



# HANKISON

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**HPD SERIES**

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**HEATED PURGE**

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**DESICCANT**

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**COMPRESSED**

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**AIR DRYERS**

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**SPX Air Treatment**

# HPD Series Dryers Slash Purge Air Energy Costs

Since 1948, compressed air users have relied on Hankison to provide compressed air treatment products with integrity. Global demand for Air Quality Class 3 and our advanced Ambient Air Amplification (A<sup>3</sup>) Purge Technology™ enables us to offer you externally heated purge desiccant dryers with dew point performance guaranteed from 250 to 3,200 scfm.



Model HPD 1050

## The Hankison Guarantee

Hankison guarantees that HPD Series dryers will produce the design dew point while operating continuously at maximum rated flow (100% duty cycle) at CAGI ADF 200 inlet standards of 100°F inlet temperature and 100% relative humidity at 100 psig.

## Standard HPD Series Dryers: -4°F to -40°F Pressure Dew Points

Designed for applications that were previously forced to accept a -40°F pressure dew point when simple protection against seasonal freezing is the issue. The standard design delivers ISO 8573.1 dew points between Class 2 and Class 3 automatically. Class 2 (-40°F) dew points protect against freezing during low ambient conditions and Class 3 (-4°F) dew points keep your air system bone dry during the heat of summer. Applications that require Class 2 (-40°F) dew points year round simply need to select the Free-Air (FA) Supercharger option package.

## ISO 8573.1 Air Quality Standards

Quality Classes	Solids		Moisture		Oil	
	max. particle size in microns	Dew Point °C	Dew Point °F	Liquid & Gas mg/m <sup>3</sup>	ppmw/w	
0	as specified	as specified		as specified		
1	0.1	-70	-94	0,01	0.008	
2	1	-40	-40	0,1	0.08	
3	5	-20	-4	1	0.8	
4	15	3	38	5	4	
5	40	7	45	>5	>4	
6	—	10	50	—	—	

## HOW IT WORKS

### Standard Design:

Moist, filtered compressed air enters the pressurized on-line desiccant-filled drying Tower 1 through valve (A). Up-flow drying enables the desiccant to strip the air stream of moisture. Clean, dry compressed air exits through valve (E) to feed the air system. Tower 2 (when in regeneration mode) closes valve (B), then depressurizes to atmosphere through muffler (C). Valves (D & G) open and the heater turns on. A portion of dry compressed air (purge air) is diverted before exiting (E) and passes through the heater. Hot dry purge air desorbs the moisture from the desiccant as it flows down through Tower 2 to exit at valve (D). Once desorbed, the heater turns off and cool dry purge air continues to pass until the desiccant bed is cooled. Finally, valve (D) closes and Tower 2 is repressurized. At a fixed time interval, valve (B) will open and Tower 2 will be placed on-line to dry the bed and valves (A & D) will close. Operations will switch and Tower 1 will be regenerated.

### EMS options with FA Supercharger Design:

Whereas the standard design operates on a fixed time interval basis, Free-Air Supercharger versions manage the drying and regeneration cycles with precision for systems with variable air demands. The on-line Tower will continue to dry the air stream until the "moisture front" is detected. Only then will the switchover sequence begin. In regeneration mode the FA Supercharger is engaged and a portion of dry purge air exits valve (F) to be injected into the Y-axis of the FA Supercharger. A<sup>3</sup> Purge Technology™ draws ambient air into the X-axis to desorb the desiccant at better than 1:1 amplification. Sensors detect the retreat of the moisture front, disengages the FA Supercharger, eliminates the purge air usage and, initiates the repressurization cycle. The dry, pressurized off-line Tower will remain ready and isolated until sensors detect that the on-line drying Tower is saturated. Then, the switchover will occur and the process will repeat.

