/8 (9,5) | | | | 3/8 (9,5) | | | | 3/8 (9,5) | | | | | 3/8 (9,5) | | | | |
| Face Area | $m^2$ | 327 | 525 | 525 | 525 | 554 | 780 | 1090 | 1090 | 1090 | 1108 | 1560 | 2180 | 2180 | 2220 | 3000 | 3300 | 4360 | 4360 |
| Fin Spacing | mm | 2,1 | | | | 2,1 | | | | 2,1 | | | | | 2,1 | | | | |
| CONDENSER FANS Type | | Propeller, Direct Drive | | | | | | | | | | | | | | | | | |
| Fans Speed | RPM | 1340 | | | | 850 | | | 1340 | 850 | | | | | 850 | | | | |
| Blade Diameter | mm | 630 | | | | 900 | | | 630 | 900 | | | | | 900 | | | | |
| No. of Fans | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 6 | 6 | 6 | 8 | 10 | 10 | 12 | 12 | 16 | No. of Fans |
| Total Power | kW | 5,7 | 5,7 | 5,7 | 7,6 | 9,9 | 9,9 | 9,9 | 13,2 | 7,6 | 19,8 | 19,8 | 19,8 | 26,4 | 33 | 33 | 39,6 | 39,6 | 52,8 |
| Total Airflow | $M^3/h$ | 45000 | 43500 | 43500 | 52000 | 81000 | 81000 | 81000 | 100000 | 110000 | 162000 | 162000 | 162000 | 200000 | 266000 | 262000 | 300000 | 324000 | 400000 |
| EVAPORATOR Type | | Shell and Tubes, Direct Expansion, Removable Tube-Bundle | | | | | | | | | | | | | | | | | |
| No. of RefrigerantCircuit | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | No. of |
| Water Volume | L | 35 | 41 | 46 | 54 | 65 | 81 | 95 | 100 | 114 | 133 | 162 | 184 | 215 | 230 | 278 | 334 | 382 | 453 |
| Chilled water Flow | L/s | 4,77 | 6,07 | 6,89 | 8,10 | 9,43 | 11,36 | 13,19 | 15,44 | 16,20 | 18,87 | 22,71 | 26,39 | 30,89 | 34,07 | 39,58 | 46,33 | 52,77 | 61,77 |
| Pressure Drop | kPa | 19 | 27 | 18,8 | 22,8 | 26,1 | 30,6 | 34 | 46,6 | 47,7 | 52,1 | 31,7 | 38,1 | 41,2 | 45,3 | 54,8 | 65,6 | 67,6 | 71 |
| Inlet / Outlet Temperature | $^0C$ | 12 1 7 | | | | | | | | | | | | | | | | | |
| Water Connection | | | | | | | | | | | | | | | | | | | |
| Inlet / Outlet | DN | 80 | 80 | 100 | 100 | 100 | 125 | 125 | 150 | 150 | 150 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Drain | FPT | 1 - | | | | | | | | | | | | | | | | | |

Cooling Capacity Based on ambient 35$^0$C, 55% RH, Refrigerant R-22, te 2$^0$C, tc 50$^0$C

| CA Series | | | 50 ASC | 60 ASC | 70 ASC | 80 ASC | 90 ASC | 110 ASC | 125 ASC | 140 ASC | 160 ASC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dimension | Lenath | mm | 3400 | 3400 | 3400 | 3400 | 3600 | 4000 | 4600 | 4600 | 4600 |
| | Width | mm | 1800 | 1800 | 1800 | 1800 | 1200 | 1200 | 1200 | 1200 | 1200 |
| | Height | mm | 1100 | 1100 | 1100 | 1100 | 2400 | 2400 | 2400 | 2400 | 2400 |
| Weight | | kg | 830 | 900 | 1120 | 1160 | 1200 | 1700 | 1800 | 1900 | 2400 |

| CA Series | | | 180 ASC | 220 ASC | 250 ASC2 | 280 ASC2 | 320 ASC2 | 360 ASC2 | 440 ASC2 | 480 ASC3 | 540 ASC3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dinnenston | Lenath | mm | 3600 | 4000 | 4600 | 4600 | 6100 | 6700 | 6900 | 9000 | 9000 |
| | Width | mm | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 |
| | Height | mm | 2800 | 3700 | 4100 | 4300 | 2400 | 2400 | 2400 | 2400 | 2400 |
| Weight | | kg | 2800 | 3700 | 4100 | 4300 | 5500 | 5900 | 6300 | 8000 | 8000 |

**We improve our products continuously; therefore we reserve the right to change in specification without prior notice.**



## Optional features :

- **Ozone friendly refrigerant use**
- **Epoxy coating fins or marine type copper fins**
- **Heat recovery from refrigerant hot gas to reduce hot water**
- **Brine chiller type with brine temperature from 2 ° C to - 40 ° C**

### Programable Electronic Controller

A high performance 16-bit microprocessor guarantees high program running speed and efficient management of the interfaces and the expansion boards, including control of faster transients.

The parameters can be protected by various password levels (manufacturer, user).
All of components in this system can be connected to pLAN local networks without requiring additional cards , for the exchanger of data and information . Consequently, distributed control networks can be created simply and reliability for optimized management of the installation.

### Refrigerant Waste Heat Recovery :

The Heat Recovery Unit captures waste heat discharged from the refrigerant cycle in an Water Chiller or Air Conditioning system, and transfers that heat into a Hot water tank, thereby creating low cost hot water for Hotel , Laundry , Feed water Boiler or Industrial use. Not only does the Heat Recovery Unit substantially reduce the amount of energy required to provide domestic hot water, but it also improves the cooling efficiency of the Chiller or Air Conditioner it is operating.

Heat recovery from refrigerant hot gas to water.
Temperature of water can be reach until 70 ° C


**PT. Metalindo Prima Engineering**
**Heat Transfer Engineering**

Office :
Jl. K.H Zainal Mustafa No. 17 - Jakarta ( 13350 ) - Indonesia
Phone : 081212070575 Fax : 62 21 851 3109 -
Website : www.metalindoengineering.com
Email : julfikar@metalindoengineering.com