



More Technical Zoom

- Connectivity increased - now up to 48 indoor units
- Multi-systems with combinations from 13 HP up to 50 HP
- 200 m maximum allowable piping length (L1)
- Extended pipe runs (total 780 m)
- 10,000 run hours between engine service intervals (equivalent to one maintenance every 3.2 years*)
- Full heating capacity down to -20 °C
- No defrost cycle
- Assuming 3,120 running hours per year - 12 h x 5 days x 52 weeks

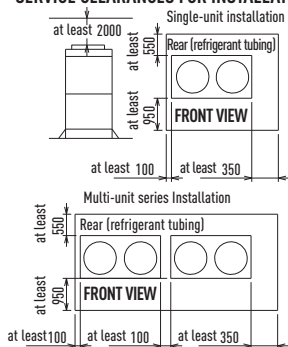


Sample installation

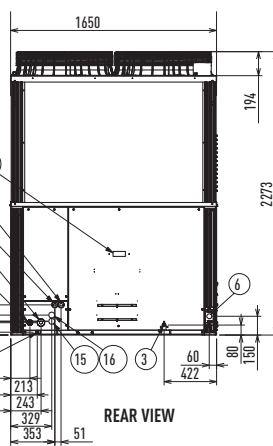
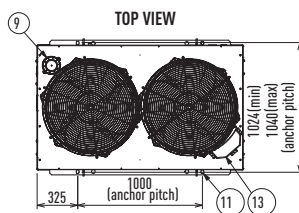
* Referring to outside temperature

| | 45 kW | 56 - 71 kW | 85 kW |
|--------------------------------|--------------------------|------------|---------|
| 1 Gas refrigerant pipe | Ø 28.58 | Ø 31.75 | Ø 31.75 |
| 2 Liquid refrigerant pipe | Ø 12.7 | Ø 15.88 | Ø 19.05 |
| 3 Exhaust gas drain port | HOSE OD Ø 25 (accessory) | | |
| 4 Electrical power supply port | Ø 28 | | |
| 5 Inter-unit cable port | Ø 28 | | |
| 6 Fuel gas port | R3/4 | | |
| 7 Condensation drain opening | Ø 20 | | |
| 8 Rain and condensation outlet | | | |
| 9 Engine exhaust outlet | | | |
| 10 Suspension holes 4-Ø 20x30 | | | |
| 11 Anchor holes 4-Ø 22x30 | | | |
| 12 Segmented display | | | |
| 13 Coolant intake (top) | | | |
| 14 Vent | | | |
| 15 Hot water intake | | Rp3/4 | |
| 16 Hot water outlet | | Rp3/4 | |

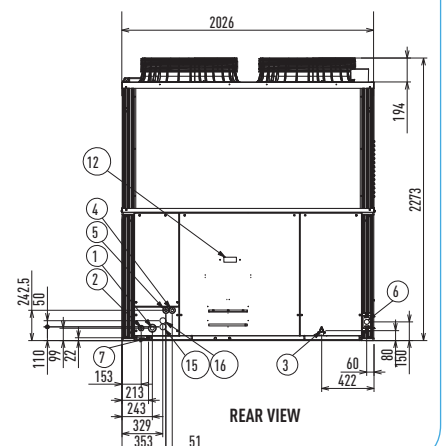
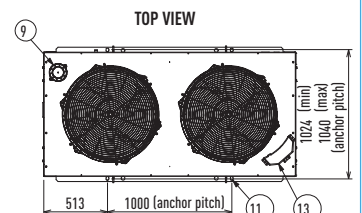
SERVICE CLEARANCES FOR INSTALLATION



U-16GE2E5 // U-20GE2E5 // U-25GE2E5



U-30GE2E5



High savings

ECO G
ECO E

ECO G AND ECO G MULTI

2-PIPE HEAT PUMP SYSTEM

ECO G and ECO G Multi 2-Pipe for Heat Pump Applications.

