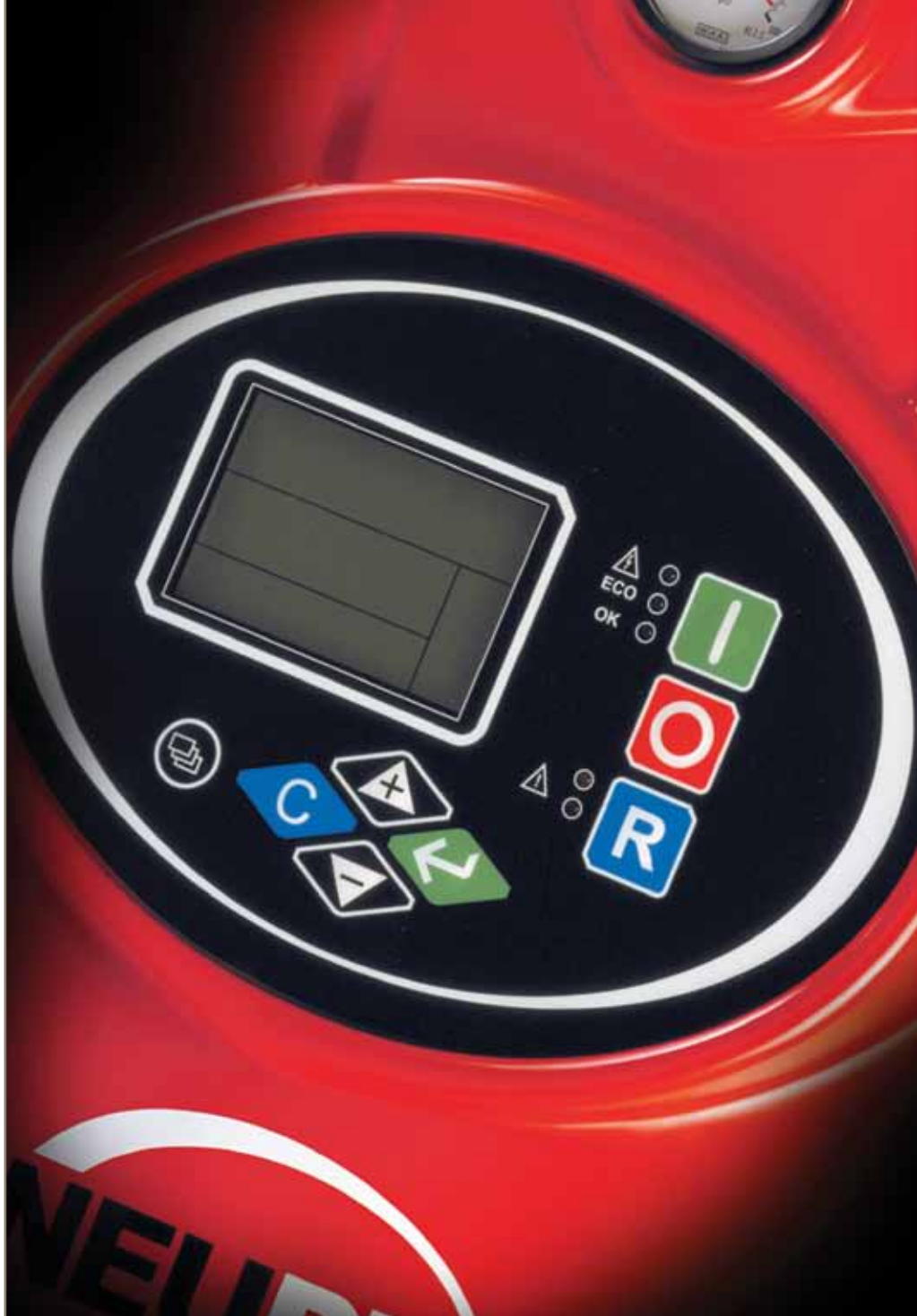




aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



PNEUDRI

Compressed Air Desiccant Dryers



ENGINEERING YOUR SUCCESS.

Compressed air contamination is a real problem for industry

In today's modern production facilities, the use of compressed air is often pivotal to manufacturing processes. Irrespective of whether the compressed air comes into direct contact with the product or is used to automate a process, provide motive power, or even to generate other gases on-site, a clean, dry, reliable compressed air supply is essential to maintain efficient and cost effective production.

Parker domnick hunter provides complete compressed air treatment solutions to suit every industry, application & budget.

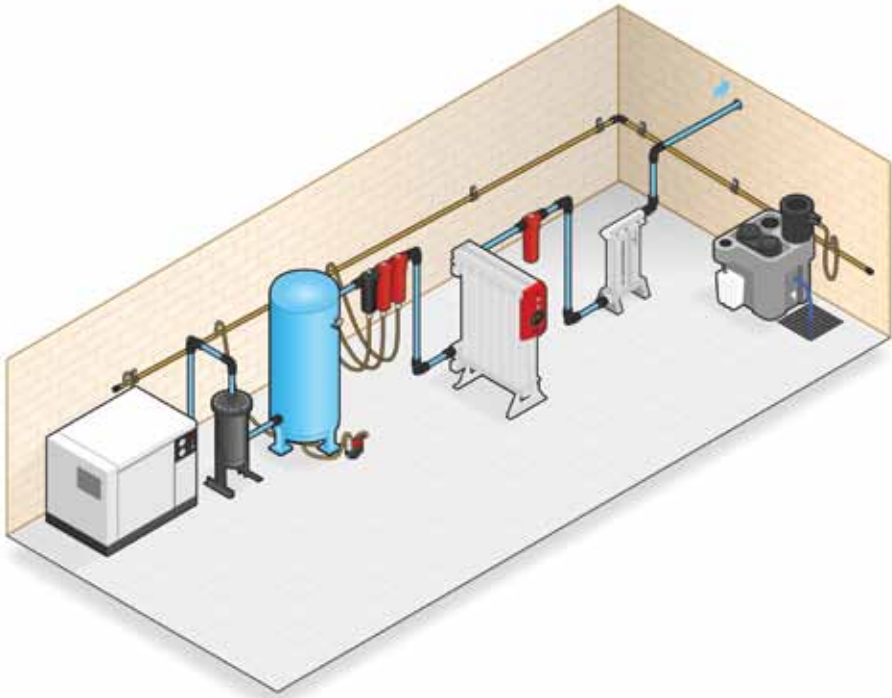
The benefits of using Parker domnick hunter compressed air treatment solutions:

- Plant Reliability - trouble free operation from equipment and processes using compressed air
- Clean Dry Air available for all applications
- No contamination of products / processes / equipment
- Low Maintenance Costs – Reduce or eliminate unexpected / unplanned plant maintenance for better budget control
- Lower plant energy consumption
- Lower plant environmental impact
- Legislation compliance – e.g. assist in complying with hygiene legislation in the Food, Beverage & Pharmaceutical industries



Compressed air dryers – The heart of the compressed air treatment solution

At the heart of any compressed air treatment solution is the dryer, it's purpose, to remove water vapour, stop condensation, corrosion and in the case of adsorption dryers, inhibit the growth of micro-organisms.



Heatless adsorption dryers (also known as PSA dryers) are the simplest type of adsorption dryer available and have long been the dryer of choice for many industries and applications. They are simple, reliable and cost effective and for small to medium flow systems, often

the only viable technology available. Additionally, modular heatless dryers such as PNEUDRI provide an even more reliable, smaller, more compact & lightweight dryer which can be installed in both the compressor room or at the point of use.

