

WILKERSON®

Richland, MI 49083

Tel: (269) 629-5000

Installation & Service Instructions
83-050-000

Manual Desiccant Dryer Models
X06, X03, X04, and X25 with
Variations and Accessories

ISSUED: October, 2004

Supersedes: December, 2002

Doc. #83-050-000, Rev. 2

⚠ WARNING

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer's specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

Description

Wilkerson manual dryers are intended to remove water vapor from the compressed air system. Atmospheric dew points as low as -100°F (-73°C) are achievable when operated within rated unit specifications.

General Safety Information

- **Release all air pressure from intended airline before installation.**
- Install unit in air line before opening desiccant container. After unit installation, add desiccant following steps in desiccant replacement instructions on page 2.
- Always make sure bowl, bowl guard, and clamp ring are in place and the clamp ring is securely locked before pressurization.
- DO NOT exceed the pressure and temperature ratings as shown in the specifications.
- Follow all local, state and federal EPA, OSHA, and similar codes regarding disposal of old desiccant.

Installation

1. Refer to **WARNING** (on page 6).
2. Install as close as possible to the point where the air is being used.
3. Install unit with the airflow going in the direction of the arrow. For the X04, install with airflow entering at the bottom center port of the 4-way valve and exiting at the center port of the shuttle valve.
4. Install unit on air line before opening desiccant container. After installation, add desiccant. Shake and tap bowl while filling to settle desiccant. Fill Model X25 and X03/X04 to 1/8" below inner shoulder of bowl. Fill Model X06 bowl to within 1/2" of top.
5. Replace bowl and bowl guard, or metal bowl, and clamp ring onto the unit. Be sure clamp ring is securely locked in place before pressurizing unit.
6. Most manual desiccant dryer users will achieve optimal results when installing the dryer as close to the equipment or process being protected as possible in the compressed air system. Most users, especially those with high quality air requirements, should protect their system and the manual dryer with one or more of the following types of components: **Please see page 4 for exact model recommendations.**

- **Liquid Separator:** Should be used prior to the manual desiccant dryer in any system where large slugs of liquid water are anticipated. The manual desiccant dryer silica gel or mole sieve can be destroyed by large amounts of liquid moisture. Most systems which have an aftercooler and separator, and/or a refrigerated air dryer, will not require a liquid separator. An alternative is to use a particulate filter/separator, described below.

- **Particulate Filter/Separator:** Should be used prior to the manual desiccant dryer in any system where significant amounts of dirt, pipe scale, etc, and/or liquid water, is present, in order to prevent clogging the manual dryer or harming the desiccant. A particulate filter/separator should be used prior to a coalescing filter to extend the life of the coalescing element.



Specifications	X06	X03 plastic bowl	X03 metal bowl	X04	X25 metal bowl
Maximum Pressure	150 psig (10.3 bar)	150 psig (10.3 bar)	150 psig (10.3 bar)	150 psig (10.3 bar)	150 psig (10.3 bar)
Maximum Temperature	125°F (52°C)	125°F (52°C)	150°F (66°C)	125°F (52°C)	150°F (66°C)
Atmospheric Dewpoint*	000 Model: -45°F (-43°C) U00 Model: 4A Molecular Sieve -100°F (-73°C)	000 Model: -45°F (-43°C) U00 Model: -100°F (-73°C)	M00 Model: -45°F (-43°C) MU0 Model: -100°F (-73°C)	000 Model: -45°F (-43°C) U00 Model: -100°F (-73°C)	000 Model: -45°F (-43°C) U00 Model: -100°F (-73°C)
Maximum Continuous Airflow*	5 scfm (2.3 dm³/s)	10 scfm (4.7 dm³/s)	10 scfm (4.7 dm³/s)	10 scfm (4.7 dm³/s)	25 scfm (11.8 dm³/s)
Total Airflow*	600 scf (283 dm³)	4400 scf (2076 dm³)	4400 scf (2076 dm³)	4400x2 scf (2076x2 dm³)	11,000 scf (5191 dm³)
Total Min. of Operation @ Max Continuous Airflow	120 min.	440 min.	440 min.	880 min.	440 min.
Unit Weight With Desiccant	1.13 lbs. (0.51 kg)	7.4 lbs. (3.4 kg)	6.8 lbs. (3.1 kg)	15.0 lbs. (6.8 kg)	11.2 lbs. (5.1 kg)
Desiccant Weight (Alone)	0.25 lbs. (0.11 kg)	1.8 lbs. (0.8 kg)	1.8 lbs. (0.8 kg)	35 lbs. (3.6 kg)	4.4 lbs. (2.0 kg)
Pipe Connections	1/4" NPT (BSPP)	1/4", 1/2" NPT (BSPP)	1/4", 1/2" NPT (BSPP)	1/4", 1/2" NPT (BSPP)	1/2" NPT (BSPP)

