

Compact Regenerative Air Dryers

DE0 - DE5 Series

Catalog 9CW-AW-220



WILKERSON®

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The requirement for clean, dry compressed air for today’s manufacturing and processing methods is more critical than ever. Moisture and particulate matter are found in all compressed air systems. These contaminants cause rust and corrosion damaging and increasing downtime of pneumatic tools, controls, and instrumentation. When applications require better dew points than can be achieved with refrigerated air dryers (35°F to 39°F) a heatless regenerative desiccant dryer should be utilized. -40°F to -100°F (-40°C to -73°C).

At one time, compressed air dryers were luxuries. Today, as maintenance costs continue to rise, and the need for increased productivity grows, they’re a necessity in nearly every process where compressed air is used.

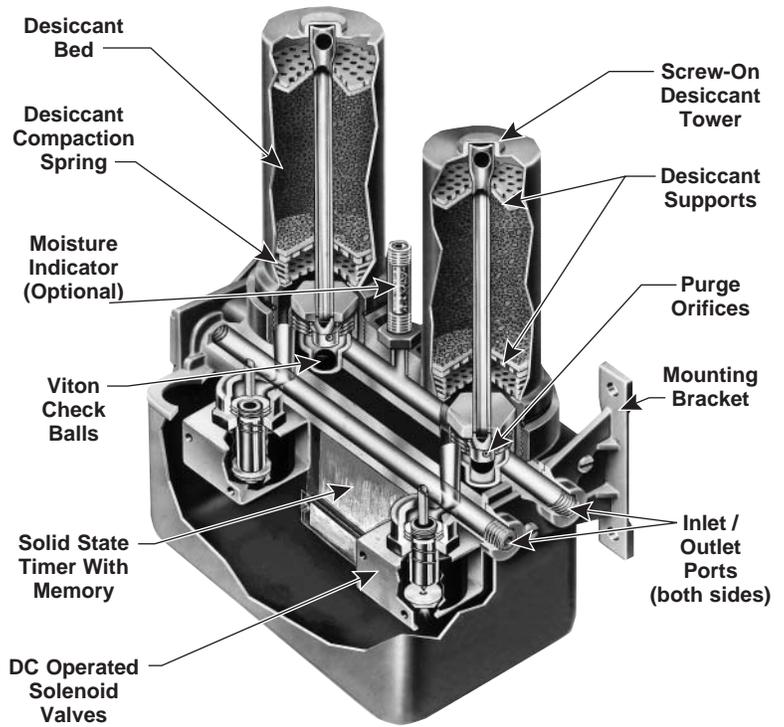
The Wilkerson air dryer, together with its associated filters, is a key part of a well-engineered compressed air system. Wilkerson, an industry leader in the design and manufacture of innovative compressed air products, has developed the DE Series -40°F to -100°F (-40°C to -73°C) pressure dew point Heatless Regenerative Desiccant Dryer to meet the ever-increasing demand for efficient and economical ultra dry compressed air.

Our Compact Regenerative Pressure Swing Heatless Air Dryers, together with a broad range of high-efficiency filters, can provide total air treatment with outstanding reliability and performance for your compressed air applications.