Benefits of Heatless Adsorption Dryers

- Industry proven design
- Suitable for all industries and applications - some adsorption dryer regeneration methods prevent their use in certain industries / applications
- Lower capital investment compared to other adsorption dryer regeneration methods
- Reduced complexity compared to other adsorption dryer regeneration methods
- Robust & reliable
- Uses clean, dry compressed air for regeneration making them suitable for all industries and applications
- Lower maintenance costs compared to other adsorption dryer regeneration methods
- No heat / heaters / heat related issues



RELIABILITY



QUALITY



EFFICIENCY

PNEUDRI modular compressed air dryers - a dedicated solution for every application

By combining the proven benefits of desiccant drying with modern design, Parker domnick hunter has produced an extremely compact and reliable system to totally dry and clean compressed air.



PNEUDRI MIDAS
Flowrates from
5.1m³/hr >



PNEUDRI MIDplus
Flowrates from
49m³/hr >



PNEUDRI MX
Flowrates from 408m³/hr >



PNEUDRI MXLE ADVANTAGE

The Parker domnick hunter PNEUDRI ranges of heatless and heat regenerative dryers have proven to be the ideal solution for many thousands of compressed air users worldwide in a wide variety of industries.

Compressed air purification equipment must deliver uncompromising performance and reliability whilst providing the right balance of air quality with the lowest cost of operation.

Benefits:

Highest quality air

- Clean, oil-free and dry compressed air in accordance with all editions of ISO8573-1, the international standard for compressed air quality

Energy efficient

- Maximising savings

Dry air eliminates microbiological growth

- Preventing product spoilage, recall and litigation

Dry air means zero corrosion

- Preventing product spoilage and damage

Smaller, more compact and lightweight

- Modular construction means less than half the size of conventional dryers

Modular design

- 100% standby at a fraction of the cost of twin tower designs
- 10 year guarantee on pressure envelope
- Corrosion resistance due to alochroming and epoxy painting
- Constant dewpoint performance thanks to snowstorm filling

Approvals to international standards

- PED, CE, CSA (US+Canada), CRN

Easy and flexible installation

- Minimal space required

Simple maintenance

- Giving reduced downtime

Reduced noise pollution

- Super quiet operation

Clean, dry air improves production efficiency and reduces maintenance costs and downtime. Only an adsorption dryer can provide the highest levels of dry compressed air.

PNEUDRI - How It Works

Adsorption dryers work on the principle of moisture always migrating to the driest medium possible. Therefore, water vapour is removed from compressed air by passing it over an adsorbent desiccant material.

As the air contacts the adsorbent material, water vapour transfers from the wet air to the dry desiccant, however, adsorbent materials have a fixed adsorption capacity and once this capacity is reached, they must be regenerated or replaced.

Therefore, to provide a continuous supply of clean, dry compressed air, adsorbent dryers utilise two chambers of desiccant material and at any one time, whilst one chamber is on-line, drying the incoming compressed air, the other is either

off-line, being regenerated or is re-pressurised, ready to come on-line. All adsorption dryers remove water in this manner.

The energy consumed by an adsorption dryer can be directly attributed to the method used to regenerate the adsorbent material. Parker domnick hunter PNEUDRI dryers utilise either the Heatless PSA or the Heat Regenerative TSA method to regenerate the adsorbent material.

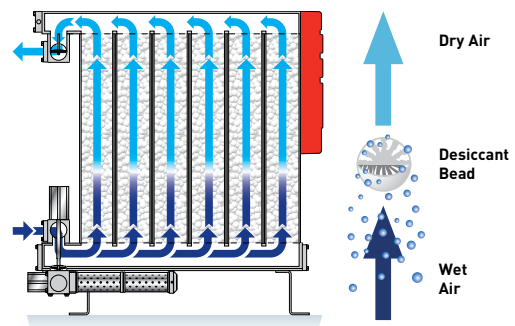
PNEUDRI Operation - Drying Cycle

The process air enters the dryer through the inlet and is directed into the on-line drying chamber via the inlet valves and lower manifold.

(PNEUDRI models can be made up of either single or multiple drying columns, depending upon the range)

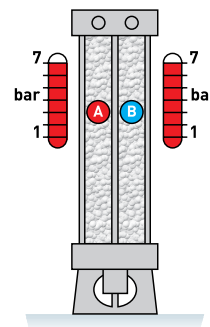
The air is evenly distributed through the drying columns and passes over the desiccant material, reducing the water vapour content.

The dried process air then combines in the upper manifold and exits the dryer via the outlet check valves.



Column Changeover

Before the on-line (drying) and off-line (regenerating) columns change over, the dryer exhaust valve, is closed, allowing the purge air to re-pressurise the off-line columns. This ensures a consistent system pressure and dewpoint when the drying chambers change over.



PNEUDRI Operation - Regeneration Cycle (Heatless PSA or Pressure Swing Adsorption)

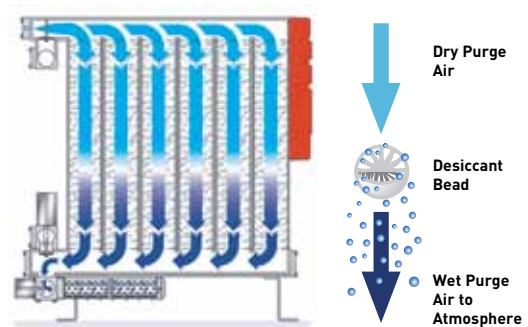
At the start of the regeneration cycle, the exhaust valve of the dryer is closed and the off-line chamber is at full line pressure. The air in the off-line chamber has a dewpoint equal to the air leaving the dryer.

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

Once the off-line chamber has de-pressurised, a continuous bleed of dried process air is directed into the off-line upper manifold. This air is known as purge air.

With the exhaust valve open, the purge air expands from line pressure to atmospheric pressure and flows downwards through the columns, over the off-line 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.



Time (minutes)	Standard Drying / Regeneration Cycle					
	0	2.5	3	0	2.5	3
Side A	Regeneration		Re-pressurisation	Drying		
Side B	Drying			Regeneration		Re-pressurisation

PNEUDRI - The world's most advanced modular drying system

With the proven benefit of advanced aluminium forming technology, Parker domnick hunter has developed a twin tower desiccant dryer that is typically 60% of the size and weight of conventional designs.

These advanced desiccant dryers include ranges of heatless and heat-regenerative PNEUDRI dryers which provide one of the most simple and cost effective compressed air drying solutions. Engineers at Parker domnick hunter have developed PNEUDRI using innovative aluminium forming technology, resulting in units that are typically 60% of the size and weight of conventional welded steel desiccant air dryers. Using a single, high tensile extruded aluminium column, the PNEUDRI modular design

eliminates the need for complex valves or interconnecting piping.

Also, the length to diameter ratio of the internal voids and non-welded construction means that PNEUDRI does not require periodic inspections for insurance purposes, unlike traditional twin-tower air dryers that require out of service periods which can severely disrupt production schedules.



Drying Columns



Distribution Manifold

Greater flexibility with multi-banking



Multi-banking

Unlike traditional twin tower dryer designs, PNEUDRI MAXI models can be multi-banked to provide extra compressed air drying capacity should demand increase in the future. There is no need to replace the dryer with a larger unit, additional capacity can be covered by simply adding extra bank(s), a feature only available with PNEUDRI.



Flexibility during maintenance

Multi-banking allows individual dryer banks to be easily isolated for routine service work, whilst maintaining your clean, dry air supply.

100% stand-by

Compared to traditional twin tower designs, 100% standby is available at a fraction of the cost as only one extra dryer bank is required.



