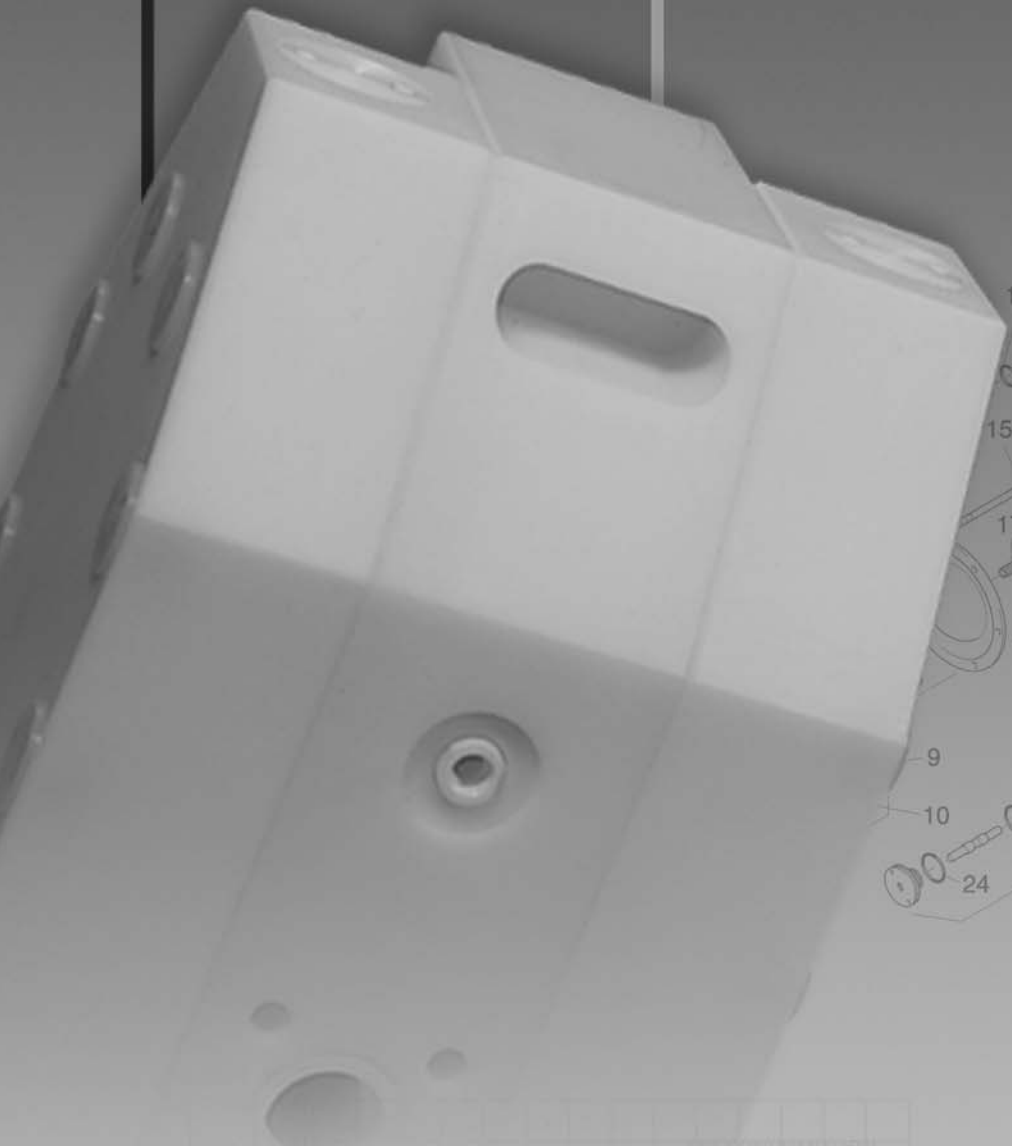
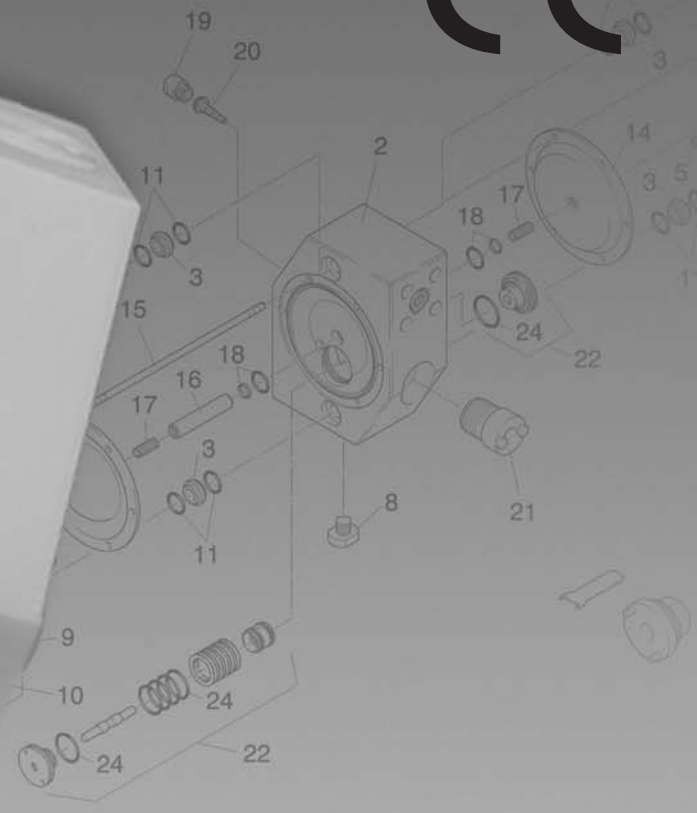
UNITEC™ SERIES

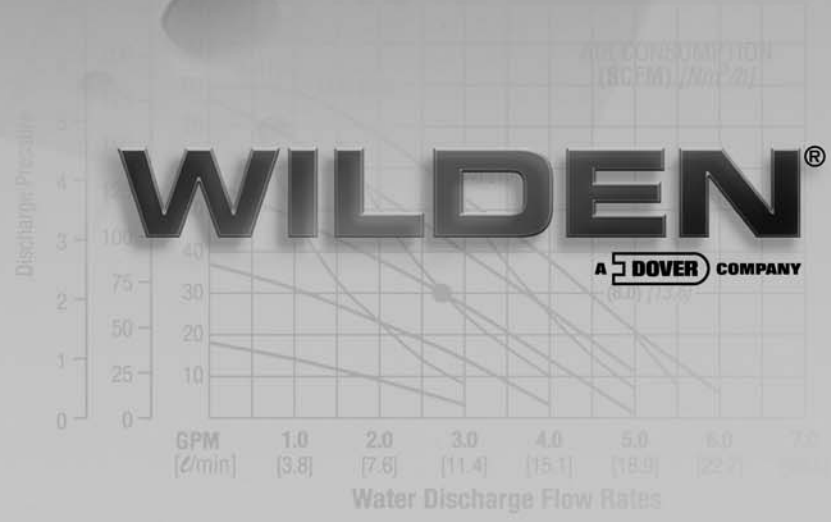
UA Series

Engineering Operation & Maintenance

CE







WILDEN®

A DOVER COMPANY

UNI-FLO™

PROGRESSIVE PUMP TECHNOLOGY

Plastic Pumps

TT4129

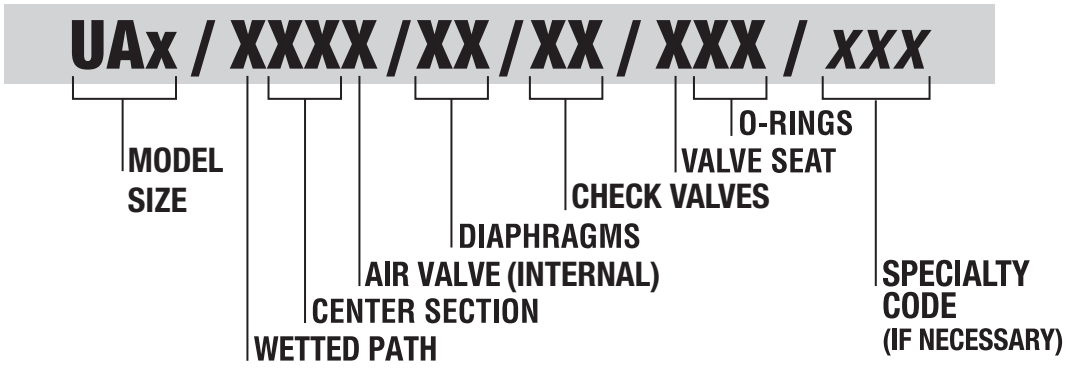
EOM-UX/UA 1/04
REPLACES EOM-UX/UA 1/03

TABLE OF CONTENTS

Member of: Hydraulic INSTITUTE

SECTION 1

WILDEN PUMP DESIGNATION SYSTEM



UNITEC™ SERIES PLASTIC PUMP MATERIAL CODES

MODEL SIZES
UA.025 = 6 mm (¼")
UA.038 = 10 mm (⅜")
UA.050 = 13 mm (½")
UA2 = 25 mm (1")
UA4 = 38 mm (1-½")
UA8 = 51 mm (2")

WETTED PATH
T = TEFLON® PTFE
E = POLYETHYLENE
F = CONDUCTIVE TEFLON® PTFE
D = CONDUCTIVE POLYETHYLENE

CENTER SECTION
TT = TEFLON® PTFE
EE = POLYETHYLENE
FF = CONDUCTIVE TEFLON® PTFE
DD = CONDUCTIVE POLYETHYLENE

AIR VALVE
E = POLYETHYLENE

DIAPHRAGMS
ET = TEFLON® PTFE W/ INTEGRAL OUTER PISTON (White)
EX = NORDEL® W/ INTEGRAL OUTER PISTON

CHECK VALVES
TF = TEFLON® PTFE (White) – BALL
ND = NORDEL® – BALL
SS = STAINLESS STEEL – BALL
CE = POLYETHYLENE – CYLINDER
CT = TEFLON® PTFE – CYLINDER

VALVE SEATS
T = TEFLON® PTFE
E = POLYETHYLENE
F = CONDUCTIVE TEFLON® PTFE
D = CONDUCTIVE POLYETHYLENE

VALVE SEAT O-RINGS
TV = TEFLON® ENCAP. VITON®
ND = NORDEL®

SPECIALTY CODES

504 DIN flange
800 Barrier chamber system
801 Barrier chamber system, DIN
802 Back flushing system, hand operated, EPDM seals
803 Back flushing system, hand operated, EPDM seals, DIN
804 Back flushing system, hand operated, PTFE seals
805 Back flushing system, hand operated, PTFE seals, DIN
806 Back flushing system, pneumatic, EPDM seals
807 Back flushing system, pneumatic, EPDM seals, DIN
808 Back flushing system, pneumatic, PTFE seals
809 Back flushing system, pneumatic, PTFE seals, DIN
812 Stroke sensor
813 Stroke sensor, DIN
814 Stroke counting pneumatic with pressure transmitter
815 Stroke counting pneumatic with pressure transmitter, DIN
816 Diaphragm sensor
817 Diaphragm sensor, DIN
850 Dampener, Poly/Teflon Diaph
851 Dampener, Poly/Teflon Diaph, DIN
852 Dampener, Poly/EPDM Diaph
853 Dampener, Poly/EPDM Diaph, DIN
854 Dampener, Conductive Poly/Teflon Diaph
855 Dampener, Conductive Poly/Teflon Diaph, DIN
856 Dampener, Conductive Poly/EPDM Diaph
857 Dampener, Conductive Poly/EPDM Diaph, DIN
858 Dampener, Teflon/Teflon Diaph
859 Dampener, Teflon/Teflon Diaph, DIN
860 Dampener, Teflon/EPDM Diaph
861 Dampener, Teflon/EPDM Diaph, DIN
862 Dampener, Conductive Teflon/Teflon Diaph
863 Dampener, Conductive Teflon/Teflon Diaph, DIN
864 Dampener, Conductive Teflon/EPDM Diaph
865 Dampener, Conductive Teflon/EPDM Diaph, DIN

SECTION 2

THE UNITEC™ PUMP — HOW IT WORKS

The Wilden UNITEC™ pump is an air-operated, positive displacement, self-priming pump. These drawings show the flow pattern through the pump upon its initial stroke. It is assumed the pump has no fluid in it prior to its initial stroke.

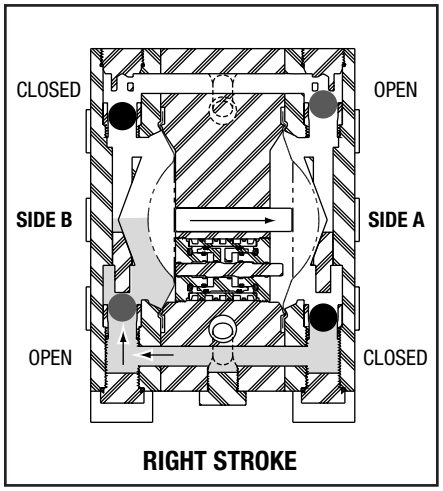


FIGURE 1: The air valve directs pressurized air to the back side of diaphragm A. The compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center block of the pump. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on its suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center block of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

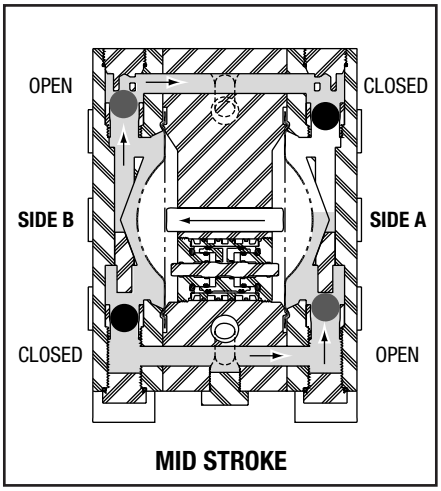


FIGURE 2: When the pressurized diaphragm, diaphragm A, reaches the limit of its discharge stroke, the air valve redirects pressurized air to the back side of diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. Diaphragm B forces the inlet valve ball onto its seat due to the hydraulic forces developed in the liquid chamber and manifold of the pump. These same hydraulic forces lift the discharge valve ball off its seat, while the opposite discharge valve ball is forced onto its seat, forcing fluid to flow through the pump discharge. The movement of diaphragm A toward the center block of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off its seat allowing the fluid being pumped to fill the liquid chamber.

