

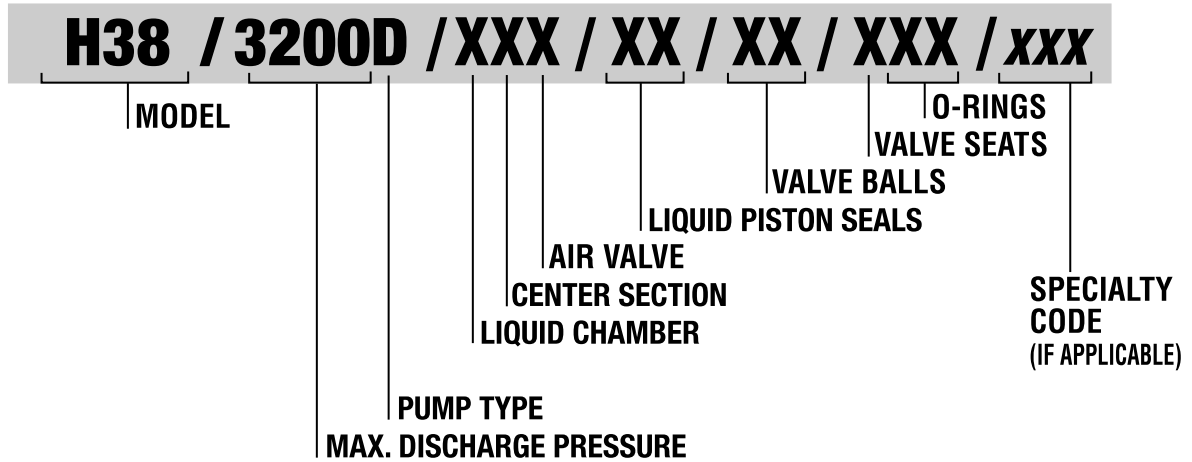




## SECTION 1

# WILDEN PUMP DESIGNATION SYSTEM

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## MODEL H38/3200D MATERIAL CODES

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### MODEL

H38 = 10 mm (<sup>3</sup>/<sub>8</sub>" ) CONNECTIONS

### AIR VALVE

P = POLYPROPYLENE

### VALVE SEATS

S = STAINLESS STEEL

### MAX. DISCHARGE PRESSURE

3200 = 220.6 BAR (3,200 PSIG)

