

Antares dryer ATT 025-340

with Tandem Technology



Short Description

Antares dryer with Tandem Technology – an innovative family of dryers for compressed air from 2.5 to 34m³/min manufactured by Parker HZD (Hiross Zander Division). “Tandem Technology” effectively combines two well known classic drying techniques, working in harmony with one another, to form an optimised and unique compressed air treatment package - Refrigeration Technology/Adsorption Technology. This unique combination enables high-quality compressed air to be provided to the end-user at low energy consumption levels when compared to more traditional adsorption dryers.

Antares Tandem Technology constantly achieves a dew point of -40 °C as standard. To reach such levels of compressed air purity, patented product features and mode of operation contribute to extremely low purge-air requirements. Without the need to alter any of the components in the dryer, **AT-Technology** is able to supply a wide range of compressed air dew points, achieved by simply setting the desired value on the control panel. Dew points above zero, typical of the performance of a refrigeration dryer and dew points below zero (down to -70 °C), which are in the realms of adsorption technology, are easily achievable in an efficient and economical manner.



Untreated, humid compressed air is initially confronted by a pre-filter protecting a traditional, but modified and patented refrigeration circuit, where the majority of the water vapour is effectively removed from the incoming air. The second stage consists of a highly-compact desiccant drying stage, protected before and after by high-performance oil/water-aerosol and particle removal filters, which serves to further reduce the moisture content of the air to a standard dew point of -40 °C. Finally, clean, dry compressed air exits via the patented air/air heat-exchanger to be re-heated and delivered to the air distribution system.

Tried and tested, patent-pending technology, exploiting both PSA (pressure swing adsorption) and TSA (tempera-

ture swing adsorption) brings together an effective and economical solution to meet the needs of the compressed air user. With the addition of a dew-point dependent switching feature for periods of intermittent load, incorporated into the electronic controller of every **ATT dryer**, initial investment costs are quickly amortised and lifetime costs minimised.

ATT dryers equipped with an optional by-pass are ideally suited to meet the demands of seasonal variation, calling for application flexibility to meet dew points requirements above zero in summer and below zero in winter. In such cases Antares Tandem Technology can be operated solely as a refrigeration-dryer or alternatively “in tandem” with the adsorption stage.

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The major advantage of Parker Hiross “Antares Tandem Technology” over and above that of other compressed air drying technologies is its contribution to energy-efficiency and overall running-cost reduction. Less overall power consumption, less purge-air consumption, constant and stable outlet-pressure dew points and reduced operating and maintenance costs are the major features of this product range.



Key Applications:

- Food & Beverage
- Surface treatment
- Instrumentation and control
- Automotive
- Materials handling
- Pharmaceutical
- Chemical
- Material forming
- Petrochemical

Key Benefits:

- Lower operating costs vs. traditional heatless and heat-regenerative adsorption dryers (lower purge-air requirement and lower heater consumption).
- Reduced maintenance costs due to less desiccant-fill with extended life time.
- Exemption from periodic vessel inspection.
- Constant dew point performance - no peaks above set-point.
- „Dial-a dew point feature“ for seasonal operation (By-pass Option)
- Additional energy savings at partial load – (Dew-point-Dependent-Switching).
- Compact overall dimensions – Small footprint - Space saving.

Scope of supply:

- Antares Tandem Technology dryer – supplied ready for installation.
- Complete with ISO-12500 validated oil/water-aerosol and particulate GL pre-filters, located prior to the refrigeration circuit, and pre-and post the adsorption stage.
- Dew-point Dependant Switching – A standard feature on all models.
- Integral timed-drain on models ATT025-090 - integral capacitance-drain on models ATT140-340.

Optional:

- By-pass for seasonal operation (Models ATT060-340).
- 7“ colour -Touch Screen Display (Models ATT140-340).

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Ordering – and Performance data

Model	Order-No.	Airflow ¹ Inlet - Outlet m ³ /min	Air Connections BSPP-F	Max Pressure bar _e	Effective Avg. absorbed power ² kW	Purge Air equivalent absorbed- power ³ kW	Refrigerationcircuit Pre-filter „Oil/Water & particulate	Desiccant Pre-filter „Oil/Water- aerosol & particulate“	Desiccant After-filter „Particulate“
ATT 025	ATT025-A23015016TI	2.5 – 2.4	1"	16	0.94	0.42	GL9ZL	GL9XL	GL9ZL
ATT 040	ATT040-A23015016TI	4 – 3.9	1"	16	1.30	0.68	GL11ZL	GL11XL	GL11ZL
ATT 060	ATT060-A23015012TI	6 – 5.8	1 ½"	12	1.27	1.02	GL11ZL	GL11XL	GL11ZL
ATT 090	ATT090-A23015012TI	9 – 8.7	1 ½"	12	1.94	1.53	GL12ZL	GL12XL	GL12ZL
ATT 140	ATT140-A40035012EI	14 – 13.6	2"	12	2.01	2.37	GL14ZL	GL14XL	GL14ZL
ATT 260	ATT260-A40035012EI	26 – 25.2	2 ½"	12	4.02	4.41	GL19ZL	GL19XL	GL19ZL
ATT 340	ATT340-A40035012EI	34 – 32.9	2 ½"	12	5.17	5.76	GL19ZL	GL19XL	GL19ZL

¹ referring to 1 bara and 20 °C at compressor suction capacity. Subsequently compressed to 7 bar_e at 35 °C inlet to the dryer, at 100 % relative humidity, 25 °C ambient, for -40 °C

pressure dew point. Outlet flow is the average net flow following subtraction of the average purge-air flow.

