

Atlas Copco

Process Cooling Chillers

TCX 4-90A





Setting the standard in industrial cooling systems.

The Atlas Copco TCX4-90A series is a compact all-in-one water chiller with an air-cooled condenser with an integrated hydro module. The TCX4-90A chillers are specially designed for cooling water (or a mixture of water and glycol) for the most various industrial processes.

Excellent Reliability

The newest TCX4-90A range is equipped with Elektronikon® MkV and Smartlink controller on board. The pump housing, tank and evaporator are made in stainless steel and the entire chiller is designed for easy maintenance with safety components included as standard. All of these components contribute to increase the reliability of your system and guarantee productivity.

Energy Efficiency

TCX4-90A range fully complies with the EcoDesign Directive 2021 meeting the Seasonal Energy Performance Ratio (SEPR HT) to reach the highest level of energy saving. Using energy-efficient chiller made by Atlas Copco, you reduce production costs and increase the competitiveness of your company.

Easy all-in-one installation

The integrated design of the TCX4-90A chiller includes internal piping with hydraulic circuit, copper brazed plate evaporator, micro-channel aluminum condenser, scroll compressor and axial fans: this is the all-in-one ready-to-use package including easy “Plug’n’play” connections for a quick installation. TCX4-90A series chillers are fully assembled and tested at the factory. A pump and a tank on board allow you to reduce footprint, installation and commissioning costs.

For indoor and outdoor use

Thanks to the use of the necessary reliable components with IP54 protection, TCX4-90A series chillers can be installed both indoors and outdoors (from TCX11A). This allows you to save internal space, optimize the distribution of cooling water and also permit to work with cold winter air temperature to gain efficiency for your chiller.

Various options as a standard solution

Atlas Copco strives to exceed customer requirements and set new standards in the industry. TCX4-90A series include always as a standard solution automatic filling, all main important safety devices and compressor crankcase heating for the compressors.



Quality

Your process might need exactly the right temperature of water all the time. In case of fluctuations, the quality of your end product can fluctuate as well. Our TCX chiller range guarantees a stable temperature

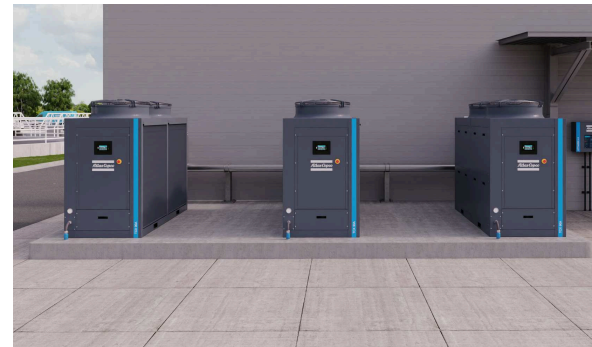


Control and Monitoring

TCX new chiller range (from TCX11A) is equipped with the Elektronikon® MkV Touch controller. By using it you can monitor the temperature and guarantee to provide the required accuracy of control of the cooling water. Our TCX chillers can also be monitored by our Smartlink system already included in MkV controller. Using of standard Atlas Copco solution is allowing to you easily monitor maintenance periods, alarms and all the values of temperature and pressures through the refrigerant and water circuit, with also the opportunity to implement new equipment in existing net and reduce service costs.

Components for industrial use

Our new line of equipment is designed for industrial use. The components are selected for continuous use in industrial environments and provide a high level of reliability. Scroll compressor, copper brazed plate evaporator, micro channel coated aluminum condensers, stainless steel tank, pipes and pump impeller are the main components that are supplied by leading experts in their fields, assembled and fully tested in our factory.



Safety devices

A wide range of safety devices such as flow and level switches, thermal and pressure probes, crankcase heating or strainers allows you to operate the chillers with safety. The controller, which combines all the chiller sensors into one system, issues timely warnings in case of deviation of the operating parameters from the standard values. This allows you to focus on the main production with prompt notification in case of any type of matters with the cooling water system.

Easy configuration to meet a wide range of customer's requirements

Various hydraulic and fan configurations available to fit the majority application requirements. The rigid steel structure of the weather- and soundproof canopy with a wide range of options makes it possible to operate Atlas Copco TCX4-90A chillers in various climatic and environmental conditions.



