

Refrigerated Air Dryers.
Innovative, High Quality,
and Cost Effective

Innovative Compressed Air Products



WILKERSON[®]
CORPORATION

Refrigerated Air Dryers

Leading Edge Technology

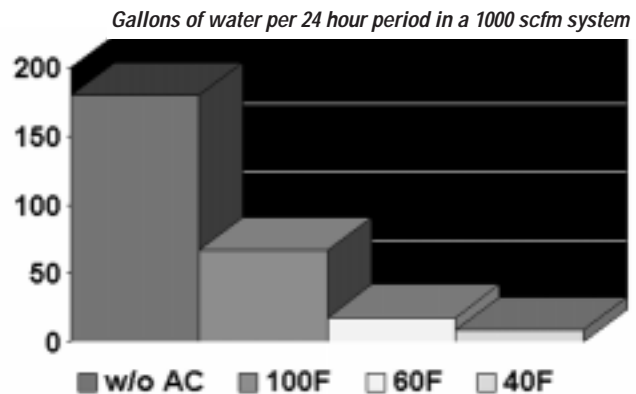
Wilkerson's WRD Series Innovative Dryers

Models 50-650 SCFM

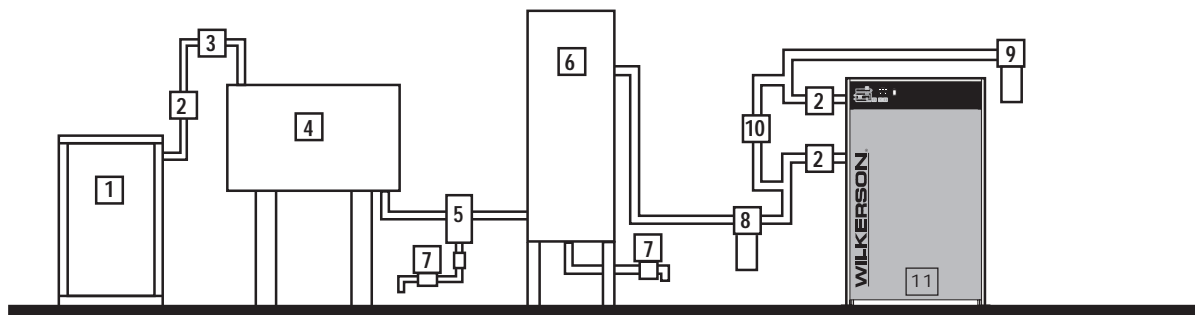
One of the largest culprits of equipment failure and poor product quality in a compressed air system is liquid moisture. As an example in a typical compressed air system, the air exiting an aftercooler is approximately 100°F and 100% RH. If you are running a 1000 scfm system and the air cools to 60°F as it travels through plant piping, you will condense approximately 50 gallons of water per day. If no dryer exists in the system the water will travel into the compressed air equipment and potentially into the end product.

The graph to the right shows the above example and gives moisture contents at other conditions as well. Moisture is in a vapor state until the air is cooled below its dew point resulting in a condensed liquid.

To combat this inherent problem with compressed air systems, Wilkerson has developed a high quality, cost effective line of *Refrigerated Air Dryers*. The process of the dryer cools the air to 35°F and separates the condensed liquid from the air stream. This eliminates the possibility of condensing any more liquid, as in the example above. The end result will be longer lasting equipment and higher quality products.