*With Dry Desiccant at 100 psig (7 bar) and 70°F (21°C)

Models X06, X03, X04, and X25

- **Coalescing Filter:** Should be used prior to the manual desiccant dryer in any lubricated compressor system which does not utilize a system coalescing filter. The coalescing filter removes oil from the compressed air, which prevents the oil from coating the silica gel or mole sieve and destroying its ability to dry the air. Oil contaminated desiccant must be replaced and disposed of properly, as it cannot be regenerated.
- **Afterfilter:** Should be used after the manual desiccant dryer in any system where any amount of desiccant dust, however insignificant, is undesirable. The afterfilter prevents the very slight desiccant dusting, which occurs over time, from proceeding downstream into the compressed air system.
- **Pre-Dryers:** Both the silica gel and mole sieve manual desiccant dryers can have their drying lives extended through the use of a pre-dryer. The silica gel ("000"/"M00") models will typically last over three times as long if a refrigerated air dryer is placed in the compressed air system prior to it. (A plant air system refrigerated dryer will provide the same extended life.) The mole sieve ("U00"/"MU0") models will typically last three times as long if a silica gel ("000"/"M00") model dryer installed prior to the mole sieve dryer. (A plant air system desiccant dryer will provide the same extended life.) Users of either type of manual desiccant dryer who expect a high air flow demand may wish to consider using a pre-dryer. **Please see page 4 for exact model recommendations.**

Operation

1. The silica gel desiccant, when visible through the clear polycarbonate plastic bowl, contains a color indicator. It changes from Blue (meaning dry) to Pink (meaning wet) to indicate the need to replace or regenerate the desiccant. (An X05-02-000 moisture indicator can be used with 4A molecular sieve units to perform the same function.) On units with metal bowls, a moisture indicator mounted on the cover performs the same color changing function.
2. The 4A molecular sieve does not change color. For moisture indication an X05-02-000 is recommended. See page 4.
3. By installing two or more units in parallel, higher dry airflows can be achieved.

Maintenance

1. The only servicing required for silica gel units is when the desiccant color or moisture indicator has changed from Blue (meaning dry) to Pink (meaning wet). Should this color change occur:
 - a. **Turn off and depressurize the line containing the dryer unit.**
 - b. Loosen the clamp ring and remove the bowl from the top housing. (Figure 1) Proceed to step 2 or 3, as required.
2. **Desiccant replacement:**
 - a. Pour out used desiccant.
 - b. Open new container and refill bowl. (Figure 2)
 - c. Shake or tap bowl to settle desiccant. Add or remove sufficient quantity to fill Model X03 and X25 unit bowl to 1/8" below inner step, and for Model X06 fill bowl to within 1/2" of the top. (Figure 3)
 - d. See replacement parts list for specifics on kit numbers for replacement desiccant.

3. Desiccant regeneration:

- a. — For silica gel ("000") units: **Pour out used Pink desiccant onto flat pan. Place Pink desiccant in 350°F (176°C) oven for approximately three hours or until the desiccant color has changed back to Blue.**
 - For 13x molecular sieve ("X00") units cannot be regenerated. See page 5 for replacement kits.
 - For 4A molecular sieve ("U00") units: **Pour out used desiccant onto flat pan. Place desiccant in 600°F (316°C) oven for up to a maximum of 3 hours.**
 - b. Remove desiccant from oven and allow to cool down to ambient temperature.
 - c. Pour desiccant back into unit bowl, periodically shaking and tapping to settle the desiccant.
4. Replace bowl and bowl guard, or metal bowl, and clamp ring onto the unit. Be sure clamp ring is securely locked in place before repressurizing the unit.

CAUTION

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types. Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents, but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

Bowl guards are recommended for added protection of polycarbonate bowls where chemical attack may occur.