The S Series 2-Pipe not only offers improved performance but also increased flexibility. Now available as multi-systems, many combinations are possible, from 16 HP to 50 HP, allowing for more power and enabling accurate matching of a system building load. Additional new features include part load engine management and compressor run hour equalisation.



OPTIONAL

TECHNICAL ZOOM

- REDUCED GAS CONSUMPTION BY MILLER-CYCLE ENGINE
- REDUCED ELECTRICAL POWER CONSUMPTION BY USING DC MOTORS
- NEW LIGHTWEIGHT DESIGN BY USE OF ALUMINIUM ENGINE BLOCK REDUCES WEIGHT BY 110 Kg
- DIVERSITY RATIO 50-200% (SINGLE MODELS ONLY)
- QUIET MODE OFFERS A FURTHER 2 dB(A) REDUCTION
- PART LOAD EFFICIENCIES INCREASED

| HP | | 16 HP | 20 HP | 25 HP | 30 HP | 32 HP | 36 HP* | 40 HP* | 45 HP* | 50 HP |
|-------------------------------|------------------------------|---------------|--------------------|--------------------|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| MODEL NAME | | U-16GE2E5 | U-20GE2E5 | U-25GE2E5 | U-30GE2E5 | U-16GE2E5 U-16GE2E5 | U-16GE2E5 U-20GE2E5 | U-20GE2E5 U-20GE2E5 | U-20GE2E5 U-25GE2E5 | U-25GE2E5 U-25GE2E5 |
| Cooling capacity | kW | 45.00 | 56.00 | 71.00 | 85.00 | 90.00 | 101.00 | 112.00 | 127.00 | 142.00 |
| Hot water (cooling mode) | kW | 15.00 | 20.00 | 30.00 | 30.00 | 30.00 | 35.00 | 40.00 | 50.00 | 60.00 |
| Power Input | kW | 0.71 | 1.02 | 1.33 | 1.70 | 1.42 | 1.73 | 2.04 | 2.35 | 2.66 |
| EER | | 1.48 | 1.40 | 1.15 | 1.22 | 1.48 | 1.43 | 1.40 | 1.25 | 1.15 |
| Max COP (inc hot water) | | 1.97 | 1.89 | 1.64 | 1.65 | 1.97 | 1.93 | 1.89 | 1.74 | 1.64 |
| Gas consumption | kW | 29.70 | 39.10 | 60.40 | 67.9 | 59.40 | 68.80 | 78.20 | 99.50 | 120.80 |
| Heating capacity | STD Low temp ¹ kW | 50.00 / 53.00 | 63.00 / 67.00 | 80.00 / 78.00 | 95.00 / 90.00 | 100.00 / 106.00 | 113.00 / 120.00 | 126.00 / 134.00 | 143.00 / 145.00 | 160.00 / 156.00 |
| Power Input | kW | 0.60 | 0.64 | 0.83 | 1.45 | 1.20 | 1.24 | 1.28 | 1.47 | 1.66 |
| COP | | 1.51 | 1.46 | 1.48 | 1.37 | 1.51 | 1.48 | 1.46 | 1.47 | 1.48 |
| Gas consumption | STD Low temp ¹ kW | 32.50 / 41.50 | 42.50 / 56.40 | 53.20 / 62.30 | 68.10 / 78.00 | 65.00 / 83.00 | 75.00 / 97.90 | 85.00 / 112.80 | 95.70 / 118.70 | 106.40 / 124.60 |
| COP | Average | 1.50 | 1.43 | 1.32 | 1.29 | 1.50 | 1.46 | 1.43 | 1.36 | 1.32 |
| Size | Height | mm | 2273 | 2273 | 2273 | 2273 | 2273 | 2273 | 2273 | 2273 |
| | Width | mm | 1650 | 1650 | 1650 | 2026 | 1650+100+1650 | 1650+100+1650 | 1650+100+1650 | 1650+100+1650 |
| | Depth | mm | 1000 (+80) | 1000 (+80) | 1000 (+80) | 1000 (+80) | 1000 (+80) | 1000 (+80) | 1000 (+80) | 1000 (+80) |
| Weight | Kg | 755 | 780 | 810 | 840 | 755.775 | 755.780 | 780.780 | 780.810 | 810 |
| Starter amperes | A | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Pipe Connections | Gas | Inches (mm) | 1 1/8 (Ø 28.58) | 1 1/8 (Ø 28.58) | 1 1/8 (28.58) | 1 1/4 (Ø 31.75) | 1 1/4 (Ø 31.75) | 1 1/4 (Ø 31.75) | 1 1/2 (Ø 38.10) | 1 1/2 (Ø 38.10) |
| | Liquid | Inches (mm) | 1/2 (Ø 12.70) | 5/8 (Ø 15.88) | 5/8 (Ø 15.88) | 3/4 (Ø 19.05) | 3/4 (Ø 19.05) | 3/4 (Ø 19.05) | 3/4 (Ø 19.05) | 3/4 (Ø 19.05) |
| | Fuel gas | | R3/4 (bolt thread) | R3/4 (bolt thread) | R3/4 (bolt thread) | R3/4 (bolt thread) | R3/4 (bolt thread) | R3/4 (bolt thread) | R3/4 (bolt thread) | R3/4 (bolt thread) |
| | Exhaust drain port | mm | Ø 25 rubber hose | Ø 25 rubber hose | Ø 25 rubber hose | Ø 25 rubber hose | Ø 25 rubber hose | Ø 25 rubber hose | Ø 25 rubber hose | Ø 25 rubber hose |
| Operation sound | dB(A) | 57 | 58 | 62 | 63 | 60 | 61 | 61 | 63 | 65 |
| Indoor/outdoor capacity ratio | | 50-200 % | 50-200 % | 50-200 % | 50-170 % | 50-130 % | 50-130 % | 50-130 % | 50-130 % | 50-130 % |
| Number of connections indoor* | | 24 | 24 | 24 | 32 | 48 | 48 | 48 | 48 | 48 |