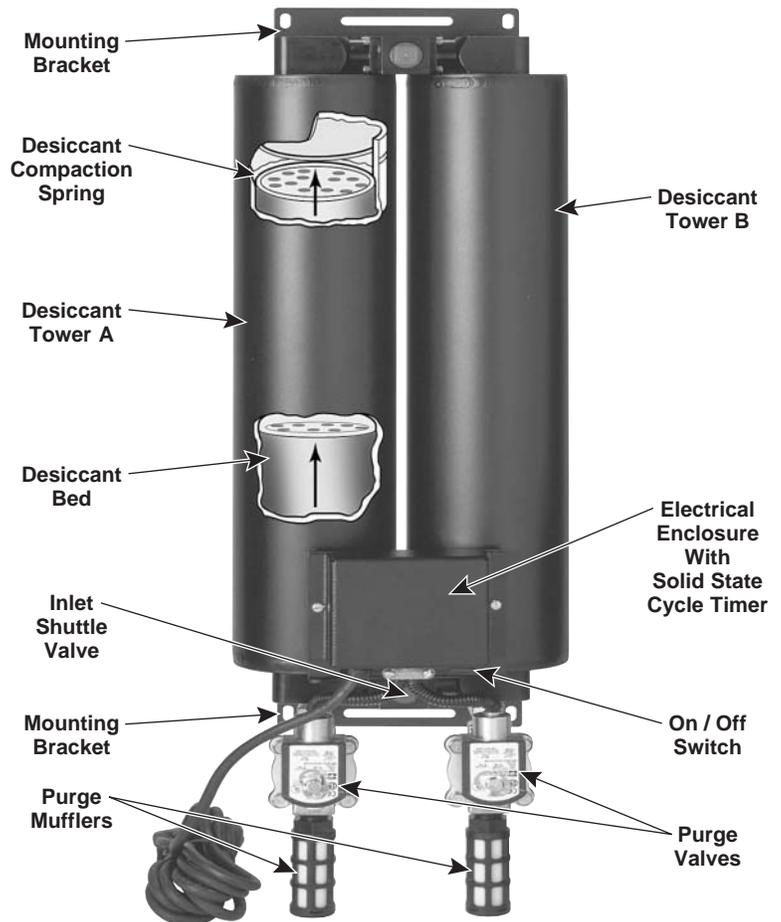
Compact Regenerative Pressure Swing Heatless Air Dryers

Features and Benefits

- Compact, modular design with few moving parts for long term reliability.
- Automatic regenerative operation and no regular maintenance required.
- Available in multiple voltages. Low power consumption.
- Solid state cycle timer with memory and quiet DC solenoid valves.
- Desiccant chambers are spring-loaded for long life and optimum performance.
- Purge mufflers are standard for quiet operation.
- Space-saving wall-mount bracket is standard.
- Repressurizing timer for minimal downstream flow and pressure fluctuation during tower switch over (DE3 – 5).
- Easy orifice change when different purge flows are required.
- Automatic solid state cycle timer with memory for reliable purge cycle timing.
- On/Off switch is standard (DE3, DE4, & DE5).
- Designed to accommodate optional system components and dryer accessories without modifications.