WARNING

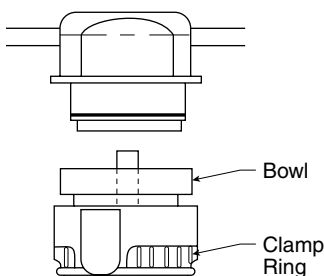
FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from The Company, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by The Company and its subsidiaries at any time without notice.

EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.

Figure 1



X03 / X04 / X25

Figure 2

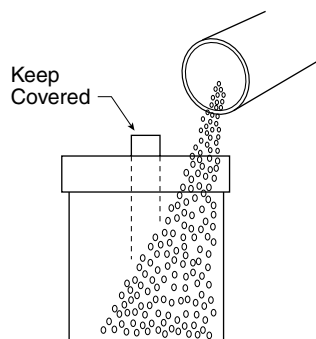
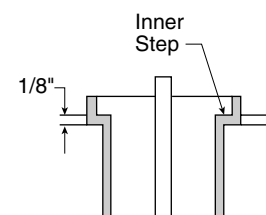
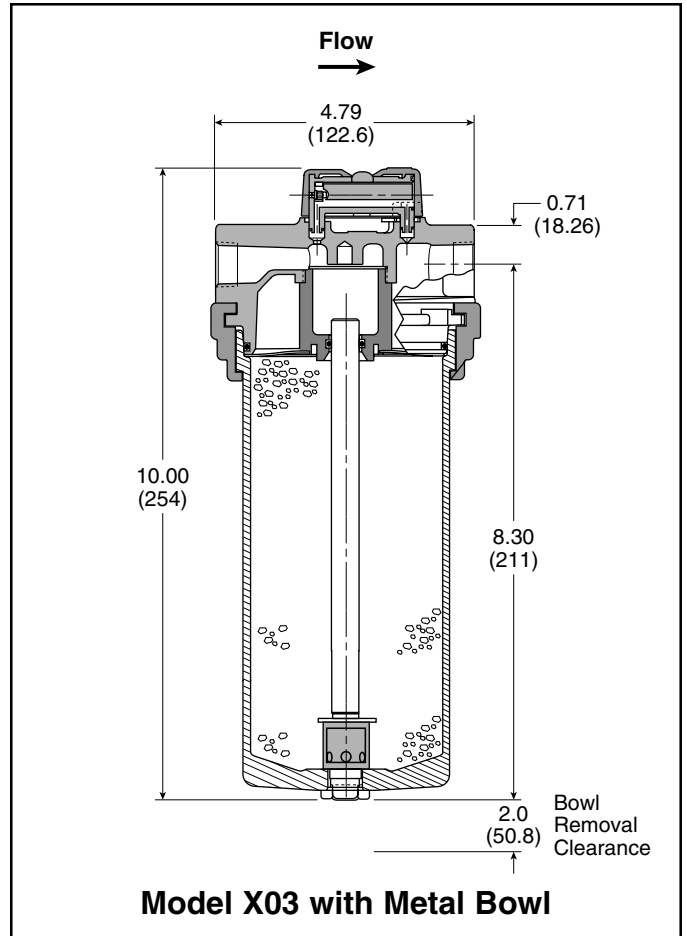
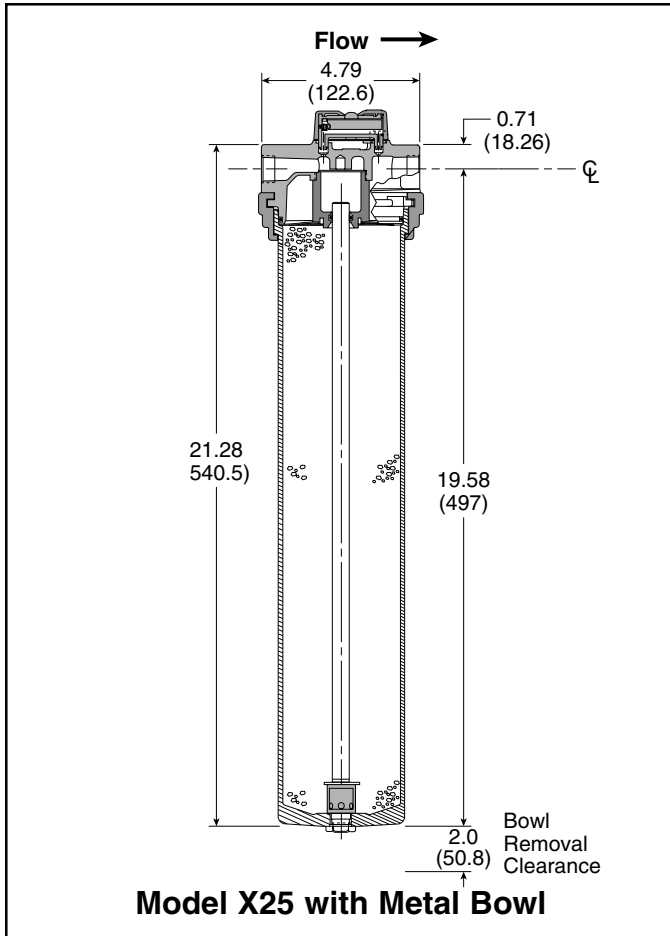
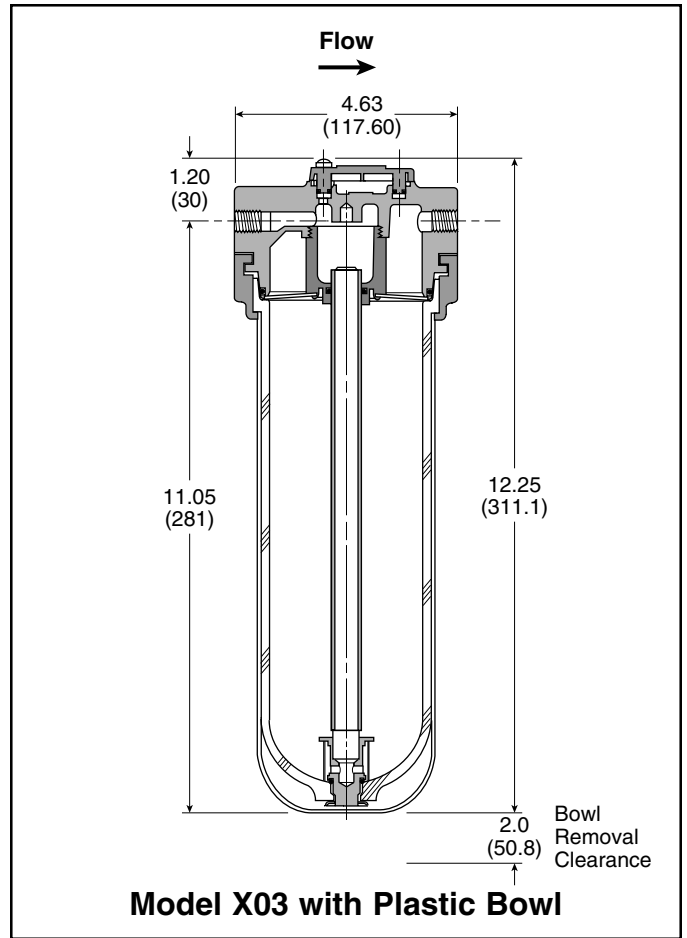
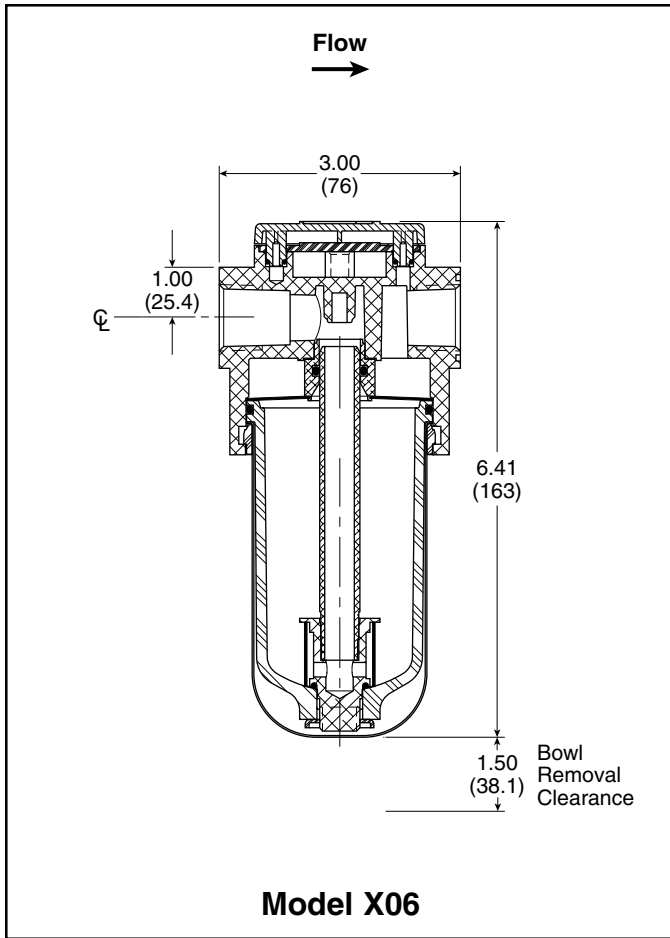


