

# Pro Dry

Heatless Desiccant Compressed Air Dryers

## Pro Dry

### The Company

Walker Filtration are one of the leading manufacturers of high efficiency compressed air filtration and drying equipment.

The Company has built a worldwide reputation for superior technical products which can accommodate specific customer requirements. Our portfolio encompasses both industrial and medical markets and the complete range illustrates the diverse nature and expert capabilities of Walker Filtration.

Using in-house R & D facilities and innovative technologies, Walker Filtration design to satisfy the increasing demands of today's sophisticated market. By manufacturing and testing to the highest specification, we can provide superior value, high quality and tailored solutions.



### The need for clean and dry compressed air

Compressed air is an important source of energy. The need for an air supply to be clean and contaminant free is crucial. So too, is the need for dry air, without traces of water or oil vapour. Any form of moisture in a compressed air line has the potential to cause costly downtime, machine damage and product spoilage.

### Energy efficiency

Compressed air accounts for approximately 10% of the energy used in industry today. A compressed air system is one of the most important determinants of overall system efficiency and represents one of the largest opportunities for energy savings on any site. There can also be significant cost benefits of an efficiently designed and maintained compressed air system.

Pro Dry offers a multitude of additional energy saving features, which allows the dryer to be linked with a compressor control system and reduces air consumption during periods of low demand.





### The solution

Inspired by its sophisticated predecessor, Walker Filtration can now boast an additional ten models to enhance the current Pro Dry range.

With flow rates from 4 scfm (7 Nm<sup>3</sup>/h - 1.94 l/s) to 365 scfm (620 Nm<sup>3</sup>/h - 172 l/s), the entire range can operate at -40°C (-40°F) pressure dewpoint as standard, with an option of -70°C (-100°F) for more critical applications. The range has been designed and engineered to meet the air purity class in accordance with ISO 8753:1-2001 (E).

The units have an intelligent diagnostic system installed as standard on each model which is bespoke to Walker Filtration. Ease of service has been foremost in the design. Each unit can be serviced without disturbing the surrounding pipework. Desiccant cartridges can also be changed out effectively without causing excessive down time.

The compact size of the Pro Dry ensures that installation is simple and versatile. The units can be installed in small spaces in either a vertical or horizontal position.

To complement its vast range of operational features, Pro Dry (models PD004 - PD035) can also be floor or wall mounted. Models PD004 to PD035 have multiple porting options, with a total of six inlet / outlet connections and many pipework possibilities.

### The application

Recognising that processes operating a compressed air dryer often have differing requirements, Walker Filtration have tailored the features of Pro Dry so that the dryers can be utilised to suit various industrial applications.



**Typical applications include automotive, power stations, paint spraying, instrumentation, packaging, pharmaceutical, general industrial use and many more.**



## Dryer Features

Suitable for worldwide installation

Approved to International Standards including PED & European directives

Multi voltage capabilities

Extruded aluminium towers fully painted for corrosion protection

Removable front panel allows for easy access for servicing

Standard controller incorporates an optional energy management system which operates in conjunction with dedicated compressors

Intelligent electronic processor

Simple purge plug changeout, no need to dismantle units

Easy and efficient servicing

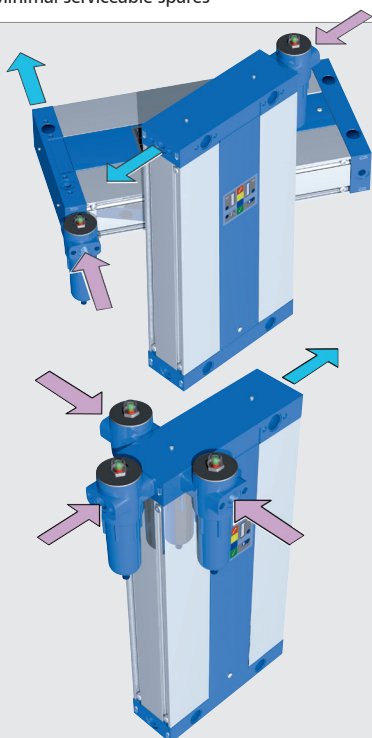
Spring loaded desiccant cartridges to avoid desiccant attrition

Clear cartridges designed to enable visible inspection of desiccant condition

Internal silencer to reduce noise levels and ensure a smooth chamber depressurisation

Suitable for wall mounting (models PD004-PD035) and horizontal integration (all models)

Minimal serviceable spares



## Features

Each Pro Dry unit has been designed to suit a multitude of requirements and is suitable for installation in many countries. The Pro Dry range adheres to our innovative principles and provides the most essential features needed for the most effective solutions.



