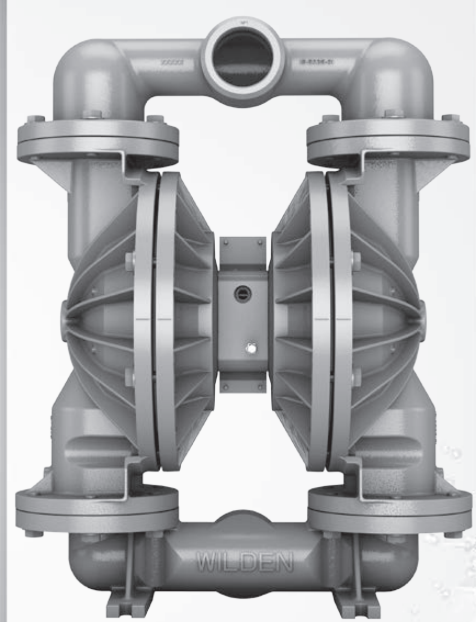
WILDEN®

PS1520/XPS1520
FIT Metal Pump



Where Innovation Flows

wilden-pumps.com

PSG®
a DOVER company

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CAUTIONS—READ FIRST!

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

CAUTION: Do not over-lubricate air supply — excess lubrication will reduce pump performance. Pump is pre-lubed.

TEMPERATURE LIMITS:

Acetal	–29°C to 82°C	–20°F to 180°F
Buna-N	–12°C to 82°C	10°F to 180°F
Geolast®	–40°C to 82°C	–40°F to 180°F
Neoprene	–18°C to 93°C	0°F to 200°F
Nordel® EPDM	–51°C to 138°C	–60°F to 280°F
Nylon	–18°C to 93°C	0°F to 200°F
PFA	–7°C to 107°C	45°F to 225°F
Polypropylene	0°C to 79°C	32°F to 175°F
Polyurethane	–12°C to 66°C	10°F to 150°F
PVDF	–12°C to 107°C	10°F to 225°F
Saniflex™	–29°C to 104°C	–20°F to 220°F
SIPD PTFE with EPDM-backed	4°C to 137°C	40°F to 280°F
SIPD PTFE with Neoprene-backed	4°C to 93°C	40°F to 200°F
PTFE [1]	4°C to 104°C	40°F to 220°F
Viton® FKM	–40°C to 177°C	–40°F to 350°F
Wil-Flex™	–40°C to 107°C	–40°F to 225°F

[1] 4°C to 149°C (40°F to 300°F) - 13 mm (1/2") and 25 mm (1") models only.

NOTE: Not all materials are available for all models. Refer to Section 2 for material options for your pump.

CAUTION: When choosing pump materials, be sure to check the temperature limits for all wetted components. Example: Viton® has a maximum limit of 177°C (350°F) but polypropylene has a maximum limit of only 79°C (175°F).

CAUTION: Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Please consult the Wilden Chemical Resistance Guide.

WARNING: Prevent 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. Please consult the Wilden Chemical Resistance Guide.

CAUTION: Do not exceed 82°C (180°F) air inlet temperature for Pro-Flo® SHIFT models.

CAUTION: Pumps should be thoroughly flushed before installing into process lines. FDA- and USDA-approved pumps should be cleaned and/or sanitized before being used.

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

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. 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 recommended.

NOTE: When installing PTFE diaphragms, it is important to tighten outer pistons simultaneously (turning in opposite directions) to ensure tight fit. (See torque specifications in Section 7.)

NOTE: Some PTFE-fitted pumps come standard from the factory with expanded PTFE gaskets installed in the diaphragm bead of the liquid chamber. PTFE gaskets cannot be re-used.

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: Pro-Flo® pumps cannot be used in submersible applications. Pro-Flo® SHIFT pumps do have a single-point exhaust option for submersible applications. Do not use standard Pro-Flo® SHIFT models in submersible applications.

CAUTION: Tighten all hardware prior to installation.

WILDEN PUMP DESIGNATION SYSTEM

PS1520 METAL

76 mm (3") Pump
Maximum Flow Rate:
1026 lpm (271 gpm)

LEGEND

XPS1520 / XXXXX / XXX / XX / XXX / XXXX

- MODEL
- WETTED PARTS & OUTER PISTON
- AIR CHAMBERS
- CENTER BLOCK
- AIR VALVE
- DIAPHRAGMS
- VALVE BALLS
- VALVE SEATS
- O-RINGS
- SPECIALTY CODE (if applicable)

MATERIAL CODES

MODEL

XPS1520 = PRO-FLO® SHIFT ATEX THREADED PORTS
PS1520 = PRO-FLO® SHIFT THREADED PORTS

WETTED PARTS/OUTER PISTON

AA = ALUMINUM / ALUMINUM
AZ = ALUMINUM/NO PISTON
SS = STAINLESS STEEL / STAINLESS STEEL
SZ = STAINLESS STEEL/ NO PISTON
WW= DUCTILE IRON / DUCTILE IRON
WZ = DUCTILE IRON / NO OUTER PISTON