## Purge Air Operating Cost Comparison

### Annual Cost of Compressed Purge Air

(constant operation at average air demand)

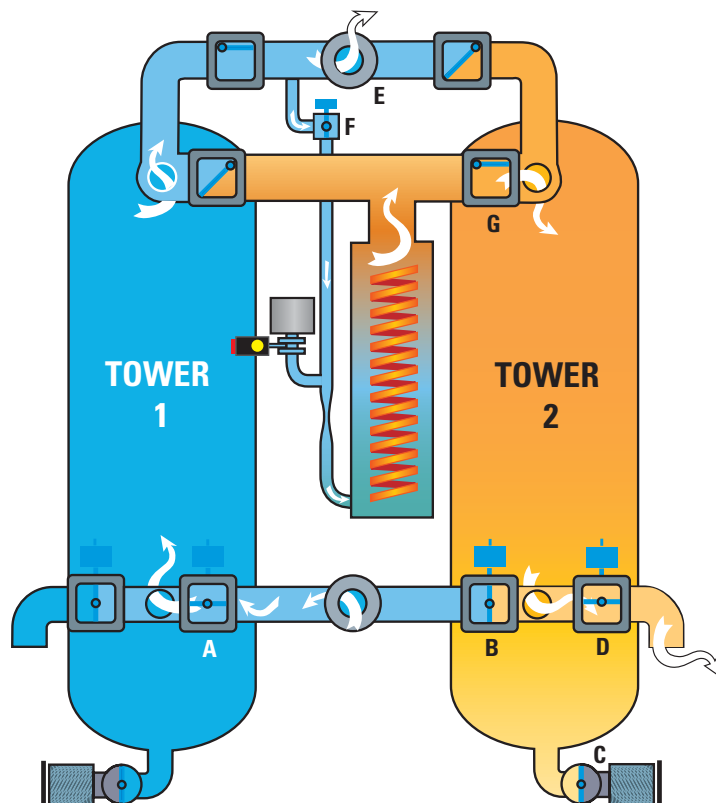
Average Air Demand (flow)	Average Air Demand (scfm)	Regeneration Cost by Technology <sup>1</sup>		
		Heatless Design (industry average 15% purge)	HPD Series (standard 7% purge)	HPD Series w/Free-Air Supercharger 6% purge)
100%	1050	\$20,585	\$9,606	\$8,234
90%	945	\$20,585	\$9,606	\$7,411
75%	788	\$20,585	\$9,606	\$6,176
50%	525	\$20,585	\$9,606	\$4,117
35%	368	\$20,585	\$9,606	\$2,882
20%	210	\$20,585	\$9,606	\$1,647

