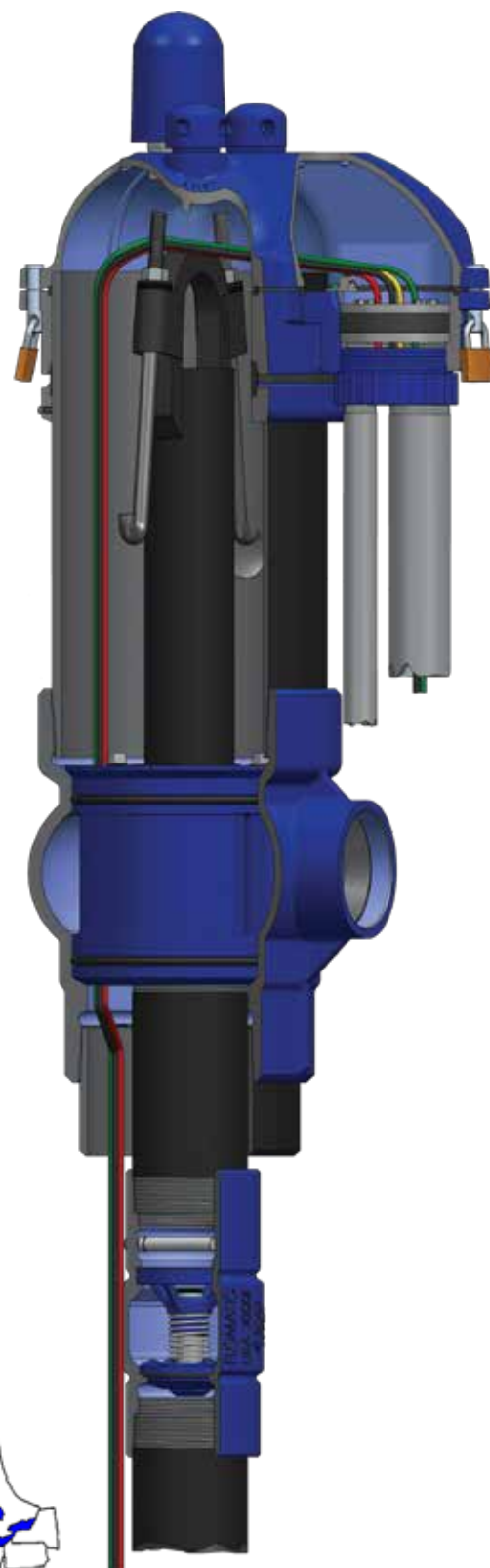


MUNICIPAL & INDUSTRIAL PITLESS WELL SYSTEMS

INSTALLATION GUIDE. ENGINEERING SPECS. TECHNICAL INFORMATION



ASSE Standard #1093-2019
WSC Standard PAS-97 (2019)



Certified to
NSF/ANSI/CAN 61
& NSF/ANSI 372



BOSHART

INDUSTRIES

BENEFITS OF A BOSHART INDUSTRIES PITLESS UNIT

QUICK INSTALLATION

A quality pump installation can be made easily and economically without compromising the integrity of the discharge housing. All Pitless Units are supplied with a beveled weld nipple which eliminates the risk of heat distortion and preserves the integrity of the epoxy coating since there is no welding directly to the discharge housing casting. The specially designed, globe-style, housing eliminates the risk of O-rings being damaged during installation. The O-rings are not compressed when they pass by the discharge connection.

EASY TO SERVICE

Spool sealing system allows the entire spool, water column and submersible pump to be lifted from the well without affecting any well system piping. The globe-style design of the housing provides room for installation of service protection sleeves to protect seating surfaces when inserting tools for well rehabilitation.

ECONOMICAL

Does not require masonry work to build a costly heated pump house, or well pit.

SANITARY

System is sealed to prevent contamination of the well from surface water, eliminating unsanitary well pits.

FROST PROOF

No heating is required. Water is pumped to the service underground below the frost line.

DURABLE

Heavy-duty construction and quality materials guarantee an Industrial Pitless that is built to last.