AIR CHAMBERS

A = ALUMINUM
S = STAINLESS STEEL

CENTER BLOCK

A = ALUMINUM
P = POLYPROPYLENE
S = STAINLESS STEEL

AIR VALVE

A = ALUMINUM
P = POLYPROPYLENE
R = ANODIZED ALUMINUM
S = STAINLESS STEEL

DIAPHRAGMS

BNS = BUNA-N (Red Dot)
EPS = EPDM (Blue Dot)
FWL = SANITARY WIL-FLEX™ IPD
FWS = SANITARY WIL-FLEX™, EZ-INSTALL [Santoprene® (Two Orange Dots)]
NES = NEOPRENE (Green Dot)
TSS = FULL-STROKE PTFE W/SANIFLEX™ BACK-UP
TWS = FULL-STROKE PTFE W/WIL-FLEX™ BACK-UP
VTS = VITON® (White Dot)
WWL= WIL-FLEX™ IPD [Santoprene® (Orange Dot)]
XBS = CONDUCTIVE BUNA-N (Two Red Dots)
ZGS = GEOLAST®, EZ-INSTALL
ZPS = POLYURETHANE, EZ-INSTALL
ZSS = SANIFLEX™, EZ-INSTALL
ZWS = WIL-FLEX™, EZ-INSTALL

VALVE BALLS

BN = BUNA-N (Red Dot)
FS = SANIFLEX™ [Hytrel® (Cream)]
FW = SANITARY WIL-FLEX™ [Santoprene® (Two Orange Dots)]
EP = EPDM (Blue Dot)
NE = NEOPRENE (Green Dot)
PU = POLYURETHANE (Brown)
TF = PTFE (White)
VT = VITON® (Silver or White Dot)

VALVE SEATS

BN = BUNA-N (Red Dot)
EP = EPDM (Blue Dot)
FS = SANIFLEX™ [Hytrel® (Cream)]
FW = SANITARY WIL-FLEX™ [Santoprene® (Two Orange Dots)]
M = MILD STEEL
NE = NEOPRENE (Green Dot)
PU = POLYURETHANE (Brown)
S = STAINLESS STEEL
VT = VITON® (White Dot)

VALVE SEAT O-RINGS

TF = PTFE (White)

SPECIALTY CODES

0014 BSPT
0100 Wil-Gard 110V
0102 Wil-Gard sensor wires ONLY
0103 Wil-Gard 220V
0320 Single-Point Exhaust
0480 Pump Cycle Monitor (sensor & wires)
0483 Pump Cycle Monitor (module, sensor & wires)
0485 Pump Cycle Monitor (module, sensor & wires), DIN flange

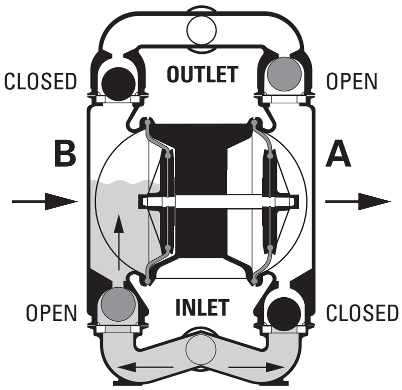
NOTE: Most elastomeric materials use colored dots for identification.
NOTE: Not all models are available with all material options.

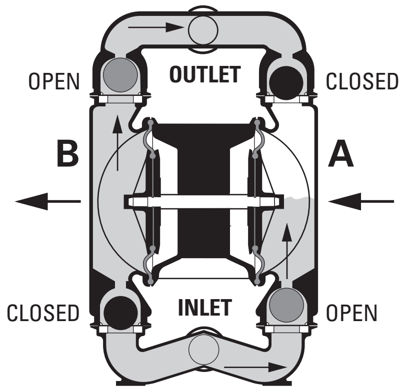
Viton® is a registered trademark of DuPont Dow Elastomers.

WILDEN

HOW IT WORKS—PUMP

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





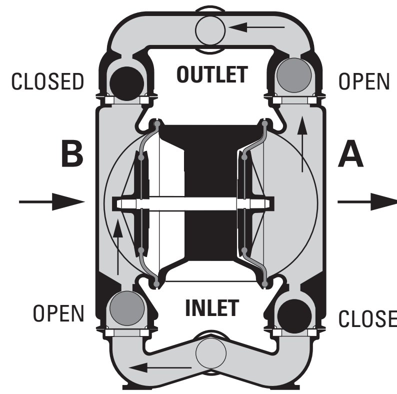
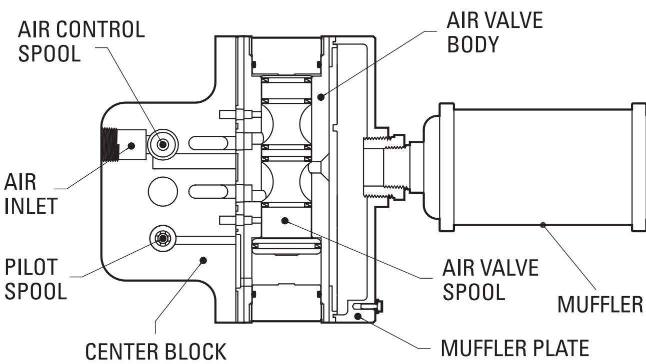


FIGURE 1 The air valve directs pressurized air to the back side of diaphragm A. The compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid; a balanced load removes mechanical stress from the diaphragm. The compressed air moves the diaphragm away from the center 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 atmosphere through the exhaust port of the pump. The movement of diaphragm B toward the center 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 while pulling diaphragm A to the center. 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 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.

