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PRODUCT CATALOGUE

HDK INTERMEDIATE PRESSURE AND HDK-MT HIGH PRESSURE DRYERS

GSFE Division

Contaminants in Compressed Air

For over 100 years, compressed air has been recognised as a safe and reliable power source and is widely used throughout industry. Known as the 4th utility, around 90% of all manufacturing companies use compressed air in some aspect of their operations.

Unlike other utilities such as gas, water and electricity which is supplied to site by a utility supplier and to strict tolerances and quality specifications, compressed air is generated on-site. The quality of the compressed air and the cost of producing this powerful utility is therefore the responsibility of the user.

The Problem with Compressed Air
Compressed air systems inherently suffer from performance and reliability issues and almost all of the problems associated with the compressed air system and many manufacturing related quality issues can be directly attributed to contamination found in the compressed air.

Compressed Air Contamination and its Sources

Unknown to many compressed air users, the compressed air system contains a large array of both visible and invisible contamination which actually originate from four different sources.

To provide clean, dry, oil-free compressed air there are a minimum of **TEN** contaminants originating from **FOUR** different sources that must be treated.

1

AMBIENT AIR
CONTAMINANTS
- Microorganisms
- Water Vapour
- Atmospheric Particulate
- Oil Vapour
(from the atmosphere)

2

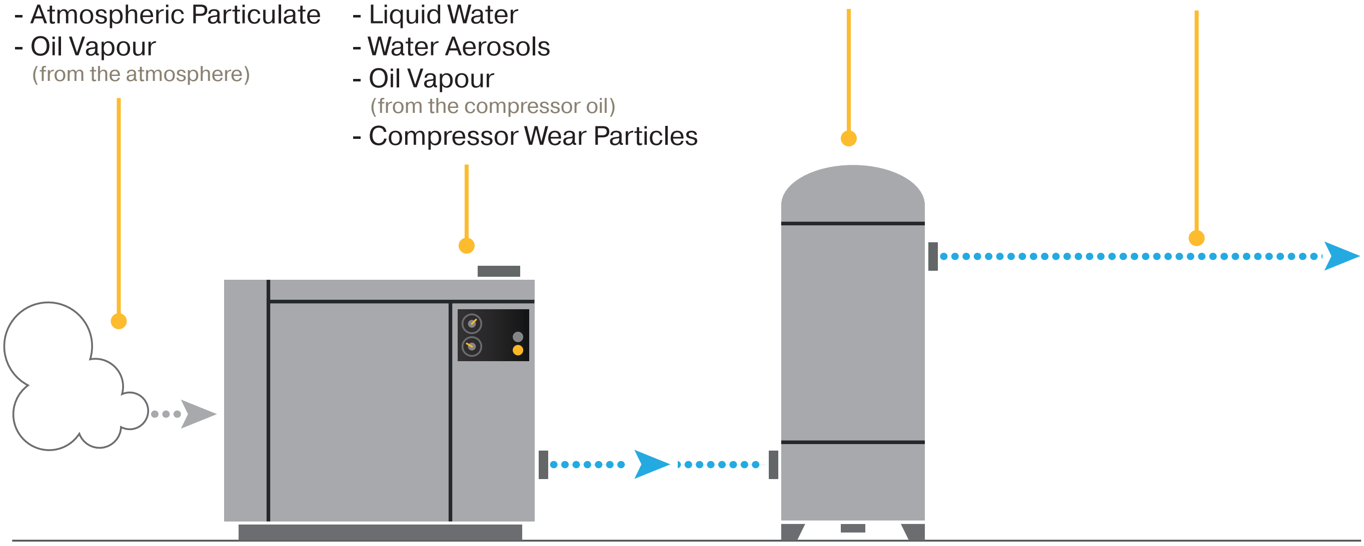
THE AIR COMPRESSOR
CONTAMINANTS
- Liquid Oil
- Oil Aerosols
- Liquid Water
- Water Aerosols
- Oil Vapour
(from the compressor oil)
- Compressor Wear Particles

3

THE AIR RECEIVER
CONTAMINANTS
- Rust
- Pipescale

4

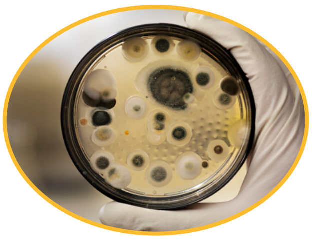
DISTRIBUTION PIPING
CONTAMINANTS
- Rust
- Pipescale



Contaminant Type	The Ten Main Contaminants in Compressed Air		
Biological	Microorganisms (Viable and Non-Viable Particles)		
Chemical	Oil Vapour	Liquid Oil	Oil Aerosols
Physical	Water Vapour	Liquid Water	Water Aerosols
	Atmospheric Particles	Compressor Wear Particles	Rust and Pipescale

In order to supply the manufacturing facility with compressed air, the air compressor must constantly move and compress large volumes of ambient air.

Microorganisms



Ambient air can contain up to 100 million microorganisms per cubic metre. Due to their small size, bacteria, viruses, fungi, yeasts, moulds and spores will pass through the intake filter and into the compressed air system. Tests carried out by the Danish Technological Institute proved that microorganisms can survive in compressed air systems up to 400 bar, where the warm moist environment inside the air receiver and distribution piping provides an ideal environment for their rapid growth.

Water Vapour

Water enters the compressed air system as a vapour (gas). The ability of air to hold water vapour is dependent upon its pressure and its temperature. The higher the temperature, the more water vapour that can be held by the air, the higher the pressure, a greater amount of water vapour is squeezed out.

As ambient air is compressed, the temperature of the air increases significantly allowing the heated air to easily retain all of the water vapour entering the compressor.

Oil Vapour

Vehicle emissions and inefficient industrial processes lead to oil vapour contamination in the ambient air. Typical concentrations in ambient air can seem low (between 0.05 and 0.5mg per cubic metre), however values measured in compressed air increase significantly after compression when contaminants become concentrated. Once in a compressed air system, oil vapour can taint ingredients, finished products and packaging with an oily smell. Cooling also causes oil vapour to condense into liquid oil and form oil aerosols.

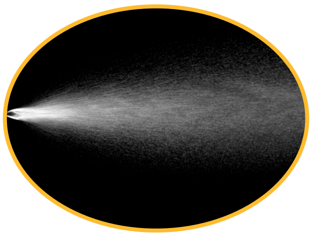
Atmospheric Particulate

Ambient air in industrial and urban environments will typically contain between 140 and 150 million dirt particles in every cubic metre.

As 80% of these particles are less than 2 microns in size, they are therefore too small to be captured by the compressor air intake filter and will travel unrestricted into the compressed air system.

Once in the compressed air system, many of the hazards found in ambient air change phase, leading to the creation of additional contaminants. The air compressor, air receiver and distribution also add to the problem.

Liquid Water and Water Aerosols



After compression, compressed air is cooled to a usable temperature by an aftercooler. This cooling reduces the air's ability to retain water vapour, resulting in condensation of water vapour into liquid water. The presence of liquid water also causes aerosols to be formed.