MAXIMUM CORROSION PROTECTION

All surfaces in contact with water are epoxy coated or constructed of corrosion resistant 304 Stainless Steel material. The NSF 61 Certified, baked epoxy finish provides superior corrosion resistance. Corrosion due to galvanic action between dissimilar metals is controlled by using gasket flanged connections with isolation bolt / gasket kit.

READILY AVAILABLE

Industrial Pitless Units are available in 5", 6", 8", 10" & 12" sizes, with minimal lead time.

CERTIFIED TO INDUSTRY STANDARDS

The BII Pitless Units exceed the requirements of, and are fully accredited by:



Certified to NSF/ANSI/CAN Standard 61 - Drinking Water System Components - Health Effects

Certified to NSF/ANSI Standard 372 -Conforms with the lead content requirements for "lead free" plumbing as defined by California, Vermont, Maryland, and Louisiana state laws and the U.S. Safe Drinking Water Act.

ASSE Standard #1093-2019, WSC Standard PAS-97 (2019) Performance Requirements for Pitless Adapters, Pitless Units, and Well Caps.

Meet the Standards for Water Works, Great Lakes Upper Mississippi River Board (GLUMRB) of State Public Health & Environmental Managers, Health Education Services, Albany, NY.

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QUOTATION FORM AVAILABLE AT BOSHART.COM

GLOSSARY OF ABBREVIATIONS & PITLESS UNIT TERMINOLOGY

AG - Above Ground: The portion of the upper barrel (UB) of a Pitless Unit which extends above ground (AG) or ground level (GL).

AHJ - Authority Having Jurisdiction: The term is defined as “An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.” While the local AHJ has a lot of authority, in the end they can be overridden by OSHA inspectors and OSHA regulations.

ANSI - American National Standards Institute: The voice of the U.S. standards, helping to assure the safety and health of consumers and the protection of the environment.

ASSE - American Society of Sanitary Engineering: ASSE International is an ANSI-accredited standards developer and product certification body composed of members representing all disciplines of the plumbing and mechanical industries. ASSE’s product performance standards, professional qualifications standards, professional certification, and product certification programs aim to improve the performance and safety of plumbing and mechanical systems.

ASTM - American Society for Testing and Materials: Is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services. Now referred to as ASTM International.

BD - Bury Depth: The depth at which the service line from the Pitless must be buried to be below the frost line to avoid freeze up. On Pitless Units it is measured from the center of the discharge connection to finished ground level (GL).

Beveled: Refers to the end finish of well casing or weld nipple, prepared for welding the connection. The words bevel, and chamfer overlap in usage.

BII - Boshart Industries Inc.

COD - Center of Discharge: Refers to the Pitless housing discharge connection to service line.

CWP - Cold Working Pressure.

DI - Ductile Iron: A family of cast spheroidal graphitic irons which possess high strength, ductility and resistance to shock; whereas cast iron is brittle and is much more susceptible to breaks.

Diameter: Diameter of a circle. May be indicated by this symbol Ø or DIA.

DP - Drop Pipe: The drop pipe connects the Pitless spool and goes down the well to the submersible. The drop pipe transfers the water from the submersible pump up to the Pitless housing to be discharged to the service line (sometimes referred to as “Riser” pipe).

Equalization Passage: The open passage, commonly called the through passage in a normal well Pitless spool allows the well to breathe (air to flow through the spool and well cap vent) as the water level in the well changes, equalizing the pressure within the well to atmospheric pressure.

FBE - Fusion Bonded Epoxy.

FPT - Female Pipe Thread: Short form for Female National Pipe Thread (Tapered) or FNPT.

GL - Ground Level: Ground level, sometimes referred to as “Final Grade” around the upper barrel. Code requires the grade must slope away from the well casing to ensure surface water drains away from the well.

GLUMRB - Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers. An organization which develops Policies for the Review and Approval of Plans and Specifications for Public Water Supplies (Recommended Standards for Water Works - 2012 Edition) Member States and Province: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, New York, Ohio, Ontario Canada, Pennsylvania & Wisconsin.