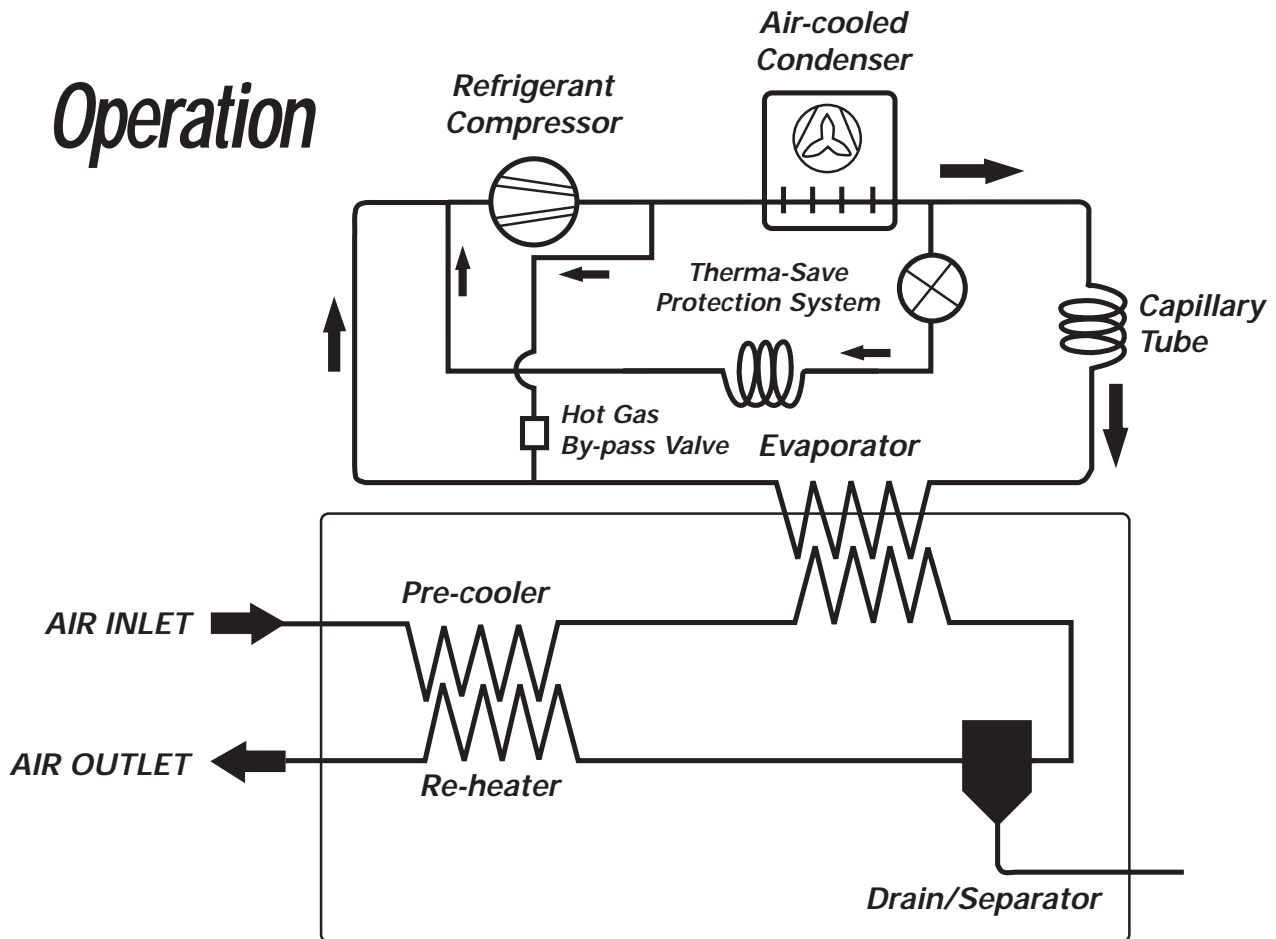


Typical Compressed Air System



- | | | |
|------------------|--------------------|---------------------------|
| 1 Air Compressor | 5 Liquid Separator | 9 Afterfilter |
| 2 Shut-off Valve | 6 Storage Tank | 10 By-pass Valve |
| 3 Flex Connector | 7 Drain Valve | 11 Refrigerated Air Dryer |
| 4 Aftercooler | 8 Prefilter | |

Operation

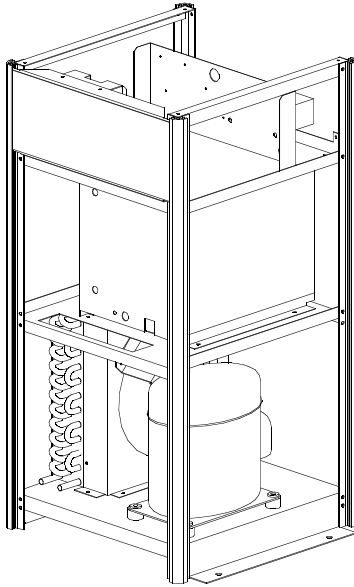


As air enters the Air-to-Air exchanger it is pre-cooled by the outgoing air. It then enters the Air-to-Refrigerant exchanger (Evaporator) where it is further cooled (down to 35°F) by the liquid refrigerant. The condensed moisture is removed from the air stream in the separator and drained from the system via the electronic drain valve. As the air leaves the system back through the Air-to-Air exchanger it is reheated by the incoming air to prevent pipe sweating downstream.