Fits through a standard doorway

Unlike traditional twin tower designs, PNEUDRI dryers will fit through a standard doorway, eliminating the need for special access or facility structural dismantling during installation.

PNEUDRI - four key features guarantee air quality

OIL-X EVOLUTION filtration

Adsorption dryers are designed for the removal of water vapour and not liquid water, water aerosols, oil, particulates or micro-organisms. Only by using Parker domnick hunter OIL-X EVOLUTION pre and after filtration can the removal of these contaminants be assured and air quality in accordance with all editions of ISO8573-1 be guaranteed.



Modular aluminium design

Aluminium extrusions are used throughout for drying chambers and distribution manifolds. This design allows the desiccant material to be retained within the drying chambers. 'Snowstorm' filling, prevents movement of the desiccant material during operation and also eliminates desiccant attrition and breakdown which could lead to a loss of pressure dewpoint.

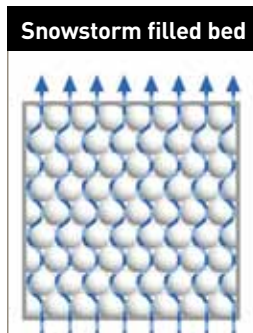
Adsorbent desiccant material

Specially selected desiccant materials provide:

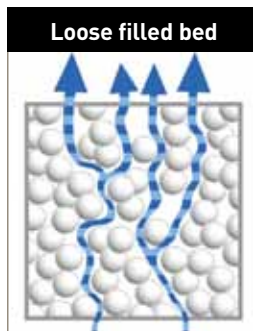
- Optimum adsorption and regeneration capacity - to ensure consistent dewpoint
- Low dusting - to prevent blockage of downstream filtration
- High crush strength - to prevent breakdown of the desiccant during operation
- High resistance to aggressive and oil-free condensate - for compatibility with all types of air compressor, their lubricants and condensate



'Snowstorm' filling ensures consistent dewpoint performance



Consistent drying with no desiccant attrition



Inconsistent drying and desiccant attrition

'Snowstorm' filling method

Unique to Parker domnick hunter modular dryers is the snowstorm filling technique used to charge the drying chambers with adsorbent desiccant material.

The benefits are:

- Achieves maximum packing density for the desiccant material, fully utilising all of the available space envelope
- Prevents air channelling through the desiccant as experienced with twin tower designs. Due to channelling, twin tower designs require more desiccant to achieve an identical dewpoint, increasing physical size, operational and maintenance costs
- Prevents desiccant attrition which can lead to dusting, blocked filters and loss of dewpoint
- Allows 100% of the available desiccant material to be used for drying, therefore reducing the amount of desiccant required and maintenance costs
- 100% of the desiccant is regenerated ensuring consistent dewpoint
- Provides a low, equal resistance to air flow allowing multiple drying chambers and multiple dryer banks to be used, a feature only available with PNEUDRI

Selecting the right dryer for your compressed air system

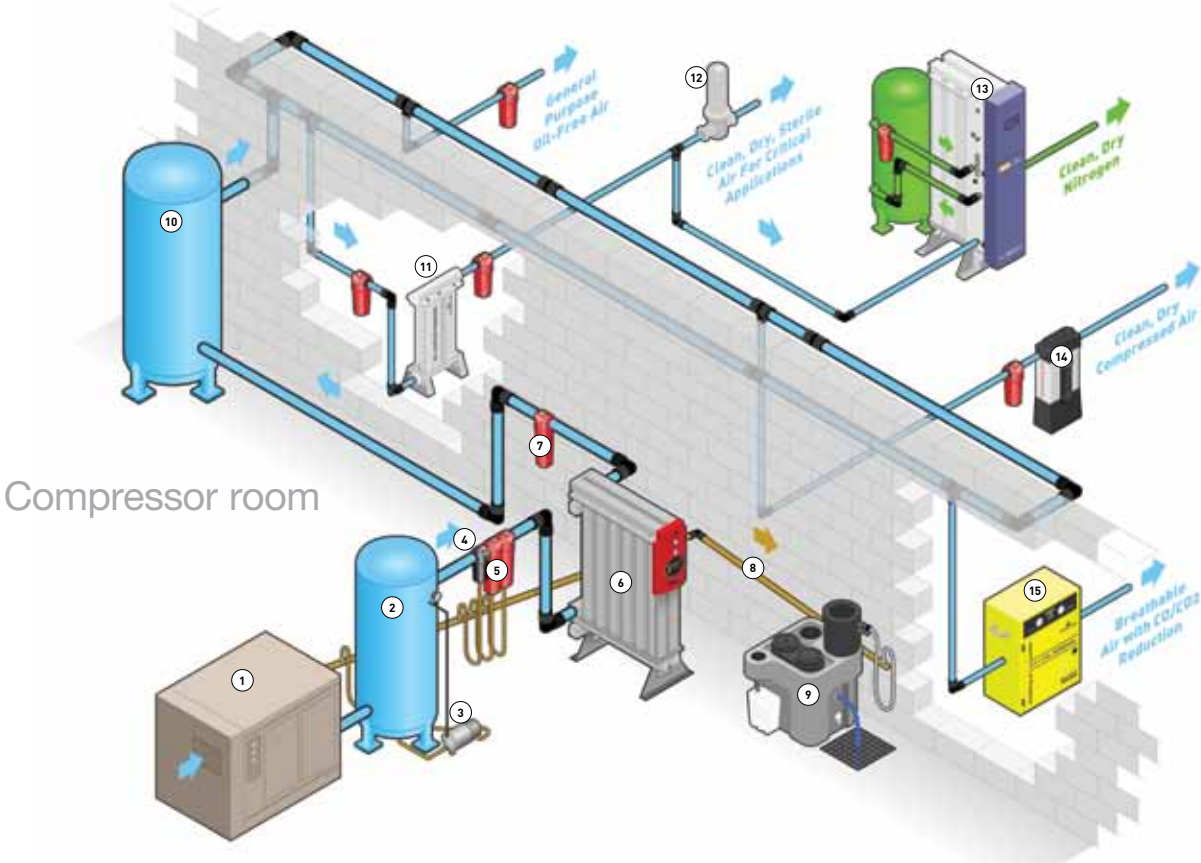
To achieve the degree of air quality specified by ISO8573-1:2010, a careful approach to system design, commissioning and operation must be adopted.

Parker domnick hunter recommends that compressed air is treated:

- Prior to entry into the distribution system
- At critical usage points and applications

This ensures that contamination already in the distribution system is removed.

Purification equipment should be installed where the air is at the lowest possible temperature (i.e. downstream of after-coolers and air receivers). Point-of-use purification equipment should be installed as close as possible to the application.



