YANMAR

NEW GHP - L SERIES

GAS ENGINE HEAT PUMP

CREATING AIR-
CONDITIONED COMFORT

GREAT COMFORT,
LOW SOUND LEVELS

Natural gas provides excellent power and performance. That is why Yanmar gas heat pump [GHP] air conditioning units are the ideal way to comfortably heat or cool large spaces. Available in air-to-air and air-to-water systems, Yanmar gas heat pumps offer outstanding cost performance and operational efficiency.

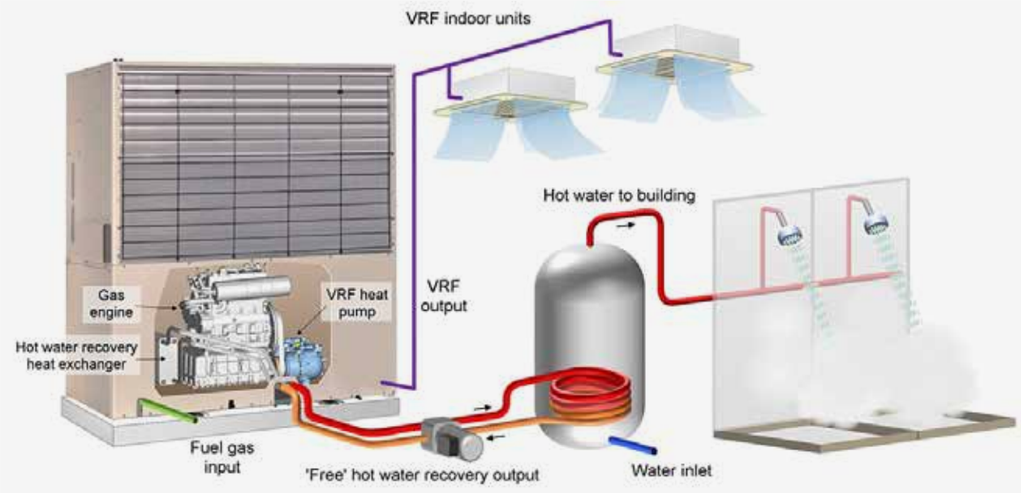
Variable engine speed control operation and various air or water distribution functions co-operate flawlessly to provide constant comfort and eliminate any noticeable temperature fluctuations. And… sound levels are comfortably low, too!

MULTIPLE
APPLICATIONS

The Yanmar GHP air conditioning units are perfect for shops such as boutiques, supermarkets, and convenience stores. Also restaurants, offices, schools, daycare centres, sports clubs, recreational facilities and factories benefit highly of it's unique qualities. Year-round, year after year, 'Yanmar comfort' is there for you.

GAS HEAT PUMP
MECHANISM

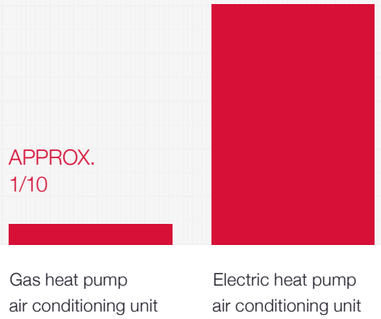
The advanced Yanmar gas engine rotates the compressor to provide heating and cooling based on the heat pump cycle. The indoor units, hydro-module and system operation are basically the same as for an electric system and no gas is combusted indoors. The only difference from an electric heat pump air conditioning unit is that a gas engine rather than an electric motor drives the compressor. However, this one difference produces a number of major benefits.



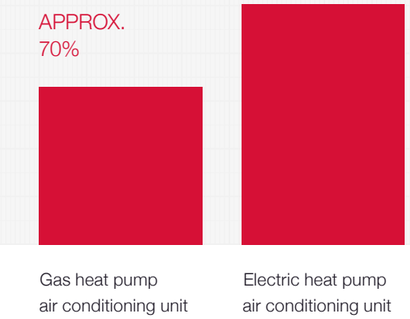
MAJOR BENEFITS
SAVING ENERGY

Because the compressor is driven by the gas engine, only the fans and peripheral equipment consume electricity, eliminating the need to install additional incoming electrical power equipment. Electrical power consumption is only approximately 10% of a similar class electric air conditioning unit.

REDUCTION OF ELECTRICITY CONSUMPTION



RUNNING COSTS



SAVING RUNNING COSTS

The use of economical gas as the main energy source offers potential reductions in running costs of up to 70 % of a similar class electric air conditioning unit. In addition, the GHP control system adjusts the engine speed to match the indoor load, thus enabling economical, comfortable and high-efficiency operation.

SAVING WATER

Unlike large systems that use cooling towers, GHP air conditioning units do not need to use costly water resources for cooling. This can reduce water consumption in a typical large building by around 20 %.

ENVIRONMENTAL FRIENDLY

When it comes to the environment, natural gas generates lower levels of environmentally damaging substances such as NOx, SOx, and CO2 than oil and coal. Furthermore, it also boosts the operational efficiency of the air conditioning system.

