# SHERMAN'S PROJECTS

Creating Heating Solutions

Specializing in Floor Heating, Heat Pumps & Electrical Accessories

## An efficient technology!

*"It is argued that heat pumps are highly energy efficient, and therefore environmentally benign."*

## Heat Pump Technology:

Heat pumps offer the most energy efficient way to provide heating and cooling in many applications, as they can use renewable heat sources in our surroundings. Even at temperatures we consider to be cold, air, ground and water contain useful heat that's continuously replenished by the sun. By applying a little more energy, a heat pump can raise the temperature of this heat energy to the level needed. Similarly, heat pumps can also use waste heat sources such as from industrial processes, cooling equipment or ventilation air extracted from buildings. A typical electrical heat pump will just need 100 kWh of power to turn 200 kWh of freely available environmental or waste heat into 300 kWh of useful heat. Because heat pumps consume less primary energy than conventional heating systems, they are an important technology for reducing emissions of gases that harm the environment, such as carbon dioxide (CO2), sulfur dioxide (SO2) and nitrogen oxides (NOx). However, the overall environmental impact of electric heat pumps depends very much on how the electricity is produced. Heat pumps driven by electricity from, for instance, hydro-power or renewable energy reduce emissions more significantly than if the electricity is generated by coal, oil or gas fired power plants.

## Heat Pump Facts:

1. Using direct combustion, (gas or oil) to generate heat is never the most efficient use of fuel.
2. Heat pumps are more efficient because they use renewable energy in the form of low-temperature heat.

## Heat Pump Operation:

Heat flows naturally from a higher to a lower temperature. Heat pumps, however, are able to force the
heat flow in the other direction, using a relatively small amount of high quality drive energy (electricity, fuel, or high temperature waste heat). Thus heat pumps can transfer heat from natural heat sources in the surroundings, such as the air, ground or water, or man-made heat sources such as industrial or domestic waste, to a building or an industrial application. Heat is then transferred in the opposite direction, from the application that is cooled, to surroundings at a higher temperature. Sometimes the excess heat from cooling is used for to meet a simultaneous heat demand. In order to transport heat from a heat source to a heat sink, external energy to drive the heat pump is needed. Theoretically, the total heat delivered by the heat pump is equal to the heat extracted from the heat source, plus the amount of drive energy supplied. Electrically driven heat pumps for heating of buildings typically supply 100 kWh of heat with just 20-40 kWh of electricity. Many industrial heat pumps can achieve even higher performance, and supply the same amount of heat with only 3-10 kWh of electricity. During the heating cycle, a heat pump will remove heat and humidity from the outdoor air and will transfer this heat to your home. This is possible because even 0 degrees Fahrenheit outdoor air contains a great deal of heat. **Remember** that your heat pump doesn't **generate** much heat it merely **transfers** it from one place to another.

## Heat Pump Characteristics:

**A Constant Heat**
A heat pump delivers a lower supply air temperature than a furnace over a longer period of time to provide a more constant heat. It may give you the impression that your system "never stops running", or "it feels like cold air". At times, the temperature of the air coming out of the vents is less than your body temperature so it feels like cold air. But it is still providing heat for your house. And when it can no longer keep-up with the heat loss of the structure, the 2nd stage or auxiliary heat will automatically energize, bringing on a much warmer heat.

**Water Run-Off**
During the heating cycle, you may notice water running off the outdoor coil. Moisture from the air is condensed on the outside surface of the coil where it gathers and runs off. This is normal.

**Outdoor Coil defrosting**
At certain conditions (low temperature, high humidity), frost, even ice, may build up on the coil of the outdoor unit. In order to maintain heating efficiency, the system will automatically defrost itself. Steam rising form the outdoor unit is normal and is and indication of proper operation. The vapor cloud will only last for a few minutes. When the defrost cycle is completed, the system will automatically switch back to heating. Supplemental heat is automatically energized to maintain comfort during defrost.

## Heat Pump Tips:

- Set thermostat at one temperature. Constant adjusting can cause higher utility costs.
- If using your thermostat as a setback type, limit the setbacks to twice a day such as when you are at work and when you are sleeping.
- Only setback the thermostat 6% of desired temperature (approximately five degrees).
- In heating, try not to set the thermostat below 65 degrees.
- Make it a habit to look at the outdoor heat pump during the winter months for signs of excessive ice or snow build-up on or around the heat pump. Especially after bad weather.
- If the unit is covered in ice or snow it must be removed for it to work properly. Turn the thermostat to Emergency heat or off and remove the snow and ice. You can pour warm or hot water over the unit to melt the snow and ice. Even cold water from a hose will help.
- **Do not** use any sharp objects to pick or knock the ice off the coils of the heat pump. This could cause severe damage and personal injury.
- Once the unit is clear of snow and ice turn the thermostat back to normal heating. If the unit ices up again, call for service.
- Do not let the outdoor unit sit underneath a leaking gutter. In the winter months, water will drip on the top of the unit and freeze solid. This will restrict the air flow and cause the whole unit to freeze-up.
- Heat Pumps should be elevated 4 to 8 inches above ground level to keep coils clear of snow and ice and to allow for proper drainage. Contact our Service Department if you would like your unit raised.