<sup>1</sup>Assumes 8760 hours, 10 cents per kWh, 5 scfm per HP

### Performance Table

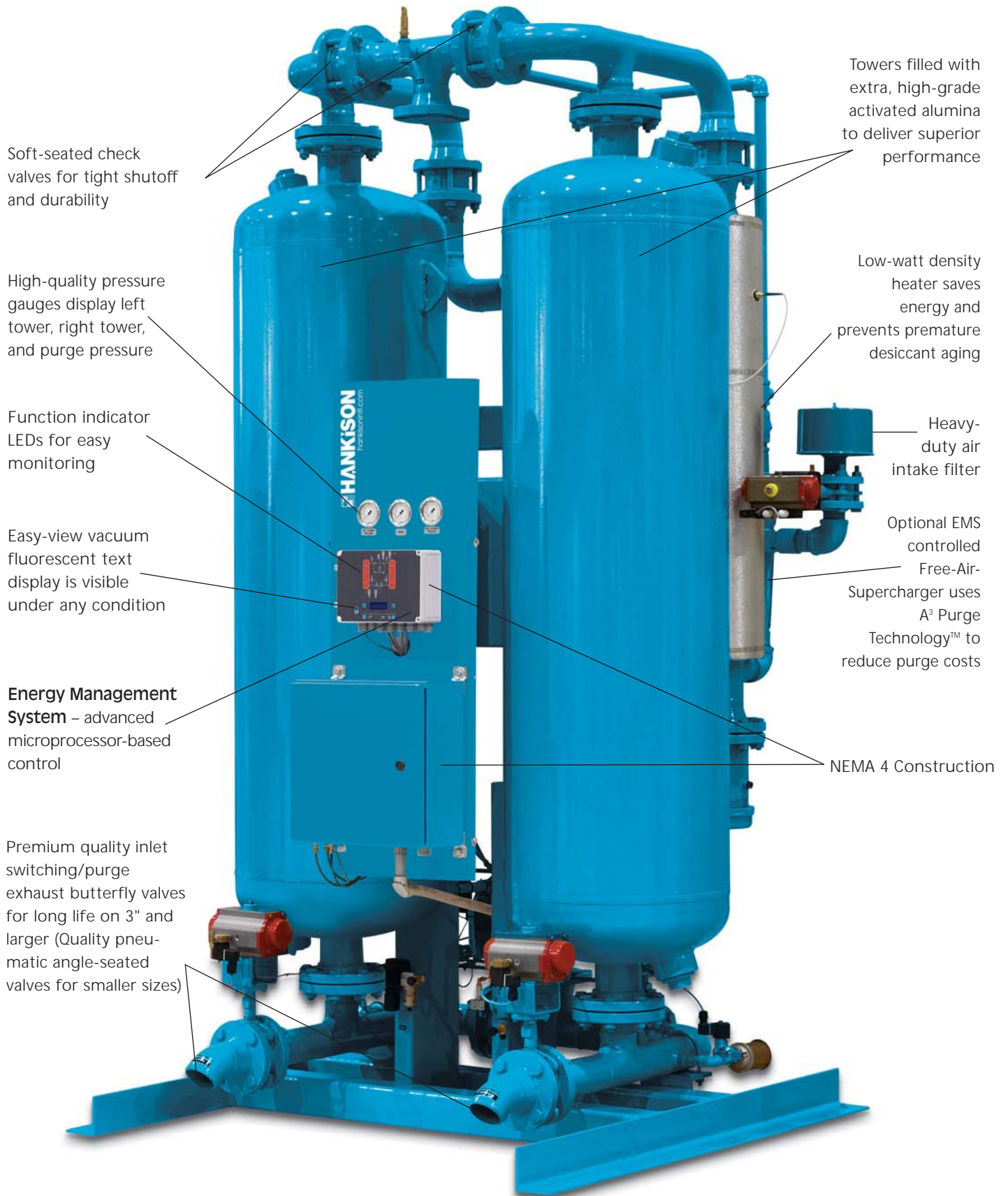
Controller	Pressure Dew Point		EMS Energy Savings
	-40°F	-4°F	Automatic
Standard	S	G	—
Optional Free-Air Supercharger	G	—	✓

S – seasonal G – guaranteed ✓ – included



Shown with optional Free-Air Supercharger

# Advanced Design



Soft-seated check valves for tight shutoff and durability

High-quality pressure gauges display left tower, right tower, and purge pressure

Function indicator LEDs for easy monitoring

Easy-view vacuum fluorescent text display is visible under any condition

**Energy Management System** – advanced microprocessor-based control

Premium quality inlet switching/purge exhaust butterfly valves for long life on 3" and larger (Quality pneumatic angle-seated valves for smaller sizes)

Towers filled with extra, high-grade activated alumina to deliver superior performance

Low-watt density heater saves energy and prevents premature desiccant aging

Heavy-duty air intake filter

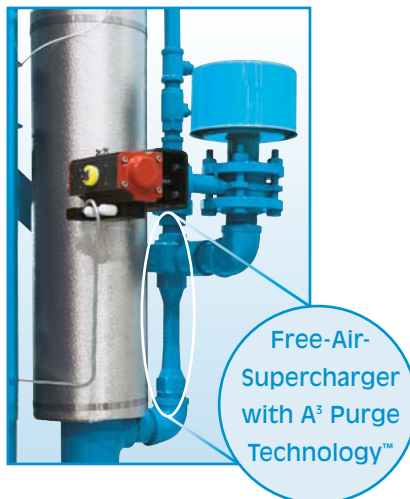
Optional EMS controlled Free-Air-Supercharger uses A<sup>3</sup> Purge Technology™ to reduce purge costs

NEMA 4 Construction

## Energy Savings and -40°F Pressure Dew Points

Select an EMS option package for fast returns-on-investment. Energy saving logic controls the A<sup>3</sup> Purge Technology™ to synchronize the engagement cycles of the Free-Air-Supercharger (FAS) to mirror plant air demands. This design features a precision venturi blower assembly, engineered to drastically reduce purge air consumption.