Key

1	Air Compressor	6	Modular Adsorption Dryer	11	Oil Vapour Removal
2	Wet Air Receiver	7	Dust Filter	12	Sterile Air Filter
3	Condensate Drain	8	Condensate Drainage	13	On-site Nitrogen Gas Generator
4	Water Separator	9	Oil / Water Separator	14	Point of use Adsorption Dryer
5	Coalescing Filters	10	Dry Air Receiver	15	Breathing Air Purifier

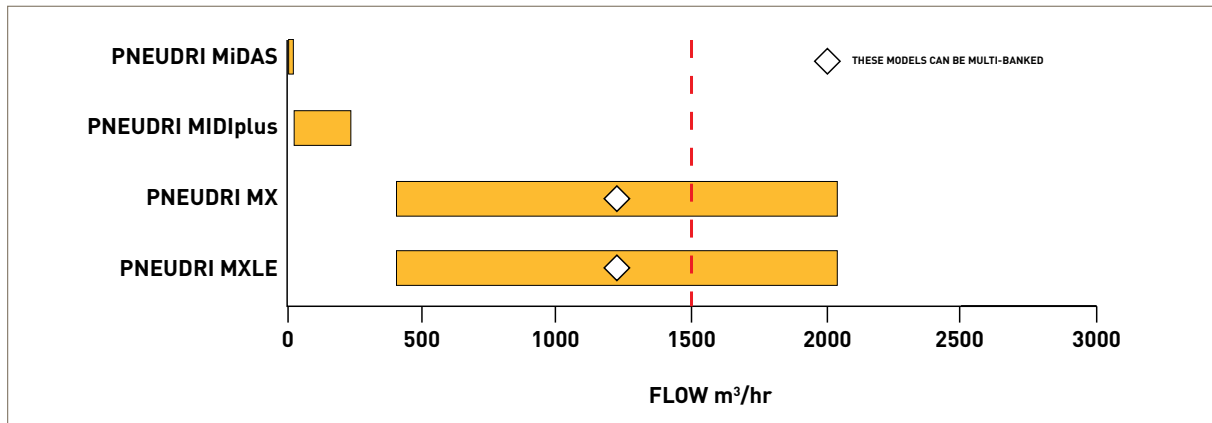
What size PNEUDRI do I require?

Dryer Selection

To correctly select a dryer model, the flow rate of the dryer must be adjusted for the minimum operating pressure and maximum operational temperature of the system. If the dewpoint required is different to the standard dewpoint of the dryer then the flow rate must also be adjusted for the required outlet dewpoint.

Selection Example

Selecting a dryer for a compressor producing at full load 1500 m³/hr at 8.3 bar g with 38°C air inlet temperature and a pressure dewpoint of -40°C.



Step 1

Select the correction factor for maximum inlet temperature from the CFT table Correction Factor for 38°C (round up to 40°C) = 1.04

Temperature Correction Factor CFT		
Maximum Inlet Temperature	°C	40
	°F	104
	CFT	1.04

Step 2

Select the correction factor for minimum operating pressure from the CFP table Correction Factor for 8.3 bar g (round down to 8 bar g) = 0.89

Pressure Correction Factor CFP		
Minimum Inlet Pressure	bar g	8
	psi g	116
	CFP	0.89

Step 3

Select the correction factor for the required dewpoint from the CFD table Correction Factor for -40°C PDP = 1.00

Dewpoint Correction Factor CFD		
Required Dewpoint	PDP °C	-40
	PDP °F	-40
	CFD	1.00

Step 4

Calculate the minimum drying capacity

Minimum drying capacity = Compressed air flow rate x CFT x CFP x CFD
 Minimum drying capacity = 1500 m³/hr x 1.04 x 0.89 x 1.00 = 1388 m³/hr
 Model selected = MX106

Step 5

Which controller is required?

SMART controller is required therefore model selected = MXS106

Step 6

Is DDS Energy Management System required?

DDS Energy Management system is required therefore model selected = MXS106DS

If the minimum drying capacity exceeds the maximum values of the models shown within the tables, please contact Parker domnick hunter for advice regarding larger multi-banked dryers.

PNEUDRI MiDAS

Product Selection

Model	Pipe Size	Inlet Flowrates			
		L/S	m ³ /min	m ³ /hr	cfm
DAS1	3/8"	1	0.09	5.1	3
DAS2	3/8"	2	0.14	8.5	5
DAS3	3/8"	4	0.23	13.6	8
DAS4	3/8"	5	0.28	17.0	10
DAS5	3/8"	6	0.37	22.1	13
DAS6	3/8"	7	0.43	25.5	15
DAS7	3/8"	9	0.57	34.0	20



Stated flows are for operation at 7 bar g (100 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.

Dryer Performance

Dryer Models	*Dewpoint (Standard)		ISO8573-1:2010 Classification (standard)	*Dewpoint (Option 1)		ISO8573-1:2010 Classification (Option 1)
	°C	°F		°C	°F	
DAS	-40	-40	Class 2	-70	-100	Class 1

Technical Data

Dryer Models	Min Operating Pressure		Max Operating Pressure		Min Inlet Temperature		Max Inlet Temperature		Max Ambient Temperature	
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F
DAS	4	58	12	175	2	35	50	122	55	131

Dryer Models	Electrical Supply (Standard) Tolerance ± 10%	Electrical Supply (Optional) Tolerance ± 10%	Thread Connection	Noise Level (average)	Electronic Controller Options	Function	
				dB(A)		Power On Indication	Service Interval Indication
DAS	230 / 1ph / 50Hz	115 / 1ph / 60Hz	BSPP or NPT	<75	DAS	•	•

For fully pneumatic applications, a PNEUDRI MINI range is available. Please contact Parker domnick hunter for further information.

Correction Factors

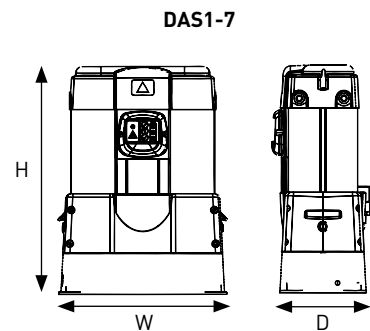
Temperature Correction Factor CFT							
Maximum Inlet Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
	CFT	1.00	1.00	1.00	1.04	1.14	1.37

Pressure Correction Factor CFP										
Minimum Inlet Pressure	bar g	4	5	6	7	8	9	10	11	12
	psi g	58	73	87	102	116	131	145	160	174
	CFP	1.60	1.33	1.14	1.00	1.03	0.93	0.85	0.78	0.71

Dewpoint Correction Factor CFD		Standard	Option 1
Required Dewpoint	PDP °C	-40	-70
	PDP °F	-40	-100
	CFD	1.00	1.43

Weights and Dimensions

Model	Pipe Size	Dimensions						Weight	
		Height (H)		Width (W)		Depth (D)		Kg	lbs
		mm	ins	mm	ins	mm	ins		
DAS1	3/8"	422	16.6	289	11.4	149	5.9	11	24.2
DAS2	3/8"	500	19.7	289	11.4	149	5.9	13	28.7
DAS3	3/8"	616	24.2	289	11.4	149	5.9	16	35.3
DAS4	3/8"	692	27.2	289	11.4	149	5.9	18	39.7
DAS5	3/8"	847	33.3	289	11.4	149	5.9	20	44.1
DAS6	3/8"	906	35.7	289	11.4	149	5.9	23	50.7
DAS7	3/8"	1098	43.2	289	11.4	149	5.9	28	61.7



Recommended Filtration

Model	Filter Pipe Size BSPT or NPT	Inlet General Purpose Pre-filter	Inlet High Efficiency Filter	Outlet Dust Filter
DAS1	3/8"	AO005B □ FX	Built into dryer	Built into dryer
DAS2	3/8"	AO005B □ FX		
DAS3	3/8"	AO005B □ FX		
DAS4	3/8"	AO005B □ FX		
DAS5	3/8"	AO005B □ FX		
DAS6	3/8"	AO0010B □ FX		
DAS7	3/8"	AO0010B □ FX		

*MiDAS dryers include integral high efficiency pre and general purpose dust filters.

□ = G (BSPP) or N (NPT)

PNEUDRI MIDiplus

Product Selection

Model	Pipe Size	Inlet Flowrates			
		L/S	m ³ /min	m ³ /hr	cfm
DME012	3/4"	11"	0.68	41	24
DME015	3/4"	15	0.91	55	32
DME020	3/4"	20	1.19	71	42
DME025	3/4"	25	1.50	90	53
DME030	3/4"	31	1.84	110	65
DME040	3/4"	42	2.49	149	88
DME050	1"	50	3.01	180	106
DME060	1"	61	3.69	221	130
DME080	1"	83	4.99	299	176



Stated flows are for operation at 7 bar g (100 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.