Aftercoolers typically incorporate a water separator to reduce the amount of liquid entering the compressed air system (these do not remove 100% of the condensed liquid and have no effect on aerosols).

The air leaving the aftercooler and entering the compressed air system is now 100% saturated with water vapour.

Any further cooling of the compressed air will result in more water vapour condensing into liquid water and the generation of more aerosols.

Condensation occurs at various stages throughout the system as the air is cooled further by the air receiver, the distribution piping and the expansion of air in valves, cylinders, production equipment.

Liquid Oil and Oil Aerosols

As with water, oil vapour drawn in with the ambient air is cooled and condensed within the after-cooler leading to the formation of liquid oil and oil aerosols (even with oil-free compressors) which carry downstream. The majority of air compressors in use today use oil in their compression stage for sealing, lubrication and cooling. Even though the oil is in direct contact with the air as it is compressed, due to the efficiency of modern air/oil separators built into the compressor, only a small proportion of this lubricating oil is carried over into the compressed air system as a liquid or aerosol (typically no more than 5mg/m^3 for a well maintained screw compressor) or as oil vapour.

Rust and Pipescale

Rust and pipescale can be directly attributed to the presence of water in the compressed air system and is usually found in air receivers and distribution piping. Over time, the rust and pipescale breaks away to cause damage or blockage in production equipment which can also contaminate final product and processes.

Rust and pipescale problems often increase for a period of time after the installation of dryers into older piping systems which were previously operated with inadequate or no purification equipment.

Poor Quality Compressed Air

To operate any compressed air system safely and cost effectively, contamination must be reduced to acceptable limits. The importance of reducing contamination is increased significantly when compressed air is used for critical parts of the manufacturing process.

Poor quality compressed air quality and failure to control contamination can cause numerous problems for a manufacturer, many of which are not immediately associated with contaminated compressed air.

Product

- Contaminated products or packaging.
- Reworked products.
- Spoiled or damaged products.

Manufacturer

- Potential for brand damage.
- Financial loss.
- Reputation for poor quality.

Manufacturing Process

- Inefficient production processes.
- Reduced production efficiency.
- Increased manufacturing costs.

Compressed Air System

- Growth, storage & distribution of micro-biological contamination.
- Corrosion within storage vessels and the distribution system.
- Contaminated / damaged production equipment.
- Blocked or frozen valves and cylinders.
- Premature unplanned desiccant changes for adsorption dryers.
- High operational and maintenance costs.

Compressed Air Must Be Treated

Compressed air contamination must be treated to ensure the safe, reliable operation of the compressed air system. Correctly treated compressed air not only protects the manufacturing equipment using the compressed air, it also protects products or processes contacted by the compressed air.

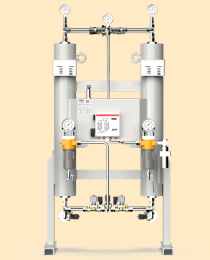
Ensuring effective control of compressed air contamination, requires a number of purification technologies.

It is often stated that only three contaminants are present in compressed air (dirt/water/oil), however as those contaminants can be found in different phases, they require a specific purification technology for efficient reduction.

The table below highlights the individual filtration and drying technologies that are required to treat each contaminant.

Purification Technologies	Contaminants								
	Atmospheric Particles	Rust and Pipescale	Micro-organisms	Liquid Water	Water Aerosol	Water Vapour	Liquid Oil	Oil Aerosol	Oil Vapour
Liquid Separator				●			●		
Coalescing Filters	●	●	●		●			●	
Adsorption Filter									●
Dryer						●			
Dry Particulate Filters		●	●						
Sterile Filter			●						

Parker Twin Tower Carbon Steel Adsorption Dryer Ranges for Compressed Air up to 350 bar g

Range	Pressure Range	Dryer Type	Construction Method	Image
HDK Series H18/25 - H550/25	Up to 25 bar g	Heatless Adsorption	Carbon Steel	
HDK Series H18/50 - H550/50	Up to 45 bar g	Heatless Adsorption	Carbon Steel	
HDK-MT Series H15/100 - H30/100	Up to 100 bar g	Heatless Adsorption	Steel	
HDK-MT Series H15/350 - H30/350	Up to 350 bar g	Heatless Adsorption	Steel	

	Clean Dry Compressed Air	
Application	**Recommended ISO 8573-1:2010 Purity Classifications**	**Recommended Parker Compressed Air Treatment Products**
General Industrial Compressed Air (Internal / External Piping System)	**Class 2:2:2** **Class 2:3:2**	**G/25 Series Filter Grade ZP + HDK Series H18/25 - H550/25** **G/50 Series Filter Grade ZP + HDK Series H18/50 - H550/50** **GH/100 Series Filter Grade ZP + HDK-MT Series 15/100 - H70/100** **GH/350 Series Filter Grade ZP + HDK-MT Series H15/350 - H70/350**

Parker Twin Tower Carbon Steel Adsorption Dryer Ranges for Compressed Air up to 45 bar g Pressure

The Parker HDK 25 & HDK 50 adsorption dryer ranges are designed for intermediate pressures (up to 25 bar g & up to 45 bar g).

Of twin tower, carbon steel construction, HDK 25 & HDK 50 models utilise the heatless PSA method for desiccant regeneration.

HDK 25 (25 bar) & HDK 50 (45 bar)

HDK 25 & HDK 50 Compressed Air Adsorption Dryers

- Parker HDK 25 & HDK 50 dryer ranges provide a constant outlet dewpoint in accordance with ISO 8573-1 classes 2 or 3 for water vapour
- Parker HDK & HDK-MT dryers use clean, dry purge air for regeneration, eliminating any risk of damage to the adsorption bed or re-contamination of the downstream compressed air
- No heat is used for regeneration; therefore, no insulation is required and loss of dewpoint on column changeover due to inefficient cool down is eliminated
- Dewpoint performance is complemented by the Parker G50 General Purpose & High Efficiency Coalescing pre-filtration and General Purpose Dry Particulate post filtration, providing treatment of oil aerosols, water aerosols and particulates

	Dryer	Parker G50 General Purpose Coalescing Filter	Parker G50 High Efficiency Coalescing Filter	Parker G50 Adsorption Filter	Parker G50 General Purpose Dry Particulate Filter
Clean Dry Air	HDK 25	Required	Included	Not Required	Included
	HDK 50	Required	Included	Not Required	Included
Technically Oil Free Air	HDK 25	Required	Included	Required	Included
	HDK 50	Required	Included	Required	Included

Parker G50 Series Filters for 25 Bar & 45 Bar

- Fitted with the Parker Multitronic electronic controller with compressor synchronisation, dewpoint display and Dewpoint Switching energy saving technology
- Compressor synchronisation aligns the compressor and dryer operation
- Dewpoint Switching uses an outlet dewpoint hygrometer to extend the drying cycle and reduce regeneration cycles, fully utilising the available desiccant material
- In combination compressor synchronisation and Dewpoint Switching save purge air, energy consumption and money

Parker Twin Tower Steel Adsorption Dryer Ranges for Compressed Air up to 350 bar g Pressure

The Parker HDK-MT 100 & HDK-MT 350 adsorption dryer ranges are designed for high pressures (up to 100 bar g & up to 350 bar g).