DE0, DE1, and DE2



DE3, DE4, and DE5

Dryer Operation

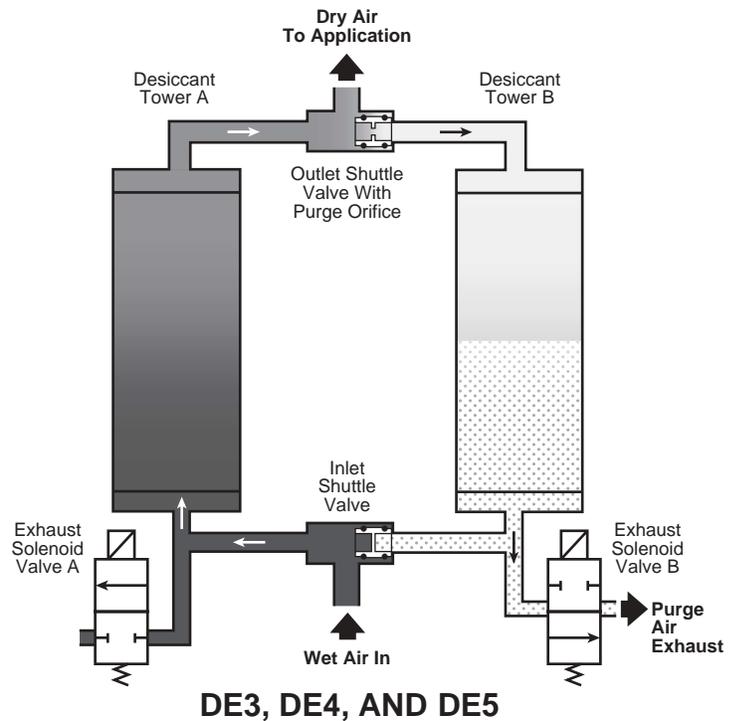
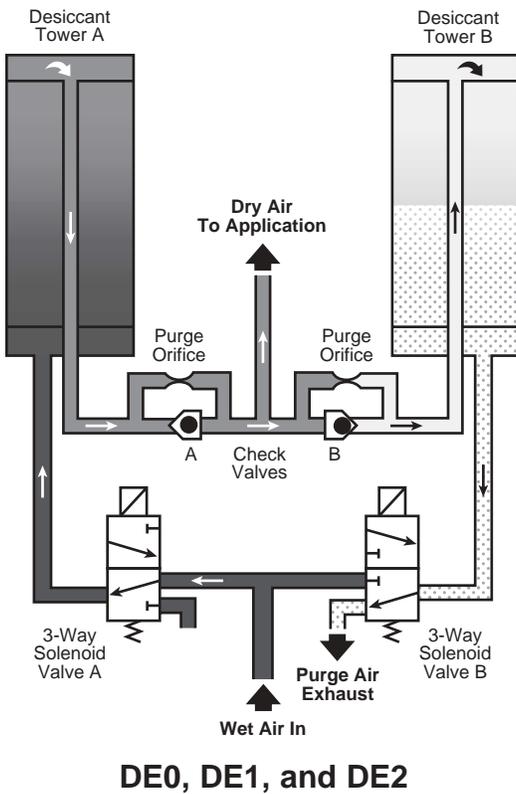
The heatless air dryers utilize two symmetrical desiccant towers. The wet air enters the dryer and flows through one of the towers where nearly all the water vapor is adsorbed. In the flow schematics shown below, the right tower is being regenerated while the left tower is drying the wet inlet air. Inlet air flow direction is controlled by the solenoid valves. As shown below, valve A is open and valve B is closed in the DE0, DE1, and DE2 dryers, directing the inlet air to the left tower. Valve B is open and valve A is closed in the DE3, DE4 and DE5 dryers, which allows the inlet shuttle valve to direct the air to the left tower.

A portion of the dry air is allowed to flow through an orifice into the right tower. The dry air flowing through the orifice expands to nearly atmospheric pressure, which dries the purge air still more. This very dry air extracts the water from the desiccant as it flows through the right tower and out the solenoid valve exhaust port.

The orifices are fixed and are sized by the factory, based on flow and pressure.

A solid state timer controls the cycling of the solenoid valves. After a set period of time, the procedure is reversed. The wet left tower is being regenerated, while the right tower is drying the wet inlet air. During each cycle, the desiccant towers are either drying the wet inlet air or being reactivated with dry air from the drying tower.

The total cycle time for the DE0, DE1, and DE2 dryers is one minute. The tower being regenerated has 30 seconds of purge flow before the valves switch towers. The DE3, DE4, and DE5 dryers have a total cycle time of two minutes. The tower being regenerated has a purge flow of 40 seconds and then a 20-second repressurization.



How to Select a Wilkerson DE Series Heatless Air Dryer

Proper selection of a Wilkerson heatless air dryer depends on knowing the inlet pressure, outlet flow and inlet temperature. *Note: Maximum inlet temperature is 100°F. All models have a 40–150 PSIG operating pressure rating.*

Example:

Application: Calls for 20 SCFM outlet capacity at -40°F pressure dew point, and 100 PSIG operation pressure at 70°F inlet temperature.

Selecting Model for Application: On the model selection listing below, locate the 100 PSIG inlet pressure and find 25.0 SCFM inlet flow, subtract 4.9 purge flow, shown under purge flow column. For the 20 SCFM application, the model DE4 meets the requirements. Part number would be DE4-AE-000-7G20.