Dryer Performance

Dryer Models	Dewpoint (Standard)		ISO8573-1:2010 Classification (standard)	Dewpoint (Option 1)		ISO8573-1:2010 Classification (Option 1)
	°C	°F		°C	°F	
DME	-40	-40	Class 2	-70	-100	Class 1
DMP*	-40	-40	Class 2	-70	-100	Class 1

Technical Data

Dryer Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature		Max Ambient Temperature		Electrical Supply (Standard)	Electrical Supply (Optional)	Thread Connection	Noise Level dB(A)
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				
DME012 - DME040	4	58	16	232	5	41	50	122	55	131	230V 1ph 50/60Hz	110V 1ph 50/60Hz	BSPP or NPT	<75
DME050 - DME080	4	58	13	190	5	41	50	122	55	131	230V 1ph 50/60Hz	110V 1ph 50/60Hz	BSPP or NPT	<75
DMP12P - DMP80P*	4	58	10.5	152	5	41	50	122	55	131	FULLY PNEUMATIC		BSPP or NPT	<75

Controller Options

Controller Options	Function								
	Power On Indication	Fault Indication	Display Fault Condition Values	Service Interval Indication	Service Countdown Timers	Configurable Alarm Settings	Remote Volt Free Alarm contacts	Filter Service Timer	DDS Energy Management System
DME (Electronic control)	•	•					•		
DME DDS	•	•					•		•

***ATEX compliant option available.**

For hazardous environments, a fully pneumatic ATEX compliant version of PNEUDRI is available.

ATEX Directive 94/9/EC
Group II, Category 2GD, T6.

Correction Factors

Temperature Correction Factor CFT							
Maximum Inlet Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
	CFT	1.00	1.00	1.00	1.04	1.14	1.37

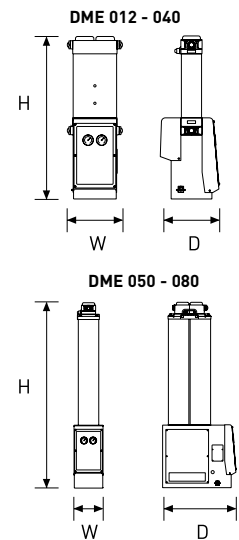
Pressure Correction Factor CFP														
Minimum Inlet Pressure	bar g	4	5	6	7	8	9	10	11	12	13	14	15	16
	psi g	58	73	87	100	116	131	145	160	174	189	203	218	232
	CFP	1.60	1.33	1.14	1.00	0.89	0.80	0.73	0.67	0.62	0.57	0.54	0.5	0.47

Dewpoint Correction Factor CFD		Standard	Option 1
Required Dewpoint	PDP °C	-40	-70
	PDP °F	-40	-100
	CFD	1.00	1.43

Models 012 - 040 only

Weights and Dimensions

Model	Pipe Size Inlet / Outlet	Dimensions						Weight	
		Height (H)		Width (W)		Depth (D)		kg	lbs
		mm	ins	mm	ins	mm	ins		
DME012	3/4"	837	33.0	284	11.2	302	11.9	32	70
DME015	3/4"	1003	39.5	284	11.2	302	11.9	37	81
DME020	3/4"	1168	46.0	284	11.2	302	11.9	42	92
DME025	3/4"	1333	52.5	284	11.2	302	11.9	47	103
DME030	3/4"	1499	59.0	284	11.2	302	11.9	52	114
DME040	3/4"	1747	68.8	284	11.2	302	11.9	60	132
DME050	1"	1433	56.4	220	8.7	566	22.3	80	176
DME060	1"	1599	63.0	220	8.7	566	22.3	90	198
DME080	1"	1847	72.7	220	8.7	566	22.3	104	229



Recommended Filtration

For Dryer Model	Filter Pipe Size BSPT or NPT	Inlet General Purpose Pre-filter	Inlet High Efficiency Filter	Outlet Dust Filter
DME012	3/4"	AO020D □ FX	AA020D □ FX	AR020D □ MX
DME015	3/4"	AO020D □ FX	AA020D □ FX	AR020D □ MX
DME020	3/4"	AO020D □ FX	AA020D □ FX	AR020D □ MX
DME025	3/4"	AO020D □ FX	AA020D □ FX	AR020D □ MX
DME030	3/4"	AO020D □ FX	AA020D □ FX	AR020D □ MX
DME040	3/4"	AO025D □ FX	AA025D □ FX	AR025D □ MX
DME050	1"	AO025E □ FX	AA025E □ FX	AR025E □ MX
DME060	1"	AO030E □ FX	AA030E □ FX	AR030E □ MX
DME080	1"	AO030E □ FX	AA030E □ FX	AR030E □ MX

□ = G (BSPP) or N (NPT)

PNEUDRI MX

Product Selection

	Model	Pipe Size	Flowrates			
			L/s	m ³ /min	m ³ /hr	cfm
Single Bank	MX □ 102C	2"	113	6.81	408	240
	MX □ 103C	2"	170	10.22	612	360
	MX □ 103	2"	213	12.78	765	450
	MX □ 104	2"	283	17.03	1020	600
	MX □ 105	2½"	354	21	1275	750
	MX □ 106	2½"	425	26	1530	900
	MX □ 107	2½"	496	30	1785	1050
	MX □ 108	2½"	567	34	2040	1200
Multi-Bank	2 x MX □ 105	2½"	708	43	2550	1500
	2 x MX □ 106	2½"	850	51	3060	1800
	2 x MX □ 107	2½"	992	60	3570	2100
	2 x MX □ 108	2½"	1133	68	4080	2400
	3 x MX □ 106	2½"	1275	77	4590	2700
	3 x MX □ 107	2½"	1488	89	5355	3150
	3 x MX □ 108	G 2½"	1700	102	6120	3600



Stated flows are for operation at 7 bar g (100 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.

Dryer Performance

Dryer Models	Dewpoint (Standard)		ISO8573-1:2010 Classification (standard)	Dewpoint (Option 1)		ISO8573-1:2010 Classification (Option 1)	Dewpoint (Option 2)		ISO8573-1:2010 Classification (Option 2)
	°C	°F		°C	°F		°C	°F	
MX □	-40	-40	Class 2	-70	-100	Class 1	-20	-4	Class 3
MXP*	-40	-40	Class 2	-70	-100	Class 1	-20	-4	Class 3

Technical Data

Dryer Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temp		Max Operating Temp		Max Ambient Temp		Electrical supply (standard)	Electrical supply (optional)	Thread Connections	Noise Level dB (A)
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				
MXS	4	58	13	190	5	41	50	122	55	131	85 - 265 V 1ph 50/60Hz	N/A	BSPP or NPT	<75
MXA	4	58	13	190	5	41	50	122	55	131	85 - 265 V 1ph 50/60Hz	N/A	BSPP or NPT	<75
MXP*	4	58	13	190	5	41	50	122	55	131	N/A	N/A	BSPP or NPT	<75

Controller Options

Controller Options	Function								
	Power on Indication	Fault Indication	Display Fault Condition Values	Service Interval Indication	Service Countdown Timers	Configurable Alarm Settings	Remote Volt Free Alarm Contacts	Filter Service Timer	DDS Energy Management System
SMART	•	•		•			•		
SMART DDS	•	•		•			•		•
ADVANCED	•	•	•	•	•	•	•	•	•

***ATEX compliant option available.**

For hazardous environments, a fully pneumatic ATEX compliant version of PNEUDRI is available.

