

TAE-TWE

Technical specification

1 Cover

This is made from carbon steel panels (from model 015 up) which have been galvanised, phosphated-degreased and polyester powder painted, suitable for outdoor installations, as standard.

2 Refrigeration compressor

This hermetic compressor is chilled by the inlet cooling fluid and protected by a thermal and current circuit breaker. The compressor is mounted on vibration damping rubber supports and features a very low noise level. Models from 402 to 602 are fitted with 2 cooling circuits and multiple compressors.

3 Air-cooled condenser (TAE)

This comprises one or more finned coils with copper tubes and aluminium fins and one or more electric fans. Both the condenser and the electric fan are generously sized in order to work at higher ambient temperatures.

Water-cooled condenser (TWE)

This comprises a trombone exchanger with copper tubes and a carbon steel shell. The pressure valve adjusting the flow of water is only mounted on request.

Water / cooling fluid heat exchanger

This features a finned coil matrix with copper tubes and aluminium fins. The water flows in contact with the finned surface at very low speeds and with extremely low pressure drops. The coil is fitted inside a tank.

4 Storage tank

This is made from stainless steel for models M05 and M10 and can only be connected to atmospheric pressure hydraulic circuits. From model 015 up, it is made from carbon steel and can be connected to closed hydraulic circuits as it has been designed to withstand pressures of up to 6 bar. It can also be made from stainless steel on request.

5 Cooling circuit

As well as the previously described components, the other parts of the cooling circuit are:

- capillary tube from M05 to M10.
- thermostatic valve from model 015 up.
- flow indicator from model 015 up.
- dehydrator mechanical filter.
- high and low pressure switches and fan from model 015 up.
- high and low pressure gauges from model 031 up.

6 Water circuit

The water circuit comprises a storage tank containing the previously described heat exchanger and the circulation pump. All the parts of the P0, P1 and P15 circulation pumps fitted on models from 015 to 301 that come into contact with the water are made from stainless steel. A by-pass ensures the machine also works well at low water flows.

7 Control and management

The "stage3" microprocessor control unit offers the following functions:

- Thermostat control of outlet water from the storage tank.
- Measurement and display of the temperature of the outlet water from

- the evaporator and the chiller.
- 50% and 100% capacity steps (models 201, 251, 301, 402, 502, 602);
- Display of 16 alarm messages, including:
 - High condensation pressure alarm.
 - Low evaporator pressure alarm.
 - Anti-freeze alarm on outlet water from the evaporator.
 - Alarm for faults in the compressor, fans and pump, if fitted.
 - Low tank water level alarm.
 - High water temperature alarm.
- A free contact is available for a remote general alarm indicator.
- An inspection kit for one or more machines (up to 16), via the serial port of a computer, is also available.