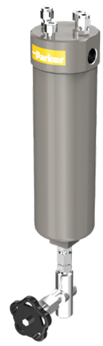
Of twin tower, carbon steel construction, HDK-MT 100 & HDK-MT 350 models utilise the heatless PSA method for desiccant regeneration.

HDK-MT 100 Bar & HDK-MT 350 Bar

HDK-MT 100 & HDK-MT 350 Compressed Air Adsorption Dryers

- Parker HDK-MT 100 & HDK-MT 350 dryer ranges provide a constant outlet dewpoint in accordance with ISO 8573-1 classes 2 or 3 for water vapour
- Parker HDK & HDK-MT dryers use clean, dry purge air for regeneration, eliminating any risk of damage to the adsorption bed or re-contamination of the downstream compressed air
- No heat is used for regeneration; therefore, no insulation is required and loss of dewpoint on column changeover due to inefficient cool down is eliminated
- Dewpoint performance is complemented by the Parker GH General Purpose & High Efficiency Coalescing pre-filtration and General Purpose Dry Particulate post filtration, providing treatment of oil aerosols, water aerosols and particulates

	Dryer	Parker GH General Purpose Coalescing Filter	Parker GH High Efficiency Coalescing Filter	Parker GH Adsorption Filter	Parker GH General Purpose Dry Particulate Filter
Clean Dry Air	HDK-MT 100	Required	Included	Not Required	Included
	HDK-MT 350	Required	Included	Not Required	Included
Technically Oil Free Air	HDK-MT 100	Required	Included	Required	Included
	HDK-MT 350	Required	Included	Required	Included



Parker GH Series Filters for 100 Bar & 350 Bar

- Fitted with the Parker Multitronic electronic controller with compressor synchronisation, dewpoint display and Dewpoint Switching energy saving technology
- Compressor synchronisation aligns the compressor and dryer operation
- Dewpoint Switching uses an outlet dewpoint hygrometer to extend the drying cycle and reduce regeneration cycles, fully utilising the available desiccant material
- In combination compressor synchronisation and Dewpoint Switching save purge air, energy consumption and money

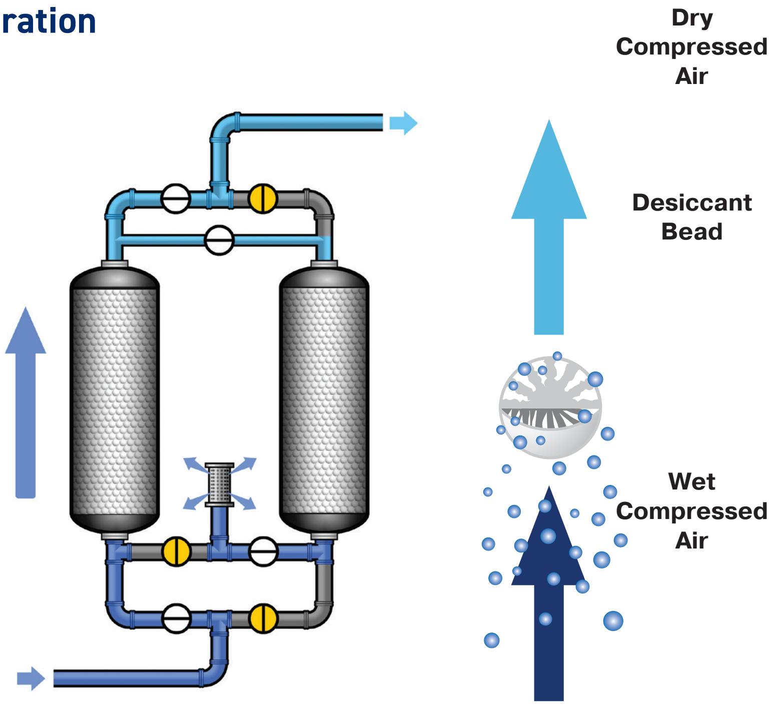
How it Works - HDK & HDK-MT

At the heart of HDK & HDK-MT is a heatless Pressure Swing Adsorption (PSA) desiccant dryer.

HDK & HDK-MT - Heatless Dryer Operation

Drying Cycle (10 Minutes)

The pre-filtered process air enters the dryer through the inlet and is directed into the online drying column via the inlet valves. The compressed air passes over the adsorbent desiccant material, reducing the water vapour content of the compressed air as it contacts the desiccant. The dried process air then exits the dryer via the outlet check valves.



HDK & HDK-MT - Heatless Dryer Operation

Regeneration Cycle (8 Minutes)

At the start of the regeneration cycle, the exhaust valves of the dryer is closed and the offline columns are at full line pressure.

The air in the offline columns has a dewpoint equal to the air leaving the dryer.

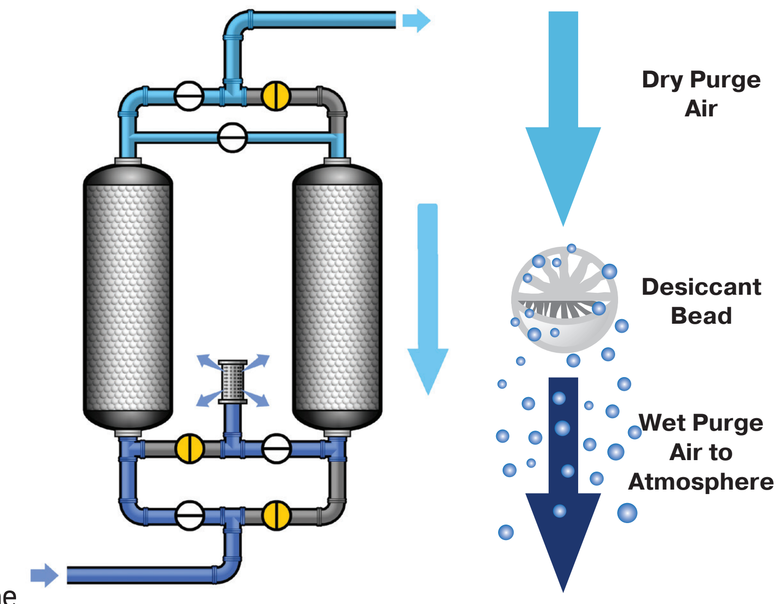
The exhaust valve is then opened and the dry air within the columns expands rapidly as it leaves the dryer via the exhaust silencer, forcing water from the desiccant material.

Once the offline columns have depressurised, a continuous bleed of dried process air is directed into the off-line desiccant bed for regeneration purposes.

This regeneration air is also known as purge air.