In fact, an HPD Series dryer with an EMS package may enable the use of a smaller air compressor. Total system efficiency would then be superior due to the linear energy-saving potential of the dryer. Purge air savings of up to 15% are possible in direct proportion to demand when compared to typical heatless designs. Consistent -40°F pressure dew points and fast returns-on-investment are automatic year round.

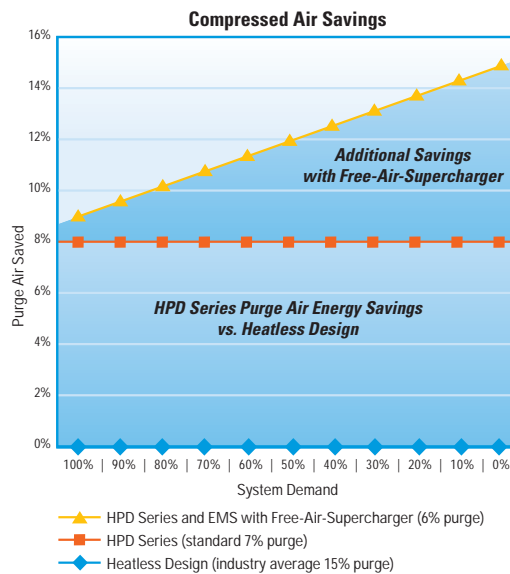


## Annual Purge Savings vs. Heatless Design

(1050 scfm System Profile Comparison)

Air Capacity Percent	Air Demand (scfm)	Time (per year)		HPD Series Savings		
		Percent	Hours	Standard Design	Includes Option FA1 or FA2	Savings with FA1 or FA2
100	1050	40	3,504	\$4,391	\$4,940	\$549
90	945	5	438	\$549	\$659	\$110
75	788	15	1,314	\$1,647	\$2,161	\$515
50	525	15	1,314	\$1,647	\$2,470	\$823
35	368	20	1,752	\$2,196	\$3,541	\$1,345
20	210	5	438	\$549	\$947	\$398
<b>Average</b>	<b>555</b>	<b>100</b>	<b>8,760</b>	<b>\$10,979</b>	<b>\$14,718</b>	<b>\$3,740</b>

**Annual savings** (optional EMS with FA Supercharger vs. standard HPD) ..... **\$3,740**  
 EMS option FA1 – payback within 8.2 months



## Energy Management System

The EMS uses rugged temperature- & humidity-sensing technology that does not require calibration. Constant desiccant bed monitoring ensures stable dew point control. Algorithm-based A<sup>3</sup> Purge Technology™ controls precisely engage the FA Supercharger when needed to manage the bed regeneration cycles and boost the airflow through the tower. Compressed purge air volume is reduced, further optimizing energy conservation.

# HPD Series – Heated Purge Desiccant Compressed Air Dryers

## Product Features

Controller	Pressure Dew Point per ISO 8573.1		Free-Air Supercharger	EMS Control	Vacuum Fluorescent Text	Languages	Power Recovery	Dry Contacts		Overlay with Circuit Graphics and LED Indicators Alarm LEDs with Text Display					
Model	ISO Class 3	ISO Class 2	Venturi Blower	Automatic Energy Savings	Digital Dew Point Monitoring	2 Line, 16 Characters (high-visibility in darkness or sunlight)	English Spanish French	Automatic Restart after Power Loss	Remote Indication of Alarm	Power On	Heater On	Tower Status (drying switchover heat, cool, etc.)	Tower Switch Failure (low heater temp/ high heater temp)	Sensor Over-range and Under-range (temp, humidity, dew point)	Service Reminder
Standard	G	S	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Option FA1	—	G	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Option FA2	—	G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