Models		TAE/TWE	M05	M10	O15	O20	O31	O51	O81	O101	O121	O161	O201	O251	O301	O351	O402	O502	O602
R407c	TAE	cooling capacity @ 15°C (1) kW	2.2	4.4	7.4	9.2	13.2	20.3	28.7	38.4	45.8	53.5	61.5	78.7	90.4	105.2	121.9	151.5	181.2
		cooling capacity @ 7°C (2) kW	1.6	3.2	5.2	6.7	9.9	14.6	20.8	27.9	33.3	38.3	44.4	57.0	65.8	75.0	87.3	109.1	130.5
		absorbed power @ 15°C (5) kW	0.7	1.3	1.6	2.1	3.2	5.2	7.0	9.2	12.3	11.8	14.2	18.6	23.6	23.1	28.0	38.8	49.3
	TWE	cooling capacity @ 15°C (3) kW	-	-	7.9	9.9	13.9	23.0	32.1	41.5	51.4	58.3	70.0	85.6	99.0	-	-	-	-
		cooling capacity @ 7°C (4) kW	-	-	5.8	7.4	10.8	17.1	24.1	31.4	38.4	43.7	52.4	64.8	74.9	-	-	-	-
		absorbed power @ 15°C (5) kW	-	-	1.4	1.9	2.8	4.0	6.0	8.0	10.0	10.1	11.9	16.1	20.0	-	-	-	-
R22	TAE	cooling capacity @ 15°C (1) kW	2.3	4.6	7.6	9.5	13.6	21.0	29.6	39.6	47.2	55.1	63.4	81.2	93.2	107.8	124.8	155.1	186.1
		cooling capacity @ 7°C (2) kW	1.7	3.3	5.4	6.9	10.2	15.1	21.4	28.7	34.3	39.3	45.7	58.7	67.8	76.7	89.5	111.9	134.4
		absorbed power @ 15°C (5) kW	0.7	1.3	1.6	2.2	3.3	5.3	7.1	9.3	12.4	12.0	14.4	18.9	23.9	23.4	28.4	39.3	50.0
	TWE	cooling capacity @ 15°C (3) kW	-	-	8.1	10.2	14.3	23.7	33.1	42.8	53.0	60.1	72.2	88.2	102.1	-	-	-	-
		cooling capacity @ 7°C (4) kW	-	-	6.0	7.6	11.2	17.6	24.9	32.4	39.5	45.0	54.0	66.9	77.3	-	-	-	-
		absorbed power @ 15°C (5) kW	-	-	1.5	1.9	2.8	4.3	6.1	8.1	10.2	10.3	12.1	16.3	20.3	-	-	-	-
COMPRESSOR	installed power (6) kW	0.85	1.7	2.3	3	4.6	6.7	9.8	12.9	16.2	16.2	2x9.8	2x12.9	2x16.2	2x16.2	4x9.8	4x12.9	4x16.7	
ELECTRIC SUPPLY	V/F/Hz	230/1/50 400/3/50 (13)																	
TANK CAPACITY	liters	25	25	60	60	110	110	165	250	250	400	400	400	400	600	600	600	600	
P0 PUMP	water flow (7) m³/h	0.29/1.5	0.56/1.5	0.91/4.8	1.16/4.8	1.72/6.0	2.55/6.0	3.6/9.6	4.84/9.6	5.78/18.0	6.7/18.0	7.7/18.0	9.89/18.0	11.43/30	13.2/42.0	15.1/42.0	18.9/72	22.6/72.0	
	available pressure bar	3.7/1.5	3.3/1.5	3.0/1.9	3.0/1.9	3.0/1.5	2.9/1.9	2.8/1.4	2.6/1.7	2.8/1.4	2.85/1.7	2.8/1.7	2.7/1.7	2.2/0.8	3.75/2.5	3.64/2.1	3.1/1.23	3.1/1.2	
	nominal power kW	0.37	0.37	0.55	0.55	0.75	0.75	0.9	0.9	1.85	1.85	1.85	1.85	4	4	5.5	5.5		
P1 PUMP	water flow (7) m³/h	-	-	0.93/4.8	1.2/4.8	1.7/4.8	2.6/4.8	3.7/12.6	4.9/12.6	5.9/12.6	6.7/30.0	7.9/30.0	10.1/30.0	11.7/30.0	13.2/33.0	15.4/33.0	19.3/54.0	23.2/54.0	
	available pressure bar	-	-	5.5/3.7	5.5/3.7	5.3/3.6	5.1/3.8	4.9/2.7	4.9/3.4	4.8/3.4	4.7/2.2	4.7/2.2	4.6/2.2	4.5/2.2	6.5/4.4	6.3/4.4	5.8/2.3	5.9/3.5	