### LIQUID PISTON SEALS

PU = POLYURETHANE

### VALVE SEAT O-RINGS

BN = BUNA-N

### PUMP TYPE

D = DUPLEX

### VALVE BALLS

SS = STAINLESS STEEL

### LIQUID CHAMBERS

A = ALUMINUM

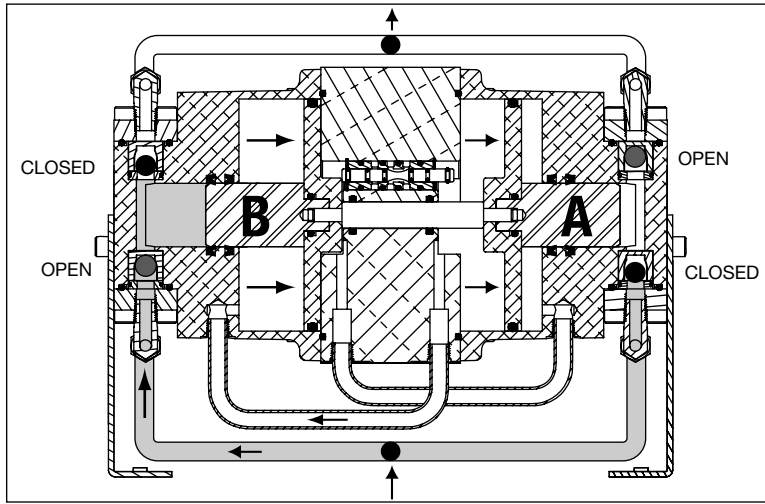
### CENTER SECTION

A = ALUMINUM

## SECTION 2

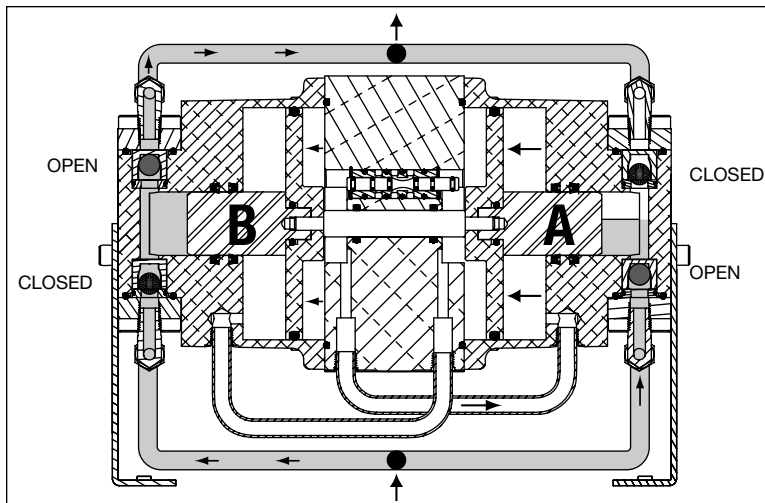
# H38/3200D — HOW IT WORKS

The Wilden piston 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.



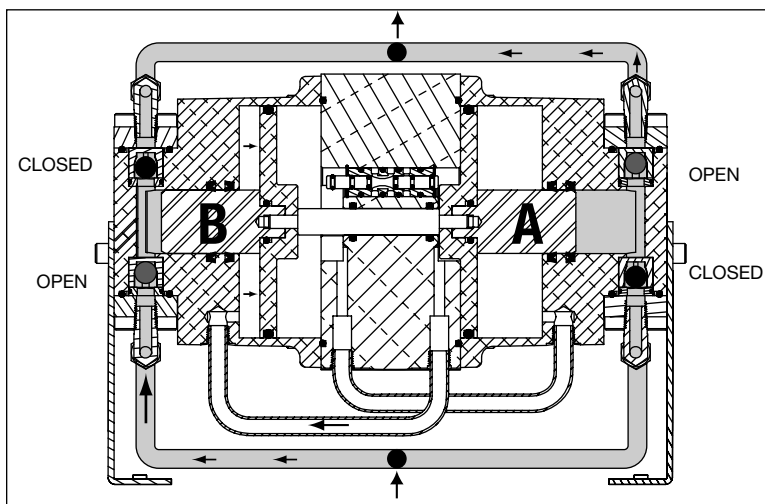
RIGHT STROKE

FIGURE 1: When air pressure is supplied to the pump, the air valve directs pressure to the back side of power piston A. The compressed air moves the power/liquid piston A away from the center section of the pump. At the same time, air is directed to the front of power piston B by means of tubing connected to the pressurized air in side A. Power piston/liquid piston B is on its suction stroke; air behind the piston has been forced out to atmosphere through the exhaust port of the pump. The movement of power/liquid piston B toward the center section of the pump creates a vacuum within chamber B. Atmospheric pressure forces fluid into the inlet port forcing the inlet valve ball, on side B, off its seat. Liquid is then free to move past the inlet valve ball and fill liquid chamber B (see shaded area).



LEFT STROKE

FIGURE 2: When piston A reaches the limit of its discharge stroke, the air valve redirects pressurized air to the back side of the power/liquid piston B and the front side of power/liquid piston A. The pressurized air forces power/liquid piston B away from the center section while pressurized air forces power/liquid piston A toward the center section. Power/liquid piston B is now on its discharge stroke. Liquid piston B forces the inlet valve ball, on side B, onto its seat due to the hydraulic forces developed within the liquid chamber. 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 combined force created by both power pistons being pressurized and the smaller size of the liquid piston area relative to the total area of the power piston creates the amplified liquid discharge pressure. The movement of power/liquid piston A toward the center section of the pump creates a vacuum within liquid chamber A. Atmospheric pressure forces fluid into the inlet port. The inlet valve ball, on side B, is forced off its seat allowing the fluid being pumped to fill liquid chamber A.