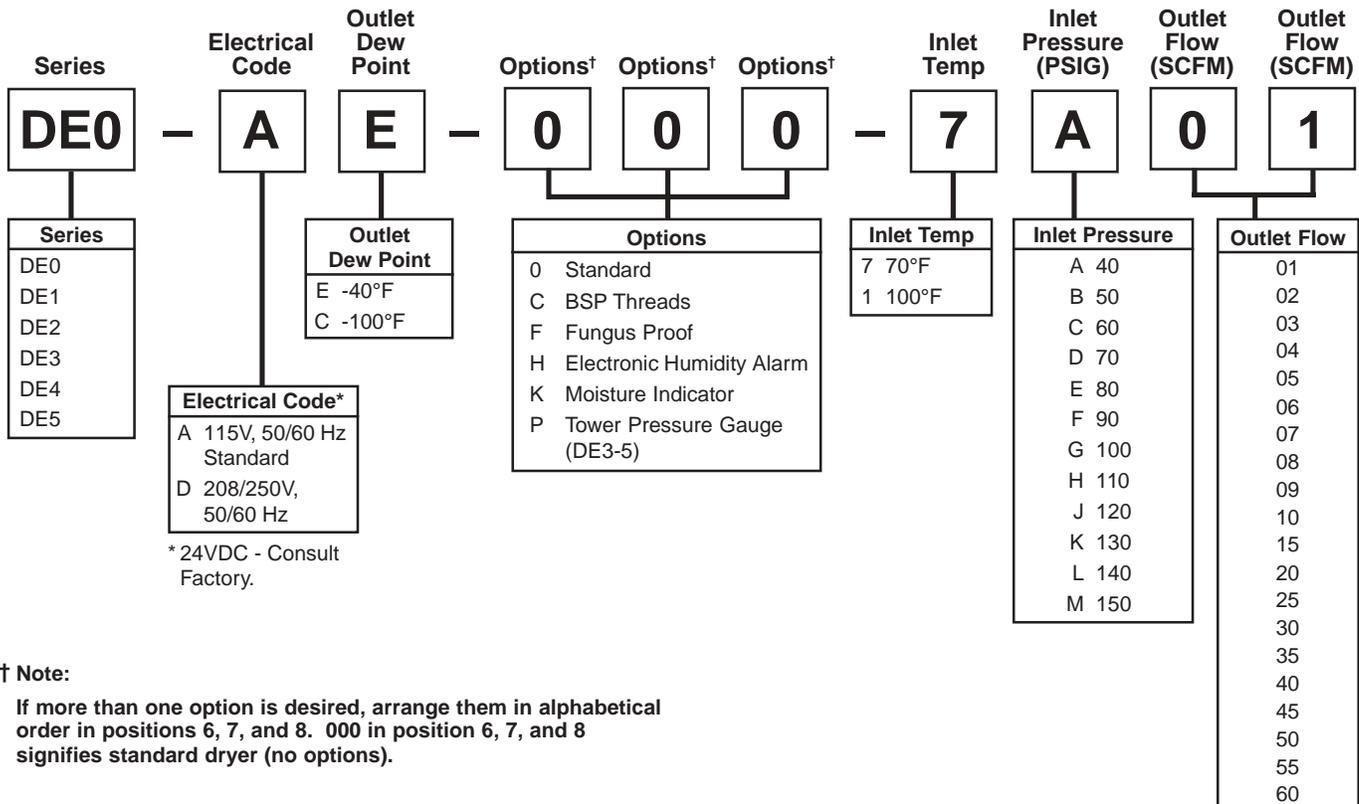
-40°F Outlet Pressure Dew Point*

Model Number	SCFM Inlet Flows @ Indicated Inlet Pressures												Purge (SCFM)		Pipe Size NPT
	40	50	60	70	80	90	100	110	120	130	140	150	@70°F	@100°F	
DE0-0E-000-****	1.3	1.6	1.8	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.8	4.0	.7	.8	1/4"
DE1-0E-000-****	2.7	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3	7.8	8.3	1.5	1.7	1/4"
DE2-0E-000-****	3.8	4.5	5.2	5.9	6.6	7.3	8.0	8.7	9.4	10.1	10.8	11.5	2.2	2.5	1/4"
DE3-0E-000-****	7.4	8.8	10.2	11.5	12.9	14.2	15.6	17.0	18.3	19.7	21.0	22.4	2.8	3.1	1/2"
DE4-0E-000-****	11.9	14.1	16.3	18.5	20.6	22.8	25.0	27.2	29.4	31.5	33.7	35.9	4.9	5.6	1/2"
DE5-0E-000-****	23.8	28.2	32.6	36.9	41.2	45.6	50.0	54.4	58.8	63.0	67.4	71.8	9.8	11.2	1/2"

Flow rates based on 70°F (21.1°C) inlet temperature.

* To determine SCFM inlet flow for -100°F atmospheric dew point, multiply inlet flow on chart above by 0.92.

Model Numbering System



† Note:

If more than one option is desired, arrange them in alphabetical order in positions 6, 7, and 8. 000 in position 6, 7, and 8 signifies standard dryer (no options).

Heatless Air Dryer Recommended Filtration and Installation