With the exhaust valve open, the purge air expands from line pressure to atmospheric pressure and flows downwards over the offline desiccant material.

As the purge air at line pressure contains a fixed amount of water vapour, allowing it to expand means the purge air becomes even drier, increasing its capacity to remove water from the saturated desiccant bed.

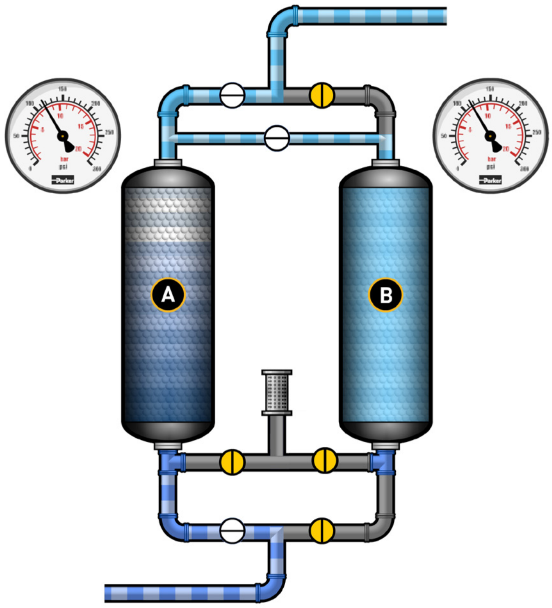


HDK & HDK-MT - Heatless Dryer Operation

Repressurisation (2 Minutes)

Before the on-line (drying) and off-line (regenerating) columns change over, the dryer exhaust valve, is closed, allowing the purge air to repressurise the offline columns.

This ensures a consistent downstream pressure and dewpoint when the drying columns change over.



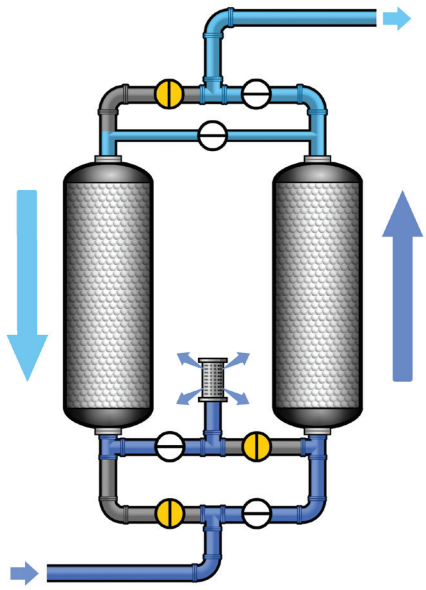
HDK & HDK-MT - Heatless Dryer Operation

Changeover

Following changeover

When operating on a fixed timing cycle, the drying columns will proceed to changeover after the 5 minute regeneration and repressurisation period.

The recently regenerated column is brought online to dry the incoming compressed air and the opposite column (now saturated, will undergo the full regeneration cycle).



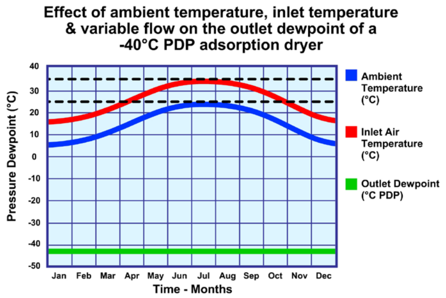
The Importance of a Selecting a Constant Outlet Dewpoint Dryer

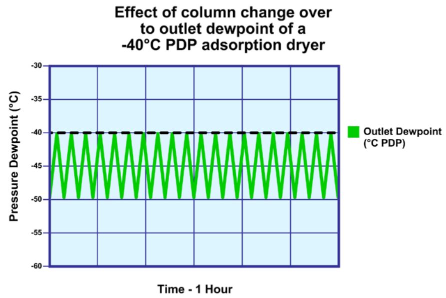
A constant outlet dewpoint dryer is 'sized' to match worst case inlet and ambient conditions of the user's site. This ensures the dryer has enough drying capacity (adsorbent material) to handle the maximum water vapour loading of the system, whilst being able to deliver a consistent outlet dewpoint.

A dryer delivering a constant outlet dewpoint will see small fluctuations, but always deliver the minimum pressure dewpoint it was sized for.

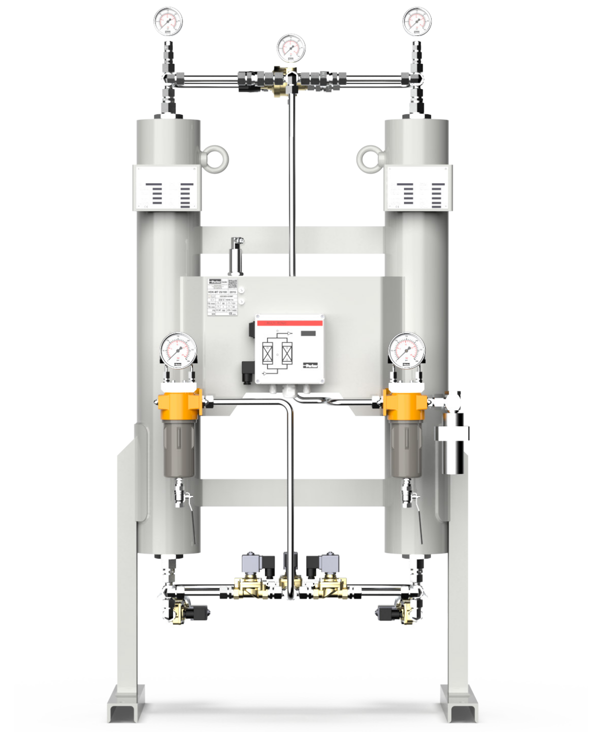
For example, if an adsorption dryer is sized to deliver a ≤-40°C PDP, then -40°C PDP will be the worst dewpoint delivered.

Typically, the outlet dewpoint will fluctuate between say -50°C and -40°C due to the way the adsorption dryer operates.





All Parker adsorption dryers are designed to deliver a constant outlet pressure dewpoint in accordance with ISO 8573-1:2010 Classifications.



HDK 25 / HDK 50

HDK-MT 100 / HDK-MT 350

Multitronic Controller

The Multitronic controller fitted as standard to all HDK & HDK-MT dryers includes a single voltage, single frequency power supply feeding a bespoke PCB with LED status indicators.

Housed in an IP65 rated enclosure, a 7 segment display is available to display outlet dewpoint if the optional dewpoint hygrometer is fitted.

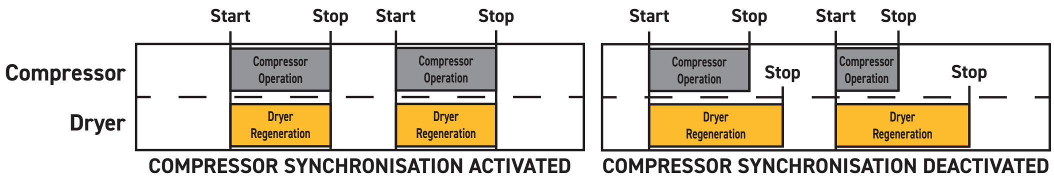
Energy Saving Technologies

When the dewpoint hygrometer is installed and connected to the multitronic controller, HDK & HDK-MT dryers are equipped with not one, but two Energy Saving Technologies, Compressor Synchronisation and Dewpoint Switching.