The Refrigeration system starts with the compressor which compresses refrigerant gas to a high pressure and in the process increases the temperature. This high temperature gas travels through a condenser (air or water cooled) to cool and condense the refrigerant back into a liquid. The high pressure liquid is expanded by the metering device, lowering the pressure and

reducing the temperature to about 32°F. This cold liquid refrigerant travels through the Air-to-Refrigerant exchanger (Evaporator) where the heat from the air evaporates the refrigerant into a gas and in turn cools the air to approximately 35°F. The Refrigerant, now in a gas form, travels into the suction side of the compressor to be compressed back into a high pressure gas and starts the process over again. Hot gas is taken off the discharge side of the compressor and introduced downstream of the evaporator to maintain a constant suction pressure and, therefore, a constant temperature in the evaporator under any condition from no load to full load. A refrigerant liquid solenoid valve is opened when there is an overload condition which introduces cool refrigerant into the return side of the system, keeping the compressor cool and preventing dryer shut down.

Features And Benefits

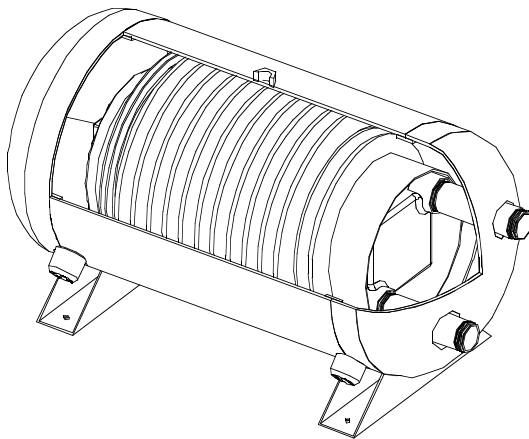
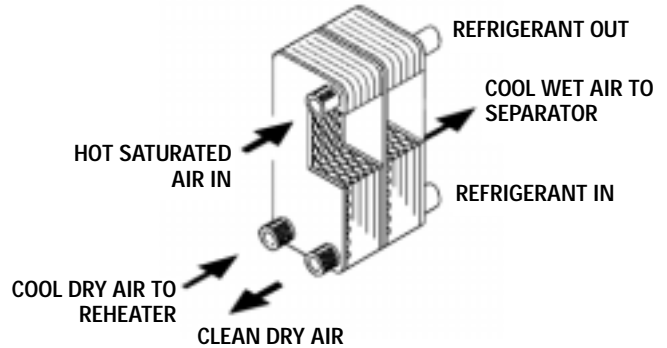


Cabinet And Frame

- Three Shelf Design → Easy Maintenance
- Smaller Footprint → Less Room Required
- Lighter Weight → Lower Freight Cost
Easier to Maneuver
- Reusable/Cleanable Ambient Air Filter → Protect Condenser
Easy Maintenance
- Panels Reside Between Aluminum Rails — no screws or rivets → Easy Disassembly of Cabinet

Stainless Steel Heat Exchanger (WRD50-WRD250)

- Stainless Steel Plate — Type Exchangers = Prevents Corrosion — Increase Life
- Oven Brazed Plate = Eliminates Leaks
- Low Pressure Drop = Energy Efficient



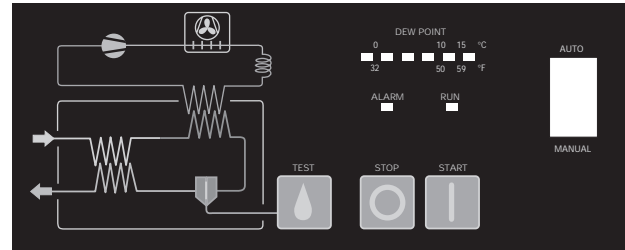
Heat Exchanger (WRD300-WRD650)

- Revolutionary unique design incorporates Air-to-Air, Evaporator, and Separator all in one → Compact Design
- Aluminum Plate — Air-to-Air Exchanger → Prevents Corrosion — Increases Life
- Oven Brazed Plate → Eliminates Leaks
- Spined Fin Aluminum/ Copper Tube Evaporator → Enhanced Surface Area and Efficiency
- Integral Separator → Reduced Pressure Drop — Energy Efficient

Unmatched By Competition

Energy Manager

The control panel is designed to be user friendly with a built in dew point monitor, system schematic, power on light and an alarm light. It has user friendly on/off push buttons to start and stop the dryer. The controller has a unique feature which senses when there is no pressure in the system and turns the dryer off until pressure is restored. This energy savings feature can save thousands of dollars per year.