Figure 3



X03 / X04 / X25



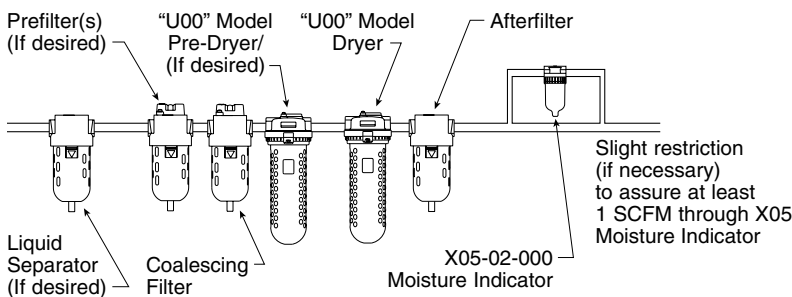
Recommended Liquid Separators, Filters and Pre-Dryers

(use as necessary for specific system requirements)

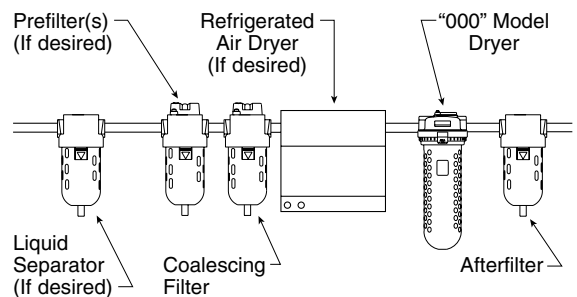
Manual Desiccant Dryer Model Used	Liquid Separator	Particulate Filter/Separator (5 micron)	Coalescing Filter (0.5 micron)	Afterfilter (0.5 micron)	Pre-Drying Manual Desiccant or Refrigerated Air Dryer, For Extended Life	Total Desiccant Life if Pre-Drying Dryer Used
Silica Gel For -45°F (-42°C) Atmospheric Dewpoint:						
X06-02-000	WSA-02-FM0	F16-02-F00	M16-02-FS0	AF1-02-S00	WRA-0010	2200 SCF
X03-XX-000/M00	WSA-XX-FM0	F16-XX-F00/M00	M16-XX-FS0/MS0	AF1-XX-S00	WRA-0010	16,000 SCF
X04-02-000	WSA-02-FM0	F16-02-F00	M16-02-FS0	AF1-02-S00	WRA-0010	32,000 SCF (16,000x2)
X25-04-000	WSA-04-FM0	F26-04-FM0	M26-04-FMS	AF2-04-S00	WRA-0025	40,000 SCF
Type 4A Molecular Model Sieve For -100°F (-73°C) Atmospheric Dewpoint:						
X06-02-U00	WSA-02-FM0	F16-02-F00	M16-02-FS0	AF1-02-S00	X06-02-000	1800 SCF
X03-XX-U00/MU0	WSA-XX-FM0	F16-XX-F00/M00	M16-XX-FS0/MS0	AF1-XX-S00	X03-XX-000/M00	13,200 SCF
X04-02-U00	WSA-02-FM0	F16-02-F00	M16-02-FS0	AF1-02-S00	X04-02-000	26,400 SCF (13,200x2)
X25-04-U00	WSA-04-FM0	F26-04-FM0	M26-04-FMS	AF2-04-S00	X25-04-000	33,000 SCF