HOW IT WORKS—AIR DISTRIBUTION SYSTEM



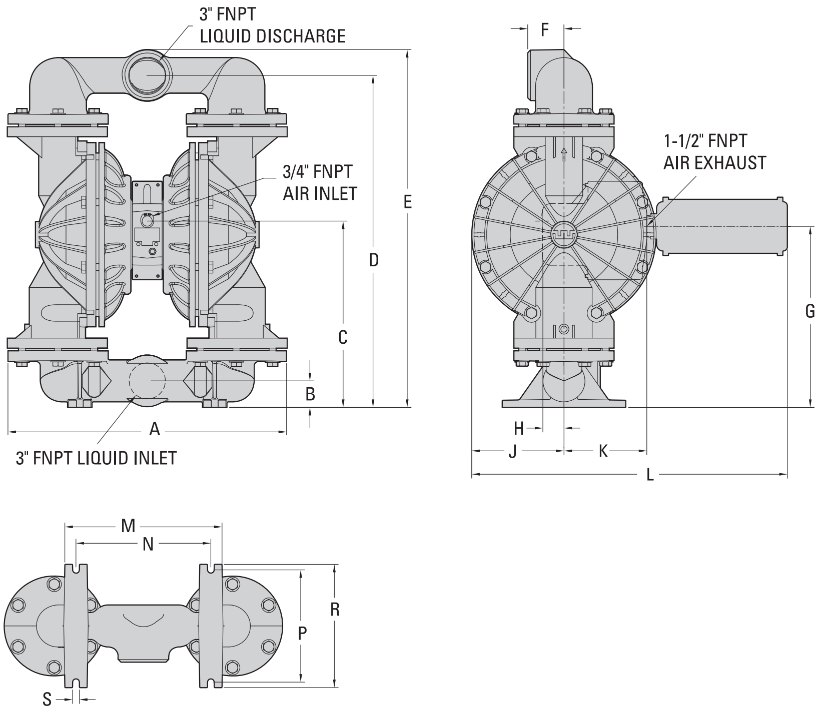
The heart of the patented Pro-Flo® SHIFT Air Distribution System (ADS) is the air valve assembly. The air valve design incorporates an unbalanced spool with the small end of the spool being pressurized continuously while the large end of the spool is alternately pressurized, then exhausted to move the spool. The air valve spool directs pressurized air to one chamber while exhausting the other. The air forces the main shaft/diaphragm assembly to move to one side – discharging liquid on that side and pulling liquid in on the other side. When the shaft reaches the end of the stroke, the inner piston actuates the pilot spool, which controls the air to the large end of the air valve spool. The repositioning of the air valve spool routes the air to the other air chamber. The air control spool allows air to flow freely into the air chamber for the majority of each pump stroke, but it significantly restricts the flow of air into the air chamber when activated by the inner piston near the end of the each stroke.

WILDEN

PRO-FLO SHIFT Progressive Pump Technology

DIMENSIONAL DRAWINGS

PS1520 Aluminum

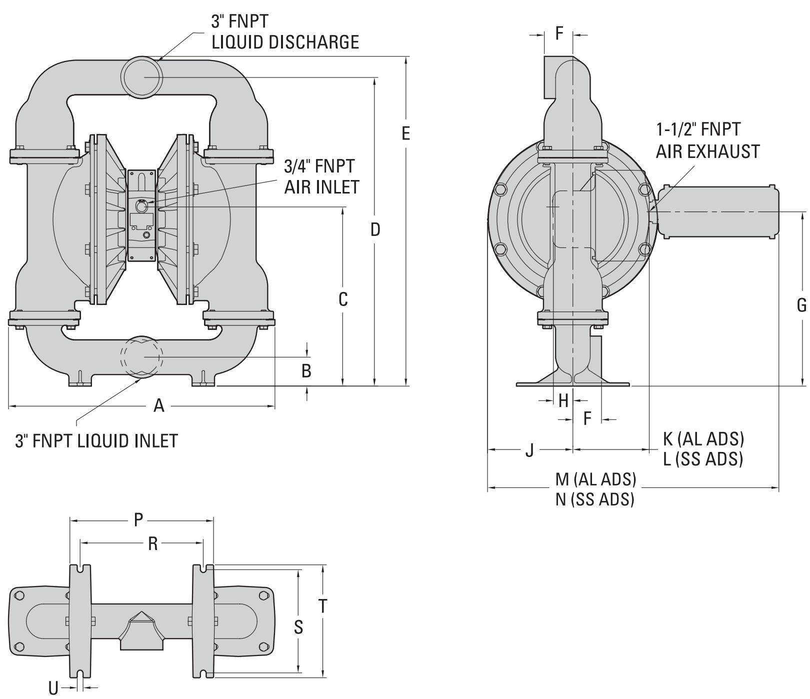


DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	635	25.0
B	61	2.4
C	426	16.8
D	759	29.9
E	818	32.2
F	84	3.3
G	414	16.3
H	48	1.9
J	211	8.3
K	189	7.4
L	720	28.4
M	358	14.1
N	307	12.1
P	257	10.1
R	282	11.1
S	15	0.6

