intarWatt R-290 | Chillers

- Built-in hydraulic unit (optional).
- Low refrigerant charge R-290.
- No need for machine room.
- Plug & Play system.
- Optimised compact system, with minimum maintenance.

Water or glycol chiller for outdoor industrial refrigeration applications.

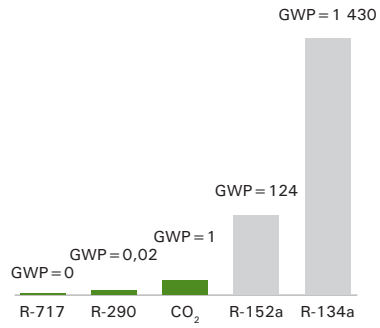
Features

- 400V 3N 50Hz power supply. Available in 60Hz. Others voltages by request.
- Reduce refrigerant charge of R-290.
- Manufactured with galvanised steel casing and polyester paint.
- Semihermetic compressor tandem for R-290 with capacity control and unloaded start, crankcase heater.
- Oil separator and oil balancing line.
- Micro-tube V condensing coil with aluminium fins and 7 mm copper pipes.
- Two electronic fans per V with variable speed.
- Plate heat exchanger with electronic expansion valve per circuit.
- Heat exchanger for liquid subcooling and suction superheating.
- Cooling circuit made of annealed copper or steel tube with soldered connections, filter drier, ATEX high and low pressure switches, pressure transducers and temperature probes.
- Hydraulic circuit made of copper pipe with threaded or flanged connections, fill/drain valve, air vent, flow switch, thermometers and inlet/outlet pressure gauges.
- External IP55 electrical panel with extraction fan. Individual protection of compressors and fans.
- Progamable Emerson control, with variable refrigeration control (digital compressor only), condensing pressure control with floating set point, and variable glycol flow control.

Natural, environmentally friendly and efficient refrigerant

R-290 or propane is a natural refrigerant with a very low greenhouse effect (GWP = 0.02 according to IPCC AR6), widely available on the market. It is a pure substance, with no evaporation slip, and has excellent thermodynamic performance, comparable only to ammonia (R-717) or difluoroethane (R-152a).

Glycol and brine are liquid, biodegradable, food grade secondary refrigerants.



R-290 is a low toxicity, but high flammability (class A3) refrigerant. The chiller comply with the safety requirements of the European standard EN-378:2016, especially with regard to refrigerant charge limitations in outdoor installations, or machine rooms.

Reliable cold distribution, free of refrigerant leaks

Cooling distribution is carried out by pumping glycol water or brine at low pressure through hydraulic piping, free of refrigerant leaks, with no risk of service interruption and low maintenance costs.

Variable glycol flow operation

Variable liquid flow control system adjust circulator pump speed to cooling demand and modulates the cooling capacity of the compressors according to the temperature and the glycol flow rate, to ensure a constant flow temperature.