	nominal power kW	-	-	1.1	1.1	1.1	1.1	2.2	2.2	2.2	3.7	3.7	3.7	3.7	9.2	11	11		
P15 PUMP	water flow (7) m³/h	-	-	0.93/4.8	1.2/4.8	1.7/5.0	2.6/7.3	3.7/12.6	4.9/12.6	5.9/17	6.7/17	7.9/17	10.1/17	11.7/24	13.2/36	15.4/36	19.3/36	23.2/36	
	available pressure bar	-	-	1.49/0.89	1.47/0.89	1.4/0.73	1.37/0.73	1.63/0.5	1.6/1.1	1.6/0.7	1.6/0.9	1.6/0.9	1.5/0.9	1.5/0.7	1.4/0.78	1.41/0.78	1.33/0.78	1.24/0.78	
	nominal power kW	-	-	0.9	0.9	0.9	0.9	0.75	0.75	0.75	0.75	0.75	1.1	1.5	1.5	1.5	1.5		
AXIAL FANS TAE	number no.	1	1	1	1	1	1	2	2	2	2	3	3	3	2	2	2	2	
	total nominal power (8) kW	0.1/-	0.11/-	0.15/-	0.15/-	0.45/0.34	0.45/0.34	0.65/0.46	0.9/0.68	0.9/0.68	1.3/0.92	1.3/0.92	2.0/1.4	2.0/1.4	3.3/2.1	3.3/2.1	3.3/2.1	3.3/2.1	
	air flow (8) m³/h	1100/-	3000/-	3300/-	2900/-	5900/5100	5500/4800	7900/6500	10800/9000	10400/8600	15800/13000	15800/13000	21800/16800	21300/16500	44000/33000	44000/33000	42300/32000	41600/30600	
	noise level (9) dB(A)	48.2/-	48.2/-	52/-	52/-	47/43	47/43	50/44	49/45	49/45	52/47	52/47	52/49	52/49	60/53	60/53	60/53	60/53	
CENTRIFUGAL FANS TAE	number no.	-	-	-	-	1	1	2	2	2	3	3	3	3	2	2	2	2	
	total nominal power (8) kW	-	-	-	-	1.1	1.1	2.2	2.2	2.2	3.3	3.3	3.3	3.3	8	8	8	8	
	air flow (8) m³/h	-	-	-	-	5900/5100	5500/4800	7900/6500	10800/9000	10400/8600	15800/13000	15800/13000	21800/16800	21300/16500	44000/33000	44000/33000	42300/32000	41600/30800	
	available pressure (8) Pa	-	-	-	-	128/238	157/240	300/310	144/250	168/247	500/550	500/550	360/500	360/500	40/213	40/213	54/213	54/190	
noise level (10) dB(A)	-	-	-	-	57/53	57/53	57/53	60/56	60/56	54/50	54/50	57/53	57/53	61/55	61/55	61/55	61/55		
TWE WATER CONDENSER	nominal water flow (11) m³/h	-	-	0.5	0.7	1	1.7	2.7	3.4	3.8	5.3	5.3	6.3	7.7	-	-	-	-	
water connections BSP	-	-	1 1/4" F	1 1/4" F	1 1/4" F	1 1/4" F	1 1/2" F	1 1/2" F	1 1/2" F	1 1/2" F	2"	2"	2"	2"	-	-	-	-	
DIMENSIONS	width mm.	744	744	538	538	743	743	743	743	743	860	860	860	860	1258	1258	1258	1258	
	depth mm.	550	550	983	983	1090	1090	1650	1650	1650	2230	2230	2230	2230	3588	3588	3588	3588	
	height mm.	860	860	1125	1125	1350	1350	1350	1350	1350	1900	1900	1900	1900	2210	2210	2210	2210	
WEIGHT	(12) kg.	80	80	127	140	190	215	310	343	365	651	715	750	770	1247	1375	1430	1500	
WATER CONNECTIONS	BSP	1/2"	1/2"	3/4"	3/4"	1"	1"	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	