AIR-TO-AIR SYSTEM (VRF)
PRODUCT RANGE

The VRF system is available in cooling capacities of 45, 56, 71 and 85 kW. Due to a high APF [Annual Performance Factor], compact installation, light weight, multiple-unit installation, low sound levels, and heating operation at low ambient temperatures, these units can be matched to any required capacity. Heating, cooling and domestic hot water supply can be achieved with only one installation for any type of application. Maintenance costs are low with engine oil change only every 20,000 hours and regular maintenance every 10,000 hours.

When large heating and cooling capacities are required, the VRF [Variable Refrigerant Flow] systems are used with one or more outdoor units and multiple indoor units. These systems extract heat from ambient air which is transferred inside in indoor units [direct expansion] with a heat exchanger, a ventilator and a control. The indoor units are fitted with an expansion valve, enabling the capacity of each unit to be regulated separately. Furthermore, the three-pipe system enables cooling and heating within one building at the same time.

AIR-TO-AIR SYSTEM, 2 PIPE
2 PIPE SYSTEM

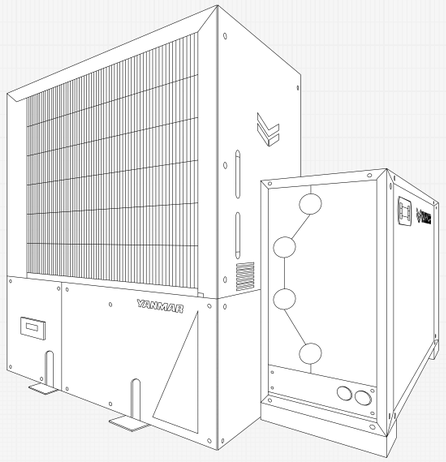
AIR-TO-AIR SYSTEM, 3 PIPE
3 PIPE SYSTEM

TECHNICAL SPECIFICATION
AIR-TO-AIR

YANMAR

			ENCP....L1 (2 pipe)				EFZP....J (3 pipe)	
Technical specification		Unit	450	560	710	850	560	850
Capacity	Cooling	kW	45.0	56.0	71.0	85.0	56.0	85.0
	Heating	kW	50.0	63.0	80.0	95.0	63.0	95.0
Hot water *1	Recovery	kW	14.5	18.5	25.0	30.0	-	-
	Outlet	°C	70.0				-	-
Gas consumption [LHV]	Cooling	kW	29.0	38.0	49.0	64.0	41.0	61.0
	Heating	kW	28.0	36.0	43.0	55.0	39.0	60.0
Gas type			Natural gas I2E, Propane gas I3P *2				Natural gas I2E	
Electrical power consumption	Cooling	kW	1.43	1.26	1.51	1.98	0.99	1.66
	Heating	kW	0.49	0.57	1.32	1.51	0.92	1.51
Power supply	Voltage	V	Single phase 230					
	Frequency	Hz	50					
Sound power level	Normal mode	dB[A]	82	83	85	87	78	81
	Max.	dB[A]	87	88	87	89	82	85
Refrigerant	Type	-	R410A					
	Charge	kg	9.0				11.8	
	Length max.	m	170					
Gas engine	Manufacturer	-	Yanmar					
	Model	-	3GKP88		4GKP88		3GHP88	4GHP88
Air-to-air system	Indoor unit	-	Several models available					
Maintenance	Interval	h	10,000					
Outdoor temperature	Cooling	°C	0 (-10 *3) – 46					
	Heating	°C	20 ~ 35					
Indoor temperature	Cooling	°C	20 ~ 30					
	Heating	°C	15 ~ 30					
Dimensions	Length	mm	1,690				1,690	2.100
	Width	mm	830				800	
	Height	mm	2,288				2,170	
Weight	Outdoor unit	kg	785	805	885	890	890	1,070

*1 In cooling mode, full load
*2 Based on EN483
*3 With optional air guard
All data subject to alteration without notice.



AIR-TO-WATER SYSTEM
PRODUCT RANGE

The VRF system is available in cooling capacities of 45, 56, 71 and 85 kW. Due to a high APF [Annual Performance Factor], compact installation light weight, multiple-unit installation, low sound levels, and heating operation at low ambient temperatures, these units can be matched to any required capacity. Heating, cooling and domestic hot water supply can be achieved with only one installation for any type of application.

Maintenance costs are low with engine oil change only every 20,000 hours and regular maintenance every 10,000 hours.

AIR-TO-WATER SYSTEM
SPLITTED

With this system, the GHP is connected to a hydromodule which can be connected to existing water piping in a building, for example radiators or floor heating. Both heating and cooling are achieved through the normal water circuit and no refrigerant is flowing through the building. This system replaces conventional systems for heating [boiler] and cooling with three major benefits: less installation space, reduced maintenance on technical installations and limited operational costs.