400V 3N 50Hz | High temperature | Semihermetic compressors | R-290

Refrigerant	Compressor	Series / Model	Compressor HP	Compressor Model	Cooling capacity (kW) I/O water temperature 12/7 °C [1]	Input power (kW)	Ecodesign SEPR [3]	Max. input current (A)	Condenser Fan Ø (mm)	Condenser Air flow (m³/h)	Water flow (m³/h)	Hydraulic connection	Weight (kg)	SPL dB(A) [4]
R-290	2x Semihermetics	AWW-KD-1 0502	50	2x V25-71	107	35	6.6	81	2x Ø 800	46 000	18.3	DN80	1 510	50
		AWW-KD-1 0602	60	2x V30-84	125	42	6.6	95	2x Ø 800	46 000	21.4	DN80	1 510	53
		AWW-KD-1 0702	70	2x V35-103	151	49	6.8	101	2x Ø 800	44 000	25.8	DN80	1 520	52
		AWW-KD-1 0802	80	2x Z40-126	175	62	6.3	129	2x Ø 800	44 000	30.0	DN80	1 620	55
		AWW-KD-1 1002	100	2x Z50-154	195	76	5.8	157	2x Ø 800	44 000	33.4	DN100	1 630	55
	4x Semiherm.	AWW-KD-2 1204	120	2x2x V30-84	250	85	6.6	191	4x Ø 800	92 000	42.8	DN100	3 030	56
		AWW-KD-2 1404	140	2x2x V35-103	302	98	6.8	203	4x Ø 800	88 000	51.7	DN100	3 050	55
		AWW-KD-2 1604	160	2x2x Z40-126	350	124	6.3	259	4x Ø 800	88 000	59.9	DN125	3 240	58
		AWW-KD-2 2004	200	2x2x Z50-154	390	152	5.8	314	4x Ø 800	88 000	66.8	DN125	3 260	58
	6x Semih.	AWW-KD-3 2106	210	3x2x V35-103	453	147	6.8	305	6x Ø 800	132 000	77.5	DN125	4 570	57
		AWW-KD-3 2406	240	3x2x Z40-126	525	186	6.3	389	6x Ø 800	132 000	89.9	DN125	4 860	60
		AWW-KD-3 3006	300	3x2x Z50-154	585	228	5.8	471	6x Ø 800	132 000	100.1	DN150	4 880	60
	8x Se.	AWW-KD-4 3208	320	4x2x Z40-126	700	248	6.3	519	8x Ø 800	176 000	119.8	DN150	6 480	61
		AWW-KD-4 4008	400	4x2x Z50-154	780	304	5.8	628	8x Ø 800	176 000	133.5	DN150	6 510	61

400V 3N 50Hz | Positive temperature | Semihermetic compressors | R-290

Refrigerant	Compressor	Series / Model	Compressor HP	Compressor Model	Cooling capacity (kW) I/O 35 % propylene glycol temperature -2/-8 °C [2]	Input power (kW)	Ecodesign SEPR [3]	Max. input current (A)	Condenser Fan Ø (mm)	Condenser Air flow (m³/h)	Glycol flow (m³/h)	Hydraulic connection	Weight (kg)	SPL dB(A) [4]
R-290	2x Semihermetics	MWW-KD-1 0502	50	2x V25-71	61	28	3.6	81	2x Ø 800	46 000	9.4	2 1/2"	1 510	50
		MWW-KD-1 0602	60	2x V30-84	73	33	3.8	95	2x Ø 800	46 000	11.2	2 1/2"	1 510	53
		MWW-KD-1 0702	70	2x V35-103	89	38	4.1	101	2x Ø 800	44 000	13.7	DN80	1 520	52
		MWW-KD-1 0802	80	2x Z40-126	107	46	4.1	129	2x Ø 800	44 000	16.4	DN80	1 620	55
		MWW-KD-1 1002	100	2x Z50-154	120	55	4.0	157	2x Ø 800	44 000	18.4	DN80	1 630	55
	4x Semiherm.	MWW-KD-2 1204	120	2x2x V30-84	147	67	3.8	191	4x Ø 800	92 000	22.5	DN100	3 030	56
		MWW-KD-2 1404	140	2x2x V35-103	179	76	4.1	203	4x Ø 800	88 000	27.3	DN100	3 050	55
		MWW-KD-2 1604	160	2x2x Z40-126	215	93	4.1	259	4x Ø 800	88 000	32.9	DN100	3 240	58
		MWW-KD-2 2004	200	2x2x Z50-154	241	110	4.1	314	4x Ø 800	88 000	36.9	DN100	3 260	58
	6x Semih.	MWW-KD-3 2106	210	3x2x V35-103	268	115	4.1	305	6x Ø 800	132 000	41.0	DN100	4 570	57
		MWW-KD-3 2406	240	3x2x Z40-126	322	140	4.1	389	6x Ø 800	132 000	49.3	DN125	4 860	60
		MWW-KD-3 3006	300	3x2x Z50-154	361	165	4.1	471	6x Ø 800	132 000	55.3	DN125	4 880	60
	8x Se.	MWW-KD-4 3208	320	4x2x Z40-126	429	187	4.1	519	8x Ø 800	176 000	65.7	DN125	6 480	61
		MWW-KD-4 4008	400	4x2x Z50-154	481	220	4.1	628	8x Ø 800	176 000	73.6	DN125	6 510	61