LW0258 REV. B

PS1520 Stainless Steel



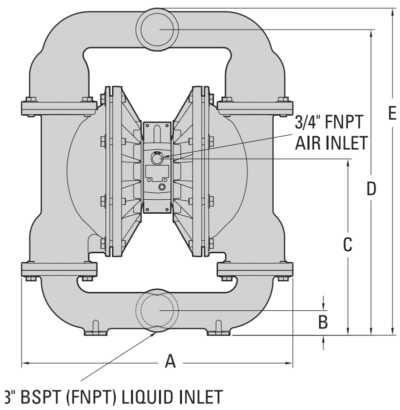
DIMENSIONS

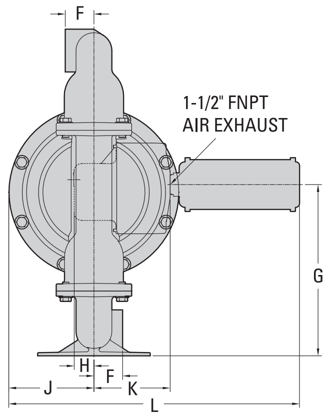
ITEM	METRIC (mm)	STANDARD (inch)
A	650	25.6
B	71	2.8
C	443	17.5
D	765	30.1
E	815	32.1
F	71	2.8
G	431	17.0
H	48	1.9
J	211	8.3
K	189	7.4
L	184	7.3
M	721	28.4
N	715	28.2
P	356	14.0
R	305	12.0
S	257	10.1
T	279	11.0
U	15	0.6

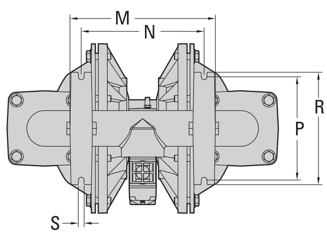
LW0259 REV. C

DIMENSIONAL DRAWINGS

PS1520 Ductile Iron







DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	670	26.5
B	61	2.4
C	437	17.2
D	757	29.8
E	810	31.9
F	71	2.8
G	425	16.7
H	48	1.9
J	211	8.3
K	189	7.4
L	721	28.4
M	360	14.2
N	305	12.0
P	257	10.1
R	279	11.0
S	15	0.6

LW0350 REV. A

PERFORMANCE

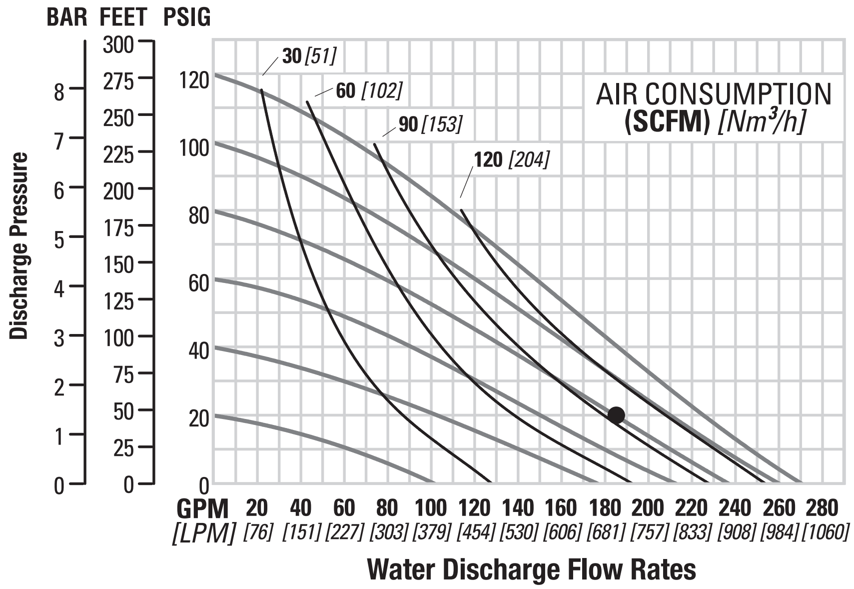
PS1520 METAL RUBBER-FITTED

1520 Threaded AL.................. 69 kg (152 lb)
1520 Threaded SS .... 126 kg (278 lb)
1520 Threaded Iron .... 114 kg (251 lb)
Air Inlet .... 3/4"
Inlet .... 76 mm (3")
Outlet .... 76 mm (3")
Suction Lift ....7.2 m Dry (23.8') AL
9.0 m Wet (29.5') AL
6.0 m Dry (19.7') SS
8.6 m Wet (28.4') SS
6.7 m Dry (22.1') Iron
9.7 m Wet (31.8') Iron
Disp. per Stroke[1] .... 5.1 L (1.35 gal) AL
5.0 L (1.32 gal) SS
5.0 L (1.31 gal) Iron
Max. Flow Rate .... 1026 lpm (271 gpm)
Max. Size Solids.................. 12.7 mm (1/2")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 700 lpm (185 gpm) against a discharge head of 1.4 bar (20 psig) requires 5.5 bar (80 psig) and 161 Nm³/h (95 scfm) air consumption.

Caution: Do not exceed 8.6 bar (125 psig) air 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's performance curve.