AIR-TO-WATER SYSTEM
COMPACT

With this system, the GHP is directly connected to existing water piping in a building, for example radiators or floor heating. Both heating and cooling are achieved through the normal water circuit and no refrigerant is flowing through the building. This system replaces conventional systems for heating [boiler] and cooling with three major benefits: less installation space, reduced maintenance on technical install tions and limited operational costs

YANMAR

GHP CHILLER
J SERIES

GHP WITH INTEGRATED
HEAT EXCHANGER

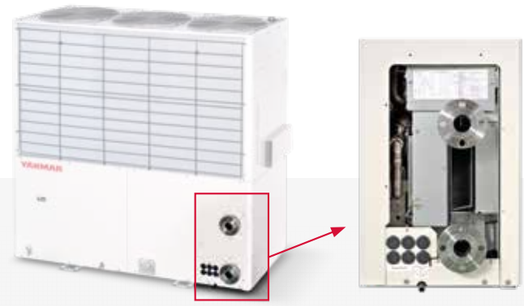
Yanmar is the first company worldwide to introduce a reversible chiller GHP of 71 kW in this power range.

It is an environmental friendly alternative to already existing air-to-air GHPs with indoor units and air-to-water GHPs with hydromodules. By incorporating a heat exchanger into the GHP unit, the Yanmar GHP chiller is self-contained, allowing for direct hydronic connection to the unit, saving installation space and resources while providing an improved COP.

INSTALLATION
ADVANTAGE

The GHP Chiller is perfect for new installations, but replaces existing chiller and boiler systems just as easily.

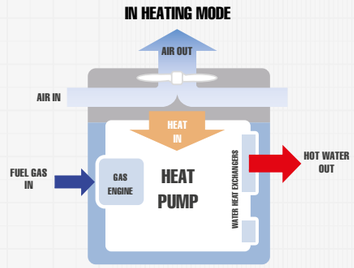
The all-in one package reduces installation space, because one GHP Chiller unit can replace a cooling tower, chiller and boiler. Existing water piping in the building can be used for direct connection to the GHP Chiller.

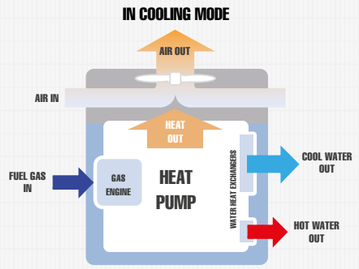


KEY
FEATURES

With one of the longest maintenance intervals in the industry, high quality and reliability, the Yanmar GHP chiller can provide water at a wide range of temperatures suitable for a wide variety of commercial applications from comfort air conditioning to the replacement of boilers and other systems in many industrial and public sectors. Next to the overall feature of an all-in-one package, the key product features include :

- heating and cooling [reverse cycle]
- high efficiency
- direct water system c onnection to the unit
- low electrical power requirement
- no need for a cooling tower
- hot water recovery for sanitary use [available in cooling mode]





ABOUT
YANMAR

Yanmar has a global workforce of over 15,000 and a sales network operating in more than 130 countries. We design and manufacture diesel engines, accessories and finishing equipment for a wide range of applications in pleasure craft and commercial marine vessels, for industrial use, agricultural machinery, construction equipment as well as gas engines for cogeneration and gas heat pump systems. The company has pioneered clean emissions technology and sustainable energy systems. In Europe, Yanmar employs around 600 people and generates annual sales of approximately Euro 800 million

TECHNICAL SPECIFICATION
AIR-TO-WATER

YANMAR

			ENCP...L1 (splitted with Hydrobox)				ECWP...J
Technical specification		Unit	450	560	710	850	710
Capacity	Cooling	kW	43.0	53.0	64.0	70.0	71.0
	Heating	kW	51.0	64.0	79.0	89.0	80.0
Hot water *1	Recovery	kW	16.0	20.5	28.5	30.0	30.0
	Outlet	°C	70.0				
Gas consumption [LHV]	Cooling	kW	33.0	40.0	54.0	63.0	61.0
	Heating	kW	30.0	38.0	51.0	60.0	53.0
Gas type			Natural gas I2E, Propane gas I3P *2				
Electrical power consumption	Cooling	kW	1.41	1.24	1.51	1.96	1.6
	Heating	kW	0.73	0.58	1.33	1.51	1.51
Power supply	Voltage	V	Single phase 230				
	Frequency	Hz	50				
Sound power level	Normal mode	dB[A]	83	83	85	87	83
	Max.	dB[A]	87	88	87	89	87
	Type	-	R410A				
Refrigerant	Charge	kg	9.0				11.8
	Length max.	m	55				-
Gas engine	Manufacturer	-	Yanmar				
	Model	-	3GKP88		4GKP88		4GHP88
Air-to-water system	Heat exchanger	-	External (Hydrobox)				Internal
Maintenance	Interval	h	10,000				
Outdoor temperature	Cooling	°C	0 (-10 *3) – 46				
	Heating	°C	20 ~ 35				
Water outlet temperature	Cooling	°C	6 ~ 18				5 ~ 15
	Heating	°C	27 ~ 50				35 ~ 55
Dimensions	Length	mm	1,690				2,100
	Width	mm	830				800
	Height	mm	2,288				2,170
Weight	Outdoor unit	kg	785	805	885	890	1,050

*1 In cooling mode, full load
*2 Based on EN483
*3 With optional air guard
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