Options

- Hydraulic group.
- Variable flow pump to control glycol flow.
- Anti-corrosion treatment based on polyurethane coating for the condensing coil.
- Electronic control and spare driver.
- Silentblocks for equipment installation.
- Heat recovery (20 or 80 % condenser heat) for hot water generation.
- Independent compressor compartment with leak detector and ATEX extraction fans.

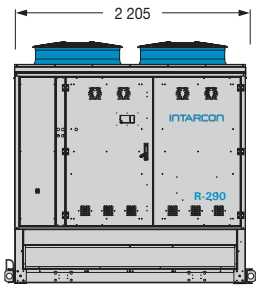
[1] Nominal performance high temperature: 35 °C ambient temperature with water inlet/outlet at 12/7 °C.

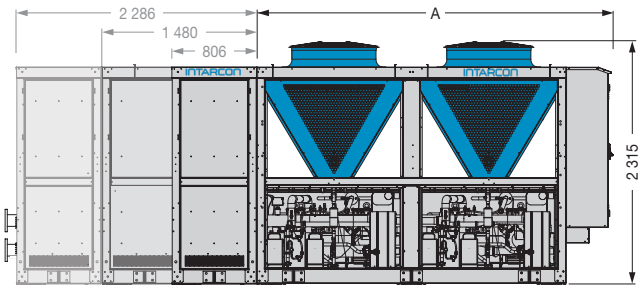
[2] Nominal performance positive temperature: 35 °C ambient temperature with glycol inlet/outlet at -2/-8 °C, with a propylene glycol concentration of 35 %.

[3] Seasonal performance factor (SEPR) according to Commission Regulation (EU) 2015/1095 and (EU) 2016/2281.

[4] Sound pressure level, with directivity 1, measured at 10 m from the unit (non-binding value calculated from sound power).

Dimensions





Pump set [*]

Dimensions (mm)	A
1 series	1 901
2 series	3 377
3 series	4 853
4 series	6 329

[*] Dimension of the additional module according to the configuration of the pump set of the equipment.