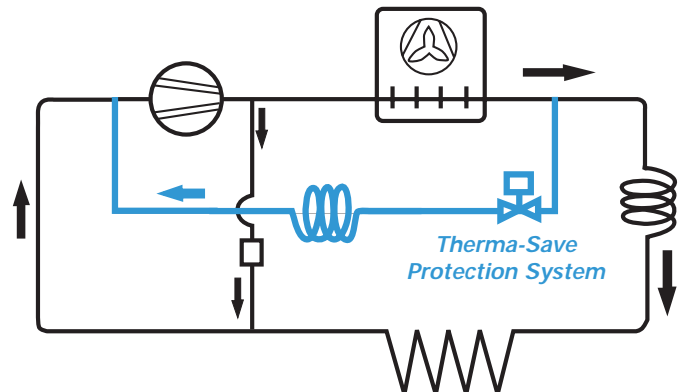


Drain Valve – Demand Controlled

The drain valve is a timer actuated electronic solenoid valve. The control panel senses inlet air temperature and will adjust the drain valve open and closed times accordingly. This function will eliminate unwanted air loss through the drain valve due to mis-adjusted timers. There is also a push-to-test button on the control panel to provide draining of the condensate on demand.

Therma-Save Protection System

The *Therma-Save Protection System* offers the ultimate refrigerant compressor protection under overload conditions. This liquid injection system is designed to keep the dryer running even under overload conditions. When ambient or inlet air temperatures become too high, a thermal overload condition is created causing an ordinary refrigerated dryer to shut down. With the *Therma-Save Protection System*, liquid refrigerant is injected through a capillary tube into the refrigeration system downstream of the evaporator to keep the compressor cool and prevent it from shutting down. The result is a dryer that continues to run even in overload situations. A dryer running is always achieving a better dew point than one that has shut down.



Absolute Remote Control

As an option on the WRD dryers a customer can have *Absolute Remote Control* of the unit. The system allows for a remote on/off switch, power on indication, high refrigerant temperature alarm, and high dew point alarm. This feature along with the automatic demand drain valve will allow for absolute control room operation. (See ordering information page for further description.)

Standard Equipment

- ON/OFF Push Buttons
- Power On Light
- Dew Point Meter
- High Refrigerant Temperature Alarm Light
- Automatic Shut Down Upon Low Air Pressure
- Therma-Save Protection System
- Automatic Demand Electronic Drain Valve
- Cold Point Separation
- Air Cooled Condenser
- Air Pre-cooler/Re-heater
- Control Transformer
- Fan Cycling controls
- Cap Tube Metering Device (50-250 scfm)
- Thermal Expansion Valve (300-650 scfm)
- Hot Gas By-Pass Valve
- Full Sheet Metal Cabinet
- Hermetically Sealed Refrigerant Compressor
- Thermal Overload Compressor Protection

Specifications

Model	Capacity* (scfm) 33-39°F pdp	Max. PSI (bar)	Standard Voltage	Nominal Ref. HP	Kw	Pressure Drop @Rated Cond.
WRD50	50	200 (13,8)	115-230/1/60	.50	0.7	4.7
WRD75	75	200 (13,8)	115-230/1/60	.50	0.7	3.1
WRD100	100	200 (13,8)	115-230/1/60	.50	0.8	1.8
WRD125	125	200 (13,8)	115-230/1/60	.75	1.2	2.7
WRD150	150	200 (13,8)	115-230/1/60	.75	1.2	3.0
WRD200	200	200 (13,8)	115-230/1/60	1.0	1.4	3.0
WRD250	250	200 (13,8)	230-460/3/60	1.0	1.6	3.5
WRD300	300	200 (13,8)	230-460/3/60	1.5	1.4	2.0
WRD400	400	200 (13,8)	230-460/3/60	2.0	1.6	2.0
WRD500	500	200 (13,8)	230-460/3/60	2.5	2.4	2.0
WRD650	650	200 (13,8)	230-460/3/60	3.0	3.1	4.0

*Capacity is rated according to CAGI Std. No. ADF100 "Refrigerated Compressed Air Dryers—Method for Testing and Rating," Pressure dew point @ 100 psig (6,9 bar g) inlet air pressure, 100°F (37,8°C) inlet air temperature, 100°F (37,8°C) ambient air temperature, with a 5 psig (0,35 bar g) maximum pressure drop.

Maximum inlet air temperature = 140°F (60°C). Consult factory for higher temperature applications.

Maximum ambient temperature = 110°F (43,3°C). Consult factory for higher temperature applications.