Compressor Synchronisation (Standard Feature)

The dryer controller is fitted as standard with a digital input which synchronises the dryer regeneration cycle with the operation of the compressor. Compressor Synchronisation is designed to stop the dryer regeneration cycle when the compressor goes off load. It uses a signal from the compressor to stop the dryer regeneration cycle and close the exhaust valve.

This prevents unnecessary use of purge air during periods of no demand, saving compressed air, energy and money.



Once the system pressure drops due downstream air demand, the compressor re-starts and the normal drying cycle will be resumed.

Compressor Synchronisation compliments the Dewpoint Switching energy saving technology and allows for additional energy savings to be made when the compressor is off-load.

Dewpoint Switching - Energy Saving Technology
(Standard Feature HDK / HDK-MT)

The energy required to regenerate the off-line desiccant bed of an absorption dryer is constant, and based upon the assumption that the dryer is operating at full capacity and the desiccant bed requiring regeneration has been fully saturated.

In reality, a dryer is rarely operating at full capacity all of the time, for example during shift work and periods of low demand.

Daily and seasonal fluctuations in ambient temperature and humidity also change the moisture loading placed upon the dryer.

Under such conditions, at the point in the drying cycle where the air flow is switched from one drying chamber to the other, there is the potential for drying capacity to remain in the desiccant material about to undergo regeneration.

As the energy used to regenerate this partially saturated bed is based upon the assumption that the bed is fully saturated, more energy (purge air) is consumed than is actually necessary.

With the Dewpoint Switching function activated, the regeneration cycle remains unchanged, however, the Dewpoint Switching function overrides the fixed drying cycle to fully utilise the drying capacity of the desiccant material.

Standard Operation (Fixed Cycle)

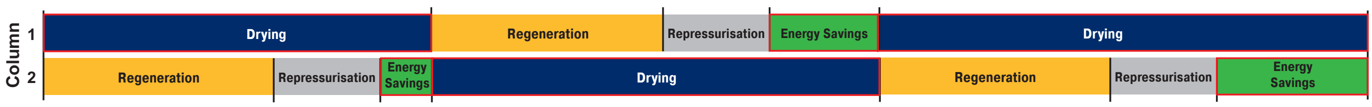
At the end of the regeneration cycle, and prior to column changeover, the fully regenerated offline column is repressurised, thus ensuring no loss of system pressure on changeover.

After re-pressurisation, all drying columns will be at full line pressure, no purge air is being used for regeneration and the dryer is in a state of zero energy consumption.

Dewpoint Switching Operation (Variable Cycle)

Under standard operation, the drying chambers would now proceed to change over automatically, however with the optional dewpoint hygrometer installed and the variable cycle activated the controller now monitors the pressure dewpoint of the compressed air leaving the dryer.

If the dewpoint of the compressed air exiting the dryer is lower than the pre-set minimum dewpoint level, the Dewpoint Switching function will override the standard control cycle. The drying columns will change over, however the drying cycle is now extended by 1 minute. During this cycle extension period, no purge air is consumed and the dryer is in a state of zero energy consumption.



After the cycle extension period has elapsed, the dryer will change over and if the outlet dewpoint is again below the pre-set minimum dewpoint at the point of changeover, an additional minute will be added to the already extended drying cycle.

The cycle extension will continue until the outlet dewpoint matches the pre-set minimum dewpoint or the drying cycle extension has reached a maximum of 60 minutes.

During the extension of the drying cycle (up to 60 minutes), no system air (purge air) is consumed, saving compressed air, saving energy and saving money.

Dryer Performance

Dryer Models	Dewpoint (Standard)		ISO 8573-1:2010 Classification (Standard)	Dewpoint (Option 1)		ISO 8573-1:2010 Classification (Option 1)
	°C	°F		°C	°F	
HDK 18/25 - HDK 550/25	-40	-40	Class 2.2.2	-20	-4	Class 2.3.2

Technical Data

Dryer Models	Minimum Operating Pressure		Maximum Operating Pressure		Minimum Operating Temperature		Maximum Operating Temperature		Maximum Ambient Temperature		Electrical Supply (Standard)	Electrical Supply (Optional)	Thread Type	Noise Level
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				dB(A)
HDK 18/25 - HDK 550/25	8	116	25	363	30	86	55	131	50	122	230V 1ph 50/60Hz	115V 1ph 50/60Hz	BSPP	95-115

Flow Rates

Model	Pipe Size BSPP	Inlet Flow Rate			
		L/s	m³/min	m³/hr	cfm
HDK 18/25	G½	7	0.42	25	15
HDK 40/25	G½	14	0.84	50	29
HDK 80/25	G½	28	1.67	100	59
HDK 120/25	G½	35	2.09	125	74
HDK 160/25	G¾	50	3.01	180	106
HDK 210/25	G¾	67	4.01	240	141
HDK 360/25	G1	108	6.51	390	230
HDK 550/25	G1	167	10.02	600	353

Stated flows are for operation at 25 bar (g) (363 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure. For flows at other pressures, apply the correction factors shown below.

Product Selection & Correction Factors

For correct operation, compressed air dryers must be sized using for the maximum (summer) inlet temperature, maximum (summer) ambient temperature, minimum inlet pressure, required outlet dewpoint and maximum flow rate of the installation.

To select a dryer, first calculate the MDC (Minimum Drying Capacity) using the formula below then select a dryer from the flow rate table above with a flow rate equal to or above the MDC.

Minimum Drying Capacity = System Flow x CFMIT x CFMAT x CFMIP x CFOD

CFMIT - Correction Factor Maximum Inlet Temperature

Maximum Inlet Temperature	°C	30	35	40	45	50
	°F	86	95	104	113	122
Correction Factor		0.98	1.00	1.28	1.70	2.04

CFMAT - Correction Factor Maximum Ambient Temperature

Maximum Ambient Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
Correction Factor		1.00	1.00	1.00	1.00	1.00	1.00

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	10	15	20	25
	psi g	145	218	290	363
Correction Factor		2.50	1.67	1.25	1.00

CFOD - Correction Factor Outlet Dewpoint

Outlet Dewpoint	°C	-20	-40
	°F	-4	-40
Correction Factor		1.00	1.00

Controller Functions

Dryer Models	Controller Function							
	Power On Indication	Visual Fault Indication	Dewpoint Display	Dewpoint Switching - Energy Saving Technology	Filter Service Indicator	Dryer Service Indicator	Fault Relay	4-20mA Dewpoint Re-transmission
HDK 18/50 - HDK 550/25	●		●	●		●		Option