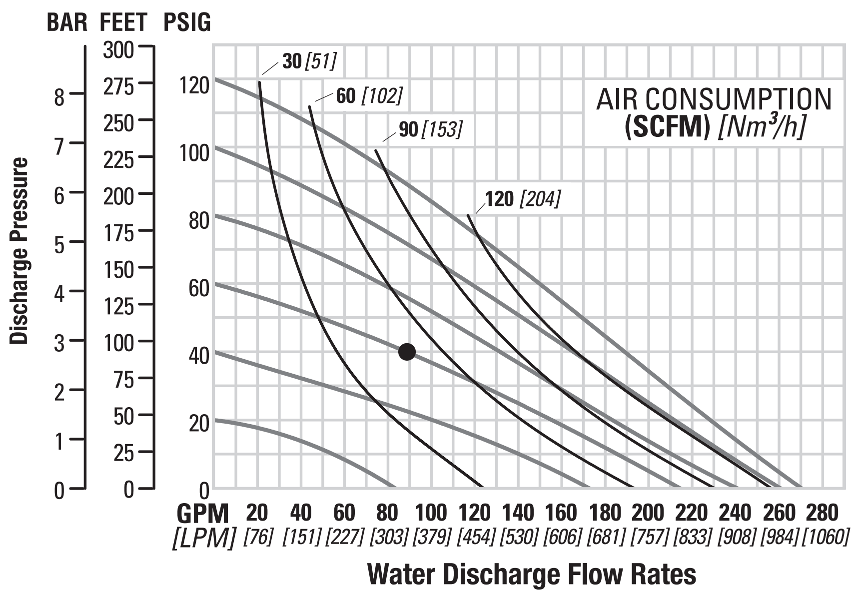
PS1520 METAL EZ-INSTALL TPE-FITTED

1520 Threaded AL.................. 69 kg (152 lb)
1520 Threaded SS .... 126 kg (278 lb)
1520 Threaded Iron .... 114 kg (251 lb)
Air Inlet .... 3/4"
Inlet .... 76 mm (3")
Outlet .... 76 mm (3")
Suction Lift .... 6.4 m Dry (21.1') AL
9.0 m Wet (29.5') AL
5.4 m Dry (17.6') SS
8.6 m Wet (28.4') SS
5.2 m Dry (17.0') Iron
9.7 m Wet (31.8') Iron
Disp. per Stroke[1] .... 5.1 L (1.35 gal) AL
5.4 L (1.43 gal) SS
5.1 L (1.34 gal) Iron
Max. Flow Rate .... 1026 lpm (271 gpm)
Max. Size Solids.................. 12.7 mm (1/2")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 337 lpm (89 gpm) against a discharge head of 2.8 bar (40 psig) requires 4.1 bar (60 psig) and 85 Nm³/h (50 scfm) air consumption.

Caution: Do not exceed 8.6 bar (125 psig) air 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's performance curve.

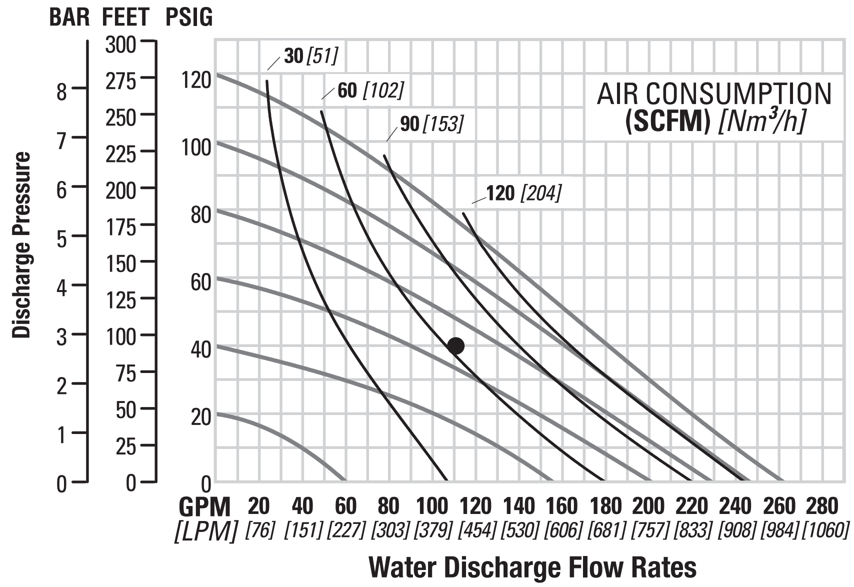
PS1520 METAL FULL-STROKE PTFE-FITTED

1520 Threaded AL.................. 69 kg (152 lb)
1520 Threaded SS .... 126 kg (278 lb)
Air Inlet .... 3/4"
Inlet .... 76 mm (3")
Outlet .... 76 mm (3")
Suction Lift .... 6.2 m Dry (20.2') AL
8.6 m Wet (28.4') AL
5.9 m Dry (19.3') SS
8.6 m Wet (28.4') SS
Disp. per Stroke[1] .... 4.9 L (1.30 gal) AL
5.0 L (1.32 gal) SS
Max. Flow Rate .... 992 lpm (262 gpm)
Max. Size Solids.................. 12.7 mm (1/2")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 420 lpm (111 gpm) against a discharge head of 2.8 bar (40 psig) requires 4.8 bar (70 psig) and 110 Nm^3/h (65 scfm) air consumption.

Caution: Do not exceed 8.6 bar (125 psig) air 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's performance curve.