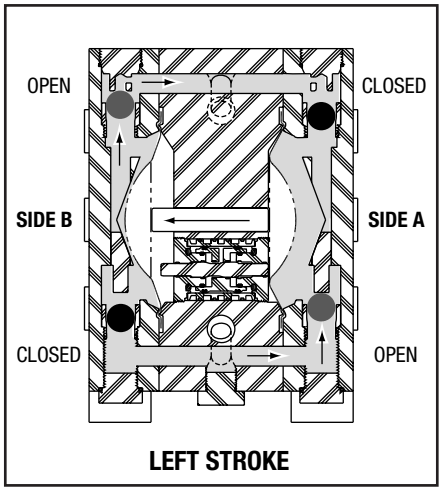


FIGURE 3: At completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

THE UNI-FLO™ AIR SYSTEM — HOW IT WORKS

The Uni-Flo™ air distribution system, the driving force behind UNITEC™ pumps, is assembled inside the center section of the pump, between the reciprocating diaphragms. The Uni-Flo™ system uses a main air valve body and mechanically actuated pilot spool mechanism to direct inlet air pressure alternately behind each diaphragm while at the same time exhausting the air behind the opposite diaphragm to atmosphere. Air inlet pressure has a direct relation to the fluid discharge pressure that the pump can develop (head), while the volume of air has a direct relation to how quickly the pump will reciprocate (flow).

The pilot spool is pushed alternately left and right through contact with the inside of the diaphragm as it moves toward the center section on its exhaust stroke. The movement of the pilot spool from one side to the other changes the inlet and exhaust porting to each diaphragm by reversing the air flow behind each diaphragm. The diaphragm that pushed the pilot spool to shift the pump while on its exhaust stroke is now pressurized with inlet air pressure and pushed away from the center section displacing fluid.

This inherently safe design needs no electronic sensors or switches to operate reliably while delivering product. Speed and flow can be controlled with simple adjustments to the air regulator, air inlet valve or fluid system valves. The Uni-Flo™ system operates solely on compressed air and is simple to use, specify and operate.

SECTION 3

WILDEN UNITEC™ PLASTIC PUMPS CAUTIONS — READ FIRST!

CAUTION: This pump is designed to run only on clean-dry air at all times. If oil and water may migrate into pump from air supply, a desiccant dryer must be installed.

CAUTION: Do not lubricate air supply — lubrication will reduce pump performance.

TEMPERATURE LIMITS:

Polyethylene	0.0°C to 70.0°C	32°F to 158°F
Nordel®	–51.1°C to 137.8°C	–60°F to 280°F
Teflon® PTFE	4.4°C to 120.0°C	40°F to 248°F

NOTE: Conductive and unfilled plastics have the same temperature range and chemical resistance.

CAUTION: When choosing pump materials, be sure to check the temperature limits for all wetted components. Example: Nordel® has a maximum limit of 137.8°C (280°F) but polyethylene has a maximum limit of only 70.0°C (158°F).

CAUTION: Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult Wilden Chem Guide (E-04) for chemical compatibility and temperature limits.

CAUTION: Always wear safety glasses and appropriate protection when operating pump. If diaphragm rupture occurs, material being pumped may be forced out air exhaust.

WARNING: Prevention of static sparking — If static sparking occurs, fire or explosion could result. Pump, valves, and containers must be grounded when handling flammable fluids and whenever discharge of static electricity is a hazard. To ground a UA conductive series pump, utilize the marked grounding point on the face of the pump and connect to suitable grounding location. As each application has different requirements, please consult the local, regional or government regulatory agency for details on proper grounding for the application.

CAUTION: Do not exceed 7 bar (100 psig) air supply pressure.

CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from pump. Before disassembly of the pump, or removal from process lines, all pressure must also be bled from the liquid side of the pump and all fluid drained into a suitable container. Failure to do so may result in product under pressure being sprayed from system.

CAUTION: Blow out air line for 10 to 20 seconds before attaching to pump to make sure all pipeline debris is clear. A 5µ (micron) in-line air filter is recommended.

CAUTION: When installing diaphragms, be sure to insert the shaft stud into the outer piston first, tightening with a hex head wrench. Then proceed to install diaphragms on the end of shaft by rotating both diaphragms clockwise. If diaphragms are hand-tight on the shaft and the bolt holes do not line up, attempt to continue rotating clockwise until holes align if possible. Reverse rotation to align holes only if it is impossible to align holes through clockwise rotation.

NOTE: Before starting disassembly, mark a line from each liquid chamber to its corresponding air chamber. This line will assist in proper alignment during reassembly.

CAUTION: UA plastic pumps are not submersible. If your application requires your pump to be submersed, contact the factory for details on a different Wilden pump model.

CAUTION: Pumps should be flushed thoroughly with water before installation into process line.

CAUTION: Tighten all hardware prior to installation.

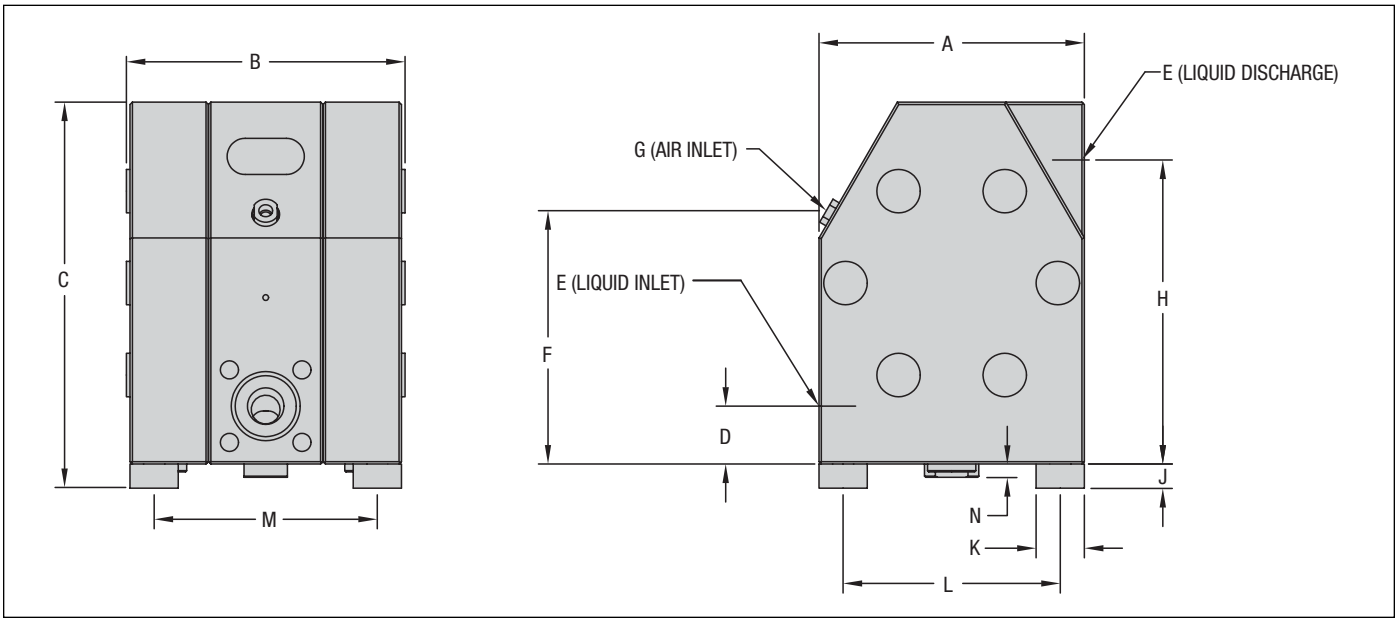
CAUTION: Long-term exposure to UV rays may damage unfilled polyethylene. If located outside an unfilled polyethylene pump should be protected from UV rays.

CAUTION: Conductive resins may have up to 2% carbon filling. Ensure your process media is compatible with this filling.

CAUTION: Use caution not to overtighten air and liquid pipe connections or pump fasteners. Overtorque of fittings or fasteners may damage the pump or cause leaking of process fluid.

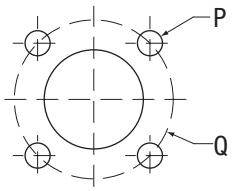
SECTION 4A
DIMENSIONAL DRAWING
WILDEN UNITEC™ PLASTIC MODELS

DIMENSIONS FOR ALL UA SERIES PUMPS



	UA.025	UA.038	UA.050	UA2	UA4	UA8
A	90 mm (3.5")	110 mm (4.3")	166 mm(6.5")	220 mm (8.7")	280 mm (11.0")	360 mm (14.2")
B	113 mm (4.5")	127 mm (5.0")	176 mm(6.9")	231 mm (9.1")	326 mm (12.8")	396 mm (15.6")
C	129 mm (5.1")	169 mm (6.7")	240 mm(9.4")	320 mm (12.6")	432 mm (17.0")	552 mm (21.7")
D	15 mm (0.6")	17 mm (0.7")	40 mm(1.6")	48 mm (1.9")	65 mm (2.6")	80 mm (3.2")
E ANSI/FNPT/BSP [1]	6 mm (1/4") FNPT/BSP	10 mm (3/8") FNPT/BSP	13 mm (1/2") FNPT/BSP	25 mm (1") ANSI/FNPT/BSP	38 mm (1-1/2") ANSI/FNPT/BSP	51 mm (2") ANSI/FNPT/BSP
E DIN [2]	-	-	-	DIN 25	DIN 40	DIN 50
F	58 mm(2.3")	78 mm(3.1")	152 mm(6.0")	207 mm (8.1")	206 mm (8.1")	266 mm(10.5")
G	3 mm (1/8") FNPT/BSP	3 mm (1/8") FNPT/BSP	6 mm (1/4") FNPT/BSP	6 mm (1/4") FNPT/BSP	13 mm (1/2") FNPT/BSP	13 mm (1/2") FNPT/BSP
H	101 mm(4.0")	139 mm(5.5")	180 mm(7.1")	252 mm (9.9")	347 mm(13.7")	452 mm(17.8")
J	13 mm(0.5")	13 mm(0.5")	20 mm(0.8")	20 mm (0.8")	20 mm (0.8")	20 mm (0.8")
K	25 mm(1.0")	25 mm(1.0")	40 mm(1.6")	40 mm (1.6")	50 mm (2.0")	50 mm (2.0")
L	50 mm(2.0")	85 mm(3.4")	126 mm(5.0")	180 mm (7.1")	230 mm (9.1")	310 mm(12.2")
M	84 mm(3.3")	97 mm(3.8")	130 mm(5.1")	185 mm (7.3")	270 mm(10.6")	340 mm(13.4")
N	-	7 mm(0.3")	9 mm(0.4")	11 mm (0.4")	13 mm (0.5")	15 mm (0.6")

[1] ANSI compatible
[2] DIN compatible



FLANGE CONNECTION SPECIFICATIONS

ANSI SPECIFICATIONS

	UA.025	UA.038	UA.050	UA2	UA4	UA8
P [Bolt Size]	-	-	-	1/2" X 13 UNC 2A X 1-1/2"	1/2" X 13 UNC 2A X 1-3/4"	5/8" X 11 UNC 2A X 1-3/4"
Q	-	-	-	79 mm (3.1") Ø	99 mm (3.9") Ø	121 mm (4.8") Ø

DIN SPECIFICATIONS

	UA.025	UA.038	UA.050	UA2	UA4	UA8
P [Bolt Size]	-	-	-	M12 X 40	M16 X 40	M16 X 45
Q	-	-	-	85 mm (3.3") Ø	110 mm (4.3") Ø	125 mm (4.9") Ø

SECTION 5A
PERFORMANCE CURVE
UA.025 PLASTIC RUBBER/TEFLON®FITTED

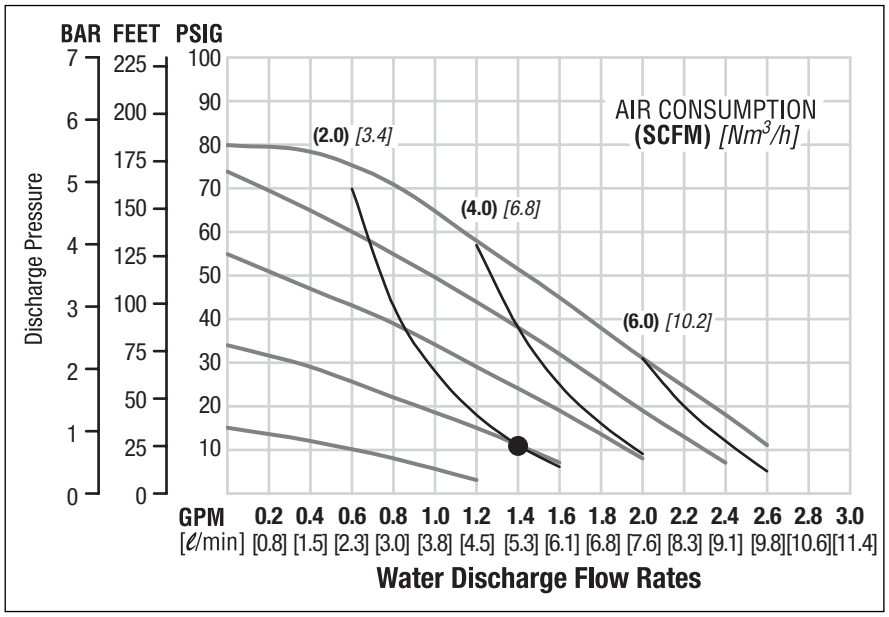
Height.....129 mm (5.1")
Width .....113 mm (4.5")
Depth .....90 mm (3.5")
Ship Weight:Teflon® PTFE.....2 kg (4 lbs)
Air Inlet .....3 mm (⅛") FNPT/BSP
Inlet.....6 mm (¼") FNPT/BSP
Discharge .....6 mm (¼") FNPT/BSP
Suction Lift .....1.0 m (3.3') Dry[1]
9.0 m (29.5') Wet

[1]Maximum dry suction is achieved when pump is fitted with cylinder check valves.