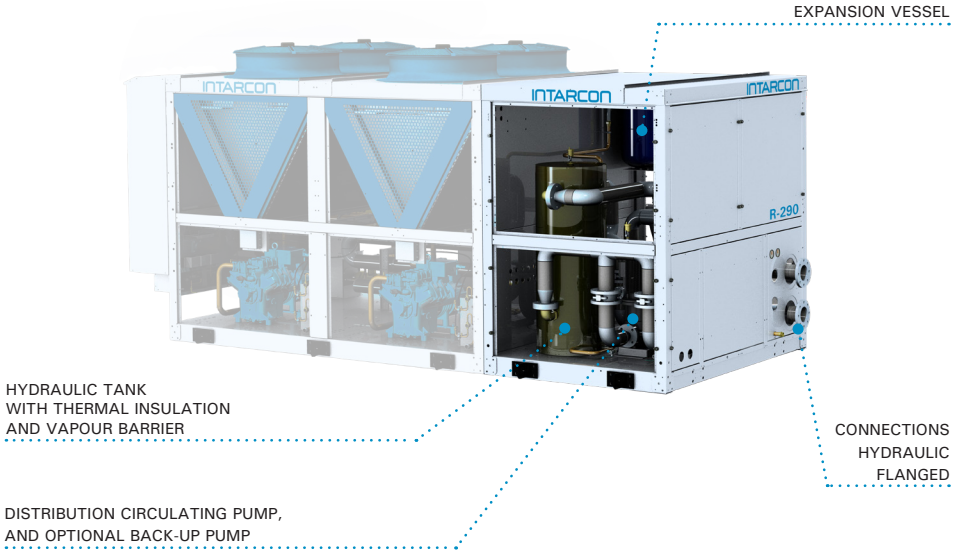
Pump sets for WW series

- Integrated modular construction.
- Optimised assemblies for water and glycol.
- Reduced footprint.

Pump sets for water or glycol in closed circuit, assembled in galvanised sheet steel bodywork and structure with polyester paint for outdoor installation and coupled to the chillers.

Features

- 400V 3N 50Hz power supply. Available in 60Hz. Others voltages by request.
- Glycol circulating pumps with stainless steel impeller and optional reserve pump.
- Buffer tank with high density polyurethane foam insulation and vapour barrier (depending on version).
- Closed membrane expansion vessel.
- Mesh filter.
- Glycerine thermometers and pressure gauges.
- Air vent.
- Drain inlet.
- Flanged hydraulic connections.
- Electrical control and power panel with magneto-thermal protection and independent differential for each pump, and electronic control unit for pump management and rotation.
- Pump sets incorporated in WW series, except WW-FD 4 and 5.

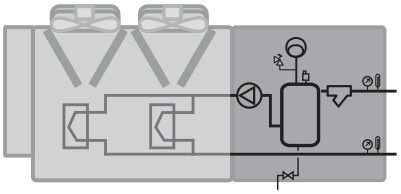


Versions

- A versions

  GW-AH: Primary pump set with tank

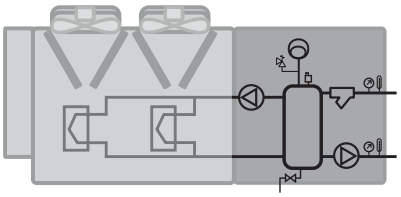
  Pump set with medium or high pressure circulating pump at constant flow rate, assembled together with the chiller.



- B versions

  GW-BH: Secondary pump set

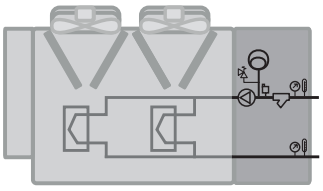
  Pump set with secondary circuit, buffer tank and medium or high pressure circulating pump at constant or variable flow rate (optional), with primary circuit pumps, assembled together with the chiller.



- N versions

  GW-NH: Pumping group

  Hydraulic unit with constant flow circulating pump.



400V 3N 50Hz | High temperature | Water

	Series / Model	Water flow (m^3/h) 7 °C [1]	Main pump (kW)	Available pressure (kPa) [3]	Inertia tank except N version (litres)	Expansion vessel (litres)	Hydraulic connection	Auxiliary primary pump B version (kW)
WATER	AGW-AH-0 025 AGW-BH-1 025	10 to 30	3.0	250 to 150	200	8	DN80	1.1
	AGW-AH-0 030 AGW-BH-1 030	20 to 30	4.0	300 to 200	200	8	DN80	1.1
	AGW-AH-1 040 AGW-BH-1 040	25 to 40	4.0	200 to 150	200	15	DN100	1.5
	AGW-AH-1 050 AGW-BH-1 050	30 to 50	5.5	300 to 150	200	15	DN100	1.5
	AGW-AH-1 055 AGW-BH-1 055	40 to 55	7.5	300 to 200	200	24	DN100	2.2
	AGW-AH-1 070 AGW-BH-2 070	50 to 75	7.5	200 to 150	200	24	DN125	4.0
	AGW-AH-1 090 AGW-BH-2 090	60 to 90	11	250 to 150	500	35	DN125	4.0