² calculated throughout the entire cycle period - includes total refrigeration-circuit and desiccant heater absorbed power

³ purge-air flow throughout the entire cycle period, evaluated as an air compressor absorbed power at the rate of 5.5 kW/m³/min.

Operating Range

Site Selection	Frost-free indoor installation in a non-hazardous environment
Ambient Temperature	5 to 50 °C
Compressed air inlet temperature	3 to 65 °C
Operating pressure	3 to 16 bar _e - ATT025-40 3 to 12 bar _e - ATT060-340
Medium	Compressed air and gaseous nitrogen

Electrical connections

Mains Voltage	230V, 1-phase, 50Hz on ATT025-090; 400V, 3-phase, 50Hz on ATT140-340
Protection class	IP44

Materials of construction

Filters	See product-specification regarding GL filter ref: ZL and XL
Heat Exchanger fridge section	Stainless Steel plate-heat exchanger on ATT025-040 All-in-one „T-Smart Pack“ Aluminium heat exchanger on ATT060-340
Refrigerant fluid	R134a in ATT025-040; R407C in ATT060-340
Pressure vessels	Aluminium for ATT025-40; Carbon Steel for ATT60-340
Valve blocks	ATT025-140: Brass valve, Aluminium blocks, ATT260-340: 3-way valve galvanised steel, ball AISI 304, plastic check valves
Filling of desiccant section	Water-resistant Silica Gel

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Pressure vessel approvals

EU	Approval for fluid group 2 in accordance with the Pressure Equipment Directive 97/23/EC (Annex A)
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Quality assurance

Development/Manufacture	DIN EN ISO 9001, DIN EN ISO 14001
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Correction factors for ATT model selection

Inlet Temperature (°C)	30	35	40	45	50	55	60	65
Correction Factor	1.22	1	0.81	0.69	0.59	0.52	0.46	0.4

Working Pressure ¹ (bar _e)	4	5	6	7	8	9	10	11	12	13	14	15	16
Correction Factor	0.62	0.75	0.87	1	1.08	1.2	1.28	1.34	1.4	1.45	1.5	1.54	1.6

Ambient Temperature (°C)	20	25	30	35	40	45	50
Correction Factor ATT025-040	1.05	1	0.94	0.88	0.81	0.75	0.68
Correction Factor ATT060-340	1.06	1	0.95	0.90	0.83	0.77	0.72

¹ Model ATT25 - ATT40 = 16 bar max
Model ATT60 - ATT340 = 12 bar max

Example: air flow 500m³/h, operating pressure 8 bar_e, 40 °C inlet T, 30 °C ambient T, at -40 °C pdp

- 1) Find the correction factor in the table above: 8 bar_e = 1.08 ; 40 °C inlet = 0.81 ; 30 °C ambient = 0.95
- 2) Calculate the required capacity: $1.08 \times 0.81 \times 0.95 = 0.83$; $500/0.83 = 602 \text{ m}^3/\text{h}$; $602 / 60 = 10 \text{ m}^3/\text{min}$
- 3) Select the model which corresponds to the calculated capacity. It is acceptable to overload a model by 10 %:
 - a. If the requested air flow is intended to be the inlet flow to the dryer, select model ATT090.
This model can nominally treat 9.0m³/min inlet flow. (loading it with 10m³/min is acceptable (approx. 10 % more).
 - b. If the requested air flow is intended to be the treated air flow at the output of the dryer, than select a larger model ATT140.
Model ATT090 can deliver 8.7m³/min at the output, so requiring 10m³/min would be almost 15 % more than its rated performance. In this case the next model must be selected.
- 4) If the requirement is for a different dew-point, the selection procedure does not alter. The required pressure dew-point does not affect the model selection. It impacts only on the total power used by the selected model.