Sound: Max. dBA 71-76
Displacement Per Stroke .... 0.008 l (0.002 gal)
Max. Flow Rate .....10.0 lpm (2.6 gpm)
Max. Size Solids .....2.0 mm (0.08")
[1]Displacement per stroke was calculated at 6.9 bar (100 psig) air inlet pressure against 0 bar (0 psig) head pressure.

Example: To pump 53 lpm (1.4 gpm) against a discharge pressure head of 0.8 bar (12 psig) requires 2.8 bar (40 psig) and 3.4 Nm^3/h (20 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 7 bar (100 psig) air inlet supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 5B
PERFORMANCE CURVE
UA.038 PLASTIC RUBBER/TEFLON®FITTED

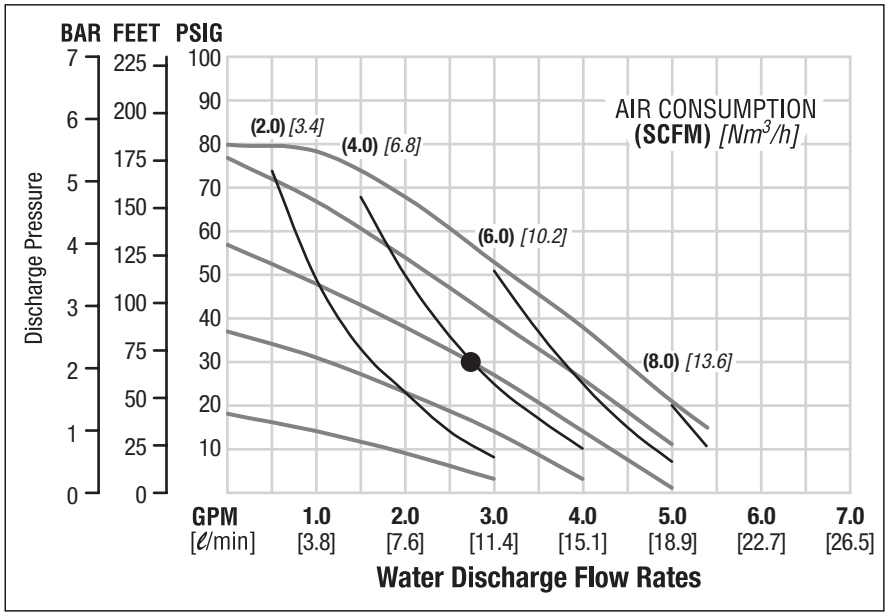
Height .....169 mm (6.7")
Width .....127 mm (5.0")
Depth .....110 mm (4.3")
Ship Weight:Teflon® PTFE.....4 kg (9 lbs)
Air Inlet .....3 mm (⅛") FNPT/BSP
Inlet.....10 mm (⅜") FNPT/BSP
Discharge .....10 mm (⅜") FNPT/BSP
Suction Lift .....2.0 m (6.6') Dry[1]
9.0 m (29.5') Wet

[1]Maximum dry suction is achieved when pump is fitted with cylinder check valves.

Sound: Max. dBA 72-75
Displacement Per Stroke ... 0.026 l (0.007 gal)[1]
Max. Flow Rate ..... 20.0 lpm (5.3 gpm)
Max. Size Solids .....3.0 mm (0.12")
[1]Displacement per stroke was calculated at 6.9 bar (100 psig) air inlet pressure against 0 bar (0 psig) head pressure.

Example: To pump 10.2 lpm (2.7 gpm) against a discharge pressure head of 2.1 bar (30 psig) requires 4.1 bar (60 psig) and 6.8 Nm^3/h (4.0 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 7 bar (100 psig) air inlet supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 5C

PERFORMANCE CURVE

UA.050 PLASTIC RUBBER/TEFLON®FITTED

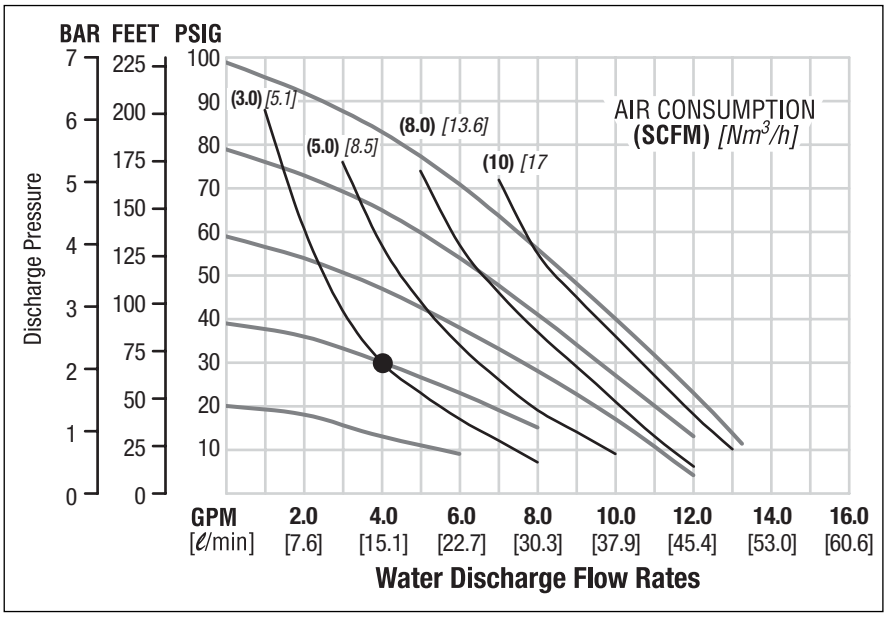
Height.....240 mm (9.4")
Width .....176 mm (6.9")
Depth .....166 mm (6.5")
Ship Weight:Teflon® PTFE.....10 kg (22 lbs)
Polyethylene .....5 kg (11 lbs)
Air Inlet .....6 mm (¼") FNPT/BSP
Inlet.....13 mm (½") FNPT/BSP
Discharge .....13 mm (½") FNPT/BSP
Suction Lift .....3.0 m (9.8') Dry[1]
9.5 m (31.2') Wet

[1]Maximum dry suction is achieved when pump is fitted with cylinder check valves.

Sound: Max. dBA 74-78
Displacement Per Stroke ... 0.110 l (0.029 gal)[1]
Max. Flow Rate .50.0 lpm (13.2 gpm)
Max. Size Solids .....4.0 mm (0.16")
[1]Displacement per stroke was calculated at 6.9 bar (100 psig) air inlet pressure against 0 bar (0 psig) head pressure.

Example: To pump 15.1 lpm (4.0 gpm) against a discharge pressure head of 2.1 bar (30 psig) requires 2.8 bar (40 psig) and 5.1 Nm^3/h (3.0 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 7 bar (100 psig) air inlet supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 5D

PERFORMANCE CURVE

UA2 PLASTIC RUBBER/TEFLON®FITTED

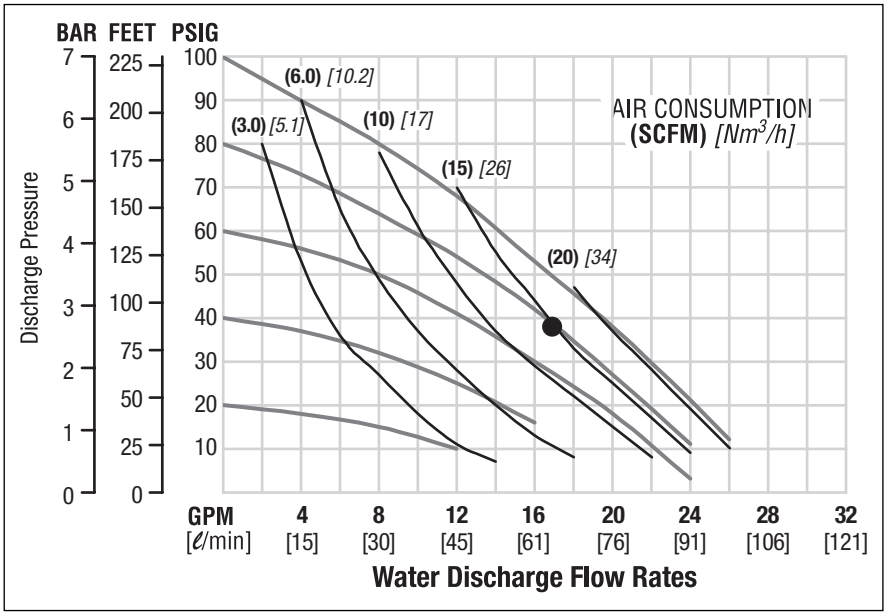
Height .....320 mm (12.6")
Width .....231 mm (9.1")
Depth .....220 mm (8.7")
Ship Weight: Teflon® PTFE .....20 kg (44 lbs)
Polyethylene .....13 kg (29 lbs)
Air Inlet .....6 mm (¼") FNPT/BSP
Inlet .....25 mm (1") FNPT/BSP w/ ANSI or DIN 25
Discharge ..25 mm (1") FNPT/BSP w/ ANSI or DIN 25
Suction Lift .....4.0 m (13.1') Dry[1]
9.5 m (31.2') Wet

[1]Maximum dry suction is achieved when pump is fitted with cylinder check valves.

Sound: Max. dBA 73-76
Displacement Per Stroke ... 0.330 l (0.087 gal)[1]
Max. Flow Rate .....100 lpm (26 gpm)
Max. Size Solids .....6.0 mm (0.24")
[1]Displacement per stroke was calculated at 6.9 bar (100 psig) air inlet pressure against 0 bar (0 psig) head pressure.

Example: To pump 64 lpm (17 gpm) against a discharge pressure head of 2.6 bar (38 psig) requires 5.5 bar (80 psig) and 2.6 Nm^3/h (15 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 7 bar (100 psig) air inlet supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 5E

PERFORMANCE CURVE

UA4 PLASTIC RUBBER/TEFLON®FITTED

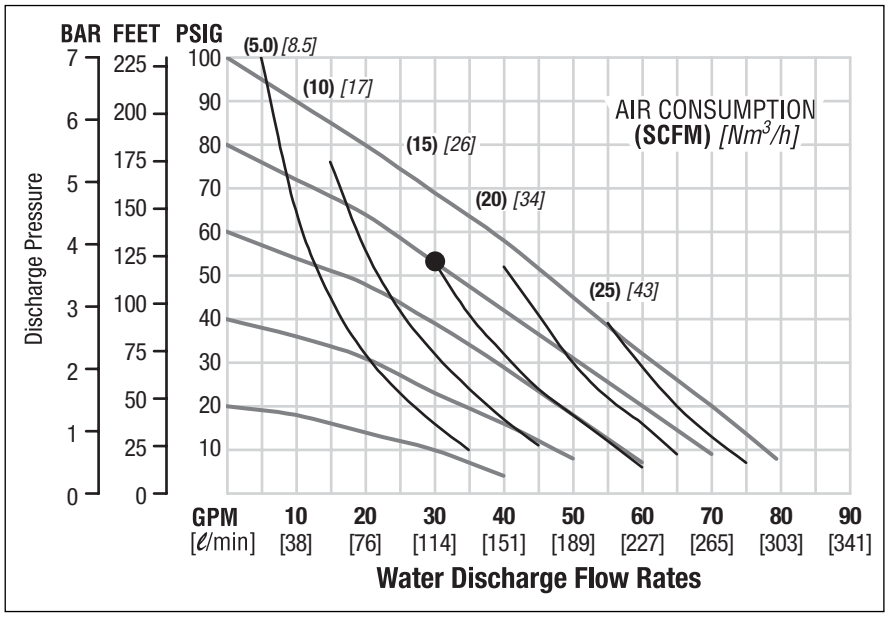
Height.....432 mm (17.0")
Width .....326 mm (12.8")
Depth .....280 mm (11.0")
Ship Weight Teflon® PTFE.....60 kg (132 lbs)
Polyethylene.....29 kg (64 lbs)
Air Inlet .....13 mm (½") FNPT/BSP
Inlet .....38 mm (1-½") FNPT/BSP w/ ANSI or DIN 40
Discharge .....38 mm (1-½") FNPT/BSP w/ ANSI or DIN 40
Suction Lift .....5.0 m (16.4') Dry[1]
9.5 m (31.2') Wet

[1]Maximum dry suction is achieved when pump is fitted with cylinder check valves.