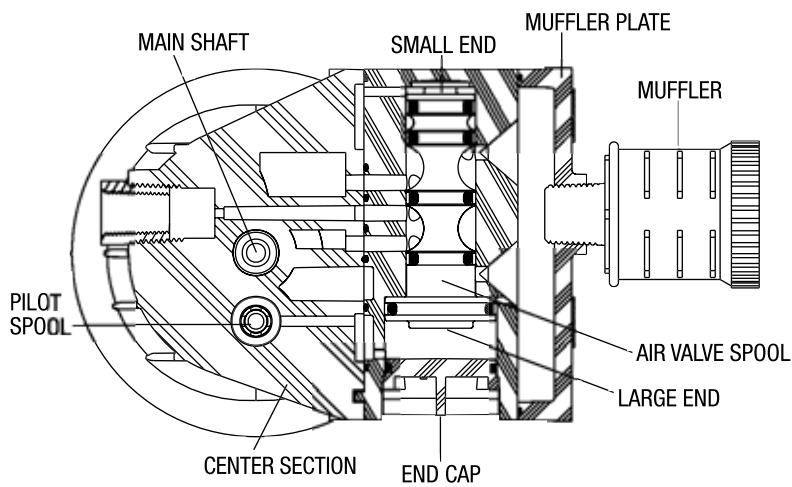


RIGHT STROKE

FIGURE 3: At completion of the stroke, the air valve again redirects air to the back side of power/liquid piston A, which starts power/liquid piston B on its suction stroke. As the pump reaches its original starting point, each power/liquid piston has gone through one suction 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.

## SECTION 2 cont.

# PRO-FLO® AIR DISTRIBUTION SYSTEM OPERATION — HOW IT WORKS



The Pro-Flo® patented air distribution system incorporates three moving parts: the air valve spool, the pilot spool, and the main shaft/piston assembly. The heart of the system is the air valve spool and air valve. As shown in this figure, this valve design incorporates an unbalanced spool. The smaller end of the spool is pressurized continuously, while the large end is alternately pressurized then exhausted to move the spool. The spool directs pressurized air to one air chamber while exhausting the other. The air causes the main shaft/piston assembly to shift to one side — discharging liquid on that side and pulling liquid in on the other side. When the shaft reaches the end of its stroke, the power piston actuates the pilot spool, which pressurizes and exhausts the large end of the air valve spool. The repositioning of the air valve spool routes the air to the other air chamber.

## SECTION 3

# WILDEN MODEL H38/3200D PUMP CAUTIONS — READ FIRST!



### PUMP TEMPERATURE LIMITS

-12.2°C to 65.6°C 10°F to 150°F



**CAUTION:** The discharge pressure generated by this pump is approximately 26 times the inlet air pressure supplied.



**CAUTION:** Do not apply compressed air to the exhaust ports — pump will not function.



**CAUTION:** The model H38/3200D is designed to pump clean fluid such as hydraulic fluid and should not be used for pumping solid objects or particles. Whenever the possibility exists that solid objects or particles may be sucked into the pump, a strainer should be used on the suction line.



**CAUTION:** Do not over-lubricate air supply — excess lubrication will reduce pump performance. Pump is pre-lubed with NLGI Grade 2 molybdenum grease.



**CAUTION:** The H38/3200D is designed for open loop systems.



**CAUTION:** Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Consult Wilden's Chemical Resistance Guide (see publication E-4) for chemical compatibility and temperature limits.



**WARNING:** Prevention of static sparking — If static sparking occurs, fire or explosion could result. Pump, valves, and containers must be grounded to a proper grounding point when handling flammable fluids and whenever discharge of static electricity is a hazard.



**CAUTION:** Do not exceed 8.6 bar (125 psig) air supply pressure.



**CAUTION:** The process fluid and cleaning fluids must be chemically compatible with all wetted pump components (see publication E-4).



**CAUTION:** Pumps should be thoroughly flushed with water before installation.



**CAUTION:** Always wear safety glasses and proper protection when operating and maintaining pump.



**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. 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.



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



**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:** Pump is not rated for UL 79 service.



**CAUTION:** H38 pumps are not submersible.



**CAUTION:** Tighten all hardware prior to installation.



**CAUTION:** All piping valves, gauges and other components installed on the liquid discharge must have a minimum pressure rating of 220.6 bar (3,200 psig).



