Final Grade: see Ground Level (GL).

Flowing Well: A water well from which the water flows without pumping due to natural or artificially supplied subterranean pressure from air or other gas. Flowing well applications require Type “F” flowing well Pitless spools.

Grout: Usually a neat cement (no aggregate) which is pumped into the space between the drilled hole and the casing, called the annular space.

HDHA - Hold-Down Hook Assembly.

ID - Inside Diameter.

LOB - Lift-Out Bail.

MPT - Male Pipe Thread: Short form for Male National Pipe Thread (Tapered) or MNPT.

NBR - Nitrile Rubber: Also known as Buna-N and acrylonitrile butadiene rubber, NBR is a synthetic rubber copolymer of acrylonitrile (ACN) and butadiene.

Normal Well: A water well created in the ground by digging, driving, boring, or drilling to access groundwater in underground aquifers. The well water must be drawn or pumped to the surface using a pump. Normal well type “N” spools with through holes / equalization passages are used in these applications.

GLOSSARY OF ABBREVIATIONS & PITLESS UNIT TERMINOLOGY

NSF - National Sanitary Foundation: A Public Health & Safety Organization which conducts impartial reviews against established criteria or guidelines, providing evidence that product labeling and claims have been objectively reviewed by a trusted third party.

Both NSF 61 and NSF 372 are recognized in Canada and the US. The “CAN” just means that NSF 61 was recently adopted as a Canadian national standard. This occurred with the February 2019 edition of NSF 61. It was previously only an American national standard (designated by the “ANSI”).

NSF/ANSI/CAN Standard 61 (NSF-61): Is a set of national standards that relates to water treatment and establishes stringent requirements for the control of equipment that comes in contact with either potable water or products that support the production of potable water.

NSF/ANSI Standard 372 (NSF-372): Addresses lead content only. Typically, regulations also require conformance to an extraction or leaching test standard. For most products, this means NSF/ANSI 61. NSF/ANSI 372 “Drinking Water System Components – Lead Content” is an American National Standard that establishes a standardized methodology for the determination and verification of product compliance to minimize lead contaminants, consistent with the United States Safe Drinking Water Act (SDWA) and its lead-free plumbing requirements, as well as the requirements of individual U.S. states such as California.

O.D. - Outside Diameter.

OSHA - Occupational Safety and Health Administration.

PA - Pitless Adapter: Consists of Pitless housing and spool, key component of a Pitless Unit (PU). The Pitless Adapter, provides a connection between the drop pipe and the service line below frost level, allowing for easy removal and installation of the submersible pump without use of an unsanitary well pit.

PAS97: Refers to Water Systems Council Pitless Adapter, Pitless Unit and Well Cap Standards.

Perpendicular: At an angle of 90° to a given line, plane, or surface.

Pitless Housing: The external component of a “Spool Type” Pitless Adapter used in the make-up of Pitless Units. The housing supports the spool and weight of the pipe column and has two seating areas for sealing of O-rings on the spool. Provides a discharge connection below frost level to the service line.

PU - Pitless Unit: Consists of a spool type Pitless Adapter and upper barrel, of enough length / bury depth to have the discharge below the frost line and with upper barrel extending above ground level. See Pitless Adapter for purpose.

PT - Probe Tube: Typically, PVC piping which runs from the well head down the well. Used to lower sensor probes and / or other devices down the well through the through passage(s) of the spool. The tube ensures the equipment can be lowered and removed, without interference, between the drop pipe and the well casing. Probe tubes protect equipment from damage.

Schedule: Referring to ASTM Pipe Wall Thickness Specification.

Service Line: The piping attached to the Pitless Adapter (Unit) discharge, transferring the water to the service.

Spool: The internal component of a “spool type” Pitless Adapter used in the make-up of Pitless Units. The spool supports the weight of the pipe column and seals the water passage to the Pitless housing by means of O-rings. The spool diverts the water from the drop pipe 90° to discharge, below frost level, to the service line.