Sound: Max. dBA 69-74
Displacement Per Stroke ... 0.940 l (0.248 gal)[1]
Max. Flow Rate .....300 lpm (79 gpm)
Max. Size Solids .....9.0 mm (0.35")
[1]Displacement per stroke was calculated at 6.9 bar (100 psig) air inlet pressure against 0 bar (0 psig) head pressure.

Example: To pump 114 lpm (30 gpm) against a discharge pressure head of 3.7 bar (53 psig) requires 5.5 bar (80 psig) and 26 Nm^3/h (15 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 7 bar (100 psig) air inlet supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 5F

PERFORMANCE CURVE

UA8 PLASTIC RUBBER/TEFLON®FITTED

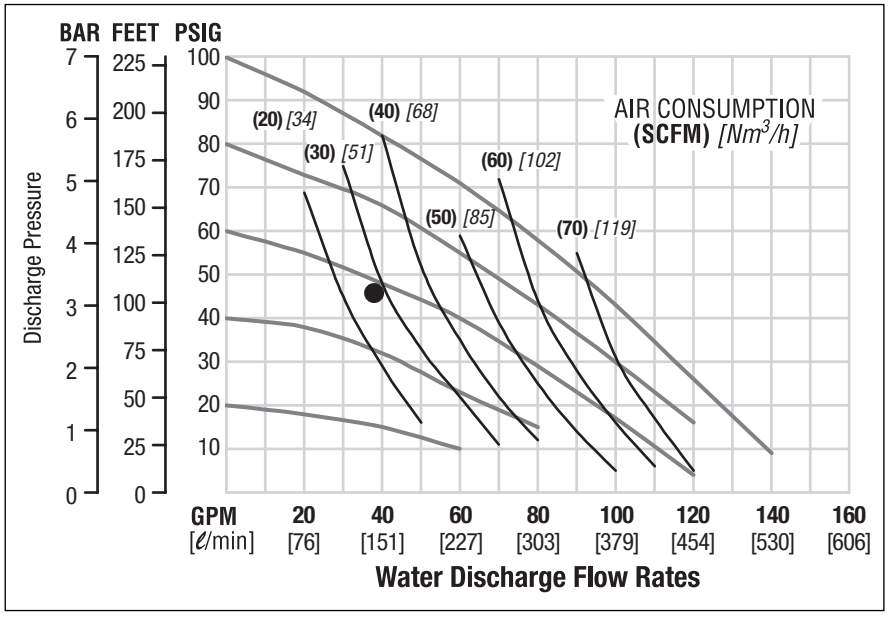
Height.....552 mm (21.7")
Width .....396 mm (15.6")
Depth .....360 mm (14.2")
Ship Weight Teflon® PTFE.....120 kg (265 lbs)
Polyethylene.....58 kg (128 lbs)
Air Inlet .....13 mm (½") FNPT/BSP
Inlet .....51 mm (2") FNPT/BSP w/ ANSI or DIN 50
Discharge .....51 mm (2") FNPT/BSP w/ ANSI or DIN 50
Suction Lift .....5.0 m (16.4') Dry[1]
9.5 m (31.2') Wet

[1]Maximum dry suction is achieved when pump is fitted with cylinder check valves.

Sound: Max. dBA 73-78
Displacement Per Stroke ... 2.100 l (0.555 gal)[1]
Max. Flow Rate ..... 530 lpm (140 gpm)
Max. Size Solids .....11.0 mm (0.43")
[1]Displacement per stroke was calculated at 6.9 bar (100 psig) air inlet pressure against 0 bar (0 psig) head pressure.

Example: To pump 151 lpm (40 gpm) against a discharge pressure head of 3.2 bar (47 psig) requires 4.1 bar (60 psig) and 51 Nm^3/h (30 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 7 bar (100 psig) air inlet supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

SECTION 6A
INSTALLATION
UA SERIES PLASTIC PUMP

The UA plastic pumps are manufactured with wetted parts of Teflon® PTFE, conductive (less than 2% carbon-filled) Teflon® PTFE, polyethylene, and conductive (less than 2% carbon-filled) polyethylene. The UA pumps are constructed with a center housing of either polyethylene, conductive polyethylene Teflon® PTFE or conductive Teflon® PTFE. A variety of diaphragms and O-rings are available to satisfy temperature, chemical compatibility, abrasion and flex concerns.

The suction pipe size for all installations should be as large as the pump inlet, or larger if highly viscous material is being pumped. The suction hose must be non-collapsible reinforced type, as the UA pumps are capable of pulling a high vacuum. Discharge piping should be as large as the pump discharge, however, larger diameter pipe may be used to reduce friction losses. It is critical that all fittings and connections are airtight or a reduction or loss of pump suction capability will result. For all UA models, Wilden offers FNPT/BSP liquid and air connections on all sizes, and ANSI or DIN compatible liquid connections on UA2, UA4 and UA8 models.

UA series pumps offer variable air and fluid connection configurations. The optional connection configuration can be achieved by inverting the center section without affecting pump performance.

INSTALLATION: Months of careful planning, study, and selection efforts can result in unsatisfactory pump performance if installation details are left to chance. Premature failure and long term dissatisfaction can be avoided if reasonable care is exercised throughout the installation process.

LOCATION: Noise, safety, and other logistical factors usually dictate where equipment be situated on the production floor. Multiple installations with conflicting requirements can result in congestion of utility areas, leaving few choices for additional pumps. Within the framework of these and other existing conditions, every pump should be located in such a way that five key factors are balanced against each other to maximum advantage.

ACCESS: First of all, the location should be accessible. If it's easy to reach the pump, maintenance personnel will have an easier time carrying out routine inspections and adjustments. Should major repairs become necessary, ease of access can play a key role in speeding the repair process and reducing total downtime.

AIR SUPPLY: Every pump location should have an air line large enough to supply the volume of air necessary to achieve the desired pumping rate (see Section 5). Use air pressure up to a maximum of 7 bar (100 psig) depending on pumping requirements. For best results, the pumps should use a 5µ (micron) air filter, needle valve and regulator. The pumps should also be run on clean-dry air only at all times. If this is not possible, a desiccant dryer must be installed and continually maintained on the air inlet to prevent migration of condensation or air line oil into the air system. The use of an air filter before the pump will insure that the majority of any pipeline contaminants will be eliminated. Sound levels are reduced below OSHA specifications using the standard Wilden muffler element supplied with pump.

ELEVATION: Selecting a site that is well within the pump's dynamic lift capability will assure that loss-of-prime troubles will be eliminated. In addition, pump efficiency can be adversely affected if proper attention is not given to site location.

PIPING: Final determination of the pump site should not be made until the piping problems of each possible location have been evaluated. The impact of current and future installations should be considered ahead of time to make sure that inadvertent restrictions are not created for any remaining sites.

The best choice possible will be a site involving the shortest and straightest hook-up of suction and discharge piping. Unnecessary elbows, bends, and fittings should be avoided. Pipe sizes should be selected to keep friction losses within practical limits. All piping should be supported independently of the pump. In addition, the piping should be aligned to avoid placing stresses on the pump fittings.

Flexible hose can be installed to aid in absorbing the forces created by the natural reciprocating action of the pump. Flexible connections between the pump and rigid piping will also assist in minimizing pump vibration. If quick-closing valves are installed at any point in the discharge system, or if pulsation within a system becomes a problem, a pulsation dampener should be installed to protect the pump, piping and gauges from surges and water hammer.

Valves should be installed in the suction and discharge lines to permit closing of the lines for pump service. The use of isolation valves prevents the media being pumped from flowing back into the pump and out any loosened connections. Note: When inlet and discharge valves are closed pressure may still remain trapped in the pump and piping. Use caution when performing any maintenance on the pump. Be sure to properly drain all air and liquid pressure from the pump before servicing.

Proper care should always be taken to ensure a tight liquid and air seal for all installations. If the pump is to be used in a self-priming application, be sure that all connections are airtight and that the suction lift is within the model's ability. Note: Materials of construction and elastomer material have an effect on suction lift parameters. Please consult Wilden distributors for specifics.

Pumps in service with a positive suction head are most efficient when inlet pressure is limited to 0.5–0.7 bar (7–10 psig). Premature diaphragm failure may occur if positive suction is higher than 0.7 bar (10 psig).

THE MODEL UA SERIES PUMPS HAVE LIMITED SOLIDS PASSAGE CAPABILITY. WHENEVER THE POSSIBILITY EXISTS THAT LARGER SOLID OBJECTS MAY BE SUCKED INTO THE PUMP, A STRAINER SHOULD BE USED ON THE SUCTION LINE. (See Section 5 for Max. Size Solids.)

CAUTION: DO NOT EXCEED 7 BAR (100 PSIG) AIR SUPPLY PRESSURE.

UA PUMPS CANNOT BE SUBMERGED. FOR SUBMERGED APPLICATIONS, CONTACT THE FACTORY FOR AN ALTERNATIVE WILDEN MODEL.

SECTION 6C
TROUBLESHOOTING

Pump will not run or runs slowly.

1. Ensure that the air inlet pressure is at least 0.4 bar (5 psig) above startup pressure and that the differential pressure (the difference between air inlet and liquid discharge pressures) is not less than 0.7 bar (10 psig).
2. Check air inlet filter for debris (see recommended installation). A 5µ (micron) air filter must be installed in the air inlet line of the pump to prevent air line particulate from entering and damaging air system.
3. Check for extreme air leakage (blow by) which would indicate worn seals/bores in the air valve, pilot spool and main shaft.
4. Disassemble pump and check for obstructions in the air passageways or objects which would obstruct the movement of internal parts.
5. Check for sticking ball check valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seals with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.
6. Diaphragms may have a pinhole allowing air to escape to the liquid side of the pump reducing performance. Check and replace diaphragms as necessary.
7. Air valve may have debris from inlet air system. A 5µ (micron) air filter must be installed in the air inlet line of the pump to prevent air line particulate from entering and damaging air system.

Pump does not run.

1. Air supply line or discharge fluid line is blocked or a valve is closed. Check valves for system and ensure they are set as desired, or disassemble pump and check for blockage.
2. Muffler may be blocked with debris or other contaminates. This will prevent air from exhausting. Replace muffler.

Pump runs and then stops with no external visible reason.

1. Ice within the air system may be blocking a port. Check system for blockage and add a dryer in air inlet line to prevent moisture from entering air system.
2. System air pressure may have dropped below system requirements. This will not hurt the pump but will put the pump into a dead-head condition. The pump will restart once air supply pressure is increased or discharge head decreases below air inlet pressure.
3. Air system may have become blocked by debris. A 5µ (micron) air filter must be installed in the air inlet line of the pump to prevent air line particulate from entering and damaging air system.
4. Air system may need maintenance. Disassemble pump and replace worn parts as necessary.
5. Diaphragm has ruptured and the product being pumped has flooded the air system stalling the pump. Disassemble the pump, clean air system of process fluid and replace diaphragms.
6. Air inlet line filter may be blocked with debris not allowing enough volume into pump for proper operation. Check and replace air inlet filter as necessary. A 5µ (micron) air filter must be installed in the air inlet line of the pump to prevent air line particulate from entering and damaging air system.

Pump runs but discharge flow decreases over time.

1. Ice within the air system may be reducing air flow in the pump. Check system for blockage and add a dryer in air inlet line to prevent moisture from entering air system.
2. Check air inlet line pressure to confirm a pressure drop has not occurred. If air pressure has decreased, locate the source of the air pressure loss and correct.
3. Debris from the air inlet line may have migrated into air system prematurely wearing the seals. Disassemble pump and replace parts as necessary. A 5µ (micron) air filter must be installed in the air inlet line of the pump to prevent air line particulate from entering and damaging air system.

Product comes out air exhaust.

1. Check for diaphragm rupture.

Pump runs but little or no product flows.

1. Check for pump cavitation; slow pump speed down to allow thick material to flow into the liquid chambers.
2. Verify that vacuum required to lift liquid is not greater than the vapor pressure of the material being pumped (cavitation).
3. Check for sticking ball check valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seals with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.
4. Pump may be operating too fast. Often to prime the pump, especially when at the maximum capability of the pump with the system design, you must lower the air inlet pressure to achieve maximum suction lift. Once primed line pressure can be raised to meet system requirements.
5. Abrasives in the product have deteriorated the valve ball or check valve and a good seal against the valve seat is not longer being achieved. Disassemble pump and replace worn parts as necessary.
6. Ensure a vacuum is not present inside the source fluid container. Check that the tank/tote vent is open and air is allowed into the tank/tote as product is being removed.
7. Check suction line for leaks and tight connections. In the event a union is loose the pump will be unable to pull the product efficiently into the pump. Tighten any loose suction line connections.
8. Check EOM for details on suction capabilities and ensure the system design is within the suction capabilities of the pump.

Pump air valve freezes.