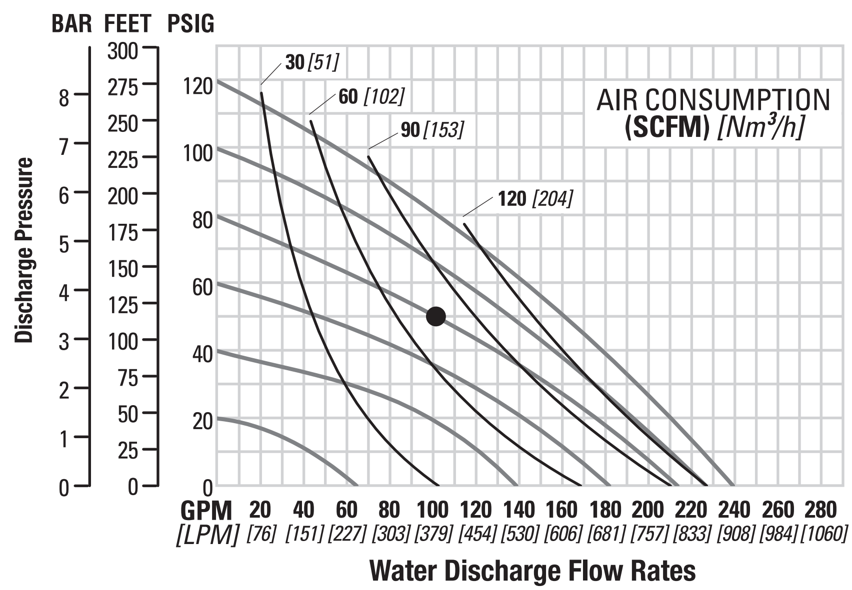
PS1520 DUCTILE IRON FULL-STROKE PTFE-FITTED

1520 Threaded Iron .... 114 kg (251 lb)
Air Inlet .... 3/4"
Inlet .... 76 mm (3")
Outlet .... 76 mm (3")
Suction Lift .... 5.94 m Dry (19.5')
9.66 m Wet (31.7')
Disp. per Stroke[1] .... 4.8 L (1.26 gal)
Max. Flow Rate .... 874 lpm (231 gpm)
Max. Size Solids.................. 12.7 mm (1/2")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 360 lpm (95 gpm) against a discharge head of 3.4 bar (50 psig) requires 5.5 bar (80 psig) and 118 Nm^3/h (75 scfm) air consumption.

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

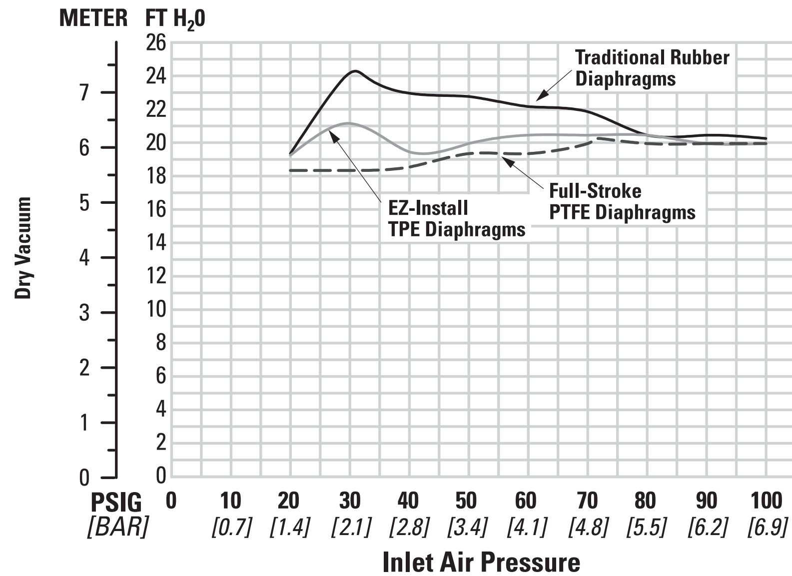


Flow rates indicated on chart were determined by pumping water.

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

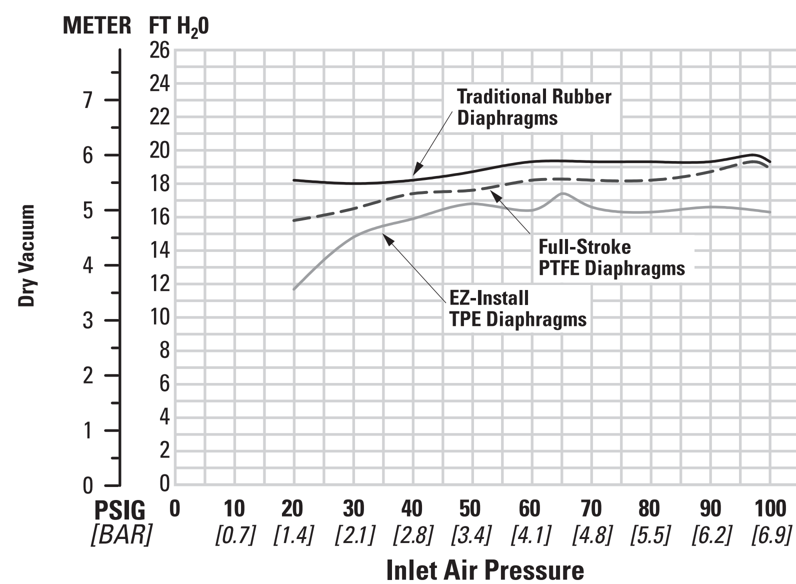
PS1520 ALUMINUM SUCTION-LIFT CAPABILITY

Suction-lift curves are calibrated for pumps operating at 305 m (1,000') above sea level. This chart is meant to be a guide only. There are many variables that can affect your pump's operating characteristics. The number of intake and discharge elbows, viscosity of pumping fluid, elevation (atmospheric pressure) and pipe friction loss all affect the amount of suction lift your pump will attain.