CAPACITY CORRECTION FACTORS (indicative values); REFRIGERATING CAPACITY OR HEAT = nominal value x CF1 x CF2 x CF3 x CF4

water outlet temperature °C	-5	0	5	7	10
TAE/TWE C _{f1}	0.63	0.77	0.93	1	1.1

AMBIENT TEMPERATURE (air)	TAE °C	20	25	30	32	35	40
C _{f2}	1.12	1.07	1.02	1	0.97	0.91	

WATER INLET TEMPERATURE (with nominal water flow)	TWE °C	20	25	30	35	40
C _{f2}	1	0.95	0.9	0.85	0.81	

SOUND PRESSURE LEVEL AT THE DISTANCE L = dB (A) 10 m + D

ethylene glycol (14) % weight C _{f3}	0	10	20	30	40	50
	1	0.99	0.98	0.97	0.96	0.94

fans speed C _{f4}	N. S.	L. S.
	1	0.96

Distance L D	1	3	5	10
	15	9	5	0

Notes:

- (1) Water outlet temp. = 15°C; water DELTA T = 5°C; ambient temperature = 25°C.
- (2) Water outlet temp. = 7°C; water DELTA T = 5°C; ambient temperature = 32°C.
- (3) Water outlet temp. = 15°C; water DELTA T = 5°C; Water inlet temp. = 20°C.
- (4) Water outlet temp. = 7°C; water DELTA T = 5°C; Water inlet temp. = 20°C.
- (5) Absorbed power by the refrigerating compressor.
- (6) Power measured at maximum working pressure conditions.
- (7) 1st number = nominal water flow (ΔT = 5°C); 2nd number = max. water flow. Pressure available to process.
- (8) 1st number = normal speed values; 2nd number = low speed values.
- (9) Sound pressure level in free field at a L=10m distance from the unit at condenser side and at 1.2m from the ground.
- (10) Sound pressure level in free field at a L=10m distance from the unit at condenser side; the values refers to the available pressure indicated.
- (11) With water inlet temperature = 20°C; condensing temperature = 35°C.
- (12) Weight refers to the TAE models with axial fans.
- (13) O15 and O20 models are available with 230V/1Ph/50 Hz electric supply (M15 and M20 versions).
- (14) Adjusted water flow by the percentage of glycol to have a DELTA of 5°C.

The data in this brochure are not binding. With a view to continuous product improvement, MTA reserves the right to make changes without prior notice. For further information, request to Sale Office. Reproduction in whole or in part is forbidden.



**Head Office & Factory
M.T.A. s.r.l.**

Via dell'Artigianato, 2 - Z.I.
35026 CONSELVE (PD) ITALY
Tel. +39 (0)49 9597211 Fax +39 (0)49 9500580
www.mta-it.com



DISTRIBUTOR

TAE-TWE

WATER CHILLERS
WITH LARGE
VOLUME
THERMAL
BUFFER TANK
FOR INDUSTRIAL
PROCESSES



TAE-TWE

TAE air-cooled water chillers

TWE water-cooled water chillers

These water chillers satisfy the increasingly more qualified and diversified requirements for disposing of the heat produced in industrial processes.

Thanks to their excellent efficiency, high reliability and the innovative technology used to build them, they are able to:

- increase productivity.
- reduce processing times.
- lower production costs.
- improve finished product quality.
- minimise waste and cycle interruptions.
- reduce maintenance times.

The most common applications are:

Plastic and rubber processing

- Injection moulding.
- Extrusion (sheet and profile).
- Blow moulding.
- Blown film extrusion.
- Thermoforming.

Laser technologies

- Welding.
- Profiling/Cutting.

Engineering

- Cooling machine tools.
- Cooling welding machines, rolling mills, presses and extruders.
- Cooling oil hydraulic control units.
- Electric spark machining.
- Vapour degreasers.

Metal-working

- Processing and transformation of precious metals.
- Working and processing aluminium.
- Anodising.
- Heat treatment furnaces.

Food industry

- Confectionery and bakery.
- Distillery / brewery.
- Dairy.
- Bottling drinks / carbonation plant.
- Meat & fish processing.
- Vegetable / salad processing.

Chemicals and pharmaceuticals

- Recycling solvents.
- Laboratories.
- Jacketed vessels.
- Polyurethane foam mixers.

Printers

Ceramics industry



Large volume thermal buffer tank

The large capacity of the tank improves the temperature stability of the chilled water. Its volume is always greater than 5.4 l/kW (required to obtain a 4°C differential and 10 on/off cycles an hour), and extend the chiller life expectancy.

Elevated weather-proofing

The IP54 level of protection and the use of galvanised and epoxy powder painted sheet metal allow the units to be installed outdoors without the need for roofing (except for M05 and M10).