* In these combinations, GEP2E5 is able to connect to a W-multi system Specifications subject to change without notice instead of a GE2E5.
1 Low temp condition: outdoor temperature 2 °C.

Specifications subject to change without notice.

| GLOBAL REMARKS | Rated conditions: | Cooling | Heating (standard) | Heating (low temp.) |
|----------------|-------------------------|--------------------|--------------------|-----------------------------|
| | Indoor air temperature | 27 °C DB / 19°C WB | 20 °C DB | 20 °C DB / 15 °C WB or less |
| | Outdoor air temperature | 35 °C DB | 7 °C DB / 6 °C WB | 2 °C DB / 1 °C WB |

Cooling and heating capacities in the tables are determined under the test conditions of JIS B 8627. Effective heating requires that the outdoor air intake temperature be at least -20 °C DB or -21 °C WB.
DB: Dry Bulb; WB: Wet Bulb
- Gas consumption is the total (high) calorific value standard.
- Outdoor unit operating sound is measured 1 meter from the front and 1.5 meters above the floor (in an anechoic environment). Actual installations may have larger values due to ambient noise and reflections.
- Values in parentheses () for refrigerant gas and liquid types are those when the maximum piping length exceeds 90 meters (equivalent length). (Reducers are available locally.)
- Specifications are subject to change without notice.
- Hot water heating capacity is applicable during cooling operation as in Note 1.
- The maximum water temperature that can be obtained is 75 °C. Water heating performance and temperature vary with the air conditioning load. Because the hot water heating system uses waste heat from the engine, which runs the air conditioning, its ability to heat water is not guaranteed.

| GHP SERVICE KITS MODEL NAMES | CZ-PSK560S | CZ-PSK850S |
|-------------------------------------|-----------------------------------|------------|
| Outdoor unit reference | U-16GE2E5 / U-20GE2E5 / U-25GE2E5 | U-30GE2E5 |
| MATERIAL INCLUDED ON THE KIT | | |
| Oil Filter | 1 | 1 |
| Air Cleaner Element (Air Filter) | 1 | 1 |
| Plug | 4 | 4 |
| V BELT (for compressor) | 1 | 1 |
| V Belt (for generator) | - | - |
| Oil Strainer | 1 | 1 |
| Drain Filter Packing | 1 | 1 |