Typical Installation Arrangement For Manual Dryers

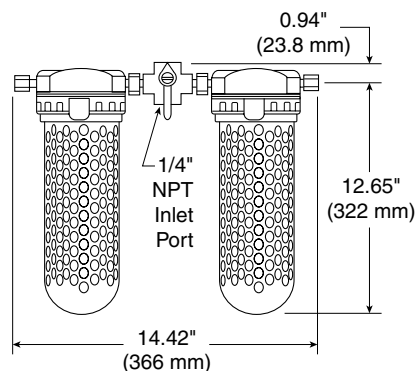
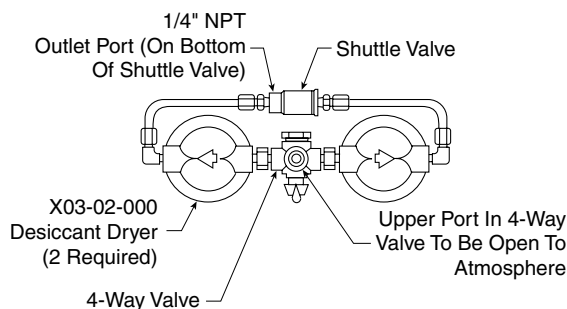
“U00”/“MU0” Models:



“000”/“M00” Models:



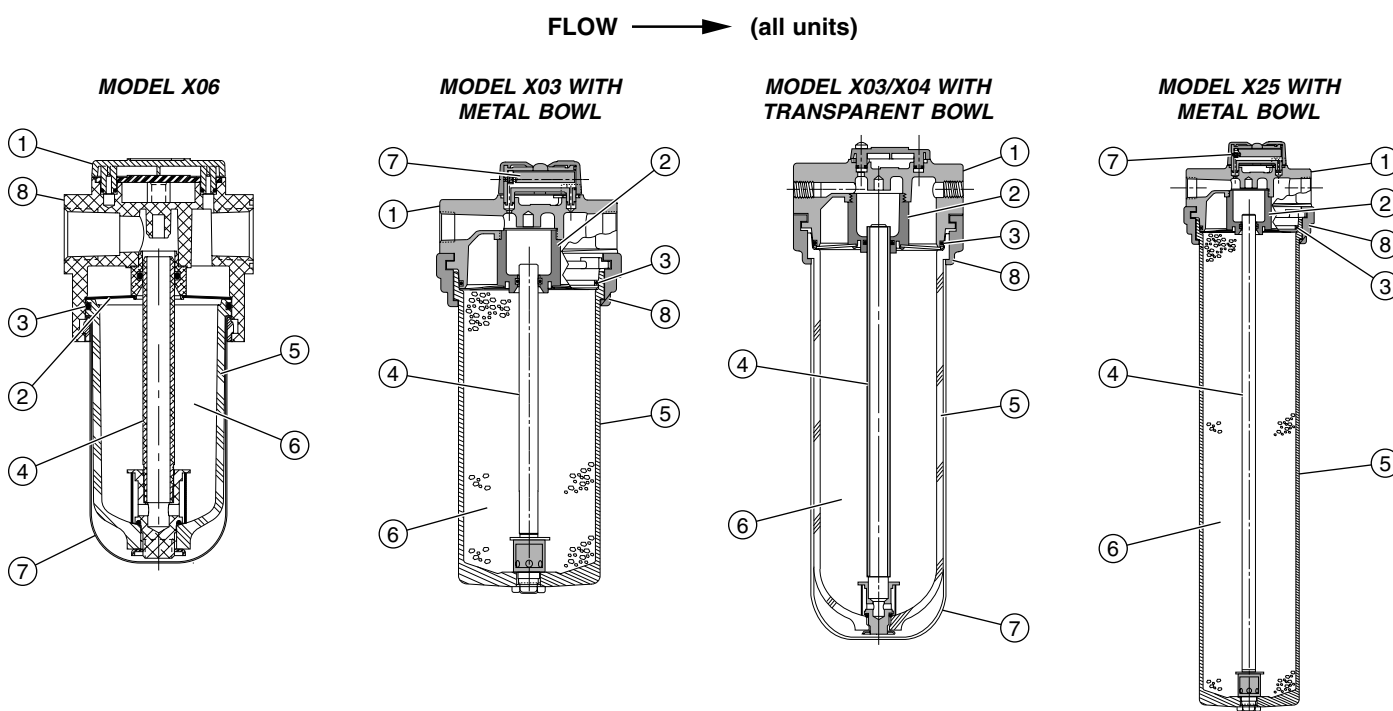
X04-02-000 Dryer



Replacement Parts List — TRANSPARENT BOWL Units with Bowl Guards

Description	Part No. X06	Qty.	Part No.	X03 Qty.	X04 Qty.
1 Cover	NNR	—	NNR	—	—
2 Screen Assembly	NNR	—	NNR	1	2
3 Bowl O-Ring	GRP-95-259	1	GRP-95-256	1	2
4 Tube Assembly w/screen	N/A	1	DRP-96-435	1	2
5 Transparent Bowl	N/A	1	GRP-95-871	1	2
6 Silica Gel (000)	DRP-95-303	3 Charges ¹	DRP-85-059	4 Charges ¹	2 Charges ¹
4A Molecular Sieve (U00)	DRP-95-304	3 Charges ¹	DRP-85-060	4 Charges ¹	2 Charges ¹
13x Molecular Sieve (X00)	DRP-95-305	3 Charges ¹	DRP-85-061	4 Charges ¹	2 Charges ¹
7 Bowl Guard	GRP-95-846	1	DRP-95-810	1	2
8 Clamp Ring	NNR	—	GRP-96-404	1	2

¹ Note: One charge equals one refill of desiccant for unit specified.



Replacement Parts List – METAL BOWL Units with Moisture Indicators

Description	Part No. X03	Qty.	Part No. X25	Qty.
1 Cover	NNR	—	NNR	—
2 Screen Assembly	GRP-96-434	1	GRP-96-434	1
3 Bowl O-Ring	GRP-95-256	1	GRP-95-256	1
4 Tube Assembly w/Screen	DRP-96-451	1	DRP-95-622	1
5 Metal Bowl	DRP-96-450	1	NNR	—
6 Silica Gel (000)	DRP-85-059	4 Charges ¹	DRP-85-280	3 Charges ¹
4A Molecular Sieve (U00)	DRP-95-060	4 Charges ¹	DRP-95-624	3 Charges ¹
13x Molecular Sieve (X00)	DRP-95-061	4 Charges ¹	N/A	—
7 Moisture Indicator **	DRP-95-623	1	DRP-95-623	1
8 Clamp Ring	GRP-96-404	1	GRP-96-404	1

¹ Note: One charge equals one refill of desiccant for unit specified.

NNR: Not normally replaced

** The moisture indicator contains a weep orifice to provide an air sample to the moisture indicating paper. Air leakage from this indicator is necessary and normal.

WILKERSON WARRANTY

Wilkerson products are warranted to be free from defects in material and workmanship, under proper use, installation, application and maintenance in accordance with Wilkerson's written recommendations and specification for a period of one year from the date of shipment from the factory (refrigerated dryers are warranted for 2 years). Wilkerson's obligation under this warranty is limited to, and the sole remedy for any such defect shall be, the repair or replacement (at Wilkerson's option) of unaltered products returned to Wilkerson and proven to have such defect, provided such defect is promptly reported to Wilkerson within said one-year period.

This is the only authorized Wilkerson Warranty and is in lieu of all other express or implied warranties or representations, including any implied warranties of merchantability or fitness, or of any other obligations on the part of Wilkerson.

Warranty claims must be submitted and shall be processed in accordance with Wilkerson's established warranty claim procedure. In no event will Wilkerson be liable for business interruptions, loss of profits, personal injury, costs of delay or for any other special, indirect, incidental or consequential losses, cost or damages.

WARNING: USE LIMITATIONS

Wilkerson's warranties are void, and Wilkerson assumes no responsibility for any resulting cost, loss, injury or any other damages whatsoever, with respect to any plastic bowl unit for which a bowl guard is standard equipment if the unit is placed in service without the bowl guard and, except as otherwise specified in writing by Wilkerson, with respect to any Wilkerson products which are used in other than compressed air service. Specific warnings with respect to these and other use limitations appear elsewhere in this catalog.

Wilkerson maintains a policy of ongoing product development and improvement. We therefore reserve the right to change dimensions specification and design without notice.

DO NOT PLACE PLASTIC BOWL UNIT IN SERVICE WITHOUT BOWL GUARD INSTALLED

Plastic bowl units are sold only with bowl guards with the exception to miniature units (C04, F00, L00, and M00). To minimize the danger of flying fragments in the event of plastic bowl failure, the bowl guards should not be removed. If the unit is in service without the bowl guard installed, manufacturer's warranties are void, and the manufacturer assumes no responsibility for any resulting loss.

If the unit has been in service and does not have a bowl guard, order one and install before placing back in service.

CAUTION

Certain compressor oils, chemicals, household cleaners, solvents, paints and fumes will attack plastic bowls and can cause bowl failure. Do not use near these materials. When bowl becomes dirty replace bowl or wipe only with a clean, dry cloth. Reinstall bowl guard or buy and install a bowl guard. Immediately replace any crazed, cracked, damaged or deteriorated plastic bowl with a bowl or a new plastic bowl and bowl guard.