Reliability



Stainless steel components

The storage tank and hydraulic parts of the centrifugal pumps are stainless steel and are factory installed and tested. They prevent process water contamination with rust particles and gives higher level of reliability and temperature control.

State-of-art microchannel condensers

The coated simple all-aluminum microchannel design is lightweight and designed to reach long life period without corrosion. This unique design results in 30 percent less refrigerant charge compared to other standard types of heat exchangers. This makes your maintenance more cost effective.

Fully hermetic scroll compressor

The fully hermetically sealed refrigerant compressor prevents refrigerant gas from leaking and requires zero maintenance. The phase sequence relay has no risk of compressor failure in case of changing power supply.

Robust design with the weather- and soundproof canopy

The IP54 rated canopy design with galvanized steel structure is painted with epoxy-polyester powder. This allows you to use new Atlas Copco TCX not only indoor, but also outdoor with ambient temperature down to -10°C and without any need for additional protection providing reduced noise level without harmful effects on the working environment.

Ease of maintenance

The unit is designed for easy access of the installed components. The wide canopy doors and thoughtful layout reduces maintenance time and allows for easy inspection to prevent breakdowns.

Reliable cooling

The units are air cooled with a cost-effective on-off regulation axial fans as a standard solution. The fans are simple and robust for increase lifetime. Fan speed regulation (phase-cut and EC fans) options are available for versions to operate in lower ambient temperatures.

Safety devices for the trouble-free operation

A wide range of safety devices such as flow and level switches, thermal and pressure probes, crankcase heating or strainers allows you to operate the chillers secure. The controller, which combines all the chiller sensors into one system, issues timely warnings in case of deviation of the operating parameters from the standard values.

Copper brazed plate evaporator

The copper brazed plate heat exchanger has a compact design and low weight. It is highly reliable and can withstand long term temperature loads.

Atlas Copco Elektronikon® MkV Touch unit controller with Smartlink®

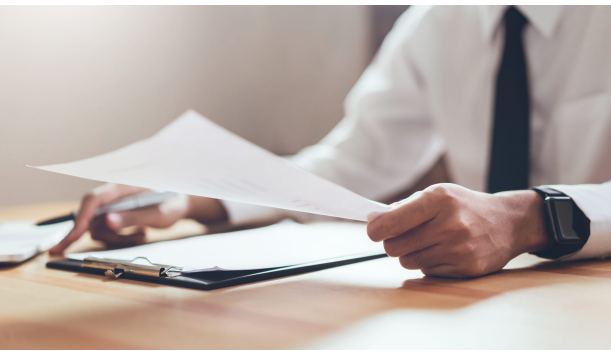
Our Elektronikon® MkV Touch unit controller is designed with Atlas Copco energy efficient algorithms to continuously control chiller parameters, with effective integration into existing central control systems with user friendly interface.

Trouble-free installation

Our chillers are fully assembled and tested in our factory and provide all-in-one ready-to-use package including easy "Plug'n'play" connections for a quick installation. Our new TCX4-90A range allows you to have trouble-free installation with a clear list of operations needed.

Designed for efficiency

You need exactly the right temperature all the time. If you have fluctuations, the quality of your end product can fluctuate as well. Understanding the customer's need for precise temperature control, we provide the ability to control the temperature using Elektronikon® MkV controller with a high accuracy of $\pm 0,1^{\circ}\text{C}$, while the setpoint can be set both for the input and output water temperature.



Compliant with EcoDesign Directive

Starting 1 January 2021 any new industrial cooling equipment entering European market must meet the Minimum Energy Performance Standards (MEPS) depending on the chiller type and size. Our industrial cooling TCX range complies with the 2009/125/EC EcoDesign Directive. Our new TCX chillers also meet the new Seasonal Energy Performance Ratio (SEPR) metrics for all the sizes of the range.

Advanced monitoring for optimal efficiency

TCX chillers (from TCX11A) include our latest Elektronikon® MkV Touch unit controller. This premium in-house solution gives you equipment awareness in any situation. You can use our SMARTLINK software to monitor your installation. SMARTLINK collects operational data from your chiller equipment and translates them in clear information for the operators. At a glance, you can check uptime, energy efficiency and machine health.