Low pressure drops

Thanks to the water/coolant heat exchanger with finned coils, pressure drops are lower than 0.1 bar. This results in a low consumption of power lost in heat due to friction in the exchanger and therefore an increase in cooling capacity.



Modular system

In installations with pressurised circuits, several machines can be installed in parallel. This allows the system to be enlarged at any time in order to cater for increases in production. (except for M05 and M10)

Easy and rapid inspection and servicing

The electrical control panel, the cooling circuit and the pump are all located in an easy-to-reach part of the front of the machine. This makes inspection easier and reduces servicing times, and site access requirements.



Wide choice of pumps

Various pump options can be selected which best meets each customer's own requirements. (except for M05 and M10).



Tested

just like every MTA product or component

The TAE and TWE water chillers are tested one by one in a completely computerised state-of-the-art test chamber. The machines are tested at rated operating conditions and temperatures, pressures, rates of flow and electrical values are measured.

Reliable thanks to the leading-edge technology

provided by the research and experience of MTA

The MTA Research & Development department makes use of sophisticated I.T. instruments to optimise the design of its components and its production processes. This factor, combined with the use of high quality components, guarantees total product reliability.

Guaranteed service

MTA products are designed, built, tested and serviced on the basis of the procedures contained in the MTA Quality System. The MTA Quality System was certified as compliant with ISO 9001 standards by ICIM, the certifying body, in July, 1996. Special attention is paid to the assistance network, technical staff training, territorial coverage and speed and effectiveness of servicing calls.

Solutions for every industrial process

Atmospheric pressure hydraulic circuit kit

This is used in case the hydraulic circuit is topped up frequently. It comprises a plastic container with a cap for filling the water connected to the tank. This container is supported and protected by a piece of galvanised and painted sheet metal with slots for controlling the level.



Pressurised hydraulic circuit kit

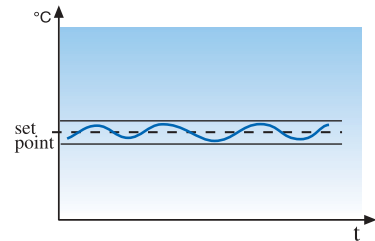
This is used when the hydraulic circuit is pressurised (up to 6 bar). It comprises a filling unit complete with pressure reducer, water inlet valve, pressure gauge, automatic relief valve, safety valve and expansion tank (except for models M05 and M10).



Laser Version

for precision control of outlet water temperature

This version is used in all those industrial processes which require precision temperature control of chilled outlet water. The name of this accessory derives from the experience that MTA has matured in the laser processing sector in which precision temperature control of cooling water is required (differential $< 1^{\circ}\text{C}$). The chiller is fitted with a "hot gas by-pass" valve and a sophisticated temperature control feature based on two probes and a variable set-point P+I function.



Version with centrifugal fans for indoor installation

This version is used when an air-cooled chiller must be installed in insufficiently ventilated rooms. The heat produced by the condenser must be disposed of in the surrounding area. If the room is insufficiently ventilated the flow of chilled air must be channelled outdoors.



Non-Ferrous Version

This version is used when the water used for chilling food grade 'potable' water or specific hazardous fluids. All the parts that come into contact with water are made from stainless steel, copper, brass and plastic. The evaporator is made with copper fins, with the tank manufactured from stainless steel. This version can also be used to chill demineralised water.

Air-water Heat Pump version for the production of hot or cold water

This version is used when the production of hot water is also required for certain industrial processes. The heating output produced is equal to the cooling capacity plus the electrical power absorbed by the compressor. This version features a reversible chilling cycle which allows it to work either as a chiller or a heat pump and therefore satisfy requests for cold or hot water. Hot water temperatures typically vary from 40 to 55°C (technical information available on request).

Remote control kit "easy"

This is used to control the chiller from a remote position (max. 100 metres). It comprises a general switch, a green power-on indicator and a red general alarm LED (cycle inversion button for the heat pump version). On request a software and an installation kit connected with RS232 serial line to a personal computer permits to measure all parameters, to control the operation of the unit, the set points and alarms.