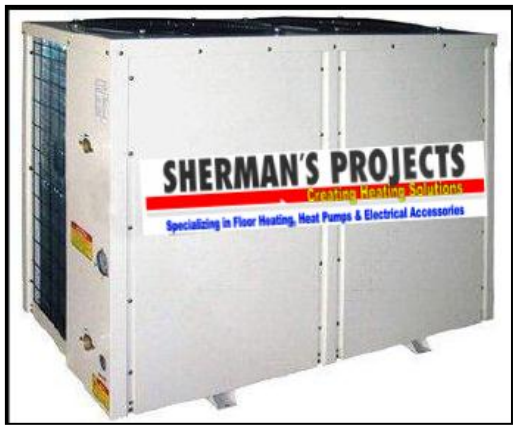
## Heat Pump Maintenance:

- Check air filters monthly. Clean or replace as needed.
- Keep outdoor unit clear of snow, ice, and debris. This includes the top, sides, bottom, and around the heat pump.
- Keep coils clean. If they get dirty you can use a heavy duty degreaser and hose them down. Just turn the unit off first.
- Keep shrubs pruned back at least 18 inches around all sides of the heat pump.
- Flush the indoor condensate drain in spring before using the air conditioning. This is extremely important if the unit is above or in a finished living area.
- Some fan motors need to be oiled annually.
- Last but not least, we suggest having your heat pump inspected by a service technician at least once a year.

## Domestic Heat Pump Specifications


| Model | | | YASBP-25HL | YASBP-38HL | YASBP-56HL | YASBP-90HL |
|---|---|---|---|---|---|---|
| Measuring Condition (A20°C / W55°C) | Heating Capacity | kw | 3.91 | 5.1 | 7.53 | 9.05 |
| | Power Input | kw | 0.8 | 1.214 | 1.88 | 2.61 |
| | Running Current | A | 3.64 | 5.31 | 8.7 | 11.86 |
| | COP | | 4.89 | 4.20 | 4.01 | 4.21 |
| Power Supply | | V/PH/Hz | 220V/1ph/50Hz | 220V/1ph/50Hz | 220V/1ph/50Hz | 220V/1ph/50Hz |
| Heating Max Power Input | | kw | 1.2 | 1.7 | 2.23 | 3.987 |
| Heaing Max Current | | A | 5.57 | 7.75 | 10.32 | 18.12 |
| Cooling Max Power Input | | kw | 0.9 | 1.3 | 1.9 | 3.014 |
| Cooling Max Current | | A | 4.28 | 6.2 | 9 | 13.7 |
| Refrigerant | | | R410A | R410A | R410A | R410A |
| Refrigerant Weight | | kg | 550g | 650g | 720g | 980g |
| Compressor | | | PANASONIC | PANASONIC | PANASONIC | PANASONIC |
| Compressor | | | Rotary | Rotary | Rotary | Rotary |
| Compressor Qty. | | | 1 | 1 | 1 | 1 |
| Fan Motor Model | | | YDK-18-6l1C | YDK-30-6 | YDK-30-6 | YDK-50-6 |
| Fan Power Input | | W | 18 | 30 | 30 | 50 |
| Fan Speed | | RPM | 910 | 900 | 900 | 890 |
| Fan Cover | | | Round & Black | Round & Black | Round & Black | Round & Black |
| Noise (tested from 1 meter away) | | dB(A) | ≤48 | ≤48 | ≤48 | ≤48 |
| Hot Water Output | | L/h | 80 | 120 | 150 | 260 |
| Heat Exchanger | | | Tube-in-Shell | Tube-in-Shell | Tube-in-Shell | Tube-in-Shell |
| Water Connection | | mm | 3/4" | 3/4" | 3/4" | 3/4" |
| Water Flow Rate | | m3/h | 1.8 | 1.8 | 1.8 | 1.8 |
| Water Pressure Drop | | kpa | 20 | 20 | 20 | 20 |
| Throttling Device | | | Capillary Tube | Capillary Tube | 20 | Capillary Tube |
| Controller | | | Intelligent & LCD | Intelligent & LCD | 20 | Intelligent & LCD |
| Controller Line | | m | 12 | 12 | 20 | 12 |
| Net Dimension (L/W/H) | | mm | 770/300/490 | 940/360/550 | 20 | 1010/370/615 |
| Packing Dimension (L/W/H) | | mm | 820/325/520 | 985/390/590 | 20 | 1140/400/670 |
| Net Weight / Gross Weingt | | kg | 38/43 | 51/56 | 20 | 65/70 |
| Loading Qty. (20"/40"/40HQ) | | Unit | 218/450/500 | 126/265/290 | 20 | 87/183/244 |
| Protection Device | | | High/Low pressure protection, Hydraulic protection, overload protection, freezing protection, temperature protection | | | |