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Factor to calculate the power consumption of an ATT model at pressure dew-point values which deviate from -40 °C and/or at partial load

Pressure Dew Point (°C)	Refrig. only	+3	0	-10	-20	-40	-70
Correction Factor	0.39	0.88	0.89	0.90	0.92	1	1.31

Partial Load	25 %	50 %	75 %	100 %
Correction Factor	0.66	0.82	0.94	1
Correction Factor Refrigeration-circuit only ¹	0.52	0.76	0.90	1

¹ Only for ATT 140, 260, 340

Example: ATT140 working at -20 °C pdp and loaded with 50 % of its nominal capacity

- 1) Find the correction factor in the table above: -20 °C pdp = 0.92 ; 50 % load = 0.82
- 2) The total power at nominal conditions consumed by model ATT140 (see performance table) is: 2.01 + 2.37 = 4.38kW
- 3) Apply the correction factor. The total power consumed at the new conditions is: 4.38 x 0.92 x 0.82 = 3.30kW

Example: ATT140 with seasonal "By-pass Option" (Refrigeration-circuit only active), unit loaded at 50%

- 1) Find the correction factor in the table above: Refrigeration-circuit only = 0.39 ; 50 % load with refrigeration-circuit only = 0.76
- 2) Apply the correction factor to the total power consumed by an ATT140. The new value is: 4.38 x 0.39 x 0.76 = 1.3kW

Air quality classes, in accordance with ISO 8573-1:2010

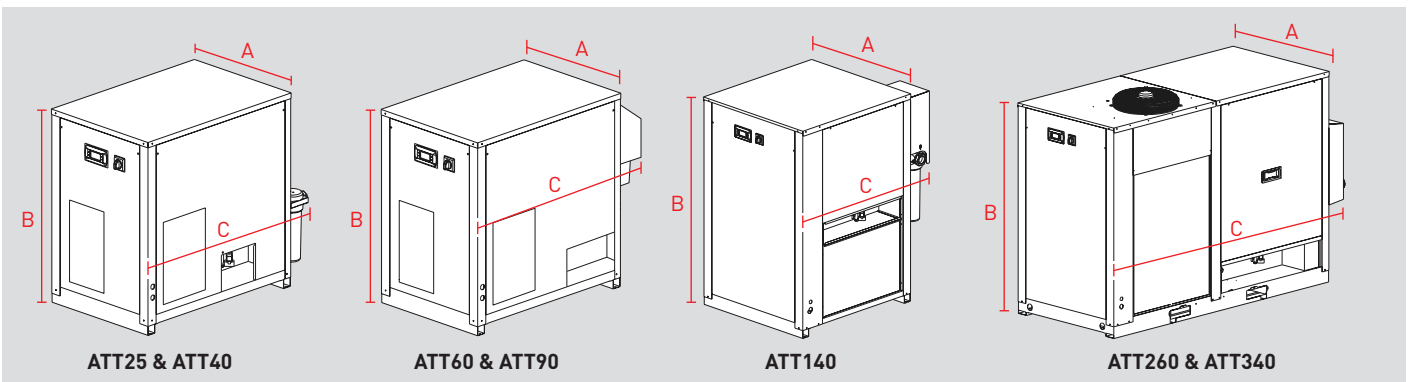
Particulate	Class 2
Humidity (gaseous)	From Class 4 to Class 1 (depending upon sizing and dew point setting)
Total oil contamination	Class 2

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Dimensions in mm, weight in kg

Model	A - Width	B - Height	C - Dept	Weight
ATT 025	706	1064	1246	180
ATT 040	706	1064	1246	200
ATT 060	806	1214	1416	295
ATT 090	806	1214	1416	335
ATT 140	1007	1586	1345	490
ATT 260	1007	1720	2535	880
ATT 340	1007	1720	2535	950



Product key

Series	Inlet Flow rate * 10 (m ³ /min)	Condenser	Electrical Voltage, phase, frequency	Max Operating Pressure (bar _e)	Drain Type	Optional by-pass winter/ summer	Optional Touch screen
ATT	025 to 040	A	230 1 50	16	TI or EX	-	-
ATT	060 to 090	A	230 1 50	12	TI or EX	TB	-
ATT	140 to 340	A	400 3 50	12	EI	TB	TS

Examples

ATT	040	A	230150	16	TI		
ATT model for 4 m ³ /min inlet, air cooled, 230 V, 1-phase, 50Hz power supply, max 16bar _e operating pressure, equipped with integral timed-drain							
ATT	040	A	230150	16	EX		
ATT model for 4 m ³ /min inlet, air cooled, 230 V, 1-phase, 50Hz power supply, max 16bar _e , equipped with external electronic capacitive-drain							
ATT	260	A	400350	12	EI	TS	
ATT model for 26 m ³ /min inlet, air cooled, 400 V, 3-phase, 50Hz power supply, max 12bar _e operating pressure, equipped with integral electronic capacitive-drain and 7" touch screen display							
ATT	140	A	400350	12	EI	TB	TS
ATT model for 14 m ³ /min inlet, air cooled, 400 V, 3-phase, 50Hz power supply, max 12bar _e operating pressure, equipped with integral electronic capacitive-drain, seasonal "By-Pass" and 7" touch screen display							



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Aerospace

Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & driers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General Industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
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