Designed for Efficiency

Small footprint

The reduced footprint doesn't only simplify the installation. The perfect design and component layout gives you an unsurpassed level of possibilities for placing equipment not only on new sites, but also on existing ones.

Efficient cooling

The chillers come with copper-brazed stainless-steel plate evaporators for the entire range. This advanced solution permits to reach a really high efficiency of evaporation. It allows you to meet the requirements for energy efficiency. The compact design and convenient layout increase cost-efficiency for maintenance and service works.

Cooling fans

Air cooled axial fans as a standard with ultra-efficient innovative blade profiling. Highly efficient fans with variable speeds are optional for the entire TCX range. These fans allow ambient temperatures down to -10°C without a risk of over freezing the condenser.

Efficient motor

The unit is equipped with a highly efficient IE3 rated motors.



Options

Options for the TCX chiller range

TCX 4-90A

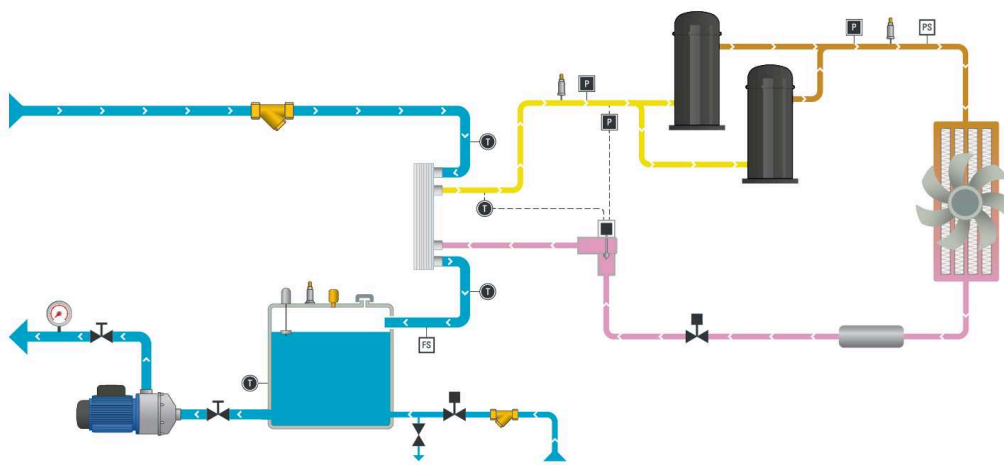
Option	Availability
Manual external bypass	•
Leaving Water Temp below 5°C	•
Lowest ambient temp below 5°C	•
Flange UNI PN16	•
Castors	•
Water strainer	•
Remote setpoint control	•
NPT thread water connections	•
Packaging - sea worthy	•

• = available

- = not available

Flowchart

Process flow of the TCX 4-90A chillers



1. Copper brazed plate evaporator

The main task of the evaporator is to remove heat from the waterflow. For this purpose, water (blue flow) and refrigerant (pink flow) are passed through it. When the refrigerant boils, it takes energy from the waterflow. As a result, water or any other cooling agent is cooled, and the refrigerating agent is heated and turns into a gaseous state (yellow flow).

2. Fully hermetic scroll compressor

The gaseous refrigerating agent (yellow flow) enters the compressor, where it affects the windings of the compressor's electric motor, contributing to their cooling. There, the hot refrigerant vapor is compressed, reheating to a higher temperature respect ambient temperature (brown flow).

3. State-of-art microchannel condenser

The condenser is the heat exchanger where the heated refrigerating agent is cooled by a stream of cold air, as a result, the refrigerant passes into a liquid state (pink flow) and is fed to the filter dryer.

4. Filter dryer

The filter removes moisture, dirt, and other harmful materials from the refrigerant, which will damage the refrigeration system and reduce efficiency.