1. Condensation from the air line is most likely bypassing the desiccant dryer or the dryer is beyond its useful life. Replace/service dryer.
2. No dryer is installed ahead of pump, allowing moisture into air system. This will damage air system and may render it inoperable. Install a desiccant dryer on the air inlet line with a 5µ (micron) air filter.

Air bubbles in pump discharge.

1. Check for ruptured diaphragm.
2. Check tightness of housing bolts and integrity of O-rings and seals, especially at intake manifold.
3. Ensure pipe connections are airtight.

Pump leaks between center section and liquid chambers.

1. Tighten all tie rods on pump to ensure a tight fit with the center section.
2. The O-rings on the sleeves between the liquid chambers and center section may be damaged. Disassemble pump and check O-rings for damage and replace as necessary.
3. Diaphragms and/or O-rings may have been damaged due to incompatibility with chemical being pumped. Check chemical use chart and select a material more appropriate for the process fluid.
4. Sleeves between center section and liquid chambers may be damaged during maintenance. Disassemble pump and replace worn or damaged parts as necessary.

SECTION 7A

UA PLASTIC & CONDUCTIVE PLASTIC PUMPS
DIRECTIONS FOR DISASSEMBLY/REASSEMBLY

CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from the pump. Use extreme caution as the pump liquid path may still be under pressure even though air line is disconnected. Disconnect all intake, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Be aware of any hazardous effects of contact with your process fluid.

The UA series pumps are available with wetted parts of Teflon® PTFE, conductive Teflon® PTFE, polyethylene and conductive polyethylene.

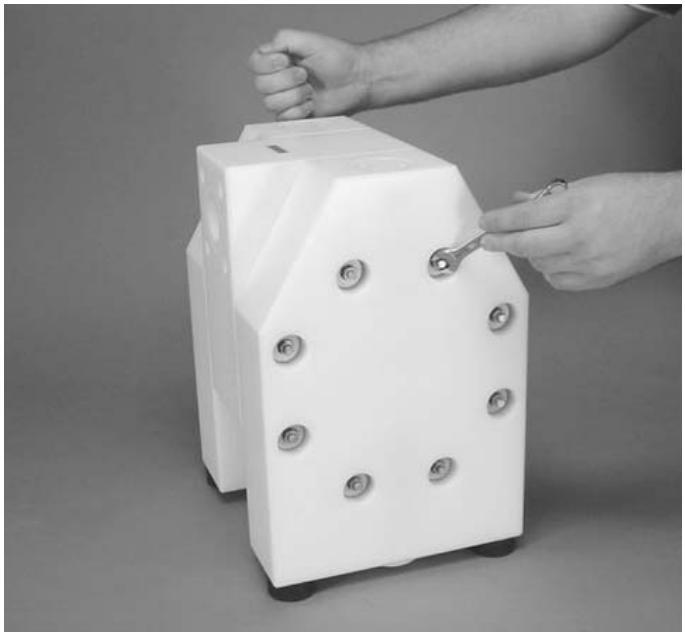
TOOLS REQUIRED:
Metric Socket Wrench Set
Metric Open-end / Box-end Wrench Set
Adjustable Wrench
Medium Flat Head Screwdriver
Air Valve Tool Included with Pump
Valve Seat Tool Included with Pump

NOTE: The model used for these instructions incorporates Nordel® diaphragms, balls, and seat O-rings. Models with Teflon® diaphragms, balls and seats are the same except where noted.

DISASSEMBLY:

STEP 1. *Figure 1*

Before disassembly, note orientation of center housing. This portion of the pump is reversible and noting direction now may prevent additional assembly time later. Remove muffler by turning counterclockwise with hand.



STEP 2. *Figure 2*

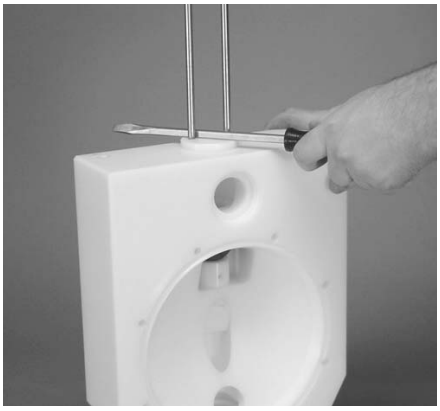
Utilizing a metric socket and box wrench, loosen and remove nuts, washers, and tie rods.

STEP 3. *Figure 3*

Remove the two liquid chambers from center housing by gently pulling apart by hand. The use of a screwdriver or other tool may damage center housing or liquid chambers, preventing proper reassembly.

STEP 4. *Figure 4*

Remove all four pump feet by rotating counterclockwise. This will make the pump components more stable during maintenance.



STEP 5. *Figure 5*

Remove bottom retainers by inserting two tie rods into predrilled holes and rotating counterclockwise with the use of a medium flat head screwdriver.

STEP 6. *Figure 6*

Remove retaining screw that affixes the inlet ball retainer in place.

STEP 7. *Figure 7*

Utilizing your finger, push ball retainer toward center of pump, out of the way of the valve ball. This will make removal of the valve ball easier.

STEP 8. *Figure 8*

Remove inlet valve ball from liquid chamber.

STEP 9. *Figure 9*

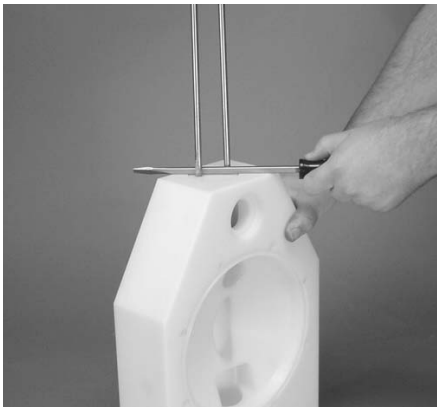
Use tool shipped with pump to turn the inlet valve seat clockwise toward center of pump for removal. An adjustable wrench may be required for leverage.

STEP 10. *Figure 10*

Remove the seat by pulling it out through the opening of the liquid chamber.

STEP 11. *Figure 11*

Removal of inlet retainer is now possible by pushing out hole in bottom of chamber.



STEP 12. *Figure 12*

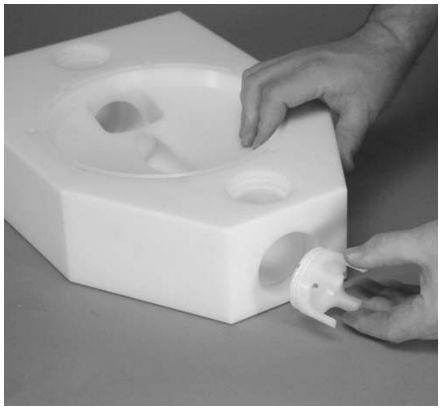
Remove top retainers by inserting two tie rods into predrilled holes and rotating counterclockwise with the use of a medium flat head screwdriver. Reassembly Hint: When reinstalling top retainers, be sure they are flush with top of liquid chamber. If overtightened, seal may be damaged - resulting in potential leaks.

STEP 13. *Figure 13*

Remove discharge valve ball and O-ring. Inspect components for wear and replace with genuine Wilden replacement parts as necessary.

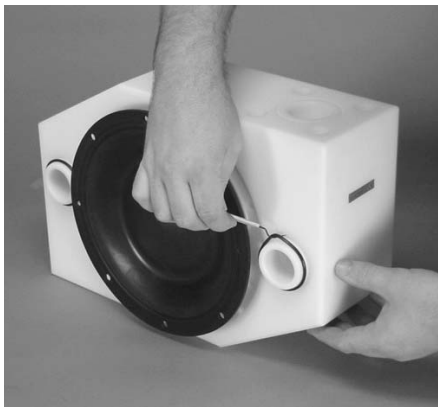
STEP 14. *Figure 14*

Utilize tool shipped with pump to turn the discharge valve seat counter-clockwise for removal. An adjustable wrench may be required for leverage.



STEP 15. *Figure 15*

Inspect seat and replace with genuine Wilden replacement parts as necessary.

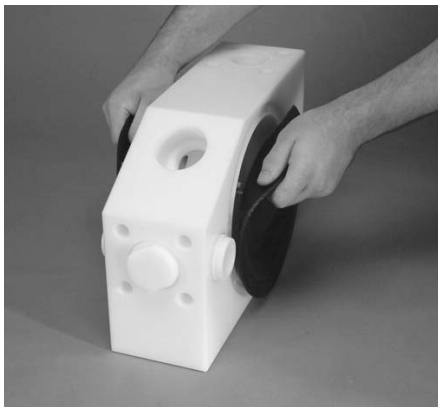


STEP 16. *Figure 16*

Four O-rings are located on the inlet and discharge ports of the center assembly (two on each side). Inspect and replace with genuine Wilden replacement parts as necessary.

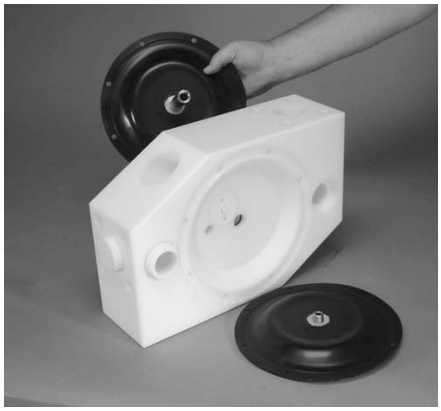
STEP 17. *Figure 17*

The unions in the liquid chambers can be removed, if required, by gently prying them off with a medium flat head screwdriver. Use extreme caution not to damage unions. **NOTE:** Removal may not be necessary if union shows no signs of wear.



STEP 18. *Figure 18*

Grasp edge of each diaphragm. Turn counterclockwise to loosen and remove one diaphragm.



STEP 19. *Figure 19*

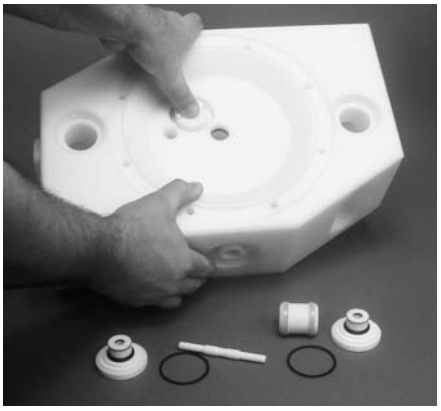
Pull diaphragm with shaft attached to it out of center housing. Remove diaphragm from shaft. Inspect and replace diaphragms as needed.

STEP 20. *Figure 20*

Use tool shipped with pump to remove Uni-Flo™ end caps (one on each side) from center assembly. Turn it counterclockwise to loosen. Use caution not to force it as the small pins on the removal tool can shear off. If one side is not coming loose, turn over and try the second side.

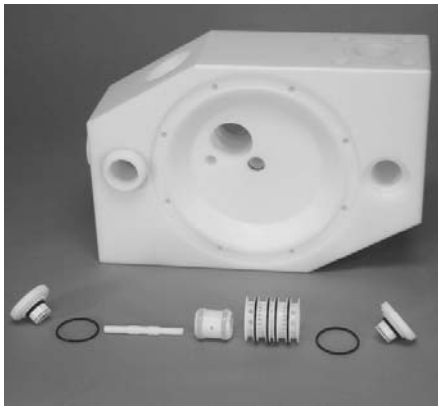
STEP 21. *Figure 21*

After removing the Uni-Flo™ end caps, remove pilot spool and O-ring. Inspect for damage. If air valve internals are damaged or worn, a complete Uni-Flo™ air valve assembly must be purchased as a replacement.



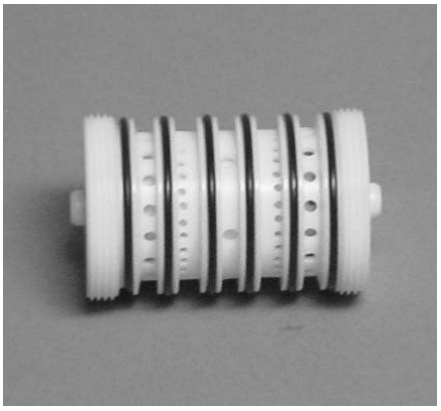
STEP 22. *Figure 22*

Place tool such that pins are sticking upward and push the valve out the bottom end with your thumbs (you may need to use a rubber mallet to gently tap the tool to initiate movement). Do not hit the valve directly with a tool.



STEP 23. *Figure 23*

Take apart Uni-Flo™ air valve with your fingers. Inspect O-rings and seals and replace entire assembly if required.



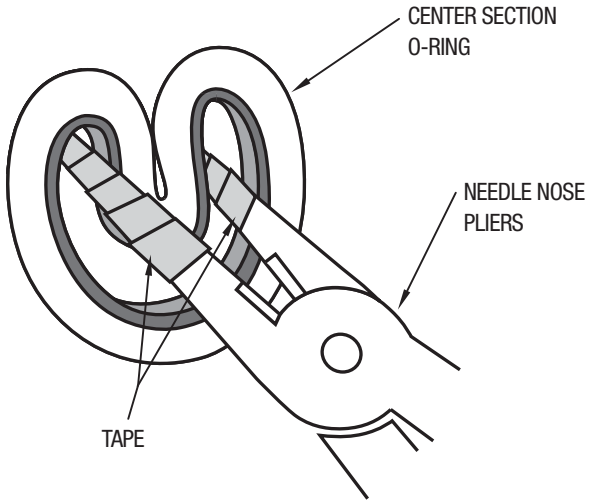
STEP 24. *Figure 24*

Complete air valve assembly.