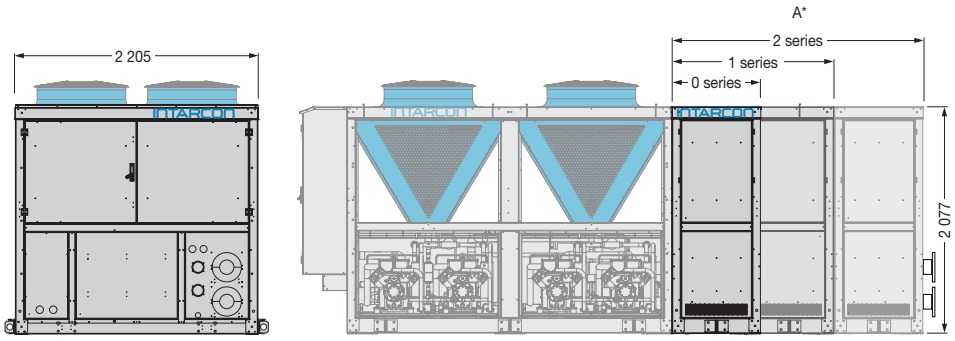
400V 3N 50Hz | Positive temperature | Glycol

	Series / Model	Flow MPG 35 % (m^3/h) -8 °C [2]	Main pump (kW)	Available pressure (kPa) [3]	Inertia tank except N version (litres)	Expansion vessel (litres)	Hydraulic connection	Auxiliary primary pump B version (kW)
GLYCOL	MGW-AH-0 015 MGW-BH-1 015	10 to 15	4.0	300 to 200	200	24	2 1/2"	0.75
	MGW-AH-0 025 MGW-BH-1 025	10 to 25	3.0	250 to 150	200	24	DN80	1.1
	MGW-AH-1 030 MGW-BH-1 030	20 to 30	4.0	250 to 150	200	35	DN100	1.1
	MGW-AH-1 035 MGW-BH-1 035	25 to 35	4.0	200 to 150	200	35	DN100	1.5
	MGW-AH-1 045 MGW-BH-1 045	30 to 45	5.5	250 to 150	200	50	DN100	1.5
	MGW-AH-1 050 MGW-BH-1 050	35 to 50	7.5	300 to 200	200	50	DN100	2.2
	MGW-AH-1 060 MGW-BH-2 060	40 to 60	7.5	200 to 150	200	50	DN125	3.0
	MGW-AH-1 070 MGW-BH-2 070	50 to 70	11.0	250 to 150	500	50	DN125	3.0
	MGW-AH-1 085 MGW-BH-2 085	65 to 85	15.0	250 to 150	500	50	DN125	3.0

Options

- Back-up main pump.
- Variable speed drive on main pump.
- Auxiliary back-up pump.

Dimensions



Dimensions (mm)	A
0 series	806
1 series	1 480
2 series	2 286

* Pump set according to configuration.

Dimensions in mm.

[1] Performance calculated for pumping water at 7°C.

[2] Performance calculated for pumping 35 % propylene glycol concentration at -8°C.

[3] Hydraulic pressure available for the distribution circuit and the chiller.

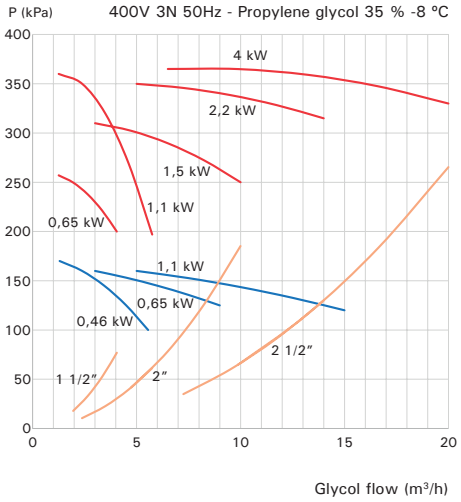
Auxiliary pump in the primary circuit

The auxiliary pump in the primary circuit is a low-pressure pump sized with an available pressure of about 50 to 100 kPa, enough to overcome the pressure drop of the exchanger of the chiller and a small section of piping.