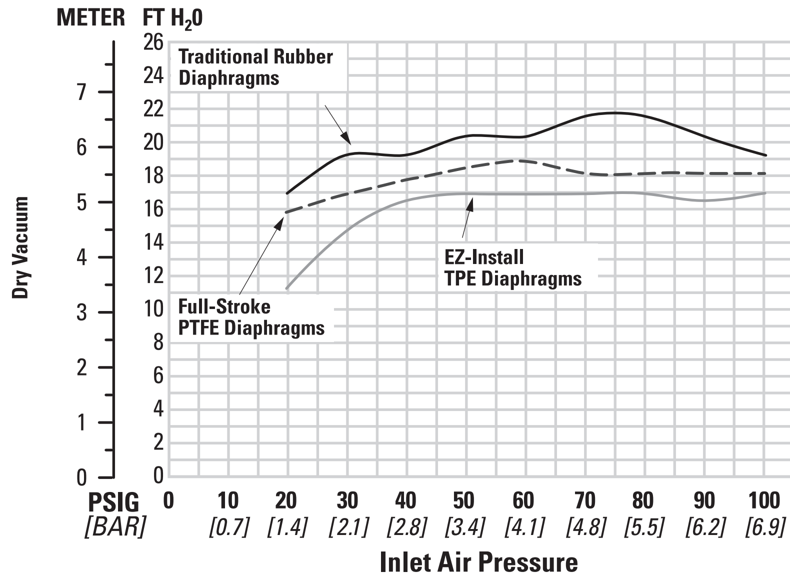
PS1520 STAINLESS STEEL SUCTION-LIFT CAPABILITY

Suction-lift curves are calibrated for pumps operating at 305 m (1,000') above sea level. This chart is meant to be a guide only. There are many variables that can affect your pump's operating characteristics. The number of intake and discharge elbows, viscosity of pumping fluid, elevation (atmospheric pressure) and pipe friction loss all affect the amount of suction lift your pump will attain.



PS1520 DUCTILE IRON SUCTION-LIFT CAPABILITY

Suction-lift curves are calibrated for pumps operating at 305 m (1,000') above sea level. This chart is meant to be a guide only. There are many variables that can affect your pump's operating characteristics. The number of intake and discharge elbows, viscosity of pumping fluid, elevation (atmospheric pressure) and pipe friction loss all affect the amount of suction lift your pump will attain.



SUGGESTED INSTALLATION

Wilden pumps are designed to meet the performance requirements of even the most demanding pumping applications. They have been designed and manufactured to the highest standards and are available in a variety of liquid-path materials to meet your chemical-resistance needs. Refer to the performance section of this manual for an in-depth analysis of the performance characteristics of your pump. Wilden offers the widest variety of elastomer options in the industry to satisfy temperature, chemical-compatibility, abrasion-resistance and flex concerns.

The suction pipe size should be at least the equivalent or larger than the diameter size of the suction inlet on your Wilden pump. The suction hose must be non-collapsible, reinforced type as these pumps are capable of pulling a high vacuum. Discharge piping should also be the equivalent or larger than the diameter of the pump discharge which will help reduce friction losses. It is critical that all fittings and connections are airtight or a reduction or loss of pump suction capability will result.

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 will 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 six 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. Use air pressure up to a maximum of 8.6 bar (125 psig) depending on pumping requirements.

For best results, the pumps should use a 5µ (micron) air filter, needle valve and regulator. The use of an air filter before the pump will ensure that the majority of any pipeline contaminants will be eliminated.

SOLENOID OPERATION: When operation is controlled by a solenoid valve in the air line, three-way valves should be used. This valve allows trapped air between the valve and the pump to bleed off which improves pump performance. Pumping volume can be estimated by counting the number of strokes per minute and then multiplying the figure by the displacement per stroke.

MUFFLER: Sound levels are reduced below OSHA specifications using the standard Wilden muffler. Other mufflers can be used to further reduce sound levels, but they usually reduce pump performance.

ELEVATION: Selecting a site that is well within the pump's dynamic-lift capability will assure that loss-of-prime issues 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 challenges 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 hookup 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 stress on the pump fittings.

Flexible hose can be installed to aid in absorbing the forces created by the natural reciprocating action of the pump. If the pump is to be bolted down to a solid location, a mounting pad placed between the pump and the foundation will assist in minimizing pump vibration. 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 surge suppressor (SD Equalizer®) should be installed to protect the pump, piping and gauges from surges and water hammer.

If the pump is to be used in a self-priming application, make 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 refer to the performance section for specifics.

When pumps are installed in applications involving flooded suction or suction head pressures, a gate valve should be installed in the suction line to permit closing of the line for pump service.

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 0.7 bar (10 psig) and higher.