S – seasonal G – guaranteed ✓ – included

## Engineering Data – 250 thru 3200 scfm\*

Model	Inlet Flow <sup>1</sup> @ 100 psig 100°F scfm	Heater Rated Output kW	Average kW	Dimensions inches			Approx. Weight lbs.	Inlet/Outlet Connections inches	HF Series Prefilter Grade 5	HTA Series Afterfilter Particulate
				H	W	D				
HPD-250	250	3.0	1.67	98	48	59	1400	1-1/2" NPT	HF5-32-12-DGL	HTA400
HPD-300	300	4.5	2.00	98	48	59	1400	1-1/2" NPT	HF5-36-12-DGL	HTA400
HPD-400	400	6.0	2.67	105	53	67	1800	1-1/2" NPT	HF5-40-16-DG	HTA400
HPD-500	500	6.0	3.34	105	53	70	1800	2" NPT	HF5-44-20-DG	HTA600
HPD-600	600	8.0	4.01	108	55	71	2000	2" NPT	HF5-44-20-DG	HTA600
HPD-750	750	10.0	5.01	114	60	87	2400	3" FLG	HF5-48-20-DG	HTA1200
HPD-900	900	12.0	6.01	114	60	87	2400	3" FLG	HF5-54-24-G	HTA1200
HPD-1050	1050	14.0	7.01	113	64	84	2900	3" FLG	HF5-56-24-G	HTA1200
HPD-1300	1300	16.0	8.68	118	66	85	3400	3" FLG	HF5-60-24-G	HTA1800
HPD-1500	1500	19.0	10.0	116	88	97	5100	3" FLG	HF5-60-24-G	HTA1800
HPD-1800	1800	23.0	12.0	116	88	97	5100	3" FLG	HF5-60-24-G	HTA1800
HPD-2200	2200	27.5	14.7	124	85	110	7800	4" FLG	HF5-64-4F-G	HTA2400
HPD-2600	2600	32.0	17.4	124	85	110	7800	4" FLG	HF5-68-4F-G	HTA3000
HPD-3200	3200	39.0	21.4	121	97	126	9000	6" FLG	HF5-72-6F-G	HTA4800

<sup>1</sup>Performance data per CAGI Standard ADF 200 for Dual-Stage Regenerative Desiccant Compressed Air Dryer. Rating conditions are 100°F (37.8°C) inlet temperature, 100 psig (6.9 bar) inlet pressure, 100% relative humidity, 100°F (37.8°C) ambient temperature, and 5 psi (0.35 bar) pressure drop. \* Consult factory for larger models.

## Inlet Flow

Inlet Flow capacities shown in the Specifications Table have been established at an inlet pressure of 100 psig (7kgf/cm<sup>2</sup>) and a saturated inlet temperature of 100°F (38°C). To determine maximum inlet flow at other conditions, multiply the inlet flow from the Specifications Table by the multiplier from Table 1 that corresponds to your operating conditions.

Table 1

Pressure psig (kgf/cm <sup>2</sup> )	Inlet Temperature °F (°C)						
	60 (15.6)	70 (21.1)	80 (26.7)	90 (32.2)	100 (37.8)	110 (43.3)	120 (48.9)
<b>60 (4.2)</b>	1.03	1.01	0.99	0.80	0.58	0.43	0.32
<b>70 (4.9)</b>	1.10	1.08	1.07	0.94	0.68	0.50	0.37
<b>80 (5.6)</b>	1.17	1.15	1.14	1.08	0.79	0.58	0.43
<b>90 (6.3)</b>	1.24	1.22	1.20	1.18	0.89	0.66	0.49
<b>100 (7.0)</b>	1.30	1.28	1.26	1.24	1.00	0.74	0.55
<b>110 (7.7)</b>	1.36	1.34	1.32	1.30	1.11	0.82	0.61
<b>120 (8.4)</b>	1.42	1.40	1.38	1.36	1.22	0.90	0.67
<b>130 (9.1)</b>	1.48	1.46	1.44	1.42	1.33	0.99	0.74
<b>140 (9.8)</b>	1.53	1.51	1.49	1.47	1.44	1.07	0.80
<b>150 (10.6)</b>	1.58	1.56	1.54	1.52	1.50	1.16	0.87

## Dew Point

Outlet pressure dew point at rated inlet conditions of 100 psig (7kgf/cm<sup>2</sup>) and 100°F (38°C) saturated. Dew point varies slightly at other conditions. Consult the factory to determine exact outlet pressure dew point at your operating conditions.

## Operating Conditions

HPD Models	maximum working pressure	minimum operating pressure	maximum inlet air temp.	minimum inlet air temp.	maximum ambient temp.	minimum ambient temp.
250-3200	150 psig	60 psig	120°F	40°F	120°F	40°F



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