5. Expansion valve

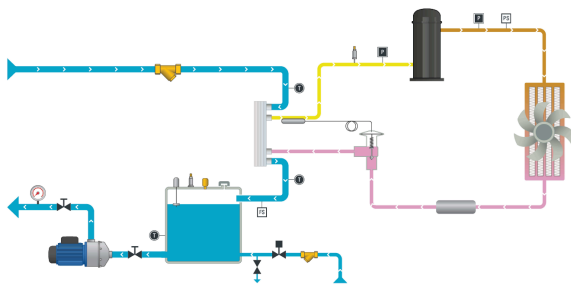
Expansion valve is a device in which the refrigerant pressure is lowered. After leaving expansion valve, the refrigerating agent is a low-pressure steam combined with a liquid. This mixture goes back to the evaporator, where the refrigerant boils again, turning into steam and overheating. The superheated steam leaves the evaporator, which is the beginning of a new cycle. The expansion valve is thermal for TCX4-70A and electronic for TCX80-90A.

6. Stainless steel tank

The storage tank as a part of a chiller is used to maintain the stable operation of the cooling system in conditions of changing thermal loads. It plays the role of a container for storing water and smoothing out temperature fluctuations.

7. Water pump with stainless steel impeller

An integral part of the chiller that creates a pressure difference in the circuit and thus ensures the circulation of the coolant. The created pressure drop must provide the required flow of the coolant and compensate for the hydraulic resistance of the system. 3 bar and 5 bar pump versions are available.



Thermal version

Our TCX 4-90A chiller range also has a thermal version.

Technical specifications

Data from the TCX chiller range

TCX 4-25A (50 Hz)

Model	TCX 4A	TCX 6A	TCX 9A	TCX 11A	TCX 13A	TCX 15A	TCX 20A	TCX 25A
Cooling capacity (1) (kW)	3,39	6,24	8,07	10,60	13,32	15,60	19,30	22,93
Total absorbed power (1) (kW)	1,06	2,03	2,95	3,61	4,40	5,09	5,94	7,50
EER (1)	3,20	3,07	2,74	2,94	3,03	3,06	3,25	3,06
SEPR HT (3)	5,11	5,28	5,06	5,34	5,16	5,05	5,42	5,38
Cooling capacity (2) (kW)	4,71	8,38	11,39	15,06	17,87	20,32	26,30	31,85
Total absorbed power (2) (kW)	0,85	1,66	2,43	3,03	3,75	4,32	5,11	6,42
EER (2)	5,54	5,05	4,69	4,97	4,77	4,70	5,15	4,96
Compressor for each circuit	1	1	1	1	1	1	1	1
Compressor type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Refrigerant circuits	1	1	1	1	1	1	1	1
Refrigerant Type / GWP	R134a/1430	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774
Capacity control	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%
Axial fans nr	1	2	2	1	2	2	1	1
Hydraulic connection in/out	1 inch	1 inch	1 inch	1 inch	1 inch	1 inch	1 inch	1 inch
IP rating	IP20	IP20	IP20	IP 54	IP 54	IP 54	IP 54	IP 54
Dimensions (mm) (L x W x H)	448 x 1058 x 1226			522 x 1260 x 1305			863 x 1200 x 1935	
Controller	Parametric Microprocessor			Elektronikon TM Mk5S + SMARTLINK				
Power supply	400V +-10% / 3Ph+PE / 50Hz							
Auxiliary voltage	24Vac							
Electrical approval	IEC							
Pressure vessel approval	PED 2014/68/UE							

TCX 28-90 A (50 Hz)

Model	TCX 28A	TCX 35A	TCX 40A	TCX 55A	TCX 70A	TCX 80A	TCX 90A
Cooling capacity (1) (kW)	27,82	34,90	44,00	54,00	68,90	82,80	90,60
Total absorbed power (1) (kW)	9,35	14,34	19,00	23,70	28,80	31,20	41,82
EER (1)	2,98	2,43	2,32	2,28	2,39	2,65	2,17
SEPR HT (3)	5,40	5,01	5,02	5,03	5,05	5,56	5,13
Cooling capacity (2) (kW)	38,34	46,84	53,85	70,25	92,50	110,18	122,44
Total absorbed power (2) (kW)	9,33	12,34	16,44	20,38	25,36	27,18	3,17
EER (2)	4,11	3,80	3,28	3,45	3,65	4,05	3,39
Compressor for each circuit	1	1	1	1	1	2	2
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Refrigerant circuits	1	1	1	1	1	1	1

TCX 28-90 A (50 Hz)

