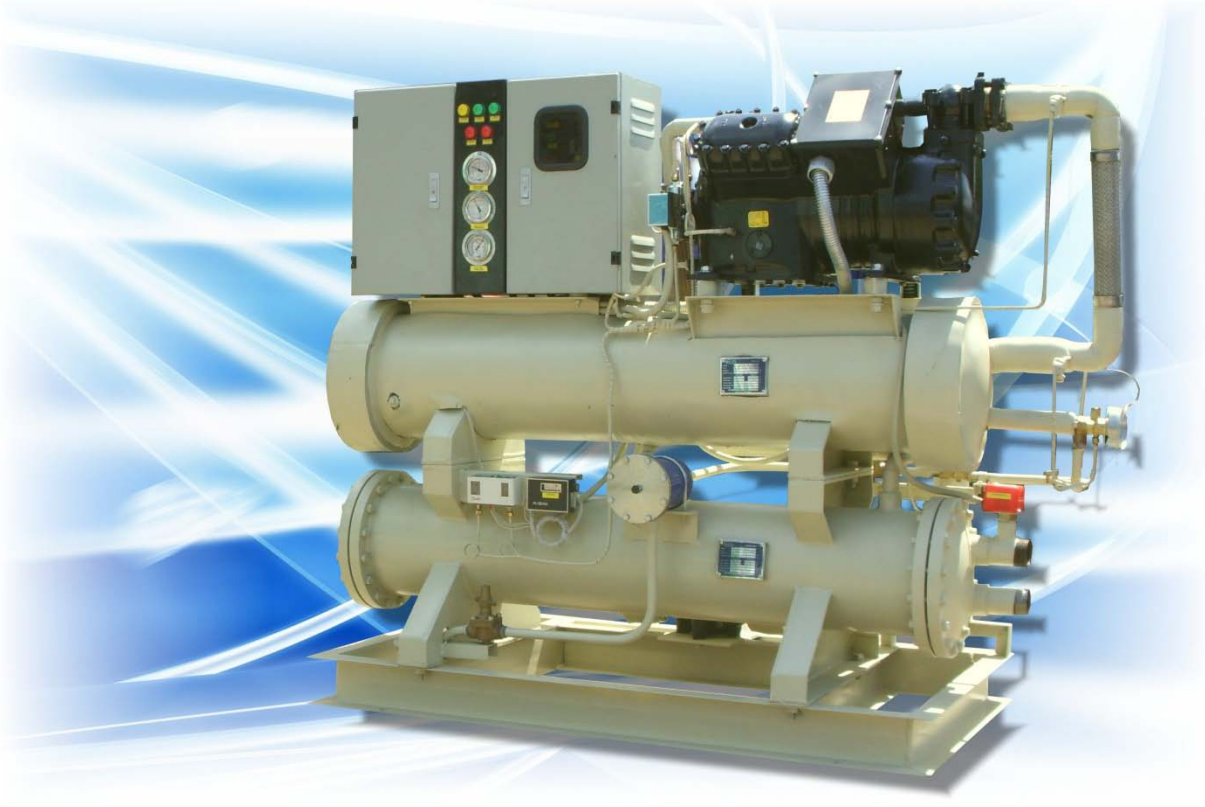
thermo Q

WATER COOLED PACKAGED CHILLER

For Heavy Duty Use



- **Cooling Capacity from 30 ~ 610 KW**
- **High cooling capacity , low power consumption**
- **Intelligent electronics protection for motor compressor**
- **High efficiency condenser**
- **High efficiency dry expansion evaporator**
- **Wide range Temperature Operation from – 40 O C to + 20 O C**

thermo Qpresents the complete line of Water cooled packaged type reciprocating Water Chiller . ranging from 8 to 175 Ton Capacity.

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

All units are compact , completely factory assembled , shape and modular system to be installed as outdoor and weather proof . its can reach on site easy to handling on transportation . The unit is pressure tested , evacuated and fully charge with Refrigerant – 22 and includes an initial oil charge .

Optional features :

- **Ozonefriendly refrigerant use**
- **Copper Nikle tube for marine type**
- **Heat recovery from refrigerant hot gas to reduce hot water**
- **Brine chiller type with brine temperature from 2 ^{O}C to - 40 ^{O}C**

Compressor

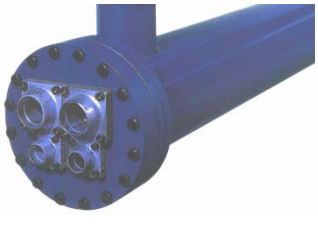
New generation reciprocating semi hermetic compressor from ***Copeland- USA***.the word's largest manufacture of semi hermetic compressor .
Compact,low noise , high efficiency , durable and easy maintenance .
Capable of operating with HCFC Refrigerant, R 404 , R 507 , R 407a , R 134a and R 407C .
Each Compressor complete with ***Intelligent electronic*** for protection
Fully motor protection against by thermal motor temperature control, motor overload, phase failure, low / hi voltage and phase sequence control , low oil pressure protection

Condenser

Shell and tube type Condenser , compact and height efficiency heat transfer with low fin tube.
Copper tube material or Copper Nikel for marine use .
All condenser complete with slight glass indicator dan stop valve for service .

Evaporator

Shell and tube type Evaporator,compact andheight 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 .



Protection and safety control equip.

Dual pressure switch , to protects hight discharge pressure caused by incorrect installation and low refrigerant suction pressure by refrigerant leak .

Freezing protection thermostat , protects against chilled water freezing due to no flow or other causes during chilled water pipe installation .

Oil pressure safety switch , protects compressor against loss of oil pressure .