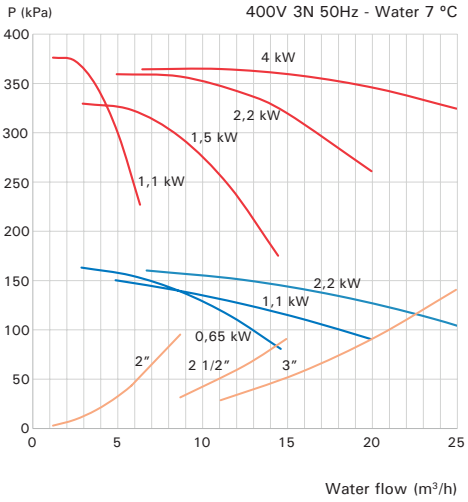
Pump sets

Characteristic curves

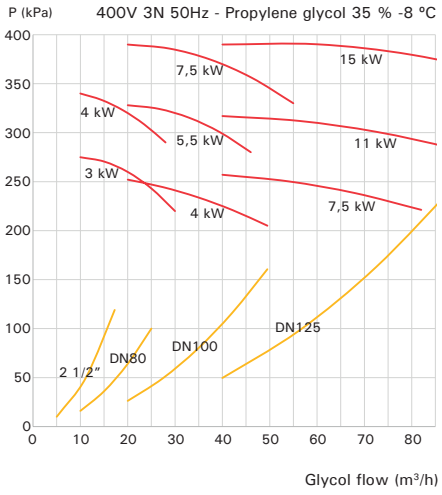
MWV series



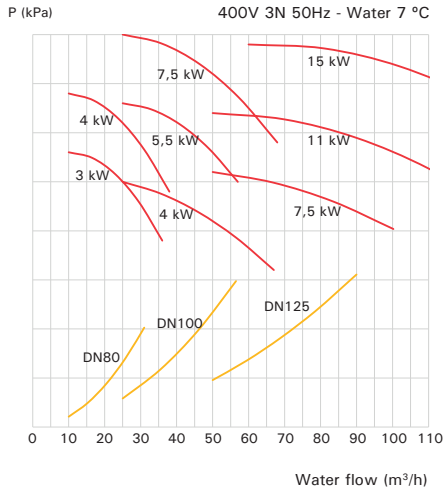
Serie AWV



MWW series



AWW series



— Main pump.

— Primary circuit booster pump.

— Pressure drop characteristic of the hydraulic unit.

The attached curves allow the operating point of the system to be checked on the basis of the pump characteristic curve and taking into account the internal pressure drop curve of the hydraulic unit.

In pump set with primary and secondary circuit (GV-BH and GW-BH versions), the hydraulic resistor of the chiller is compensated by the primary circuit pump.

For units with a single pumping unit (GV-AH and GW-AH version), the heater of the chiller must be taken into account and added to the available pressure required for the distribution circuit. The following values are recommended:

- WV series: 30-40 kPa.
- WW series: 40-50 kPa.

Example of selection

It is intended to select a pump set to be combined with the 35 % propylene glycol chiller, model MWW-FD-3 1503, with a cooling capacity of 260 kW at a temperature range of -2/-8 °C, it a glycol flow rate of 47.5 m³/h and an available pressure for the distribution circuit of 200 kPa.

For the required flow rate we are looking for the pump that results in a water column of 20 m between the characteristic curves of the pump and the DN100 pipe pump set, which corresponds to the hydraulic connections of the chiller. The 7.5 kW pump and DN100 connections characterise the pump set model MGW-BH-1 050.

Optionally, this hydraulic unit can be equipped with a primary circuit pump.