Model	TCX 28A	TCX 35A	TCX 40A	TCX 55A	TCX 70A	TCX 80A	TCX 90A
Refrigerant type / GWP	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774
Capacity control	0-100%	0-100%	0-100%	0-100%	0-100%	0-50-100%	0-50-100%
Axial fans nr	1	1	1	2	2	2	2
Hydraulic connection in/out	2 inch	2 inch	2 inch	2 inch	2 inch	2 inch	2 inch
IP rating	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54
Dimensions (mm) (W x L x H)	1068 x 1200 x 1935			1066 x 2404 x 1929			
Controller	Elektronikon Mk5S + SMARTLINK						
Power supply	400V +-10% / 3Ph+PE / 50Hz						
Auxiliary voltage	24Vac						
Electrical approval	IEC						
Pressure vessel approval	PED 2014/68/UE						

TCX 4-25 A

Model	TCX 4A	TCX 6A	TCX 9A	TCX 11A	TCX 13A	TCX 15A	TCX 20A	TCX 25A
Cooling capacity (1) (BTU/hr)	13.887	20.063	28.321	36.510	46.439	49.851	59.132	76.603
Total absorbed power (A) (kW)	1,30	2,04	3,13	3,75	4,73	5,04	5,70	7,67
EER (1) (kW/kW)	3,13	2,88	2,65	2,85	2,88	2,90	3,04	2,93
Cooling capacity (2) (BTU/hr)	19.279	26.956	39.956	51.830	60.463	64.967	80.561	106.425
Total absorbed power (2) (kW)	1,04	1,69	2,61	3,16	4,06	4,32	4,96	6,62
EER (2) (kWa/kW)	5,43	4,67	4,49	4,81	4,36	4,41	4,76	4,71
Compressor for each circuit	1	1	1	1	1	1	1	1
Compressor type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Refrigerant Circuit	1	1	1	1	1	1	1	1
Refrigerant Type / GWP	R134a/1430	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774
Capacity Control	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%
Axial fans	1	2	2	1	2	2	1	1
Hydraulic connection - in/out	1 inch	1 inch	1 inch	1 inch	1 inch	1 inch	1 inch 1/4	1 inch 1/4
IP Rating	IP20	IP20	IP20	IP54	IP54	IP54	IP54	IP54
Dimensions inch (WxLxH)	17,6 x 41,7 x 48,3			21,0 x 49,6 x 53,1			34,0 x 47,2 x 66,7	
Controller	Parametric Microprocessor			Elektronikon TM Mk5S + smartlink				
Power supply	460V +-10%/3Ph+PE/60Hz							
Auxiliary voltage	24Vac							
Electrical approval	IEC							
Pressure vessel approval	PED 2014/68/UE							

TCX 28-90A

Model	TCX 28A	TCX 35A	TCX 40A	TCX 55A	TCX 70A	TCX 80A	TCX 90A
Cooling capacity (1) (BTU/hr)	104.616	120.756	138.738	176.339	231.582	298.358	326.440
Total absorbed power (1) (kW)	10,91	15,24	18,35	24,19	29,82	34,25	45,83
EER (A) (kW/kW)	2,81	2,32	2,22	2,14	2,28	2,55	2,09
Cooling capacity (2) (BTU/hr)	144.163	162.077	169.788	229.398	310.880	396.969	441.190
Total absorbed power (2) (kW)	10,88	13,21	15,98	21,01	26,43	30,00	39,80
EER (2) (kW/kW)	3,88	3,60	3,11	3,20	3,45	3,88	3,25
Compressor for each circuit	1	1	1	1	1	1	2
Compressor type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Refrigerant circuits	1	1	1	1	1	1	1
Refrigerant type / GWP	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774	R407C/1774
Capacity control	0-100%	0-100%	0-100%	0-100%	0-100%	0-100%	0-50-100%
Axial fans	1	1	1	2	2	2	2
Hydraulic connection in/out	2 inch	2 inch	2 inch	2 inch	2 inch	2 inch	2 inch
IP rating	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54	IP 54
Dimensions inch (WxLxH)	42,0 x 47,2 x 76,2			42,0 x 94,6 x 75,9			
Controller	Elektronikon TM MK5S + SMARTLINK						
Power supply	460V +-10% / 3Ph+PE / 60Hz						
Auxiliary voltage	24Vac						
Electrical approval	IEC						
Pressure vessel approval	PED 2014/68/UE						