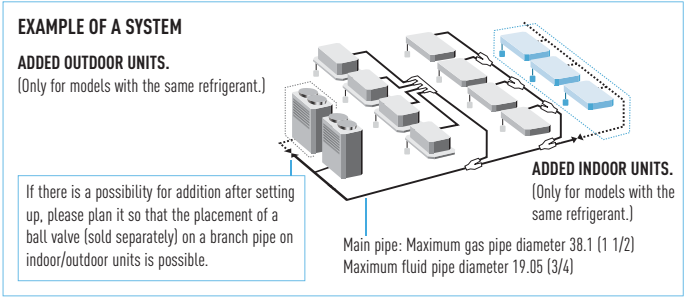
ECO G HIGH POWER, ECO G AND ECO G MULTI

2-Pipe Heat Pump System

Easy to add additional units in the future

Load can easily be increased in the future by the addition of indoor and outdoor units without having to plumb pipe shafts.

* When specifying refrigerant pipe work, please choose the size according to the horsepower after the increase of units.



Maximum possible number of outdoor units to be combined: 2 units.

Maximum horsepower of combined outdoor units: 50 HP.

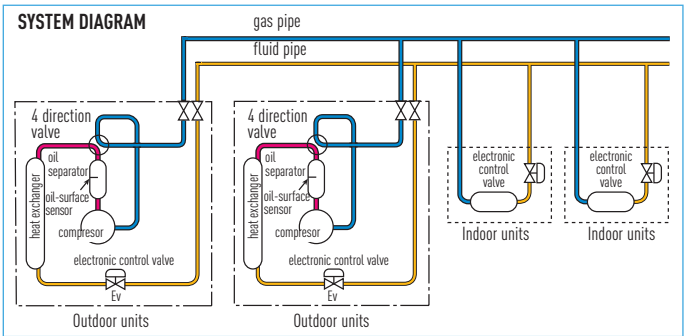
Maximum possible number of indoor units to be connected: 48 units¹.

Indoor/outdoor units capacity ratio: 50%~130%².

¹ When 2 outdoor units are connected.

² Capacity of indoor units connection is: Minimum) 50% of the capacity of the smallest outdoor unit within the system.
Maximum) 130%: total capacity of the system outdoor units.

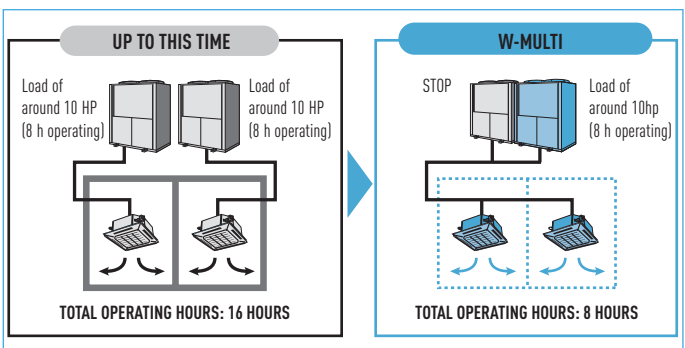
Indoor units are same as multi series for buildings.



Saving Energy

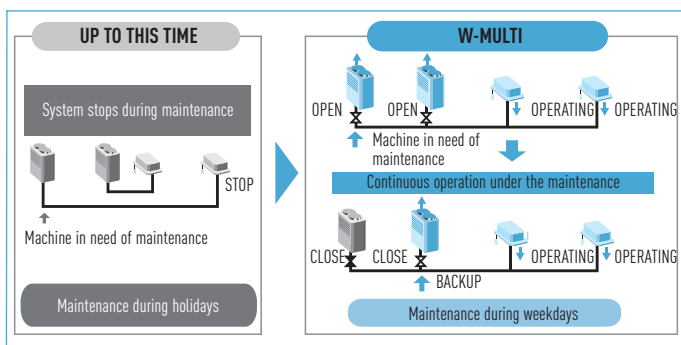
- Energy savings achieved by the Appropriate Capacity.
- Equational Program Function.