Required Filtration

Model	Pipe Size BSPP	Dryer Inlet		Dryer Outlet		
		General Purpose Pre-filter (Required)	High Efficiency Filter (included)	Oil Vapour Reduction Filter (option)	General Purpose Dry Particulate Filter (included)	High Efficiency Dry Particulate Filter (option)
HDK 18/25	G½	G3/50ZP	G3/50XP	G3/50A	G3/50V	G3/50XP
HDK 40/25	G½	G3/50ZP	G3/50XP	G3/50A	G3/50V	G3/50XP
HDK 80/25	G½	G5/50ZP	G5/50XP	G5/50A	G5/50V	G5/50XP
HDK 120/25	G½	G7/50ZP	G7/50XP	G7/50A	G7/50V	G7/50XP
HDK 160/25	G¾	G9/50ZP	G9/50XP	G9/50A	G9/50V	G9/50XP
HDK 210/25	G¾	G9/50ZP	G9/50XP	G9/50A	G9/50V	G9/50XP
HDK 360/25	G1	G11/50ZP	G11/50XP	G11/50A	G11/50V	G11/50XP
HDK 550/25	G1	G12/50ZP	G12/50XP	G12/50A	G12/50V	G12/50XP

Filtration Performance

	General Purpose Coalescing Filter	High Efficiency Coalescing Filter	Oil Vapour Reduction Filter	General Purpose Dry Particulate Filter	High Efficiency Dry Particulate Filter
Filtration Grade	Grade ZP	Grade XP	Grade A	Grade V	Grade XP
Filtration Type	Coalescing	Coalescing	Adsorption	Dry Particulate	Dry Particulate
Particle Reduction (inc water & oil aerosols)	Down to 0.01 micron	Down to 0.01 micron	N/A	Down to 3 micron	Down to 0.01 micron
Maximum Remaining Oil Aerosol Content at 21°C	$\leq$0.01 mg/m^3 ($\leq$0.01 ppm(w))	$\leq$0.01 mg/m^3 ($\leq$0.01 ppm(w))	N/A	N/A	N/A
Maximum Remaining Oil Vapour Content at 21°C	N/A	N/A	$\leq$0.003 mg/m^3 ($\leq$0.003 ppm(w))	N/A	N/A

Weights & Dimensions

Model	Pipe Size BSPP	Dimensions						Weight	
		Height		Width		Depth			
		mm	ins	mm	ins	mm	ins	kg	lbs
HDK 18/50	G½	1150	45.3	672	26.5	402	15.8	38	84
HDK 40/50	G½	1422	56.0	685	27.0	414	16.3	49	108
HDK 80/50	G½	1522	59.9	790	31.1	414	16.3	65	143
HDK 120/50	G½	1720	67.7	786	30.9	412	16.2	70	154
HDK 160/50	G¾	1716	67.6	815	32.1	462	18.2	91	201
HDK 210/50	G¾	1716	67.6	840	33.1	479	18.9	112	247
HDK 360/50	G1	1808	71.2	890	35.0	509	20.0	141	311
HDK 550/50	G1	1854	73.0	945	37.2	540	21.3	240	529

Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	IP65 Indoor and frost free installation only
EU/UK	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 optional
AUS	Approval to AS1210 optional
For use with Compressed Air Only	

Dryer Performance

Dryer Models	Dewpoint (Standard)		ISO 8573-1:2010 Classification (Standard)	Dewpoint (Option 1)		ISO 8573-1:2010 Classification (Option 1)
	°C	°F		°C	°F	
HDK 18/50 - HDK 550/50	-40	-40	Class 2.2.2	-20	-4	Class 2.3.2

Technical Data

Dryer Models	Minimum Operating Pressure		Maximum Operating Pressure		Minimum Operating Temperature		Maximum Operating Temperature		Maximum Ambient Temperature		Electrical Supply (Standard)	Electrical Supply (Optional)	Thread Type	Noise Level
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				dB(A)
HDK 18/50 - HDK 550/50	8	116	45	653	30	86	55	131	50	122	230V 1ph 50/60Hz	115V 1ph 50/60Hz	BSPP	95-115

Flow Rates

Model	Pipe Size BSPP	Inlet Flow Rate			
		L/s	m³/min	m³/hr	cfm
HDK 18/50	G½	13	0.76	45	26
HDK 40/50	G½	25	1.50	90	53
HDK 80/50	G½	50	3.01	180	106
HDK 120/50	G½	60	3.60	216	127
HDK 160/50	G¾	90	5.41	324	191
HDK 210/50	G¾	120	7.21	432	255
HDK 360/50	G1	195	11.71	703	414
HDK 550/50	G1	295	17.75	1063	626

Stated flows are for operation at 45 bar (g) (653 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure. For flows at other pressures, apply the correction factors shown below.

Product Selection & Correction Factors

For correct operation, compressed air dryers must be sized using for the maximum (summer) inlet temperature, maximum (summer) ambient temperature, minimum inlet pressure, required outlet dewpoint and maximum flow rate of the installation.

To select a dryer, first calculate the MDC (Minimum Drying Capacity) using the formula below then select a dryer from the flow rate table above with a flow rate equal to or above the MDC.

Minimum Drying Capacity = System Flow x CFMIT x CFMAT x CFMIP x CFOD

CFMIT - Correction Factor Maximum Inlet Temperature

Maximum Inlet Temperature	°C	30	35	40	45	50
	°F	86	95	104	113	122
Correction Factor		0.98	1.00	1.28	1.70	2.04

CFMAT - Correction Factor Maximum Ambient Temperature

Maximum Ambient Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
Correction Factor		1.00	1.00	1.00	1.00	1.00	1.00

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	20	25	30	35	40	45
	psi g	290	363	435	508	580	653
Correction Factor		2.36	1.92	1.62	1.40	1.24	1.00

CFOD - Correction Factor Outlet Dewpoint

Outlet Dewpoint	°C	-20	-40
	°F	-4	-40
Correction Factor		1.00	1.00

Controller Functions

Dryer Models	Controller Function							
	Power On Indication	Visual Fault Indication	Dewpoint Display	Dewpoint Switching - Energy Saving Technology	Filter Service Indicator	Dryer Service Indicator	Fault Relay	4-20mA Dewpoint Re-transmission
HDK 18/50 - HDK 550/50	●		●	●		●		Option

Required Filtration

Model	Pipe Size BSPP	Dryer Inlet		Dryer Outlet		
		General Purpose Pre-filter (Required)	High Efficiency Filter (included)	Oil Vapour Reduction Filter (option)	General Purpose Dry Particulate Filter (included)	High Efficiency Dry Particulate Filter (option)
HDK 18/50	G½	G3/50ZP	G3/50XP	G3/50A	G3/50V	G3/50XP
HDK 40/50	G½	G3/50ZP	G3/50XP	G3/50A	G3/50V	G3/50XP
HDK 80/50	G½	G5/50ZP	G5/50XP	G5/50A	G5/50V	G5/50XP
HDK 120/50	G½	G7/50ZP	G7/50XP	G7/50A	G7/50V	G7/50XP
HDK 160/50	G¾	G9/50ZP	G9/50XP	G9/50A	G9/50V	G9/50XP
HDK 210/50	G¾	G9/50ZP	G9/50XP	G9/50A	G9/50V	G9/50XP
HDK 360/50	G1	G11/50ZP	G11/50XP	G11/50A	G11/50V	G11/50XP
HDK 550/50	G1	G12/50ZP	G12/50XP	G12/50A	G12/50V	G12/50XP