# Commercial Heat Pump Specifications




| Model | | | KRS-65E/N2-M (2HP) | KRS-100E/N2-M (3HP) | KRS-200E/SN2-M (5HP) | KRS-270E/SN2-M (7HP) | KRS-380E/SN2-M (10HP) | KRS-450E/SN2-M (12HP) | KRS-550E/SN2-M (15HP) | KRS-800E/SN2-M (20HP) |
|---|---|---|---|---|---|---|---|---|---|---|
| Measuring Conditions A20℃DB/15 ℃WB； W 55℃ | Heating Capacity | kw | 6.5 | 10.5 | 19 | 30 | 38 | 45 | 55 | 80 |
| | Input Power | kw | 1.65 | 2.55 | 4.55 | 6.5 | 9.2 | 10.8 | 13.4 | 19.5 |
| | Input Current | A | 8.06 | 12.46 | 7.83 | 11.19 | 15.84 | 18.60 | 23.07 | 33.57 |
| | COP | W/W | 3.94 | 4.12 | 4.18 | 4.62 | 4.13 | 4.17 | 4.10 | 4.10 |
| | Hot water offer | L/H | 140 | 226 | 408 | 645 | 817 | 967 | 1182 | 1720 |
| Power Supply | | V/PH/Hz | 220V/1PH/50HZ | 220V/1PH/50HZ | 380V/3PH/50HZ | 380V/3PH/50HZ | 380V/3PH/50HZ | 380V/3PH/50HZ | 380V/3PH/50HZ | 380V/3PH/50HZ |
| Refrigerant | | | R410A | R410A | R410A | R410A | R410A | R410A | R410A | R410A |
| Max heating input | | kw | 2.31 | 3.57 | 6.37 | 9.1 | 12.88 | 16.2 | 20.1 | 29.25 |
| Max heating current | | A | 11.29 | 17.45 | 10.97 | 15.67 | 22.18 | 27.89 | 34.61 | 50.36 |
| Compressor model &Brand | | | Mitsubishi RN222 | Toshiba PA330 | Sanyo C-SBN373H8D | Sanyo C-SBN453HD | Sanyo C-SBN373H8D | Sanyo C-SBN453HD | Sanyo C-SBN523H8D | Sanyo C-SBN373H8D |
| Compressor type | | | Rotary | Rotary | scroll | scroll | scroll | scroll | scroll | scroll |
| NO.of compressor | | pcs | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 4 |
| Condenser | | | copper tube in shell | | | | | | | |
| Evaporator | | | ϕ9.52 hydrophilic aluminum fins | | | | | | | |
| Four-way valve （Saginomiya Brand） | | | STF-0218G | | STF-0408G | | | | | |
| AC contactor （Siemens Brand） | | | 3TF3300-0X/AC220V | | 3TF3300-0X/AC220V | | | | | |
| Fan Motor （Helong Brand） | | | YDK-40-6 | YDK-50C-6 | YDK-160G-6 | | | | | |
| Wired controller (develop by ourself) | | | Intelligent & LCD | | | | | | | |
| Noise(1 meter) | | dB(A) | 53 | 55 | 57 | 58 | 60 | 61 | 62 | 64 |
| Water Connection | | inch | 0.75 | 1 | 1 | 1 | 1.5 | 1.5 | 1.5 | 2 |
| Net Dimension(W/H/D) | | mm | 1002/620/302 | 880/680/780 | 1040/810/850 | 1040/810/850 | 1455/1160/710 | 1455/1360/710 | 1450/1930/1100 | 2040/1930/1100 |
| Packing Dimension(W/H/D) | | mm | 1120/780/450 | 1030/930/930 | 1200/1060/1000 | 1200/1060/1000 | 1600/1400/850 | 1600/1600/850 | 1600/2200/1350 | 2200/2200/1350 |
| Fan Discharge | | | Horizontal | Vertical | | | | | | |
| Net Weight/Gross Weingt | | kg | 53/65 | 110/128 | 150/170 | 180/200 | 260/290 | 300/330 | 450/490 | 750/800 |

We, at Sherman's Projects, recommend the implementation and installation of Air Source Heat Pump Water Heaters, Split Type, instead of the Monobloc Type (also known as the All-in-One Heat Pump). Experience showed that there are complications when experiencing problems with the Monobloc Type Heat Pumps. These pumps can't always be repaired on site, which means that the unit needs to be removed from the premises. This results in a situation where the customer is left without a vessel to produce hot water. The Split Type or Domestic Heat Pump can be repaired on site. Should it be necessary to remove the Heat Pump, an immediate connection, of the existing element to the geyser, can be done. This insures that warm water will still be available to the customer until the Heat Pump maintenance/repairs have been done.

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# WARRANTY CERTIFICATE

**This certifies that Sherman's Heat Pumps have a warranty as follows:**

1. **Panasonic Compressor - 5 year guarantee**
2. **Heat Exchanger - 3 year guarantee**
3. **Wilo Pump - 3 year guarantee**
4. **Motorola Keypad - 3 year guarantee**
5. **All other internal components - 12 month guarantee**

**The above warranties are subject to the unit and components being serviced at least once a year by a qualified and reputable heat pump company or technician.**

Serial Number: _____

Date Installed: _____

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