Energy savings are achieved by the Appropriate Load Divider Function, which enables efficient operation by concentrating the cooling/heating capacity to one outdoor unit and stopping the other. Compared to conventional machines with a similar COP, this function allows energy savings and thus reduces the running costs, especially in part-load seasons like spring and autumn.



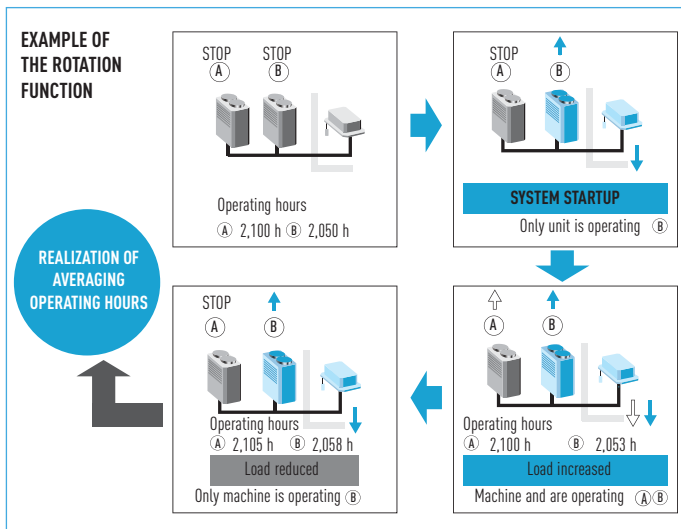
Non-stop operation, even during maintenance

- System will not stop even during maintenance, due to Manual Backup Operating Function.
 - Maintenance is possible during weekdays because it can continue operating during maintenance.
 - Automatic Backup Operating Function enables continuous operation.
- If one outdoor unit stops the backup function will automatically start on the remaining unit and continue operating. During service intervals, the system being serviced can be isolated by a closing valve in the outdoor unit, enabling continuous operation with the still operative outdoor unit.



Long lifetime

- Renewal period prolonged due to rotation function.
- Rotation function, which is run from outdoor units with low operating time, will average the operating hours of each outdoor unit. This will result in prolongation of maintenance or replacement period.

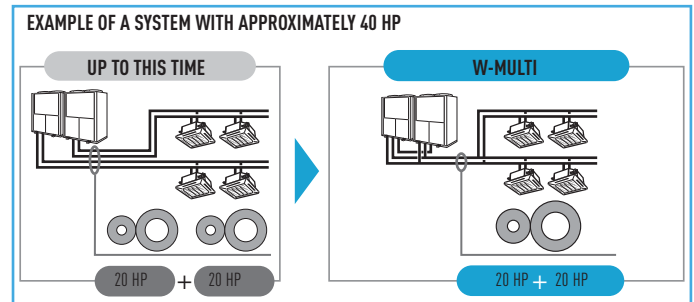


Ease of construction

- By using common header pipe work the installation cost and time is significantly reduced.
- By combining all pipes, which were needed for each indoor unit, into a common pipe in each system, the number of pipes are reduced by half* which leads to ease of construction. Furthermore, space of pipes within pipe shafts can be reduced by 2/3.*

*System with approximately 40hp (20hp x 2 units)