SECTION 7B
REASSEMBLY HINTS & TIPS

When reassembling a UA series pump, it is important to pay particular attention to specific details to avoid damaging the pump or limiting pump performance. To reassemble a UA pump follow disassembly instructions 1 through 24 in reverse order and be sure to adhere to the following assembly hints & tips:

1. Before installing or inserting any components, moisten all parts with distilled water for lubrication. DO NOT use any oil or silicone lubricants as these may damage the pump or render it inoperable.
2. When tightening the air valve end into the center section, be sure to use the tool included with pump upon arrival.
3. Continue to tighten the air valve ends until the top of the end cap is flush with the center housing.
4. To prevent damage to O-rings in center block from being damaged upon insertion, carefully fold into a kidney shape before insertion. (See figure.) After insertion, carefully smooth O-rings with a tie rod before inserting shaft.
5. When reattaching diaphragms to the shaft, first insert and tighten the shaft stud into the diaphragm piston using a hex head wrench. Then proceed to hand-tighten onto end of shaft.
6. **CAUTION:** When installing diaphragms, be sure to insert the shaft stud into the outer piston first, tightening with a hex head wrench. (Note: U.025 and U.038 have an integral stud on diaphragm.) Then proceed to install diaphragms on the end of shaft by rotating both diaphragms clockwise. If diaphragms are hand-tight on the shaft and the bolt holes do not line up, attempt to continue rotating clockwise until holes align if possible. Reverse rotation to align holes only if it is impossible to align holes through clockwise rotation.
7. After reinserting discharge valve ball, reinstall top retainers. Be sure not to overtighten as this may cause pump to leak. The edge of the retainer, under the wrench landing, must be flush with the top of the liquid chamber.
8. Reassemble both liquid chambers against the center housing, aligning all bolt holes. Insert all tie rods and install all nuts and washers. Be sure the Belleville washers have the concave side of the washer facing toward the center housing. Hold all 3 pieces together with a C-clamp to assist with assembly. Continue to tighten until all three pieces meet flush, but do not overtighten. Over-torque of the tie rod nuts will cause pump damage.
9. To prevent seizing of hardware upon reassembly, spray a Teflon® lubricant on the tie-rod threads before tightening.



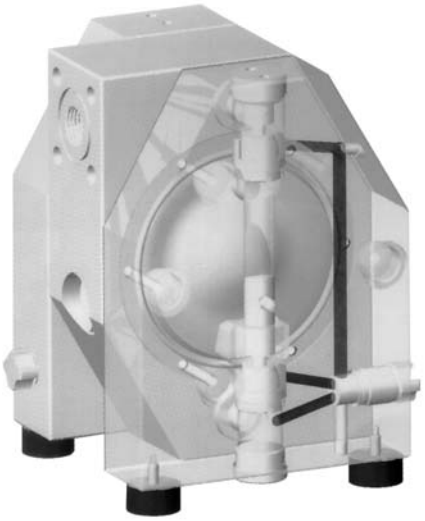
MAXIMUM TORQUE SPECIFICATIONS FOR TIE ROD ASSEMBLY

SIZE	PE	PTFE
UA.025	-----	2 N•m [1.5 ft.-lbs.]
UA.038	-----	4.5 N•m [3.5 ft.-lbs.]
UA.050	8 N•m [5.9 ft.-lbs.]	6 N•m [4.4 ft.-lbs.]
UA2	13 N•m [9.6 ft.-lbs.]	10 N•m [7.4 ft.-lbs.]
UA4	17 N•m [12.5 ft.-lbs.]	14 N•m [10.3 ft.-lbs.]
UA8	22 N•m [16.2 ft.-lbs.]	18 N•m [13.3 ft.-lbs.]

SECTION 8A
OPTIONAL EQUIPMENT FOR UA SERIES PUMPS

BACK-FLUSHING & DRAIN SYSTEM

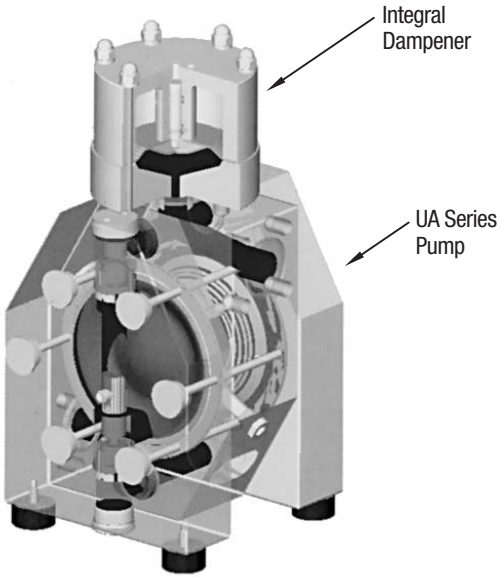
UNITEC™ pumps from 13 mm (½") through 51 mm (2") in size are available with an optional back flushing system to allow for complete cleaning, disinfection or neutralization of the system before maintenance or a change in process fluid. This unique system must be ordered with the pump as it requires special liquid chamber porting. The system can be activated manually or can be automated to start and stop as needed for process requirements. The system is also used to drain all process fluid from the pump prior to removal for inspection and maintenance and to keep personnel safe from hazardous fluids.



INTEGRAL PULSATION DAMPENERS

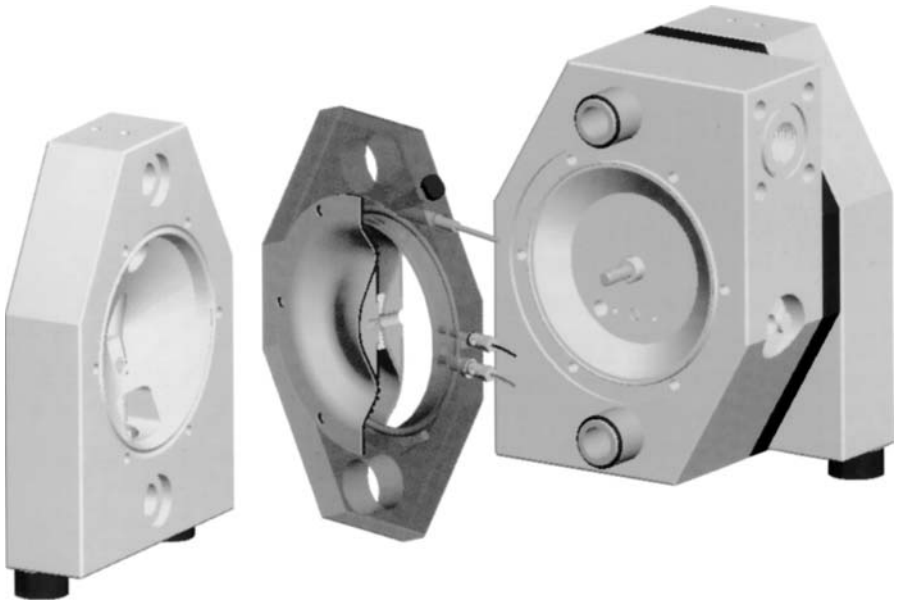
All UNITEC™ UA-series pumps can be easily fitted with an integral pulsation dampener to minimize the effect of the pumps reciprocating action on the process system. Typical to all air-operated double-diaphragm pumps the reciprocating action of the diaphragms, coupled with the cross checking action of the valve balls or check valves, causes a fluctuation in the discharge pressure while pumping. Each time a diaphragm reaches the end of its discharge stroke and begins to move back toward the center section the fluid stops for a fraction of a second while the opposite diaphragm is being pressurized in preparation for another discharge stroke. Once the opposite diaphragm is pressurized with supply air pressure, fluid on the opposite side of the pump is accelerated towards the discharge of the pump.

Dampeners combat this fluctuation in pressure by absorbing the pressure peaks as the pump reaches the full length of the stroke. Dampeners also fill the pressure valleys between strokes by forcing accumulated process fluid back into the process line as the pump is changing direction to begin discharging fluid from the opposite chamber. The integral dampeners are designed to attach directly to the center section of a UA series pump, with no additional hardware or piping required. A simple specialty code added to the pump description ensures your pump will arrive with an integral pulsation dampener. To add a pulsation dampener to a UA pump after installation, Wilden offers SD and BF Equalizers™ in various sizes and materials.



SECTION 8B
BARRIER CHAMBER SYSTEM

UNITEC™ pumps from 10 mm (⅜") through 51 mm (2") in size are available with an optional barrier chamber system. This system allows the pump to be electronically monitored for a diaphragm failure and prevents a product spill or damage to the center section of the pump by aggressive process fluids. The system uses an additional spacer section between the liquid chamber and center section on each side of the pump. This additional spacer allows the use of secondary diaphragms between the main diaphragms, but connected to the same shaft.



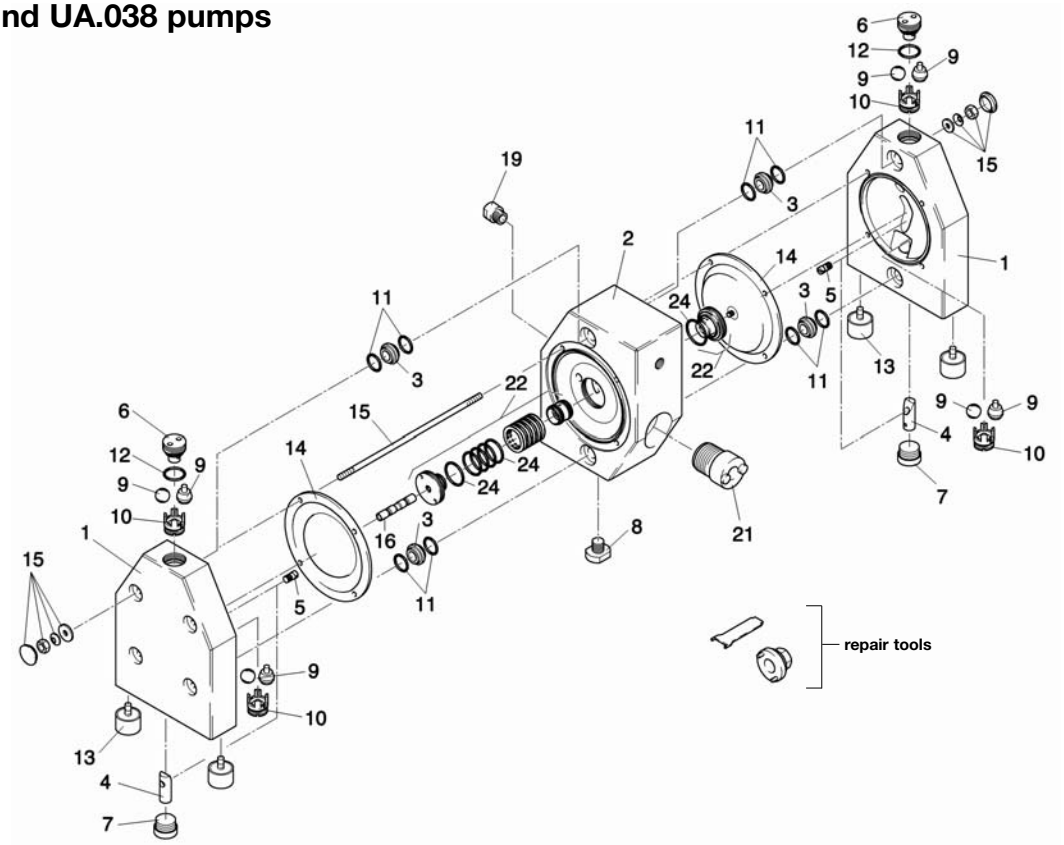
Deionized (DI) water is placed between the secondary and primary diaphragms and is monitored. As DI water is non-conductive, no current can pass through the water which is read by the sensor. Once the primary diaphragm fails the DI water has been diluted by the process fluid changing the conductivity of the barrier fluid. The system recognizes this change in conductivity. NOTE: Other substances may be used other than DI water if application or process fluid dictates.