ATEX Directive 94/9/EC
Group II, Category 2GD, T6.

Correction Factors

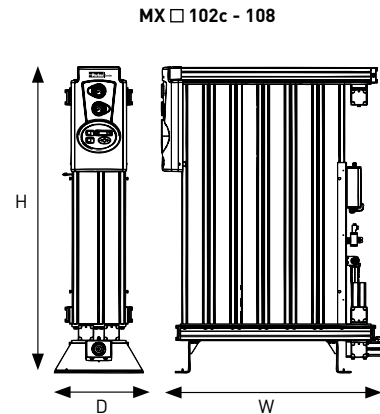
Temperature Correction Factor CFT							
Maximum Inlet Temperature	°C	25	30	35	40	45	50
	°F	77	86	95	104	113	122
	CFT	1.00	1.00	1.00	1.04	1.14	1.37

Pressure Correction Factor CFP											
Minimum Inlet Pressure	bar g	4	5	6	7	8	9	10	11	12	13
	psi g	58	73	87	100	116	131	145	160	174	189
	CFP	1.60	1.33	1.14	1.00	0.89	0.80	0.73	0.67	0.62	0.57

Dewpoint Correction Factor CFD		Option 2	Standard	Option 1
Required Dewpoint	PDP °C	-20	-40	-70
	PDP °F	-4	-40	-100
	CFD	0.91	1.00	1.43

Weights and Dimensions

Model	Pipe Size	Dimensions						Weight	
		Height (H)		Width (W)		Depth (D)		kg	lbs
		mm	ins	mm	ins	mm	ins		
MX □ 102C	2"	1647	64.8	687	27.0	550	21.7	235	518
MX □ 103C	2"	1647	64.8	856	33.7	550	21.7	316	696
MX □ 103	2"	1892	74.5	856	33.7	550	21.7	355	782
MX □ 104	2"	1892	74.5	1025	40.3	550	21.7	450	992
MX □ 105	2½"	1892	74.5	1194	47.0	550	21.7	543	1197
MX □ 106	2½"	1892	74.5	1363	53.6	550	21.7	637	1404
MX □ 107	2½"	1892	74.5	1532	60.3	550	21.7	731	1611
MX □ 108	2½"	1892	74.5	1701	67.0	550	21.7	825	1818

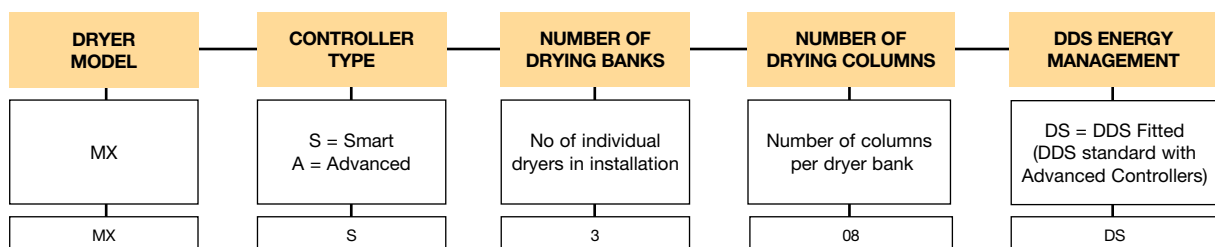


Recommended Filtration

For Dryer Model	Filter Pipe Size BSPT or NPT	Inlet General Purpose Pre-filter	Inlet High Efficiency Filter	Outlet Dust Filter
MX □ 102C	2"	AO040H □ FX	AA040H □ FX	AR040H □ MX
MX □ 103C	2"	AO040H □ FX	AA040H □ FX	AR040H □ MX
MX □ 103	2"	AO045H □ FX	AA045H □ FX	AR045H □ MX
MX □ 104	2"	AO045H □ FX	AA045H □ FX	AR045H □ MX
MX □ 105	2½"	AO050I □ FX	AA050I □ FX	AR050I □ MX
MX □ 106	2½"	AO055I □ FX	AA055I □ FX	AR055I □ MX
MX □ 107	2½"	AO055I □ FX	AA055I □ FX	AR055I □ MX
MX □ 108	2½"	AO055I □ FX	AA055I □ FX	AR055I □ MX

□ = G (BSPP) or N (NPT)

Dryer Coding Example



Example: PNEUDRI model MXS308DS

Improving manufacturing efficiency

Every manufacturing organisation strives to improve its operational efficiency, especially in terms of energy consumption and environmental impact.

Heatless adsorption dryers use clean, dry process air for regeneration, but in real terms, this means that not all of the compressed air generated is available for manufacturing processes.

Generating compressed air uses electrical energy, so although heatless adsorption dryers have many benefits, the energy costs associated with this

type of dryer may be higher when compared to other types of adsorption dryers with different regeneration methods.



DESIGNED FOR AIR QUALITY & ENERGY EFFICIENCY

REDUCED CO₂

INTRODUCING

PNEUDRI MXLE ADVANTAGE

Low Energy Heatless Adsorption Dryers

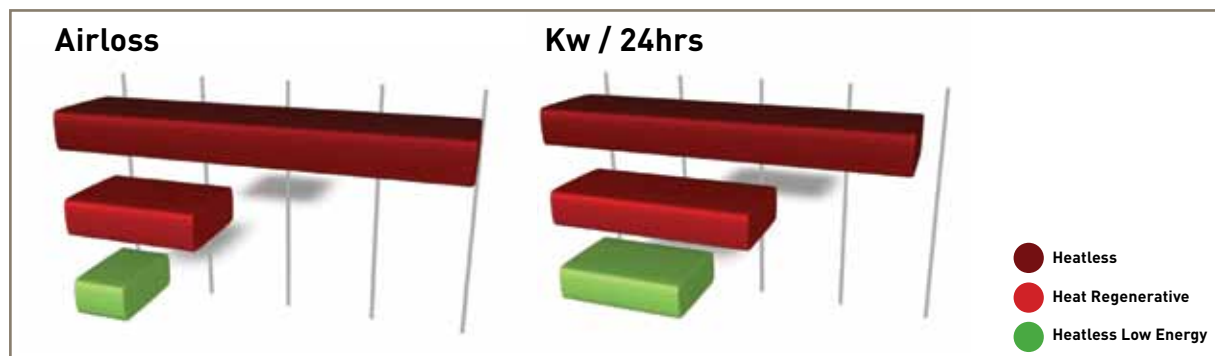
The PNEUDRI MXLE *ADVANTAGE* has been specifically designed to provide all of the benefits of a traditional PNEUDRI MX heatless adsorption dryer with the additional benefits of increased compressed air available for plant use, lower energy costs and lower environmental impact.

Dryer Selection
Dryers should not be selected upon energy costs alone, but on delivered air quality, their suitability for the industry & application in which they are to operate, reliability and total cost of ownership.