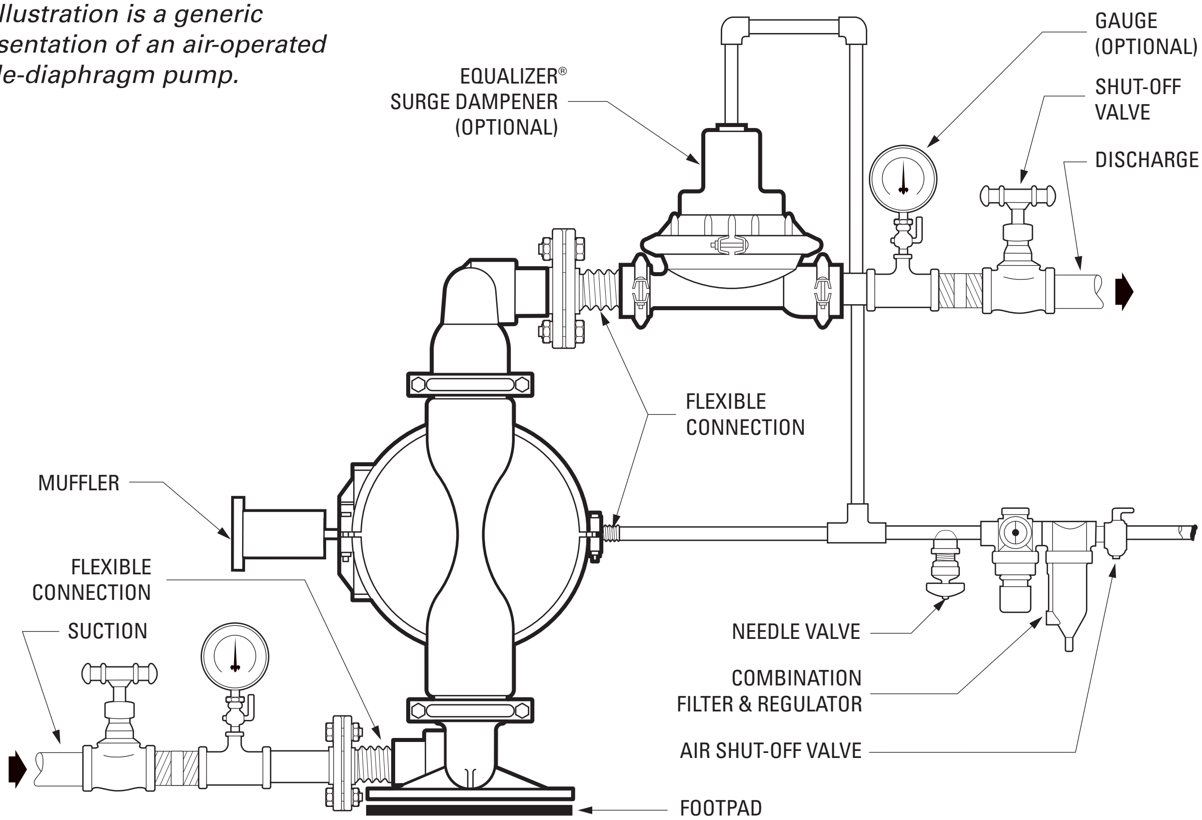
SUBMERSIBLE APPLICATIONS: Pro-Flo® SHIFT pumps can be used for submersible applications when using the Pro-Flo® SHIFT single-point exhaust option.

ALL WILDEN PUMPS ARE CAPABLE OF PASSING SOLIDS. A STRAINER SHOULD BE USED ON THE PUMP INTAKE TO ENSURE THAT THE PUMP'S RATED SOLIDS CAPACITY IS NOT EXCEEDED.

CAUTION: DO NOT EXCEED 8.6 BAR (125 PSIG) AIR SUPPLY PRESSURE.

SUGGESTED INSTALLATION

This illustration is a generic representation of an air-operated double-diaphragm pump.



NOTE: In the event of a power failure, the shut-off valve should be closed, if the restarting of the pump is not desirable once power is regained.

AIR-OPERATED PUMPS: To stop the pump from operating in an emergency situation, simply close the shut-off valve (user-supplied) installed in the air supply line. A properly functioning valve will stop the air supply to the pump, therefore stopping output. This shut-off valve should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.

SUGGESTED OPERATION & MAINTENANCE

OPERATION: The Pro-Flo® SHIFT pumps are pre-lubricated and do not require in-line lubrication. Additional lubrication will not damage the pump; however if the pump is heavily lubricated by an external source, the pump's internal lubrication may be washed away. If the pump is then moved to a non-lubricated location, it may need to be disassembled and re-lubricated as described in the DISASSEMBLY/REASSEMBLY INSTRUCTIONS.

Pump discharge rate can be controlled by limiting the volume and/or pressure of the air supply to the pump. An air regulator is used to regulate air pressure. A needle valve is used to regulate volume. Pump discharge rate can also be controlled by throttling the pump discharge by partially closing a valve in the discharge line of the pump. This action increases friction loss which reduces flow rate. (See Section 5.) This is useful when the need exists to control the pump from a remote location. When the pump discharge pressure equals or exceeds the air supply pressure, the pump will stop; no bypass or pressure relief valve is needed, and pump damage will not occur. The pump has reached a "deadhead" situation and can be restarted by reducing the fluid discharge pressure or increasing the air inlet pressure. Wilden Pro-Flo® SHIFT pumps run solely on compressed air and do not generate heat; therefore, your process fluid temperature will not be affected.

MAINTENANCE AND INSPECTIONS: Since each application is unique, maintenance schedules may be different for every pump. Frequency of use, line pressure, viscosity and abrasiveness of process fluid all affect the parts life of a Wilden pump. Periodic inspections have been found to offer the best means for preventing unscheduled pump downtime. Personnel familiar with the pump's construction and service should be informed of any abnormalities that are detected during operation.

RECORDS: When service is required, a record should be made of all necessary repairs and replacements. Over a period of time, such records can become a valuable tool for predicting and preventing future maintenance problems and unscheduled downtime. In addition, accurate records make it possible to identify pumps that are poorly suited to their applications.

Where Innovation Flows

WILDEN®

PSG
22069 Van Buren St., Grand Terrace, CA 92313-5607

wilden-pumps.com

Authorized PSG Representative:

airpumping.co.uk
Unit 16, Upminster Trading Park, Warley Street, Upminster, RM14 3PJ
Tel: 01708 259870 • Fax 020 8470 4617
www.airpumping.co.uk • e-mail: sales@airpumping.co.uk

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