Barrier Chamber Filling Sensor Information		
Description		**Instruction/Detail**
Sensor type		NAMUR DIN 9-234
UNITEC spare part #		U1-00-673-99
Housing / active area		12 mm
Operating voltage	U_B	5-60 V DC
Nominal voltage	U_N	8 V DC
Max. permanent residual ripple		5%
Input Current		
active area free	I_0	< / =1.5 mA
active area damped		typ. 3.5 mA
Load resistance		
active area free	R_1	typically 5 k
active area damped	R_1	typically 1 k
Frequency of operating cycles	f	1 kHz
Sensing distance		
Min	m	1
Max	m	5
Self inductance	L	ca. 0 uH
Self capacitance	C	210 nF
Max. permanent wire resistance		5 k
Repeat accuracy variance		< 0.1%
Drift		> 10%
Permanent ambient temp.	°C	-25 - 70
	°F	-13 - 158
Degree of protection IEC 529		IP 67
Connection cable	2 M	2 * 0.14 mm²
Installation		M12 * 1 male

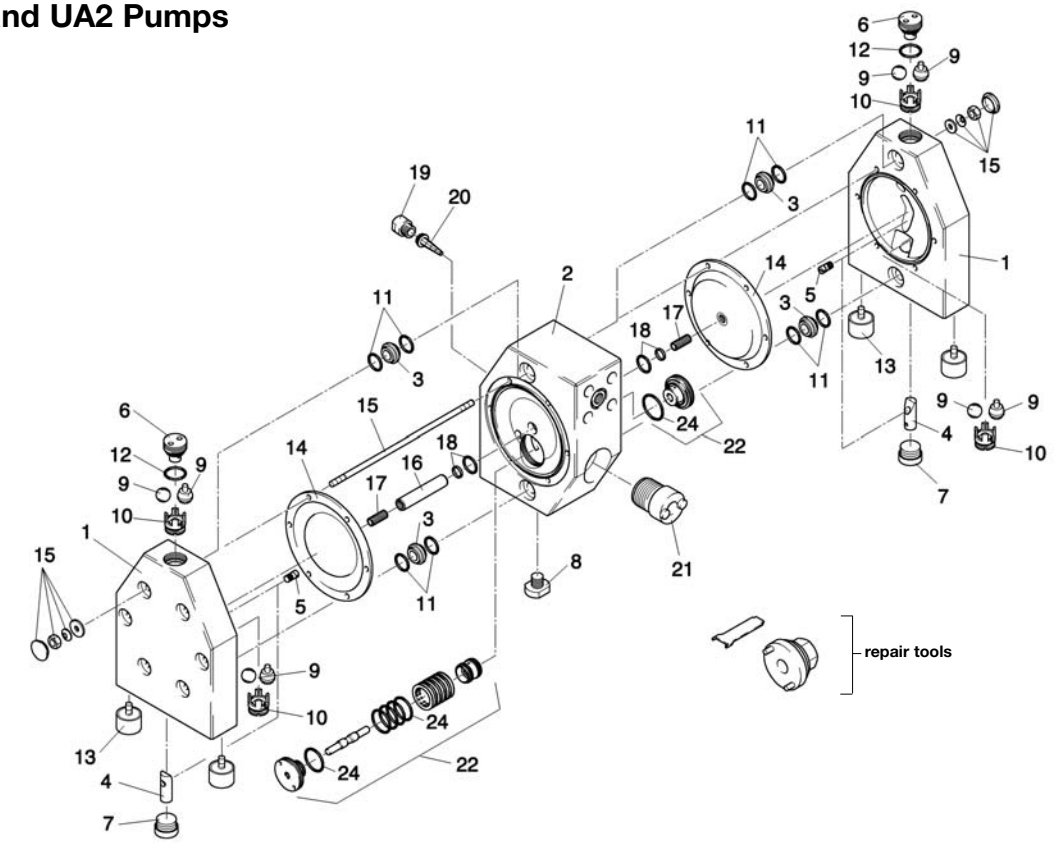
Barrier Chamber Conductivity Sensor Information		
Description		**Instruction/Detail**
Sensor Type		Embedded
Operating voltage		5-15 V DC
Nominal voltage		5 V DC
Sensing distance		
Min	m	1
Max	m	5
Wire dimension		1 * 05 mm² - 1 * 2.5 mm²
	or	2 * 05 mm² - 2 * 1.5 mm²
Connection		2 wire for limit detection
	or	3 wire for two point detection not protected
Protection class - DIN 40050		IP 40

SECTION 9A
EXPLODED VIEW / PARTS LISTING

UA.025 and UA.038 pumps



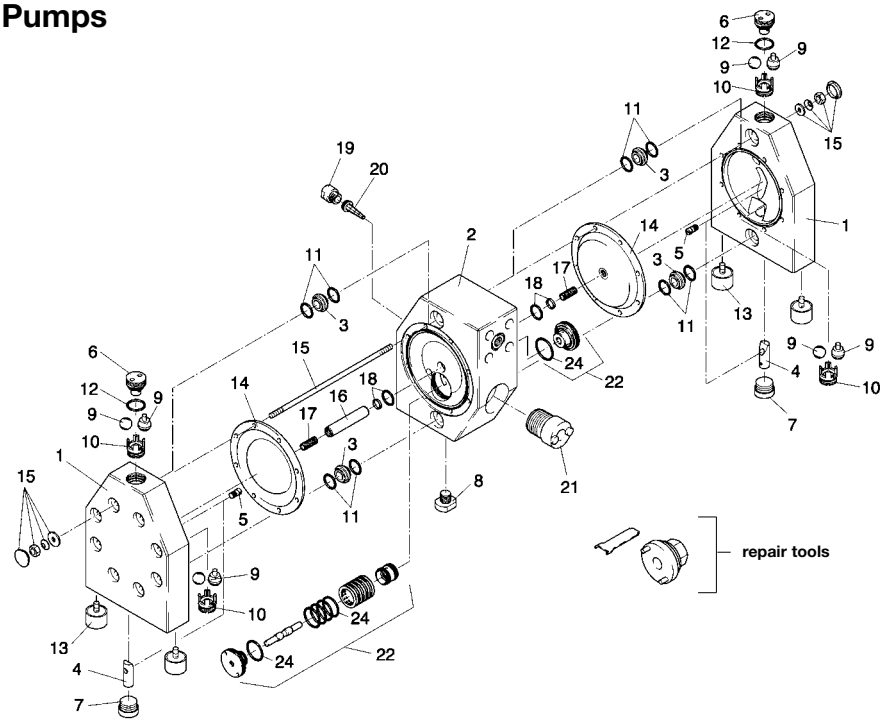
UA.050 and UA2 Pumps



SECTION 9A CONT'D

EXPLODED VIEW / PARTS LISTING

UA4 and UA8 Pumps



UNITEC™ UA SERIES PUMPS – RUBBER/TEFLON®-FITTED

UNITEC™ Series Pumps - Teflon® PTFE Liquid Path Models								
Pump Model			UA.025	UA.038	UA.050	UA2	UA4	UA8
Item	Description	Qty.	P/N	P/N	P/N	P/N	P/N	P/N
1	Chamber, Liquid	2	U2-08-010-60	U2-10-010-60	U2-15-010-60	U2-25-010-60	U2-40-010-60	U2-50-010-60
2	Center Section - FNPT/BSP w/DIN	1	U2-08-011-60***	U2-10-011-60***	U2-15-011-60***	U2-25-011-60	U2-40-011-60	U2-50-011-60
2	Center Section - FNPT/BSP w/ANSI	1	-	-	-	U2-25-411-60	U2-40-411-60	U2-50-411-60
3	Sleeve	4	U2-08-012-60	U2-10-012-60	U2-15-012-60	U2-25-012-60	U2-40-012-60	U2-50-012-60
4	Retainer, Inlet Valve	2	U2-08-013-60	U2-10-013-60	U2-15-013-60	U2-25-013-60	U2-40-013-60	U2-50-013-60
5	Bolt, Valve Retainer	2	U2-08-014-60	U2-10-014-60	U2-15-014-60	U2-25-014-60	U2-40-014-60	U2-50-014-60
6	Retainer, Discharge Valve	2	U2-08-015-60	U2-10-015-60	U2-15-015-60	U2-25-015-60	U2-40-015-60	U2-50-015-60
7	Plug, side housing	2	U2-08-017-60	U2-10-017-60	U2-15-017-60	U2-25-017-60	U2-40-017-60	U2-50-017-60
8	Plug, center housing	1	U2-10-019-60	U2-10-019-60	U2-15-019-60	U2-25-019-60	U2-40-019-60	U2-50-019-60
9	Valve, Cylinder, TF	4	U2-08-016-60	U2-10-016-60	U2-15-016-60	U2-25-016-60	U2-40-016-60	U2-50-016-60
	Valve Ball, ND		U1-10-032-72	U4-15-032-72	U1-15-032-72	U1-25-032-72	U1-40-032-72	U1-50-032-72
	Valve Ball, SS		U1-10-032-22	U4-15-032-22	U1-15-032-22	-	-	-
	Valve Ball, TF		U1-10-032-60	U4-15-032-60	U1-15-032-60	U1-25-032-60	U1-40-032-60	U1-50-032-60
10	Seat, Valve	4	U2-08-018-60	U2-10-018-60	U2-15-018-60	U2-25-018-60	U2-40-018-60	U2-50-018-60
11	O-ring, sleeve, ND	8	-	U9-15-630-72	U9-20-631-72	U9-33-632-72	U9-50-633-72	U9-62-634-72
	O-ring, sleeve, TV		U9-12-629-59	U9-15-630-59	U9-20-631-59	U9-33-632-59	U9-50-633-59	U9-62-634-59
12	O-ring, top retainer, ND	2	-	U9-19-624-72	U9-24-625-72	U9-38-626-72	U9-57-627-72	U9-76-628-72
	O-ring, top retainer, TV		U9-16-623-59	U9-19-624-59	U9-24-625-59	U9-38-626-59	U9-57-627-59	U9-76-628-59
13	Foot, Pump Base	4	U1-08-322-85	U1-08-322-85	U1-15-322-85	U1-15-322-85	U1-40-322-85	U1-40-322-85
14	Diaphragm, EX	2	-	U1-10-031-72	U1-15-031-72	U1-25-031-72	U1-40-031-72	U1-50-031-72
	Diaphragm, ET		U1-08-031-67	U1-10-031-67	U1-15-031-67	U1-25-031-67	U1-40-031-67	U1-50-031-67
15	Tie Rod, Housing	*	U2-08-020-22	U2-10-020-22	U2-15-020-22	U2-25-020-22	U2-40-020-22	U2-50-020-22
16	Shaft, Unitec	1	U2-08-030-22**	U2-08-030-22**	U2-15-030-22	U2-25-030-22	U2-40-030-22	U2-50-030-22
17	Screw, Set, Shaft Unitec	2	-	-	U9-10-220-22	U9-12-221-22	U9-16-222-22	U9-20-223-22
18	Shaft piston ring, cpl.	2	-	-	U1-15-041-64	U1-25-041-64	U1-40-041-64	U1-50-041-64
19	Bushing, Air Inlet Reducer	1	U1-08-047-84	U1-08-047-84	U1-15-047-84	U1-15-047-84	U1-40-047-84	U1-40-047-84
20	Filter, Air Inlet	1	-	-	U1-15-043-51	U1-15-043-51	U1-40-043-51	U1-40-043-51
21	Muffler, Complete	1	U1-08-244-51	U1-08-244-51	U1-15-244-51	U1-15-244-51	U1-40-244-51	U1-50-244-51
22	Uni-Flo™ Air Valve Assembly	1	U2-08-001-84	U2-08-001-84	U2-15-001-84	U2-15-001-84	U2-40-001-84	U2-50-001-84
24	O-ring, air valve housing	6	U9-26-519-71**	U9-26-519-71**	U9-36-504-71**	U9-36-504-71**	U9-46-515-71**	U9-66-533-71**

* UA.025 and UA.038: 4 pieces; UA.050 and UA2: 6 pieces; UA4 and UA8: 8 pieces
** included in item 22
*** available with FNPT/BSP liquid connections only

UNITEC™ Series Pumps - Conductive Teflon® PTFE Liquid Path Models								
Pump Model			**UA.025**	**UA.038**	**UA.050**	**UA2**	**UA4**	**UA8**
Item	**Description**	**Qty.**	**P/N**	**P/N**	**P/N**	**P/N**	**P/N**	**P/N**
1	Chamber, Liquid	2	U2-08-010-65	U2-10-010-65	U2-15-010-65	U2-25-010-65	U2-40-010-65	U2-50-010-65
2	Center Section - FNPT/BSP w/DIN	1	U2-08-011-65***	U2-10-011-65***	U2-15-011-65***	U2-25-011-65	U2-40-011-65	U2-50-011-65
2	Center Section - FNPT/BSP w/ANSI	1	-	-	-	U2-25-411-65	U2-40-411-65	U2-50-411-65
3	Sleeve	4	U2-08-012-65	U2-10-012-65	U2-15-012-65	U2-25-012-65	U2-40-012-65	U2-50-012-65
4	Retainer, Inlet Valve	2	U2-08-013-65	U2-10-013-65	U2-15-013-65	U2-25-013-65	U2-40-013-65	U2-50-013-65
5	Bolt, Valve Retainer	2	U2-08-014-65	U2-10-014-65	U2-15-014-65	U2-25-014-65	U2-40-014-65	U2-50-014-65
6	Retainer, Discharge Valve	2	U2-08-015-65	U2-10-015-65	U2-15-015-65	U2-25-015-65	U2-40-015-65	U2-50-015-65
7	Plug, side housing	2	U2-08-017-65	U2-10-017-65	U2-15-017-65	U2-25-017-65	U2-40-017-65	U2-50-017-65
8	Plug, center housing	1	U2-10-019-65	U2-10-019-65	U2-15-019-65	U2-25-019-65	U2-40-019-65	U2-50-019-65
9	Valve, Cylinder, TF	4	U2-08-016-60	U2-10-016-60	U2-15-016-60	U2-25-016-60	U2-40-016-60	U2-50-016-60
	Valve Ball, ND		U1-10-032-72	U4-15-032-72	U1-15-032-72	U1-25-032-72	U1-40-032-72	U1-50-032-72
	Valve Ball, SS		U1-10-032-22	U4-15-032-22	U1-15-032-22	-	-	-
	Valve Ball, TF		U1-10-032-60	U4-15-032-60	U1-15-032-60	U1-25-032-60	U1-40-032-60	U1-50-032-60
10	Seat, Valve	4	U2-08-018-65	U2-10-018-65	U2-15-018-65	U2-25-018-65	U2-40-018-65	U2-50-018-65
11	O-ring, sleeve, ND	8	-	U9-15-630-72	U9-20-631-72	U9-33-632-72	U9-50-633-72	U9-62-634-72
	O-ring, sleeve, TV		U9-12-629-59	U9-15-630-59	U9-20-631-59	U9-33-632-59	U9-50-633-59	U9-62-634-59
12	O-ring, top retainer, ND	2	-	U9-19-624-72	U9-24-625-72	U9-38-626-72	U9-57-627-72	U9-76-628-72
	O-ring, top retainer, TV		U9-16-623-59	U9-19-624-59	U9-24-625-59	U9-38-626-59	U9-57-627-59	U9-76-628-59
13	Foot, Pump Base	4	U1-08-322-85	U1-08-322-85	U1-15-322-85	U1-15-322-85	U1-40-322-85	U1-40-322-85
14	Diaphragm, EX	2	-	U1-10-031-72	U1-15-031-72	U1-25-031-72	U1-40-031-72	U1-50-031-72
	Diaphragm, ET		U1-08-031-67	U1-10-031-67	U1-15-031-67	U1-25-031-67	U1-40-031-67	U1-50-031-67
15	Tie Rod, Housing	*	U2-08-020-22	U2-10-020-22	U2-15-020-22	U2-25-020-22	U2-40-020-22	U2-50-020-22
16	Shaft, Unitec	1	U2-08-030-22**	U2-08-030-22**	U2-15-030-22	U2-25-030-22	U2-40-030-22	U2-50-030-22
17	Screw, Set, Shaft Unitec	2	-	-	U9-10-220-22	U9-12-221-22	U9-16-222-22	U9-20-223-22
18	Shaft piston ring, cpl.	2	-	-	U1-15-041-64	U1-25-041-64	U1-40-041-64	U1-50-041-64
19	Bushing, Air Inlet Reducer	1	U1-08-047-84	U1-08-047-84	U1-15-047-84	U1-15-047-84	U1-40-047-84	U1-40-047-84
20	Filter, Air Inlet	1	-	-	U1-15-043-51	U1-15-043-51	U1-40-043-51	U1-40-043-51
21	Muffler, Complete	1	U1-08-244-51	U1-08-244-51	U1-15-346-34	U1-15-346-34	U1-40-346-34	U1-40-346-34
	Adapter, muffler conductive	1	-	-	U1-15-345-55	U1-15-345-55	U1-40-345-55	U1-40-345-55
22	Uni-Flo™ Air Valve Assembly	1	U2-08-001-84	U2-08-001-84	U2-15-001-84	U2-15-001-84	U2-40-001-84	U2-50-001-84
24	O-ring, air valve housing	6	U9-26-519-71**	U9-26-519-71**	U9-36-504-71**	U9-36-504-71**	U9-46-515-71**	U9-66-533-71**