CAUTION

Except as otherwise specified by the manufacturer, this product is specifically designed for compressed air service, and use with any other fluid (liquid or gas) is a misapplication. For example, use with or injection of certain hazardous liquids or gases in the system (such as alcohol or liquid petroleum gas) could be harmful to the unit or result in a combustible condition or hazardous external leakage. Before using with fluids other than air, or for non-industrial applications, or for life support systems, consult Wilkerson Corporation for written approval.

SOME OF THE MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS.

Acetaldehyde	Chlorobenzene	Methylene chloride
Acetic acid (conc.)	Chloroform	Methylene salicylate
Acetone	Cresol	Milk of lime (CaOH)
Acrylonitrile	Cyclohexanol	Nitric acid (conc.)
Ammonia	Cyclohexanone	Nitrobenzene
Ammonium fluoride	Cyclohexene	Nitrocellulose lacquer
Ammonium hydroxide	Dimethyl formamide	Phenol
Ammonium sulfide	Diozane	Phosphorous hydroxy chloride
Anaerobic adhesives and sealants	Ethgane tetrachloride	Phosphorous trichloride
Antifreeze	Ethyl acetate	Propionic acid
Benzene	Ethyl ether	Pyridine
Benzoic acid	Ethylamine	Sodium hydroxide
Benzyl alcohol	Ethylene chlorohydrin	Sodium sulfide
Brake fluids	Ethylene dichloride	Styrene
Bromobenzene	Ethylene glycol	Sulfuric acid (conc.)
Butyric acid	Formic acid (conc.)	Sulphural chloride
Carbolic acid	Freon (refrig. & Propell.)	Tetrahydronaphthalene
Carbon disulfide	Gasoline (high aromatic)	Tiophene
Carbon tetrachloride	Hydrazine	Toluene
Caustic potash solution	Hydrochloric acid (conc.)	Turpentine
Caustic soda solution	Lacquer thinner	Xylene
	Methyl alcohol	Perchlorethylene & Others

TRADE NAMES OF SOME COMPRESSOR OILS, RUBBER COMPOUNDS AND OTHER MATERIALS THAT WILL ATTACK POLYCARBONATE PLASTIC BOWLS.

Atlas "Perma-Guard"	National Compound #N11
Buna N	"Nylock" VC-3
Cellulube #150 and #220	Parco #1306 Neoprene
Crylex #5 cement	*Permabond 910
*Eastman 910	Petron PD287
Garlock #98403 (polyurethane)	Prestone
Haskel #568-023	Pydraul AC
Hilgard Co.'s hil phene	Sears Regular Motor Oil
Houghton & Co. oil #1120, #1130 & #1055	Sinclair oil "Lily White"
Houtosafe 1000	Stauffer Chemical FYRQUEL #150
Kano Kroil	Stillman #SR 269-75 (polyurethane)
Keystone penetrating oil #2	Stillman #SR 513-70 (neoprene)
*Loctite 271	Tannergas
*Loctite 290	Telar
*Loctite 601	Tenneco anderol #495 & #500 oils
*Loctite Teflon-Sealant	Titon
Marvel Mystery Oil	*Vibra-tite
Minn. Rubber 366Y	Zerex

*When in raw liquid form.

We cannot possibly list all harmful substances, so check with Mobay or the General Electric office for further information on polycarbonate plastic.

The trade names "EconOmist" and "Flow-Guide" are registered at the United States Patent Office. "Auto-Fill", "Dial-Air", "Flex-Drain", "Mainliner" and "Whirl-Flo" are trade names of the Wilkerson Corporation.

WILKERSON PRODUCTS ARE PROTECTED BY THE FOLLOWING U.S. PATENT AND PATENTS IN OTHER COUNTRIES, ADDITIONAL PATENTS ARE PENDING.

3,631,878	3,667,493	3,762,224	4,215,790
4,215,790	3,793,803	4,718,245	3,793,803
3,858,403	D-292-310	D-229-629	4,215,790
4,289,335	4,352,511	4,559,065	4,631,073
4,689,969	4,696,320	3,889,484	3,945,465
4,631,073	D-234-848		

WILKERSON®

Customer/Technical Service
Pneumatic Division
Richland, MI 49083

Tel: (269) 629-2550
Fax: (269) 629-2475