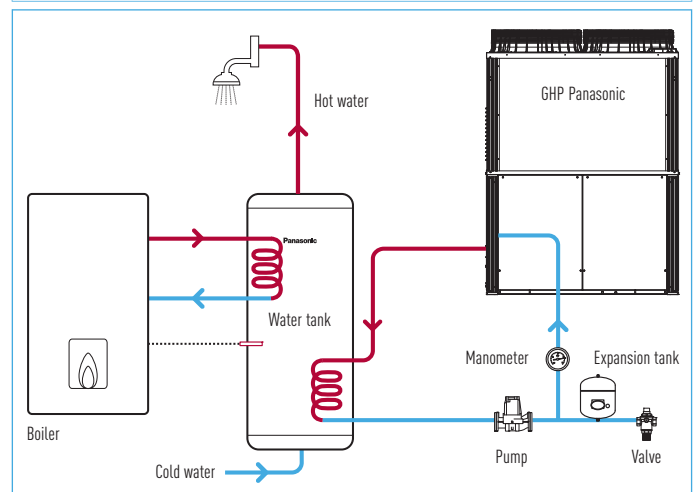
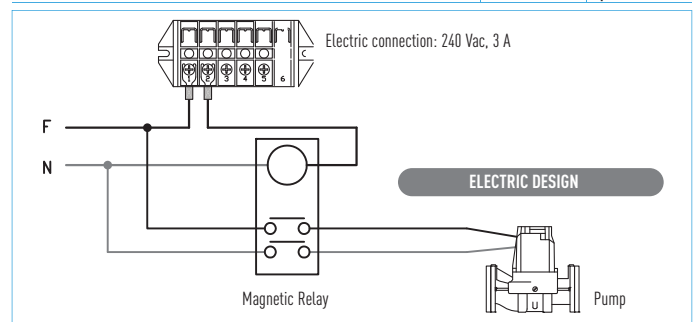
Combining all pipes, which were needed for each outdoor unit, into a pipe in each system. (Number of pipes is reduced by half).



Hot Water Supply Function

- System Advantage.
- The engine waste heat, which is normally exhausted into the atmosphere, is recovered via the heat exchanger and effectively used as hot water, so the GHP Chiller acts as a sub system that alleviates the load on the client's main hot water system, and therefore offers 'free' hot water.

| CAPACITY AT COOLING STANDARD POINT | | OUTLET TEMP 75 °C | |
|-------------------------------------|-----------|-------------------|-------|
| Outdoor unit | U-16GE2E5 | kW | 15.00 |
| | U-20GE2E5 | | 20.00 |
| | U-25GE2E5 | | 30.00 |
| | U-30GE2E5 | | 30.00 |
| Hot water piping allowable pressure | | MPa | 0.7 |
| Hot water circulation rate | | m³/h | 3.9 |
| Hot water tube size | | Rp | 3/4 |



- All the items illustrated in this drawing (except the outdoor unit) are not supplied by Panasonic.
 - During start up, set temperature value of the water in the outdoor unit's parameter.