PNEUDRI MXLE *ADVANTAGE*

Features & Benefits

- **Complete clean dry air solution with guaranteed air quality**
 - Includes Pre & Post Filtration
 - Delivered air quality in accordance with ISO8573-1
 - 3rd Party validated performance on both dryer and pre / post filtration
 - Dryer tested in accordance with ISO7183
 - Filters tested in accordance with ISO12500-1 / ISO8573-4
- **Modular construction**
 - Smaller, more compact & lightweight than traditional Twin Tower dryers
 - Fully expandable as your system grows
 - Existing MX dryers can be upgraded to extend life of existing capital equipment and lower capital expenditure
- **Low energy heatless technology**
 - 17% more air available for use than a comparative heatless dryer
 - On average, 60% lower energy consumption than a comparative heatless dryer & 39% lower energy consumption than a comparative heat regenerative dryer
 - Energy Management System fitted as standard for additional savings
- **Suitable for all industrial applications**
- **Ideally suited for food, beverage and pharmaceutical industries & applications**
 - Uses clean dry process air for regeneration (no contamination of adsorption bed)
 - Materials of Construction FDA Title 21 Compliant and EC1935-2004 exempt
- **Heatless fall back mode for extra security**
 - Extra security – should a fault occur with the vacuum pump, dryer can be operated in full heatless mode to keep plant operational
- **Lower total cost of ownership**
 - Low running costs
 - Shorter maintenance times & extended preventative maintenance periods
 - Lower maintenance costs compared to other types of low energy dryer
- **Lifetime warranty available**



PNEUDRI MXLE ADVANTAGE

Product Selection

	Model	Pipe Size	Flowrates			
			L/s	m ³ /min	m ³ /hr	cfm
Single Bank	MXLE 102C	G 2	113	6.81	408	240
	MXLE 103C	G 2	170	10.22	612	360
	MXLE 103	G 2	213	12.78	765	450
	MXLE 104	G 2	283	17.03	1020	600
	MXLE 105	G 2½	354	21	1275	750
	MXLE 106	G 2½	425	26	1530	900
	MXLE 107	G 2½	496	30	1785	1050
	MXLE 108	G 2½	567	34	2040	1200



Stated flows are for operation at 7 bar g (100 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.

Dryer performance

Dryer Models	Dewpoint (Standard)		ISO8573-1:2010 Classification (standard)	Dewpoint (Option 1)		ISO8573-1:2010 Classification (Option 1)	Dewpoint (Option 2)		ISO8573-1:2010 Classification (Option 2)
	°C	°F		°C	°F		°C	°F	
MXLE	-40	-40	Class 2	-70	-100	Class 1	-20	-4	Class 3

* ISO8573-1 Classifications when used with included Parker domnick hunter OIL-X EVOLUTION pre / post filtration

Technical data

Dryer Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temp		Max Operating Temp		Max Ambient Temp		Electrical supply (standard)	Electrical supply (optional)	Thread Connections	Noise Level dB (A)
	bar g	psi g	bar g	psi g	°C	°F	°C	°F	°C	°F				
MXLE	5	58	13	190	5	41	50	122	55	131	380V - 420V 3PH 50Hz 440V - 480V 3PH 60Hz	N/A	BSPP	<75

Model		MXLE102c	MXLE103c	MXLE103	MXLE104	MXLE105	MXLE106	MXLE107	MXLE108
Vacuum Pump kW	50Hz	3	3	4	5.5	7.5	8	9.5	11
	60Hz	3.6	3.6	4.8	6.6	9	9.6	11.4	13.2

Correction Factors

Temperature Correction Factor CFT								
Maximum Inlet Temperature	°C		25	30	35	40	45	50
	°F		77	86	95	104	113	122
	CFT		1.00	1.00	1.00	1.04	1.14	1.37

Pressure Correction Factor CFP											
Minimum Inlet Pressure	bar g	4	5	6	7	8	9	10	11	12	13
	psi g	58	73	87	100	116	131	145	160	174	189
	CFP	1.60	1.33	1.14	1.00	0.89	0.80	0.73	0.67	0.62	0.57

Dewpoint Correction Factor CFD		Option 2	Standard	Option 1
Required Dewpoint	PDP °C	-20	-40	-70
	PDP °F	-4	-40	-100
	CFD	0.91	1.00	1.43

Dryer coding example

Dryer model	Controller type	Number of drying banks	Number of drying columns
MX	LE = LOW ENERGY	Number of individual dryers in installation	Number of columns per dryer bank
MX	LE	1	08

Note:

Dryer and vacuum pump ordered separately.

Part numbers

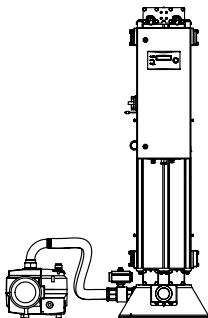
Dryer Part Numbers		Vacuum Pump Part Numbers	Dryer Upgrade Kits Part Numbers
-20°C /-40°C PDP	-70°C PDP		
MXLE102C	MXLE102C-70	MXLEP2C	MXLEK2C
MXLE103C	MXLE103C-70	MXLEP3C	MXLEK3C
MXLE103	MXLE103-70	MXLEP3	MXLEK3
MXLE104	MXLE104-70	MXLEP4	MXLEK4
MXLE105	MXLE105-70	MXLEP5	MXLEK5
MXLE106	MXLE106-70	MXLEP6	MXLEK6
MXLE107	MXLE107-70	MXLEP7	MXLEK7
MXLE108	MXLE108-70	MXLEP8	MXLEK8

Weights and dimensions

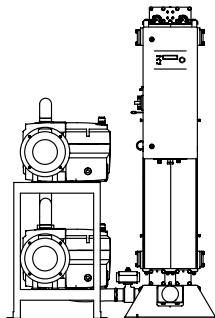
Model	Pipe Size	Dryer Dimensions								Weight	
		Height (H)		Width (W)		Depth (D)					
		mm	ins	mm	ins	mm	ins	kg	lbs		
MXLE102c	2"	1647	65	794	32	550	22	265	583		
MXLE103c	2"	1647	65	963	38	550	22	346	761		
MXLE103	2"	1892	75	963	38	550	22	385	847		
MXLE104	2"	1892	75	1132	45	550	22	480	1056		
MXLE105	2½"	1892	75	1300	52	550	22	573	1261		
MXLE106	2½"	1892	75	1470	58	550	22	667	1467		
MXLE107	2½"	1892	75	1642	65	550	22	761	1674		
MXLE108	2½"	1892	75	1808	71	550	22	855	1881		

Model	Vacuum Pump Dimensions						Weight	
	Height (H)		Width (W)		Depth (D)			
	mm	ins	mm	ins	mm	ins	kg	lbs
MXLE102c	355	14	900	35	531	21	129	284
MXLE103c	355	14	900	35	531	21	129	284
MXLE103	385	15	998	39	531	21	163	359
MXLE104	385	15	1084	43	531	21	178	392
MXLE105	385	15	1084	43	531	21	178	392
MXLE106	1185	47	1100	43	750	30	361	796
MXLE107	1185	47	1100	43	750	30	376	829
MXLE108	1185	47	1100	43	750	30	391	862

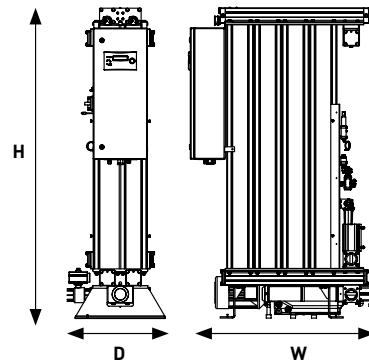
MXLE102c - MXLE105
SINGLE VACUUM PUMP



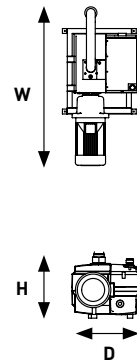
MXLE106 - MXLE108
DUPLIX VACUUM PUMP



DRYER



VACUUM PUMP



Included filtration

For Dryer Model	Filter Pipe Size BSPP	Inlet General Purpose Pre-filter	Inlet High Efficiency Filter	Outlet Dust Filter
MXLE 102C	2"	AO040HGFX	AA040HGFX	AR040HGMX
MXLE 103C	2"	AO040HGFX	AA040HGFX	AR040HGMX
MXLE 103	2"	AO045HGFX	AA045HGFX	AR045HGMX
MXLE 104	2"	AO045HGFX	AA045HGFX	AR045HGMX
MXLE 105	2½"	AO050IGFX	AA050IGFX	AR050IGMX
MXLE 106	2½"	AO055IGFX	AA055IGFX	AR055IGMX
MXLE 107	2½"	AO055IGFX	AA055IGFX	AR055IGMX
MXLE 108	2½"	AO055IGFX	AA055IGFX	AR055IGMX