Wilkerson offers a complete line of air preparation products consisting of prefilters, coalescing filters, afterfilters and regulators to match the performance of the dryer selected. Each type or combination of filters provide a different degree of air quality, dependent on your application needs. These filters will remove virtually all contamination from the compressed airflow including bulk liquid water and oil, solid particles, oil aerosols, oil vapors and oil associated odors.

Prefilter – The Type A inlet filter is a 5 micron, reusable element that will remove solid contaminants and bulk liquids. This filter should also be used as a prefilter for the Type C (oil removal) filter.

Oil-Removal Filter – The Type C high efficiency coalescing filter removes particles and extremely fine oil mist and aerosols down to 0.01 microns. Filter oil

removal efficiency is better than 99.9999% resulting in a maximum remaining oil content downstream of the filter of less than 0.01 ppm/wt.

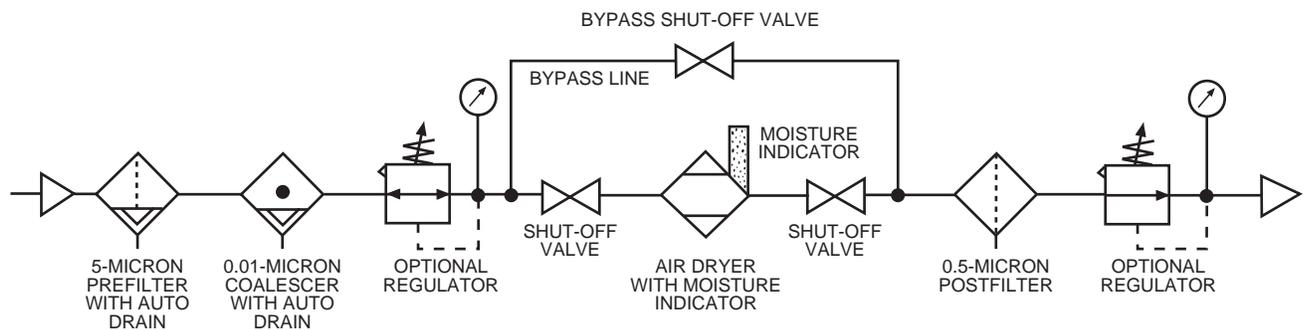
Afterfilter – The Type B filter is a 0.5 micron filter that will remove solid contaminants, such as desiccant dust, from migrating downstream. The Afterfilter is designed for use in “dry” systems where it provides efficient removal of desiccant dust and other solid contaminants downstream of various types of chemical dryers.