Filtration Performance

	General Purpose Coalescing Filter	High Efficiency Coalescing Filter	Oil Vapour Reduction Filter	General Purpose Dry Particulate Filter	High Efficiency Dry Particulate Filter
Filtration Grade	Grade ZP	Grade XP	Grade A	Grade V	Grade XP
Filtration Type	Coalescing	Coalescing	Adsorption	Dry Particulate	Dry Particulate
Particle Reduction (inc water & oil aerosols)	Down to 0.01 micron	Down to 0.01 micron	N/A	Down to 3 micron	Down to 0.01 micron
Maximum Remaining Oil Aerosol Content at 21°C	$\leqslant$0.01 mg/m^3 ($\leqslant$0.01 ppm(w))	$\leqslant$0.01 mg/m^3 ($\leqslant$0.01 ppm(w))	N/A	N/A	N/A
Maximum Remaining Oil Vapour Content at 21°C	N/A	N/A	$\leqslant$0.003 mg/m^3 ($\leqslant$0.003 ppm(w))	N/A	N/A

Weights & Dimensions

Model	Pipe Size BSPP	Dimensions						Weight	
		Height		Width		Depth			
		mm	ins	mm	ins	mm	ins	kg	lbs
HDK 18/50	G½	1150	45.3	672	26.5	402	15.8	38	84
HDK 40/50	G½	1422	56.0	685	27.0	414	16.3	49	108
HDK 80/50	G½	1522	59.9	790	31.1	414	16.3	65	143
HDK 120/50	G½	1720	67.7	786	30.9	412	16.2	70	154
HDK 160/50	G¾	1716	67.6	815	32.1	462	18.2	91	201
HDK 210/50	G¾	1716	67.6	840	33.1	479	18.9	112	247
HDK 360/50	G1	1808	71.2	890	35.0	509	20.0	141	311
HDK 550/50	G1	1854	73.0	945	37.2	540	21.3	240	529

Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	IP65 Indoor and frost free installation only
EU/UK	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Approval to ASME VIII Div. 1 optional
AUS	Approval to AS1210 optional
For use with Compressed Air Only	

Dryer Performance

Dryer Models	Dewpoint (Standard)		ISO 8573-1:2010 Classification (Standard)	Dewpoint (Option 1)		ISO 8573-1:2010 Classification (Option 1)
	°C	°F		°C	°F	
HDK-MT 15/100 - HDK-MT 30/100	-40	-40	Class 2.2.2	-20	-4	Class 2.3.2

Technical Data

Dryer Models	Minimum Operating Pressure		Maximum Operating Pressure		Minimum Operating Temperature		Maximum Operating Temperature		Maximum Ambient Temperature		Electrical Supply (Standard)	Electrical Supply (Optional)	Thread Type	Noise Level
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				dB(A)
HDK-MT 15/100 - HDK-MT 30/100	50	725	100	1450	30	86	55	131	50	122	230V 1ph 50/60Hz	115V 1ph 50/60Hz	BSPP	95-115

Flow Rates

Model	Pipe Size BSPP	Inlet Flow Rate			
		L/s	m³/min	m³/hr	cfm
HDK-MT 15/100	G½	33	2.00	120	71
HDK-MT 20/100	G½	50	3.01	180	106
HDK-MT 25/100	G½	67	4.01	240	141
HDK-MT 30/100	G½	83	5.01	300	177

Stated flows are for operation at 100 bar (g) (1450 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure. For flows at other pressures, apply the correction factors shown below.

Product Selection & Correction Factors

For correct operation, compressed air dryers must be sized using for the maximum (summer) inlet temperature, maximum (summer) ambient temperature, minimum inlet pressure, required outlet dewpoint and maximum flow rate of the installation.

To select a dryer, first calculate the MDC (Minimum Drying Capacity) using the formula below then select a dryer from the flow rate table above with a flow rate equal to or above the MDC.

Minimum Drying Capacity = System Flow x CFMIT x CFMAT x CFMIP x CFOD

CFMIT - Correction Factor Maximum Inlet Temperature

Maximum Inlet Temperature	°C	30	35	40	45	50	55
	°F	86	95	104	113	122	131
Correction Factor		1.00	1.00	1.29	1.67	2.08	2.68

CFMAT - Correction Factor Maximum Ambient Temperature

Maximum Ambient Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
Correction Factor		1.00	1.00	1.00	1.00	1.00	1.00

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	50	60	70	80	90	100
	psi g	725	870	1015	1160	1305	1450
Correction Factor		2.00	1.67	1.43	1.25	1.11	1.00

CFOD - Correction Factor Outlet Dewpoint

Outlet Dewpoint	°C	-20	-40
	°F	-4	-40
Correction Factor		1.00	1.00

Controller Functions

Dryer Models	Controller Function							
	Power On Indication	Visual Fault Indication	Dewpoint Display	Dewpoint Switching - Energy Saving Technology	Filter Service Indicator	Dryer Service Indicator	Fault Relay	4-20mA Dewpoint Re-transmission
HDK-MT 15/100 - HDK-MT 30/100	●		●	●		●		Option

Required Filtration

Model	Pipe Size BSPP	Dryer Inlet		Dryer Outlet		
		General Purpose Pre-filter (Required)	High Efficiency Filter (included)	Oil Vapour Reduction Filter (option)	General Purpose Dry Particulate Filter (included)	High Efficiency Dry Particulate Filter (option)
HDK-MT 15/100	G½	GH7/100ZP	GH7/100XP	GH7/100A	GH7/100ZP/VV	GH7/100XP/VV
HDK-MT 20/100	G½	GH7/100ZP	GH7/100XP	GH7/100A	GH7/100ZP/VV	GH7/100XP/VV
HDK-MT 25/100	G½	GH7/100ZP	GH7/100XP	GH7/100A	GH7/100ZP/VV	GH7/100XP/VV
HDK-MT 30/100	G½	GH7/100ZP	GH7/100XP	GH7/100A	GH7/100ZP/VV	GH7/100XP/VV