Example of model PD004 - PD035





## Benefits

### ✓ Economical to use

Walker Filtration's high performance dryers provide a host of financial benefits such as an integral electronic drain and service interval indication, all of which are included in the standard dryer package.

### ✓ Clean & dry air

With XA grade 0.01 micron oil removal filtration (supplied as standard on models PD004 - PD035), an integral 1 micron dust filter and a choice of -40°C (-40°F) or -70°C (-100°F) pressure dewpoints, Pro Dry meets and exceeds the highest standards of purity as specified in ISO 8573:1-2001.

### ✓ Worldwide installation

The units can recognise any voltage between 100-240 VAC and also any voltage between 12 to 24 VDC, meaning the Pro Dry can be operated anywhere in the world. All dryers are built to be fully compliant with all approvals.

### ✓ Intelligent processor

A feature of each unit is an intelligent in-built central processing unit (CPU). The optional software interface package provides a sophisticated system which allows for remote interrogation of the dryer. The CPU is serialised and is housed in an IP65 rated enclosure.

### ✓ Energy management

Pro Dry offers a multitude of additional energy saving features, which allows the dryer to be linked with a compressor control system and reduces air consumption during periods of low demand.

### ✓ Condensate management

Condensate management is essential to maximise dryer efficiency. Pro Dry is supplied with an integral electronic drain valve which is operated and controlled by the CPU. This drain valve opens at the end of every cycle when an indicator illuminates and the CPU checks for any sign of malfunction in the dryer. Operation of the unit is viewed by the diagnostic control panel located on the front of each unit.

### ✓ Desiccant Cartridges

An improved desiccant cartridge design with integral handle facilitates a simple and clean change out procedure.

## Dryer accessories



**12,000 hour service kit includes:** desiccant cartridges, spare pre-filter element, pack of sealing 'O' rings and washers, instruction leaflet.



**Valve service kit:** Shuttle seats, shuttles, pressure plugs, diaphragms, diaphragm brass discs, conical compression springs, exhaust solenoid valves, controller reset cap and a full set of replacement 'O' rings.