Air Regulators – Wilkerson offers a full line of conventional, precision, electronic and manifold regulators to meet most application needs. All regulators have balanced valves for superior regulation.

Model Number	Pipe Size	Recommended* PreFilter	Recommended** Coalescing Filter	Recommended Afterfilter
DE0	1/4"	F18-02-SG00	M18-02-CG00	A18-02-BKM0
DE1	1/4"	F18-02-SG00	M18-02-CG00	A18-02-BKM0
DE2	1/4"	F18-02-SG00	M18-02-CG00	A18-02-BKM0
DE3	1/2"	F28-04-SG00	M28-04-CG00	A28-04-BKM0
DE4	1/2"	F28-04-SG00	M28-04-CG00	A28-04-BKM0
DE5	1/2"	F28-04-SG00	M28-04-CG00	A28-04-BKM0

* Type A 5 micron particulate filter.

** Type C 0.01 micron coalescing filter.



Options, Accessories, and Replacement Parts

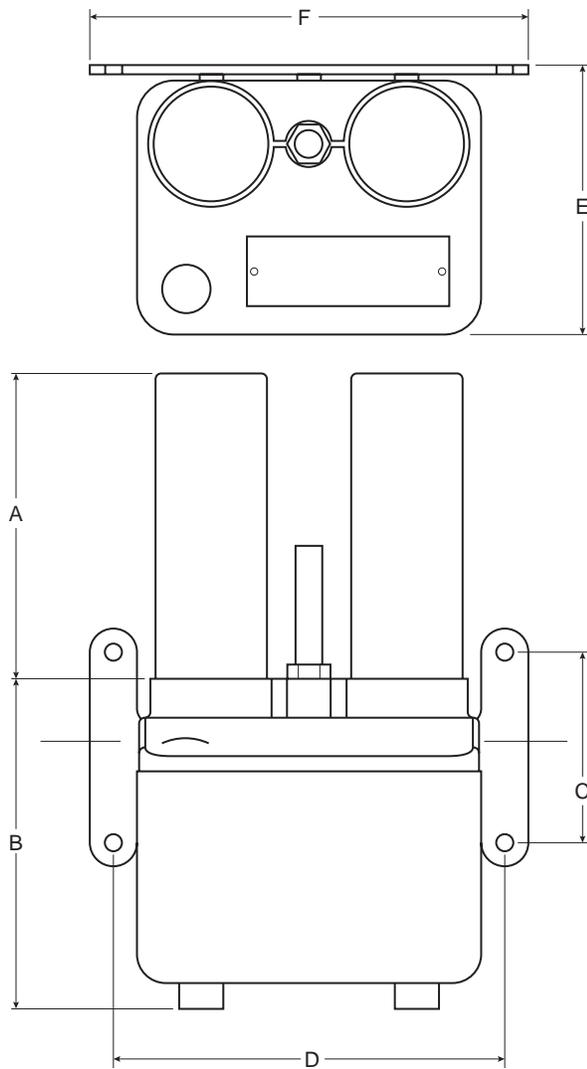
Moisture Detection – An inline color-change moisture indicator is available for all models. When the air flowing through the indicator reaches 10% relative humidity, the silica gel desiccant turns from blue to pink. For sensitive applications, the electronic humidity alarm option is recommended. This system continuously tracks the moisture level of a compressed air source and features simultaneous audible and visual alarms, in addition to an open-and-closed-circuit condition for integration into a control system. Various humidity levels and voltages are available.

Tower Pressure Gauge Option – To monitor system performance, the tower pressure gauges display the air pressure of the desiccant chambers. Available only on DE3, DE4, and DE5 models.