Pressure vessels manufactured to ASME Unfired Pressure Code, Section VIII Specifications.

All units use R-22 Refrigerant which has an ozone depletion level of 0.05.

Dryers are fully UL/CSA Certified

Correction Factors

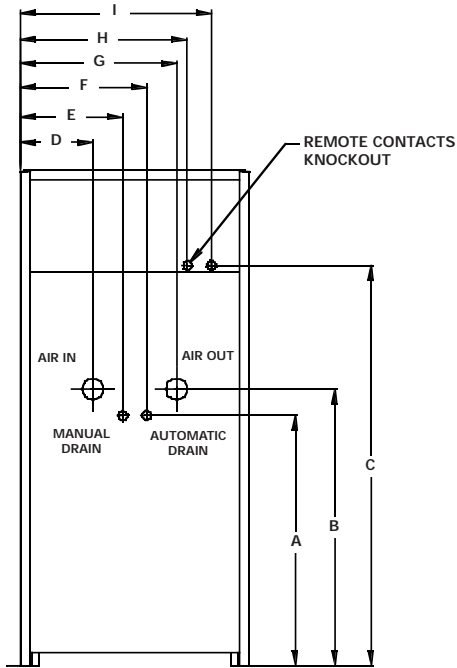
Inlet Air Pressure		Inlet Air Temperature		Ambient Air Temperature		Dew Point	
Pressure	Correction	Temperature	Correction	Temperature	Correction	Dew Point	Correction
psig (bar)	Factor	°F (°C)	Factor	°F (°C)	Factor		Factor
50 (3,5)	1.06	80 (27)	0.68	70 (21)	0.91	33 - 39°F	1.00
80 (5,5)	1.04	90 (32)	0.80	80 (27)	0.93	40 - 44°F	0.9
100 (7)	1.00	100 (38)	1.00	90 (32)	0.95	45 - 49°F	0.8
125 (8,6)	0.97	110 (43)	1.25	100 (38)	1.00	50 - 54°F	0.7
150 (10,3)	0.88	120 (49)	1.58	110 (43)	1.11	-	-

Example: Select the right dryer for the following worst case conditions: 250 scfm, 100 psig inlet air pressure, 110°F inlet air temperature, 90°F ambient temperature, 39°F pressure dew point

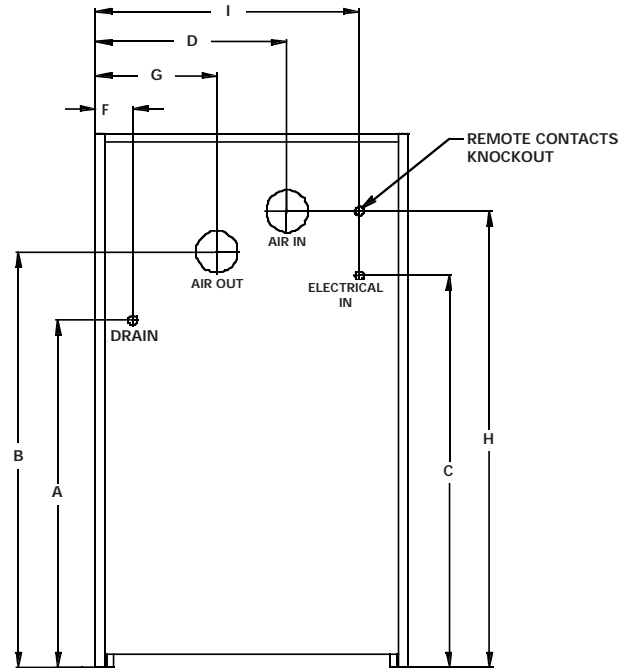
Determine Dryer Model: 250 scfm X 1.00 X 1.25 X 0.95 X 1.00 = **297 SCFM** capacity dryer required

Selection: WRD300.