**Optional energy management, monitoring and diagnostics**



## Operation

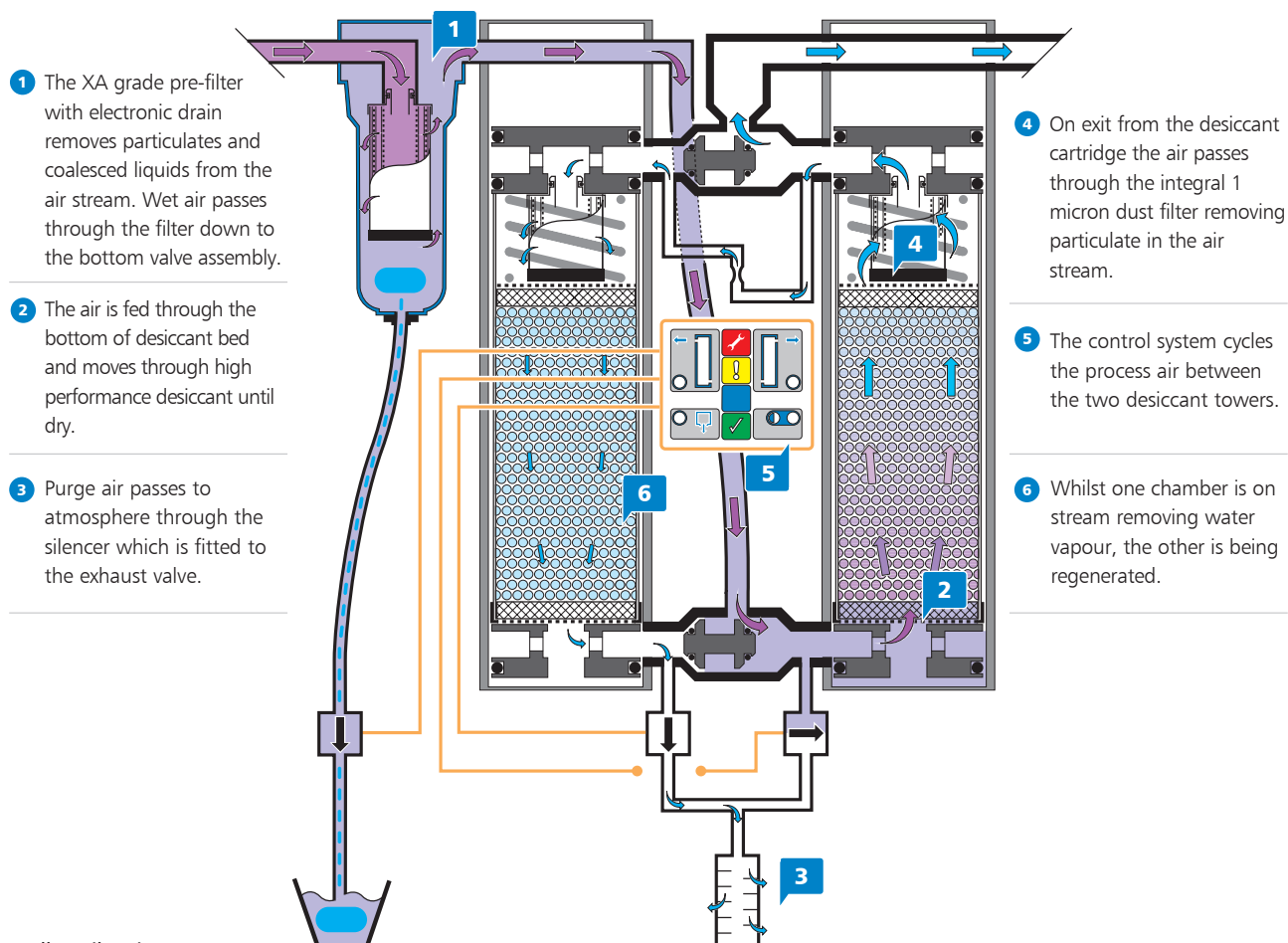
Pro Dry is designed to provide a smooth, controlled, uninterrupted delivery of dry compressed air.

Wet air passes through a pre-filter and travels down to the bottom valve assembly. The air is then fed through the bottom of the desiccant bed and moves through the high performance desiccant until it becomes dry. On exit from the desiccant cartridge, the air is passed through the outlet valve assembly.

During this process, the dryer control system cycles the process air between the two desiccant towers. While one chamber is on stream removing water vapour, the other is being carefully depressurised in preparation for regeneration. The desiccant bed is regenerated by expanding a small amount of dry process air, or purge air, through the saturated desiccant.

Purge air passes to atmosphere through the silencer, which is fitted to an exhaust valve. The chamber is then repressurised, with the control system assuring each chamber is at full operational pressure prior to changeover.

This ensures a reliable and efficient operation. The air stream is switched and the cycle repeats on a continuous basis.



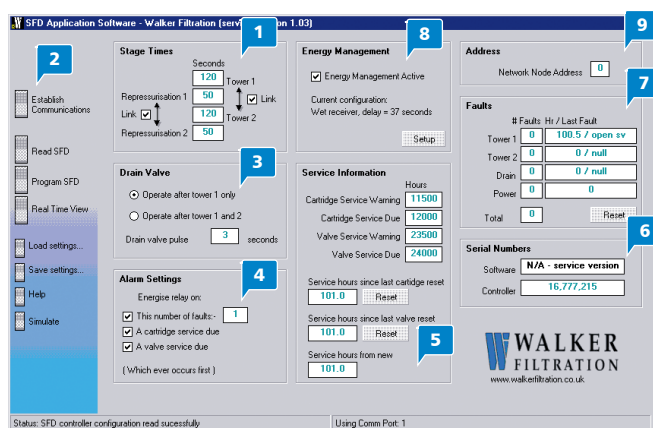


# Intelligent Processor

## Optional software interface and diagnostics control

Incorporating the new intelligent processor allows the Pro Dry to be interfaced with a PC. The software interface package provides a sophisticated system allowing users to remotely interrogate the dryer as well as activate the built in energy management and remote alarm facility.