Sight glass , a moisture indicating sight glass is installed in the liquid line. Easy to read color indicator shows moisture content directly on the spot . This provides mean for easy checking of the system refrigerant charge and condition .

Filter drier , Refrigerant circuits are kept free from harmful moisture , sludge , acids and oil contaminating particles . A filter – drier witch a large effective are allowing for very low pressure drop is provided on each mode.

Flow switch , protector for poor cooling water .

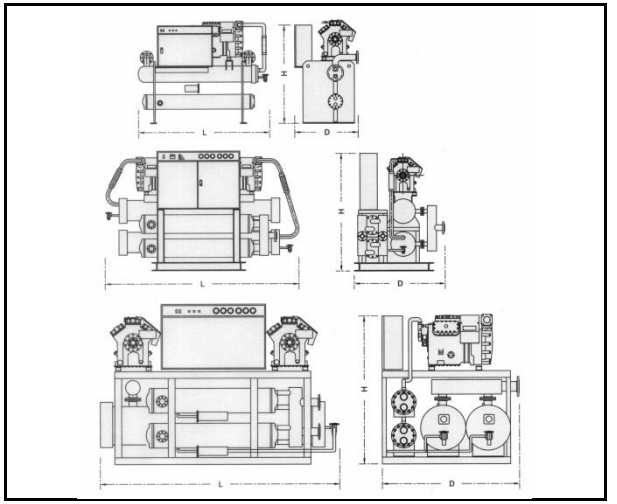
Thermostat control ,Automatically maintains the leaving chilled water temperature at desired level.

WATER COOLED PACKAGED CHILLER
SPECIFICATION DATA

MODEL CW Series		10 AS	15 AS	20 AS	30 AS	40 AS	50 AS	60 AS	70 AS	80 AS.2	100 AS.2	120 AS.2	140 AS.2	180 AS.3	210 AS.3	240 AS.4	280 AS.4
COOLING CAPACITY *	(kW)	29.833	39.170	45.091	63.476	98.634	113.373	135.598	152.522	197.269	226.746	271.195	305.044	406.793	457.567	542.391	610.089
COMPRESSOR	Type	Semi Hermetic															
	Model	Piston (Reciprocating)															
	HP	10	15	20	30	40	50	60	70	2 x 40	2 x 50	2 x 60	2 x 70	3 x 60	3 x 70	4 x 60	4 x 70
	V/Ph/Hz	380 / 3 / 50															
	RLA (A)	25.1	31.4	32.7	48	70.5	92	112	130	2 x 70.5	2 x 92	2 x 112	2 x 130	3 x 112	3 x 130	4 x 112	4 x 130
	LRA (A)	96	129	160	218	374	444	544	600	2 x 374	2 x 444	2 x 544	2 x 600	3 x 544	3 x 600	4 x 544	4 x 600
	Qty./Unit	1								2				3		4	
REFRIGERANT	Type	R **407**															
CONDENSER	Type	**Thermo Q** - SHELL AND TUBE															
No. of Circuit		1								2				3		4	
Condenser Water Flow Rate	(m³/h)	6.41	8.41	9.69	14.06	21.18	24.35	29.11	32.75	42.36	48.68	58.24	65.50	87.35	98.25	116.48	131.02
Condenser Water Connection (Inch)		DN 40	DN 50		DN 80		DN 100		DN 125			DN 150		DN 200			DN 250
Condenser Water Temp.In/Out	(°C)	30 / 35															
EVAPORATOR	Type	Thermo Q - SHELL AND TUBE															
No. of Circuit		1								2				3		4	
Chilled Water Flow Rate	(m³/h)	5.13	6.73	7.75	11.25	16.94	19.48	23.29	26.20	33.89	38.95	46.59	52.40	69.88	78.60	93.18	104.81
Chilled Water Pressure Drop	(bar)	0.42	0.32	0.44	0.4	0.41	0.44	0.36	0.4	0.45	0.53	0.57	0.71	0.89	0.47	0.5	0.52
Water Connection	(Inch)	DN 40		DN 50		DN 80		DN 100		DN 125			DN 150		DN 200		
Chilled Water Temp.In/Out	(°C)	12 / 7															
* Cooling Capacity Based Condenser water In / Out - 30°C / 35 °C. Refrigerant R - 407, CW. In 12 °C, Out 7 °C																	

Note :

RLA : Rated load Amp. LRA : Locked Rotor Amp.



DIMENTION :

TYPE	L	D	H
CW 10 AS	1.500	1.000	1.400
CW 15 AS	1.250	1.000	1.400
CW 20 AS	1.750	1.000	1.400
CW 30AS	1.750	1.000	1.500
CW 40 AS	1.750	1.000	1.400
CW 50 AS	3.200	1.000	1.400
CW 60 AS	3.200	1.000	1.400
CW 70 AS	3.200	1.000	1.400

TYPE	L	D	H
CA 80 AS.2	3.200	1.750	1.800
CA 100 AS.2	3.200	1.750	1.800
CA 120 AS.2	3.200	1.750	1.800
CA 140 AS.2	3.200	1.750	1.800
CA 180 AS.3	3.200	2.250	1.800
CA 210 AS.3	3.200	2.250	1.800
CA 240 AS.4	3.200	2.750	1.800
CA 280 AS.4	3.200	2.750	1.800

Refrigerant Hot Gas Heat Recovery(Optional)

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 coolingefficiency of the Chiller or Air Conditioner it is operating.

Heat recovery from refrigerant hot gas to water .
Max. temperature of water can be reach = 70 ^{O} C

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Heat Transfer Engineering

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