* UA.025 and UA.038: 4 pieces; UA.050 and UA2: 6 pieces; UA4 and UA8: 8 pieces
** included in item 22
*** available with FNPT/BSP liquid connections only

UNITEC™ Series Pumps - Polyethylene Liquid Path Models						
Pump Model			**UA.050**	**UA2**	**UA4**	**UA8**
Item	**Description**	**Qty.**	**P/N**	**P/N**	**P/N**	**P/N**
1	Chamber, Liquid	2	U2-15-010-51	U2-25-010-51	U2-40-010-51	U2-50-010-51
2	Center Section - FNPT/BSP w/DIN	1	U2-15-011-51***	U2-25-011-51	U2-40-011-51	U2-50-011-51
2	Center Section - FNPT/BSP w/ANSI	1	-	U2-25-411-51	U2-40-411-51	U2-50-411-51
3	Sleeve	4	U2-15-012-51	U2-25-012-51	U2-40-012-51	U2-50-012-51
4	Retainer, Inlet Valve	2	U2-15-013-51	U2-25-013-51	U2-40-013-51	U2-50-013-51
5	Bolt, Valve Retainer	2	U2-15-014-51	U2-25-014-51	U2-40-014-51	U2-50-014-51
6	Retainer, Discharge Valve	2	U2-15-015-51	U2-25-015-51	U2-40-015-51	U2-50-015-51
7	Plug, side housing	2	U2-15-017-51	U2-25-017-51	U2-40-017-51	U2-50-017-51
8	Plug, center housing	1	U2-15-019-51	U2-25-019-51	U2-40-019-51	U2-50-019-51
9	Valve, Cylinder, PE	4	U2-15-016-51	U2-25-016-51	U2-40-016-51	U2-50-016-51
	Valve, Cylinder, TF		U2-15-016-60	U2-25-016-60	U2-40-016-60	U2-50-016-60
	Valve Ball, ND		U1-15-032-72	U1-25-032-72	U1-40-032-72	U1-50-032-72
	Valve Ball, SS		U1-15-032-22	-	-	-
	Valve Ball, TF		U1-15-032-60	U1-25-032-60	U1-40-032-60	U1-50-032-60
10	Seat, Valve	4	U2-15-018-52	U2-25-018-52	U2-40-018-52	U2-50-018-52
11	O-ring, sleeve, ND	8	U9-20-631-72	U9-33-632-72	U9-50-633-72	U9-62-634-72
	O-ring, sleeve, TV		U9-20-631-59	U9-33-632-59	U9-50-633-59	U9-62-634-59
12	O-ring, top retainer, ND	2	U9-24-625-72	U9-38-626-72	U9-57-627-72	U9-76-628-72
	O-ring, top retainer, TV		U9-24-625-59	U9-38-626-59	U9-57-627-59	U9-76-628-59
13	Foot, Pump Base	4	U1-15-322-85	U1-15-322-85	U1-40-322-85	U1-40-322-85
14	Diaphragm, EX	2	U1-15-031-72	U1-25-031-72	U1-40-031-72	U1-50-031-72
	Diaphragm, ET		U1-15-031-67	U1-25-031-67	U1-40-031-67	U1-50-031-67
15	Tie Rod, Housing	*	U2-15-020-22	U2-25-020-22	U2-40-020-22	U2-50-020-22
16	Shaft, Unitec	1	U2-15-030-22	U2-25-030-22	U2-40-030-22	U2-50-030-22
17	Screw, Set, Shaft Unitec	2	U9-10-220-22	U9-12-221-22	U9-16-222-22	U9-20-223-22
18	Shaft piston ring, cpl.	2	U1-15-041-64	U1-25-041-64	U1-40-041-64	U1-50-041-64
19	Bushing, Air Inlet Reducer	1	U1-15-047-84	U1-15-047-84	U1-40-047-84	U1-40-047-84
20	Filter, Air Inlet	1	U1-15-043-51	U1-15-043-51	U1-40-043-51	U1-40-043-51
21	Muffler, Complete	1	U1-15-244-51	U1-15-244-51	U1-40-244-51	U1-50-244-51
22	Uni-Flo™ Air Valve Assembly	1	U2-15-001-84	U2-15-001-84	U2-40-001-84	U2-50-001-84
24	O-ring, air valve housing	6	U9-36-504-71**	U9-36-504-71**	U9-46-515-71**	U9-66-533-71**

* UA.050 and UA2: 6 pieces; UA4 and UA8: 8 pieces
** included in item 22
*** available with FNPT/BSP liquid connections only

UNITEC™ Series Pumps - Conductive Polyethylene Liquid Path Models						
Pump Model			UA.050	UA2	UA4	UA8
Item	Description	Qty.	P/N	P/N	P/N	P/N
1	Chamber, Liquid	2	U2-15-010-55	U2-25-010-55	U2-40-010-55	U2-50-010-55
2	Center Section - FNPT/BSP w/DIN	1	U2-15-011-55***	U2-25-011-55	U2-40-011-55	U2-50-011-55
2	Center Section - FNPT/BSP w/ANSI	1	-	U2-25-411-55	U2-40-411-55	U2-50-411-55
3	Sleeve	4	U2-15-012-55	U2-25-012-55	U2-40-012-55	U2-50-012-55
4	Retainer, Inlet Valve	2	U2-15-013-55	U2-25-013-55	U2-40-013-55	U2-50-013-55
5	Bolt, Valve Retainer	2	U2-15-014-55	U2-25-014-55	U2-40-014-55	U2-50-014-55
6	Retainer, Discharge Valve	2	U2-15-015-55	U2-25-015-55	U2-40-015-55	U2-50-015-55
7	Plug, side housing	2	U2-15-017-55	U2-25-017-55	U2-40-017-55	U2-50-017-55
8	Plug, center housing	1	U2-15-019-55	U2-25-019-55	U2-40-019-55	U2-50-019-55
9	Valve, Cylinder, PE	4	U2-15-016-51	U2-25-016-51	U2-40-016-51	U2-50-016-51
	Valve, Cylinder, TF		U2-15-016-60	U2-25-016-60	U2-40-016-60	U2-50-016-60
	Valve Ball, ND		U1-15-032-72	U1-25-032-72	U1-40-032-72	U1-50-032-72
	Valve Ball, SS		U1-15-032-22	-	-	-
	Valve Ball, TF		U1-15-032-60	U1-25-032-60	U1-40-032-60	U1-50-032-60
10	Seat, Valve	4	U2-15-018-56	U2-25-018-56	U2-40-018-56	U2-50-018-56
11	O-ring, sleeve, ND	8	U9-20-631-72	U9-33-632-72	U9-50-633-72	U9-62-634-72
	O-ring, sleeve, TV		U9-20-631-59	U9-33-632-59	U9-50-633-59	U9-62-634-59
12	O-ring, top retainer, ND	2	U9-24-625-72	U9-38-626-72	U9-57-627-72	U9-76-628-72
	O-ring, top retainer, TV		U9-24-625-59	U9-38-626-59	U9-57-627-59	U9-76-628-59
13	Foot, Pump Base	4	U1-15-322-85	U1-15-322-85	U1-40-322-85	U1-40-322-85
14	Diaphragm, EX	2	U1-15-031-72	U1-25-031-72	U1-40-031-72	U1-50-031-72
	Diaphragm, ET		U1-15-031-67	U1-25-031-67	U1-40-031-67	U1-50-031-67
15	Tie Rod, Housing	*	U2-15-020-22	U2-25-020-22	U2-40-020-22	U2-50-020-22
16	Shaft, Unitec	1	U2-15-030-22	U2-25-030-22	U2-40-030-22	U2-50-030-22
17	Screw, Set, Shaft Unitec	2	U9-10-220-22	U9-12-221-22	U9-16-222-22	U9-20-223-22
18	Shaft piston ring, cpl.	2	U1-15-041-64	U1-25-041-64	U1-40-041-64	U1-50-041-64
19	Bushing, Air Inlet Reducer	1	U1-15-047-84	U1-15-047-84	U1-40-047-84	U1-40-047-84
20	Filter, Air Inlet	1	U1-15-043-51	U1-15-043-51	U1-40-043-51	U1-40-043-51
21	Muffler, Complete	1	U1-15-346-34	U1-15-346-34	U1-40-346-34	U1-40-346-34
	Adapter, muffler conductive	1	U1-15-345-55	U1-15-345-55	U1-40-345-55	U1-40-345-55
22	Uni-Flo™ Air Valve Assembly	1	U2-15-001-84	U2-15-001-84	U2-40-001-84	U2-50-001-84
24	O-ring, air valve housing	6	U9-36-504-71**	U9-36-504-71**	U9-46-515-71**	U9-66-533-71**

* UA.050 and UA2: 6 pieces; UA4 and UA8: 8 pieces
** included in item 22
*** available with FNPT/BSP liquid connections only

WARRANTY

Each and every product manufactured by Wilden Pump and Engineering, LLC is built to meet the highest standards of quality. Every pump is functionally tested to insure integrity of operation.

Wilden Pump and Engineering, LLC warrants that pumps, accessories and parts manufactured or supplied by it to be free from defects in material and workmanship for a period of one year from date of startup or two years from date of shipment, whichever comes first. Failure due to normal wear, misapplication, or abuse is, of course, excluded from this warranty.

Since the use of Wilden pumps and parts is beyond our control, we cannot guarantee the suitability of any pump or part for a particular application and Wilden Pump and Engineering, LLC shall not be liable for any consequential damage or expense arising from the use or misuse of its products on any application. Responsibility is limited solely to replacement or repair of defective Wilden pumps and parts.

All decisions as to the cause of failure are the sole determination of Wilden Pump and Engineering, LLC.

Prior approval must be obtained from Wilden for return of any items for warranty consideration and must be accompanied by the appropriate MSDS for the product(s) involved. A Return Goods Tag, obtained from an authorized Wilden distributor, must be included with the items which must be shipped freight prepaid.

The foregoing warranty is exclusive and in lieu of all other warranties expressed or implied (whether written or oral) including all implied warranties of merchantability and fitness for any particular purpose. No distributor or other person is authorized to assume any liability or obligation for Wilden Pump and Engineering, LLC other than expressly provided herein.

PLEASE PRINT OR TYPE AND FAX TO WILDEN

Item #_____ Serial # _____

Company Purchased From _____

Your Company Name _____

Industry _____

Your Name _____ Title_____

Your Address (Street) _____

(City)_____ (State)_____ (Postal Code)_____ (Country) _____

(Telephone)_____ (Fax)_____ (e-mail) _____

Number of pumps in facility? _____Diaphragm _____Centrifugal

_____Gear _____Submersible _____Lobe _____Other _____

Chemical(s) being pumped _____

How did you hear of Wilden Pump? _____Trade Journal _____Trade Show

_____Internet/E-mail _____Distributor _____Other _____

ONCE COMPLETE, FAX TO (909) 783-3440

NOTE: WARRANTY VOID IF PAGE IS NOT FAXED TO WILDEN