The package also provides a number of additional diagnostic tools, which the user can utilise and evaluate, and if required, modify the flexible operation parameters to ensure the dryer performs to the required conditions.

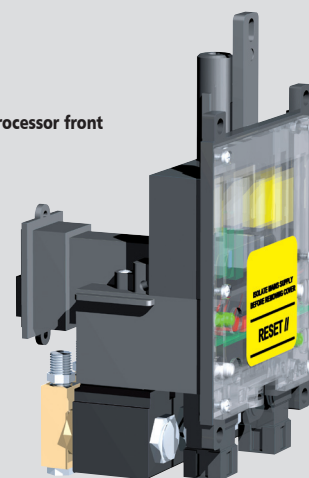


- 1 Stage Times** Time settings for the repressurisation of the desiccant towers.
- 2 Real Time View** Provides an up to the minute status of dryer conditions.
- 3 Drain Valve** The settings for the drain valve function are factory set. Through the use of the software there is the ability to change the settings as required.
- 4 Alarm Settings** The user is able to adjust the remote alarm activation from the default values.
- 5 Service Information** Indicates the default settings, service history, total hours run, and hours since last service.
- 6 Serial Number** Each electronic processor and software package is allocated a unique serial number.
- 7 Faults** If a fault occurs in the dryer, both the timings and the errors are logged on the software screen. Full operating history of the Pro Dry is maintained.
- 8 Energy Management** To save on the consumption of compressed air, the energy management facility can be activated from this window.
- 9 Address** Indicates the network address of the dryer, should several dryers be operated from a single software screen.

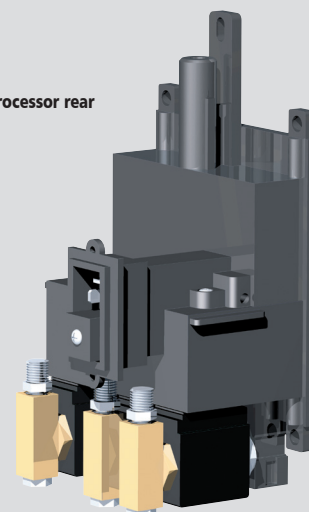
## PROCESSOR SPECIFICATION

<b>DIN Plug:</b>	GDS Type C Industry Standard
<b>Alarm ready relay rating:</b>	3 amp
<b>Alarm connector:</b>	GDS Type C Industry Standard
<b>Energy management signal:</b>	5VDC
<b>Energy management connector:</b>	GDS Type C Industry Standard
<b>Software interface connector:</b>	RJ45
<b>Processor/PC interface:</b>	RS232
<b>Network processor/PC interface:</b>	RS485
<b>Maximum number of nodes:</b>	31
<b>Environmental rating:</b>	IP65

Processor front



Processor rear



## Medical & Breathing Air Packages

### Hospital and medical air

Hospitals around the world demand a clean, reliable, source of medical air which will deliver consistent pressure levels and flow rates. The medical air must be free from toxic contaminants, flammable or objectionable vapours, liquids and particulate debris. The air quality must conform to recognised international standards.

Both the medical dryer and the attached filtration have been designed and manufactured in accordance with the UK & International guidelines. Available in either simplex or duplex versions, the units currently utilise unique modular filters and desiccant drying processes to perform at its maximum capability.

Walker Filtration can offer purposely designed medical packages for international markets. Our design engineers are able to offer support and technical consultation by combining our expert knowledge of filtration and drying products with our experience in liaising with OEM customers.

Hospital and medical air packages are bespoke. We work together with companies to provide the performance required to meet the varying performance standards required. For more information please contact the Walker Filtration sales team.