ECO G WATER HEAT EXCHANGER FOR HYDRONIC APPLICATIONS

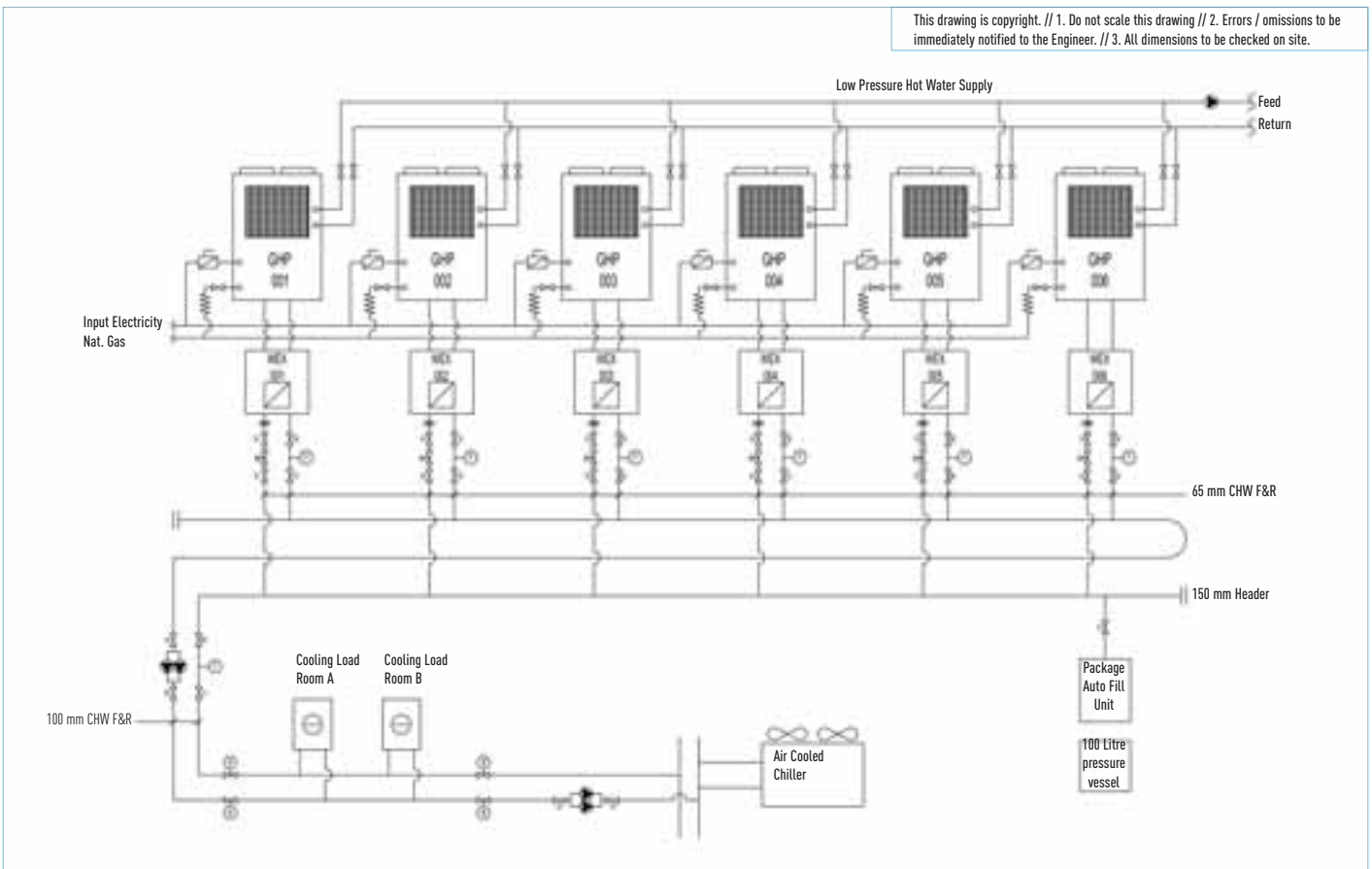
Application Examples



Application Examples

CONNECTION TO 'CLOSE CONTROL' COMPUTER EQUIPMENT.
COMPUTER ROOM APPLICATIONS

When all available electrical power needed to be utilised for the IT equipment for a leading international bank, the cooling load of over 450 kW needed to be powered by gas. The outdoor units were connected via Water Heat Exchangers to cooling coils inside the 'close control' units thereby maintaining a conditioned environment for temperature and humidity. By utilising the hot water function over 100 kW of hot water are supplied to the building and therefore the additional benefit of considerable CO₂ savings is ensured.



This Part L design has reduced CO₂ Emissions by 26% or 166 tonnes per annum compared to electric chillers.

Specifications subject to change without notice.
Rating Conditions: Cooling Indoor 27 °C DB 19 °C WB Outdoor 35 °C DB 24 °C WB Heating Indoor 20 °C DB Outdoor 7 °C DB 6 °C WB.



CONNECTION TO CHILLED WATER COILS IN AIR HANDLING EQUIPMENT.
AIR HANDLING APPLICATION

When a top London restaurant opened it needed large volumes of fresh air to ensure the optimum dining environment. GHP units connected to the cooling coils within the air handling equipment ensured the air was introduced in the right condition in both summer and winter.



CHILLER REPLACEMENT. CHILLED WATER SUPPLY TO FAN COILS.
CHILLER REPLACEMENT

When some old chillers needed replacing at the end of their operational lifetime, GHPs with Water Heat Exchangers enabled the project to be carried out in stages whilst still utilising the existing water pipe work and fan coils. This enabled the project to be delivered on time, to a restricted budget and avoided all issues regarding refrigerant in confined spaces.