Filtration Performance

	General Purpose Coalescing Filter	High Efficiency Coalescing Filter	Oil Vapour Reduction Filter	General Purpose Dry Particulate Filter	High Efficiency Dry Particulate Filter
Filtration Grade	Grade ZP	Grade XP	Grade A	Grade ZP	Grade XP
Filtration Type	Coalescing	Coalescing	Adsorption	Dry Particulate	Dry Particulate
Particle Reduction (inc water & oil aerosols)	Down to 0.01 micron	Down to 0.01 micron	N/A	Down to 1 micron	Down to 0.01 micron
Maximum Remaining Oil Aerosol Content at 21°C	≤0.01 mg/m^3 (≤0.01 ppm(w))	≤0.01 mg/m^3 (≤0.01 ppm(w))	N/A	N/A	N/A
Maximum Remaining Oil Vapour Content at 21°C	N/A	N/A	≤0.003 mg/m^3 (≤0.003 ppm(w))	N/A	N/A

Weights & Dimensions

Model	Pipe Size BSPP	Dimensions						Weight	
		Height		Width		Depth			
		mm	ins	mm	ins	mm	ins	kg	lbs
HDK-MT 15/100	G½	1050	41.3	700	27.6	370	14.6	160	353
HDK-MT 20/100	G½	1250	49.2	700	27.6	370	14.6	180	397
HDK-MT 25/100	G½	1450	57.1	700	27.6	370	14.6	200	441
HDK-MT 30/100	G½	1650	65.0	700	27.6	370	14.6	220	485

Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	IP65 Indoor and frost free installation only
EU/UK	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Not Applicable
AUS	Not Applicable
For use with Compressed Air Only	

Dryer Performance

Dryer Models	Dewpoint (Standard)		ISO 8573-1:2010 Classification (Standard)	Dewpoint (Option 1)		ISO 8573-1:2010 Classification (Option 1)
	°C	°F		°C	°F	
HDK-MT 15/350 - HDK-MT 30/350	-40	-40	Class 2.2.2	-20	-4	Class 2.3.2

Technical Data

Dryer Models	Minimum Operating Pressure		Maximum Operating Pressure		Minimum Operating Temperature		Maximum Operating Temperature		Maximum Ambient Temperature		Electrical Supply (Standard)	Electrical Supply (Optional)	Thread Type	Noise Level
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				dB(A)
HDK-MT 15/350 - HDK-MT 30/350	100	1450	350	5076	30	86	55	131	50	122	230V 1ph 50/60Hz	115V 1ph 50/60Hz	BSPP	95-115

Flow Rates

Model	Pipe Size BSPP	Inlet Flow Rate			
		L/s	m³/min	m³/hr	cfm
HDK-MT 15/350	G½	56	3.3	200	118
HDK-MT 20/350	G½	83	5.0	300	177
HDK-MT 25/350	G½	111	6.7	400	235
HDK-MT 30/350	G½	139	8.4	500	294

Stated flows are for operation at 350 bar (g) (5076 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure. For flows at other pressures, apply the correction factors shown below.

Product Selection & Correction Factors

For correct operation, compressed air dryers must be sized using for the maximum (summer) inlet temperature, maximum (summer) ambient temperature, minimum inlet pressure, required outlet dewpoint and maximum flow rate of the installation.

To select a dryer, first calculate the MDC (Minimum Drying Capacity) using the formula below then select a dryer from the flow rate table above with a flow rate equal to or above the MDC.

Minimum Drying Capacity = System Flow x CFMIT x CFMAT x CFMIP x CFOD

CFMIT - Correction Factor Maximum Inlet Temperature

Maximum Inlet Temperature	°C	30	35	40	45	50	55
	°F	86	95	104	113	122	131
Correction Factor		1.00	1.00	1.32	1.68	2.15	2.8

CFMAT - Correction Factor Maximum Ambient Temperature

Maximum Ambient Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
Correction Factor		1.00	1.00	1.00	1.00	1.00	1.00

CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	100	150	200	250	300	350
	psi g	1450	2175	2900	3625	4351	5076
Correction Factor		3.57	2.33	1.75	1.41	1.16	1.00

CFOD - Correction Factor Outlet Dewpoint

Outlet Dewpoint	°C	-20	-40
	°F	-4	-40
Correction Factor		1.00	1.00

Controller Functions

Dryer Models	Controller Function							
	Power On Indication	Visual Fault Indication	Dewpoint Display	Dewpoint Switching - Energy Saving Technology	Filter Service Indicator	Dryer Service Indicator	Fault Relay	4-20mA Dewpoint Re-transmission
HDK-MT 15/350 - HDK-MT 30/350	●		●	●		●		Option

Required Filtration

Model	Pipe Size BSPP	Dryer Inlet		Dryer Outlet		
		General Purpose Pre-filter (Required)	High Efficiency Filter (included)	Oil Vapour Reduction Filter (option)	General Purpose Dry Particulate Filter (included)	High Efficiency Dry Particulate Filter (option)
HDK-MT 15/350	G½	GH7/350ZP	GH7/350XP	GH7/350A	GH7/350ZP/VV	GH7/350XP/VV
HDK-MT 20/350	G½	GH7/350ZP	GH7/350XP	GH7/350A	GH7/350ZP/VV	GH7/350XP/VV
HDK-MT 25/350	G½	GH7/350ZP	GH7/350XP	GH7/350A	GH7/350ZP/VV	GH7/350XP/VV
HDK-MT 30/350	G½	GH7/350ZP	GH7/350XP	GH7/350A	GH7/350ZP/VV	GH7/350XP/VV

Filtration Performance

	General Purpose Coalescing Filter	High Efficiency Coalescing Filter	Oil Vapour Reduction Filter	General Purpose Dry Particulate Filter	High Efficiency Dry Particulate Filter
Filtration Grade	Grade ZP	Grade XP	Grade A	Grade ZP	Grade XP
Filtration Type	Coalescing	Coalescing	Adsorption	Dry Particulate	Dry Particulate
Particle Reduction (inc water & oil aerosols)	Down to 0.01 micron	Down to 0.01 micron	N/A	Down to 1 micron	Down to 0.01 micron
Maximum Remaining Oil Aerosol Content at 21°C	⩽0.01 mg/m³ (⩽0.01 ppm(w))	⩽0.01 mg/m³ (⩽0.01 ppm(w))	N/A	N/A	N/A
Maximum Remaining Oil Vapour Content at 21°C	N/A	N/A	⩽0.003 mg/m³ (⩽0.003 ppm(w))	N/A	N/A

Weights & Dimensions

Model	Pipe Size BSPP	Dimensions						Weight	
		Height		Width		Depth			
		mm	ins	mm	ins	mm	ins	kg	lbs
HDK-MT 15/350	G½	1050	41.3	700	27.6	370	14.6	190	86
HDK-MT 20/350	G½	1250	49.2	700	27.6	370	14.6	220	100
HDK-MT 25/350	G½	1450	57.1	700	27.6	370	14.6	250	114
HDK-MT 30/350	G½	1650	65.0	700	27.6	370	14.6	280	127

Quality Assurance / IP Rating / Pressure Vessel Approvals

Development / Manufacture	ISO 9001 / ISO 14001
Ingress Protection Rating	IP65 Indoor and frost free installation only
EU /UK	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
USA	Not Applicable
AUS	Not Applicable
For use with Compressed Air Only	

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