### Breathing air packages

The PDBA breathing air system uses a standard Pro Dry desiccant compressed air dryer, which is upgraded with *Pure Flow* replaceable cartridges.

These desiccant cartridges maintain normal ambient oxygen / nitrogen levels and remove water vapour. In addition, these units include a complete three stage filtration system consisting of a 1 micron pre-filter, 0.01 micron oil mist coalescer and an outlet filtration for removing odours, tastes and most crucially carbon monoxide.

At the heart of the unit is a fully functional electronic controller complete with an LED control panel, built in self monitoring diagnostics, software interface and energy management.

The PDBA range has been designed and manufactured to exceed current legislation guidelines including ISO 8573:1, BS EN 529: 2005 and EN 12021 and therefore is suitable for worldwide installation.

### Typical breathing air applications

Typical industrial applications where the supply of compressed air is essential include mining, internal tank cleaning, asbestos removal, toxic spillages, nuclear environments and paint spraying. In these and similar applications, the operators will be working for long periods of time in arduous conditions.

A full range of breathing air equipment is available.







## OEM Design & Capability

Exceptional design capabilities allow Walker Filtration to meet the highest demands of the OEM customer.

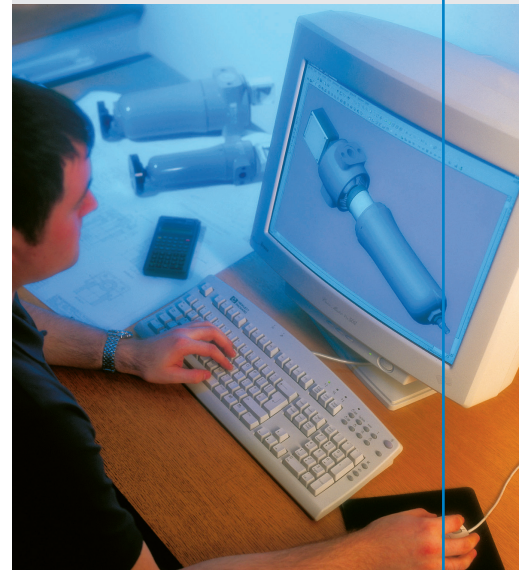
Walker Filtration have designed and developed many successful OEM products together with a broad range of prestigious industry leaders all over the world. With the expertise of our dedicated design team, we have exceptional capabilities at our disposal, so whatever the challenge and specification, Walker Filtration has the solution.

Our existing range of products provides a basis for modification or further development. We have an enviable reputation for our technical knowledge and ability to deliver solutions quickly. We understand the quick turnaround expected from development to prototype to launch. All aspects of the product are considered including brand management, bespoke packaging, language support, unique part numbers and transport details.

### The evolution of an OEM product.

Every OEM solution developed by Walker Filtration has unique aspects, yet most follow a common procedure:

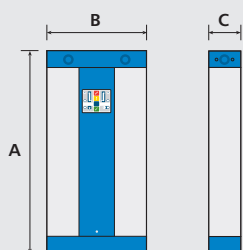
- a company involved in compressed air technology requires a filtration or drying solution to give them an advantage over their competitors.
- an enquiry is made to Walker Filtration, we evaluate the requirement and ascertain whether we can help.
- a commitment is made to designing or adapting an existing product to realise an innovative and marketable solution for the customer.
- a Walker Filtration design engineer is assigned to the product to liaise with the customer and ensure the trouble free development of the product.
- after a period of consultation and development a solution is proposed and agreed.
- prototypes are manufactured, tested and the customer offers feedback on the results.
- following any necessary design amends, material supply issues, or manufacturing process alterations the product is approved and full production begins.