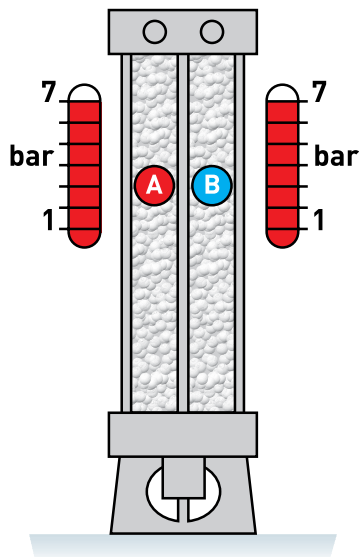
Saving energy with the dewpoint dependent switching (DDS) energy management system

The energy required to regenerate the off-line desiccant bed in an absorption dryer is constant, and based upon the assumption that the dryer is operating at its 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.

Dewpoint Dependent Switching (DDS) Energy Management System

With the DDS Energy Management system installed, the drying cycle remains unchanged, however as the drying chambers are about to change, the DDS system overrides normal operation to fully utilise the drying capacity of the on-line desiccant material.



DDS operation

At column changeover, the exhaust valve is closed to allow the purge air to re-pressurise the off-line column, thus ensuring no loss of system pressure.

At this time, both drying chambers are at full line pressure, so that no purge air is being used and the dryer is in a state of zero energy consumption.

Under normal operation, the drying chambers would proceed to change over automatically, however the DDS energy management system incorporates a hygrometer which is used to monitor the pressure dewpoint of the air leaving the dryer. If the air is drier than the pre-set dewpoint, the desiccant material is only partially saturated and has drying capacity remaining within it, therefore change over is delayed.

The hygrometer constantly monitors the outlet dewpoint until the pre-set level has been achieved, at which point, change over will occur.

The drying and regenerating cycle will then continue normally until the end of the next column changeover when the DDS energy management system may again extend the drying period as dictated by the outlet air quality.

DDS Operation - Energy Saving Cycle (Heatless Dryer example shown)

Time (minutes)	DDS Drying / Regeneration Cycle								
	0	2.5	3	changeover time dictated by outlet dewpoint	0	2.5	3	changeover time dictated by outlet dewpoint	
Side A	Regeneration	Re-pressurisation	Energy Saving	changeover	Drying				changeover
Side B	Drying				Regeneration	Re-pressurisation	Energy Saving		

DDS Energy Saving (Heatless Dryer example shown)

Air Demand %	Energy Saving %	Energy Saving P/A Kw	Environmental Saving P/A Kg CO ₂
100	33.00	95,040	50,371
90	40.00	115,200	61,056
80	47.00	135,360	71,741
70	53.00	152,640	80,899
60	60.00	172,800	91,584
50	66.00	190,080	100,742

System pressure 6 bar g. Max Temp 35°C. System flow 1700 m³/hr (1000 cfm). Average pressure 6.5 bar g. Average Temp 30°C.

Compressed air for hazardous environments



Oil & Gas Drilling and Production Installations can be some of the most inhospitable working areas known to man. Apart from potentially explosive and corrosive areas, ambient temperatures can vary from -20°C to 50°C with wind speeds of up to 80mph and the constant battering from high waves, an oil rig is a demanding place for man or machine.

The highest equipment specifications are therefore required for Oil & Gas Drilling and Production Installations that dictate a quality of design and manufacture seldom required for

conventional installations. Products must be rugged, reliable, high strength, compact and be able to withstand salt-water corrosion while still being able to function as specified.

Maintaining safe operations in a hazardous working environment means a reliance on motive and instrument quality compressed air. In a dirty, humid and corrosive atmosphere this must be consistently clean and dry in order that system quality and safety is not compromised.



Quality Compressed Air = Reliability + Safety = Peace of Mind

In addition to providing air treatment products for standard industrial applications, Parker domnick hunter also specialises in the design and manufacture of compressed air filters and dryers for hazardous industries such as chemical/petrochemical and offshore oil & gas.

Parker domnick hunter can supply fully pneumatic ATEX versions of their compressed air filters and dryers which are fully compliant with Directive 94/9/EC Group II, Category 2GD, T6 and which may be configured to suit individual customer requirements.

Additional customer requirements include:

- **Stainless steel piping**
- **Stainless steel bolts**
- **Stainless steel shroud**
- **Marine paint finish**



Aftermarket

ELEMENTS

Parker filters are designed to produce clean compressed air, gas and liquid to the highest industry standards. To maintain impeccable results, Elements within the filter must be replaced annually.

Choosing the Parker brand means you can be assured that Elements are readily available, affordable and the most energy efficient product of its kind on the market. The elements are also supplied in 100% recyclable packaging. An additional advantage of purchasing Parker Elements is that you will reduce your company's carbon footprint by 190kg. This is the equivalent of a 700 mile flight from Edinburgh to Berlin!

Parker Filter Elements also prove to be highly efficient when used in any leading competitor's filters.

SPECIALISED SERVICES

Parker Specialist Service Engineers test on-site efficiency measuring many variables including airflow, pressure, temperature, dewpoint and power consumption.

Our team of highly trained experts are the best in the industry. They take into account a range of environmental factors that could affect your system's performance. The results from this Specialist Service are extremely accurate and produce invaluable information.

Importantly, Parker informed recommendations lead to significant savings for our customers, which mean they return time and time again for our advice and products.

SUPPORT SERVICES

Parker Support Services are the first port of call for customers in need of help or guidance.

The fact that this team is responsible for the production of User Guides and Manuals gives you an insight into the level and detail of their parts and product knowledge.

Over-the-phone support is just one way in which Parker's extremely knowledgeable team, quickly reduces downtime or resolves product queries.

On some occasions engineers need to be on site to carry out a repair. In these cases, the local engineer will be quickly dispatched to ensure our customers can return to production as soon as possible.

One-to-one training can also be provided by our Support Services team. This has enabled hundreds of Parker distributors to gain an in-depth understanding. Training will also ensure distributors can make timely repairs and easily maintain their customers' products.

PARTS

Parker Kits make everyday maintenance easy. They are available for all of our products and are simply value-for-money. The Parts within the kits support our customers' varied maintenance, repair and overhaul activities.

Additionally, Preventative Maintenance Kits can be purchased for dryers and gas generators. These kits mean our customers dryer's and generator's can be serviced easily to ensure optimum performance.

An extensive range of durable Parker Parts can be obtained within 24 hours to any European, Middle East or African destination.

M.R.O.

Maintenance Repair & Overhaul - Parker Technicians are the industry's finest. Their skills and qualifications are annually approved to keep their product and legislation knowledge fresh and expertise relevant.

With this in mind, Parker offers onsite and on demand servicing to meet customers' unique requirements in a timely and efficient manner.

Parker MRO service ranges from a basic maintenance check covered under product warranty right through to a comprehensive programme, which even puts the onsite application under the microscope.

With customers at the heart of everything Parker does, the MRO service is no exception to this.





Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



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 & dryers
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
Silicone tubing & extrusions
Thermal management
Vibration dampening

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