Dimensions



(WRD50-WRD250)
Back View

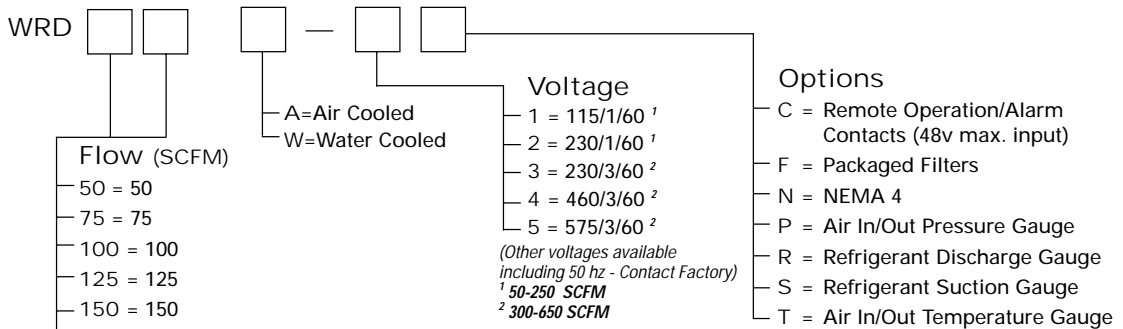


(WRD300-WRD650)
Back View

Model	Length in.	Width in.	Height in.	A	B	C	D	E	F	G	H	I	In/Out Conn. NPT	Drain Conn. NPT	Wt. (Kg)
WRD50	16	17	32	15.97	17.10	26.78	5.24	7.28	8.84	10.75	10.79	12.79	3/4"	1/4"	140 (64)
WRD75	19	18	38	17.78	19.15	31.93	6.09	8.52	10.52	12.94	13.92	15.92	3/4"	1/4"	160 (73)
WRD100	19	21	41	18.76	20.17	35.06	6.09	8.52	10.52	12.94	13.92	15.92	1"	1/4"	175 (79)
WRD125	19	21	41	18.76	20.17	35.06	6.09	8.52	10.52	12.94	13.92	15.92	1"	1/4"	185 (84)
WRD150	19	24	44	21.91	23.32	38.18	6.09	8.52	10.52	12.94	13.92	15.92	1"	1/4"	205 (93)
WRD200	22	27	46	23.84	25.21	40.07	7.28	9.70	11.70	14.12	14.66	16.66	1 1/2"	1/4"	285 (129)
WRD250	22	27	46	23.84	25.21	40.07	7.28	9.70	11.70	14.12	14.66	16.66	1 1/2"	1/4"	295 (134)
WRD300	26	33	45	29.00	35.05	32.70	15.63	-	03.10	10.35	37.83	21.90	1 1/2"	1/4"	440 (200)
WRD400	26	33	45	29.00	35.05	32.70	15.63	-	03.10	10.35	37.83	21.90	2"	1/4"	460 (209)
WRD500	26	33	45	29.00	34.80	32.70	15.90	-	03.10	10.10	38.10	21.90	2"	1/4"	480 (218)
WRD650	26	33	45	29.00	34.80	32.70	15.90	-	03.10	10.10	38.10	21.90	2"	1/4"	550 (250)

Wilkerson recommends a 2'-0" clearance around unit for maintenance.

Ordering Information



CAGI Standard ADF100

Option Description

C	Terminal strip for customer connection to remote operation and alarm signal contacts. Remote operation allows customer to turn dryer on and off remotely and has individual contact for power on, high dew point alarm, and high refrigerant temperature alarm. All contacts are normally open dry type with a capacity of 48v, 1 Amp.
F	Packages Wilkerson's 1.0 micron pre-filter and 0.01 micron coalescing after-filter with bypass piping. Package will be assembled and shipped loose to be installed by the customer.
N	Electrical components are NEMA 4 rated allowing customer to use dryer in wet applications.
P	Locally mounted 2-1/2" face pressure gauges for dryer inlet and outlet air pressure.
R	Locally mounted 2 1/2" refrigerant discharge pressure gauge.
S	Panel mounted 2 1/2" refrigerant suction pressure gauge
T	Locally mounted 3" temperature gauges for air inlet and outlet temperatures.

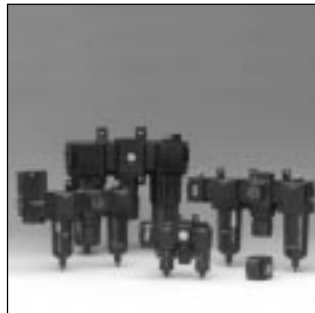
Other Innovative Wilkerson Products



WDV

Condensate Drain Valves

A comprehensive line of drain valves to fit every compressed air condensate removal application. The product line consists of Mechanical Drains, Demand Drains, Electric Timed Drains, and Motorized Ball Valves.



FRL

Filters

A full range of filters including; coalescing, particulate and activated charcoal for the removal of water, oil and particulates from compressed air.



WDH

Desiccant Dryers

A complete line of desiccant dryers for the removal of water vapor in compressed air to dew points as low as -100°F.

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