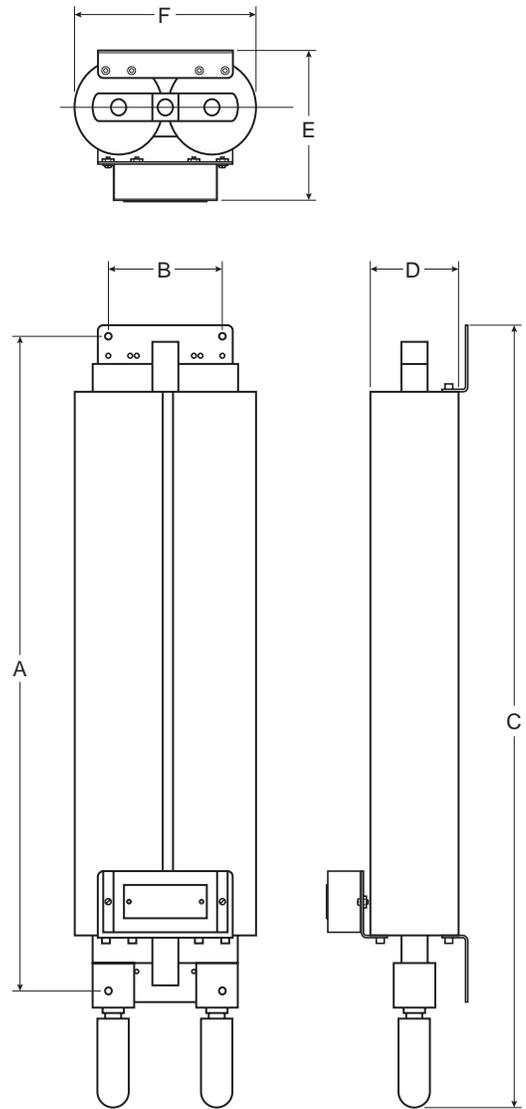
Part Number	Description	Unit Used On
Moisture Detection		
DRP-94-169	Moisture Indicator	DE0 – DE2
DRP-94-369	Moisture Indicator Assembly	DE3 – DE5
DRP-96-452	Electronic Humidity Alarm	DE0 – DE5
Exhaust Mufflers		
ES25MC or ASN-8	Exhaust Muffler, 1/4" NPT	DE0 – DE2
ES50MC or ASN-15	Exhaust Muffler, 1/2" NPT	DE3 – DE5
Solenoid Valves		
DRP-94-189-1	Solenoid Valve, 1/4", 115VAC Input	DE0 – DE2
DRP-94-189-2	Solenoid Valve, 1/4", 230VAC Input	DE0 – DE2
DRP-96-454	Solenoid valve, 1/2", 115VAC input	DE3 – DE5
DRP-96-455	Solenoid valve, 1/2", 230VAC input	DE3 – DE5
New Desiccant Towers		
DRP-94-101	New Replacement Desiccant Tower	DE0
DRP-94-102	New Replacement Desiccant Tower	DE1
DRP-94-103	New Replacement Desiccant Tower	DE2
DRP-96-456	New Replacement Desiccant Tower	DE3
DRP-96-457	New Replacement Desiccant Tower	DE4
DRP-96-458	New Replacement Desiccant Tower	DE5

Dimensions (inches)

DE0, DE1, and DE2



DE3, DE4, and DE5



Model Number	A	B	C	D	E	F
DE0	6.000	5.875	3.375	7.250	4.912	8.120
DE1	9.000	5.875	3.375	7.250	4.912	8.120
DE2	12.000	5.875	3.375	7.250	4.912	8.120
DE3	18.625	6.000	25.500	3.250	5.500	8.250
DE4	22.935	6.000	30.000	4.250	6.400	9.250
DE5	28.125	6.000	35.250	4.250	6.400	9.250

Model Number	Approximate Weight (lbs)
DE0	7
DE1	8
DE2	9
DE3	20
DE4	31
DE5	36

Notes

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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

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5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially

converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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