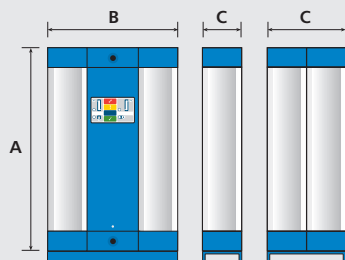


# Technical Specification

dryer model	pipe size"	inlet flow rate			dryer configuration	required filtration	supplied as standard	dimension mm			weight		dimension inch		
		Nm³/h	scfm	l/sec				A	B	C	Kg	lb	A	B	C
PD004	3/8"	7	4	1.9	Simplex	A30	✓	445	281	92	13	29	17.5	11	3.6
PD006	3/8"	10	6	2.8	Simplex	A30	✓	504	281	92	14	31	20	11	3.6
PD008	3/8"	14	8	3.8	Simplex	A30	✓	565	281	92	15	33	22	11	3.6
PD010	3/8"	17	10	4.7	Simplex	A30	✓	635	281	92	16.5	36	25	11	3.6
PD015	3/8"	25	15	7.1	Simplex	A30	✓	815	281	92	19.5	43	32	11	3.6
PD025	3/8"	42	25	11.8	Simplex	A30	✓	1065	281	92	24	53	42	11	3.6
PD035	3/8"	59	35	16.5	Simplex	A30	✓	1460	281	92	31	68	57.5	11	3.6
PD045	3/4"	76	45	21.2	Simplex	A55	×	652	520	164	53	117	28.0	20.5	7
PD055	3/4"	93	55	26.0	Simplex	A55	×	752	520	164	59	130	31.8	20.5	7
PD065	3/4"	110	65	30.7	Simplex	A55	×	852	520	164	64	141	36.0	20.5	7
PD085	1"	144	85	40.0	Simplex	A76	×	1052	520	164	75	165	43.5	20.5	7
PD105	1"	178	105	49.6	Simplex	A76	×	1362	520	164	91	200	55.8	20.5	7
PD135	1 1/4"	229	135	63.7	Simplex	A105	×	1562	520	164	102	224	63.5	20.5	7
PD175	1 1/4"	297	175	82.6	Simplex	A106	×	1962	520	164	123	271	79.5	20.5	7
PD215	1 1/2"	365	215	101.5	Duplex	A153	×	1362	520	328	172	378	55.8	20.5	13.5
PD275	1 1/2"	467	275	129.8	Duplex	A153	×	1562	520	328	192	422	63.5	20.5	13.5
PD365	1 1/2"	620	365	172.3	Duplex	A153	×	1962	520	328	232	510	79.5	20.5	13.5



PD004 - PD035



PD045 - PD365

- For NPT connections add suffix N e.g. PD008N
- Walker Filtration recommends pre-filtration of X1 and XA grade for models over PD045 to PD365.
- For models PD045 to PD365 the dryer will include a drain adaptor kit to allow assembly of the filter to the dryer. This comprises of 1/4" x 4mm swivel adaptor and tubing.

### Specification

Standard pressure dewpoint	-40°C (-40°F)
Optional pressure dewpoint	-70°C (-100°F)
Minimum working pressure	4 barg (58 psig)
Maximum working pressure	16 barg (232 psig)
Power supply	12VDC to 24VDC or 100VAC to 240VAC
Minimum inlet temperature	1.5°C (35°F)
Maximum inlet temperature	50°C (122°F)
Minimum ambient temperature	5°C (41°F)

### Dryer correction factors

Operating pressure barg (psig)	4 (58)	5 (72)	6 (87)	7 (100)	8 (116)	9 (130)	10 (145)	11 (160)	12 (174)	13 (189)	14 (203)	15 (218)	16 (232)
Pressure correction factor (PCF)*	0.62	0.75	0.87	1	1.12	1.25	1.37	1.5	1.62	1.75	1.87	2.0	2.12
Temperature °C (°F)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)						
Temp. correction factor (TCF)	1.07	1.06	1.04	1.00	0.88	0.78	0.55						
Dewpoint °C (°F)	-40 (-40)	-70 (-100)	*Always use the pressure correction factor (PCF) closest to the actual inlet pressure condition										
Dewpoint correction factor (DCF)	1	0.7											

\*Always use the pressure correction factor (PCF) closest to the actual inlet pressure condition



# Selection

## Selection and ordering information

To select the Pro Dry suitable for your application, the following information is required: -

Minimum inlet pressure	Maximum inlet flow
Maximum inlet temperature	Required dewpoint

With the above information, follow the selection example below: -

Compressor outlet pressure @ 7 barg (100 psig) and dryer inlet flow rate @ 41 scfm (70 Nm <sup>3</sup> /h - 19 l/s)	
Dryer inlet pressure, after pipework, valves, receiver and filtration @ 6.3 barg (91 psig)	
Dryer inlet temperature	25°C (77°F)
Outlet dewpoint	-70°C (-100°F)
Pressure correction factor (PCF)	0.9
Temperature correction factor (TCF)	1.06
Dew point correction factor (DCF)	0.7
<b>Corrected dryer flow rate</b>	<b>Compressor flow rate = 41</b>
	<b>PCF x TCF x DCF = 0.9 x 1.06 x 0.7 = 61 scfm (104 Nm<sup>3</sup>/h - 29 l/s)</b>

As the above dryer sizing table, the correct dryer for this application, with a corrected flow rate of 61 scfm (104 Nm<sup>3</sup>/h - 29 l/s) is a PD065.



Pro Dry service kit 12,000 hours (or 2 years)			Pro Dry VALVE service kit	
Dryer	Description	Kit Number	Dryer	Kit Number
PD004	Pro Dry desiccant cartridge x 2	PDC004 - 12,000	PD004	VSKS01
PD006	Pro Dry desiccant cartridge x 2	PDC006 - 12,000	PD006	VSKS01
PD008	Pro Dry desiccant cartridge x 2	PDC008 - 12,000	PD008	VSKS01
PD010	Pro Dry desiccant cartridge x 2	PDC010 - 12,000	PD010	VSKS01
PD015	Pro Dry desiccant cartridge x 2	PDC015 - 12,000	PD015	VSKS01
PD025	Pro Dry desiccant cartridge x 2	PDC025 - 12,000	PD025	VSKS01
PD035	Pro Dry desiccant cartridge x 2	PDC035 - 12,000	PD035	VSKS01
PD045	Pro Dry desiccant cartridge x 2	PDC045 - 12,000	PD045	PDVSKS01
PD055	Pro Dry desiccant cartridge x 2	PDC055 - 12,000	PD055	PDVSKS01
PD065	Pro Dry desiccant cartridge x 2	PDC065 - 12,000	PD065	PDVSKS01
PD085	Pro Dry desiccant cartridge x 2	PDC085 - 12,000	PD085	PDVSKS01
PD105	Pro Dry desiccant cartridge x 4	PDC105 - 12,000	PD105	PDVSKS01
PD135	Pro Dry desiccant cartridge x 4	PDC135 - 12,000	PD135	PDVSKS01
PD175	Pro Dry desiccant cartridge x 4	PDC175 - 12,000	PD175	PDVSKS01
PD215	Pro Dry desiccant cartridge x 8	PDC215 - 12,000	PD215	PDVSKD01
PD275	Pro Dry desiccant cartridge x 8	PDC275 - 12,000	PD275	PDVSKD01
PD365	Pro Dry desiccant cartridge x 8	PDC365 - 12,000	PD365	PDVSKD01
<b>12,000 hour service kit includes</b> Desiccant cartridges, spare pre-filter element, pack of sealing 'O' rings and washers, instruction leaflet			<b>Valve service kit includes</b> exhaust valve diaphragm, exhaust valve solenoids, shuttle valve and 'O' rings, extrusion / valve block 'O' rings	

## Technical notes - Pro Dry

- All flow rates are based on 7.0 barg (100 psig), at the dryer inlet and not at the compressor. It is important to apply correction factors to ensure the specified dryer performance.
- Walker Filtration recommends that an RX1 dust filter should be used in addition to the integral 1 micron dust filter located within the desiccant cartridge.
- Walker Filtration highly recommend that a WS Centrifugal Water Separator be used in conjunction with the standard Pro Dry package.
- Walker Filtration supply a full range of additional filters and accessories to suit other applications.
- Models PD045 - PD365 have mounting holes provided on skid base.

## Dryer accessories and options

Dryer	Description	Part Number
PD004-PD035	Foot mounting bracket	WKN01805
	Wall mounting bracket	WKN01804
All models	Energy Management, monitoring & diagnostics	PDFS01



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