SS - Stainless Steel: Refers to 304 Stainless Steel unless stated otherwise. 304 Stainless Steel is an austenitic stainless steel, which is less electrically and thermally conductive than carbon steel. It has a higher corrosion resistance than regular steel and is widely used for a variety of industrial applications such as food handling and processing equipment.

UB - Upper Barrel: aka Pitless Casing.

Vermin Proof: In terms of Pitless Units and well caps vermin proof means there is a suitable barrier, typically a stainless steel mesh screen to prevent insects or pests such as earwigs, spiders, rodents, animals and birds (also known as vermin) from entering the well chamber through any open area, gaps or crevices.

WN - Weld Nipple: A short piece of pipe, with a MPT thread on one end and a beveled end for butt welding on the other.

Well Pit: Older wells were often terminated in well pits below the frost line (usually 5 to 8 feet deep) to prevent freezing in winter. Well pits pose safety & well contamination risks. Only trained professionals with appropriate safety equipment should enter a well pit because the pit may contain insufficient oxygen levels or toxic gases that can cause asphyxiation and death. Well pits can flood and contaminate the well. Newer wells use a “Pitless Adapter or Unit” connected to the well casing that allows the well casing to extend above the ground and connects the buried water-supply pipe to the house.

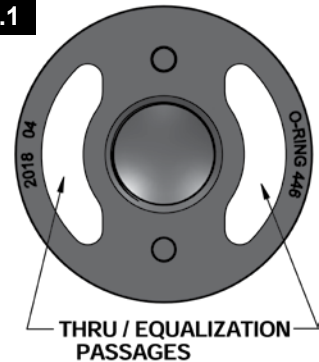
WSC - Water Systems Council.

COOL FACTS & FEATURES

LARGE CRESCENT SHAPED THROUGH / PRESSURE EQUALIZATION PASSAGES

Designed to provide the maximum through passage dimensions possible, the through passages are designed to allow heavy gauge flat jacketed pump cable to be inserted through the passage without having to remove the protective jacket, while leaving room for multiple PVC probe tubes, along with additional airlines, control wiring, chlorination equipment, and well monitoring equipment to be installed. See FIG.1

FIG.1



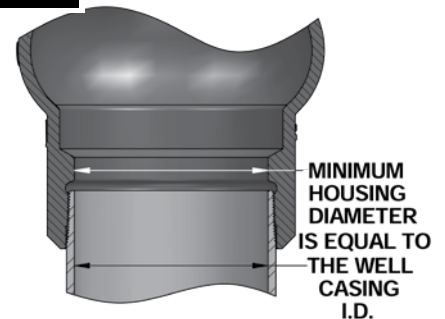
GLOBE STYLE DISCHARGE HOUSING

In addition to the excellent flow characteristics, the globe eliminates the risk of damaging O-rings during installation of the spool. The globe provides clearance between the housing and the O-ring, eliminating compression and damage of the O-ring during installation.

CLEAR-WAY DESIGN - FULL WELL DIAMETER ACCESS

The minimum housing inside diameter, located at the load bearing spool stop, which provides a stop that supports the weight of the pipe column (hold-down / lift out assembly, spool, pipe, water, pump cable and submersible pump). The diameter is equal to or greater than the well casing I.D. to ensure there is no restriction through the Pitless which would inhibit access to the well chamber. See FIG.2

FIG.2



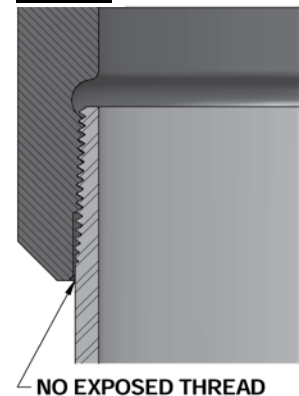
STAGGERED SEAL SEATING

The BII housings are designed for staggered seating of the O-rings. The bottom O-ring on the spool fully compresses and enters the lower seat area before the top O-ring on the spool starts to compress and enter the upper seating area. This design is unique to the BII Pitless Units and ensures smooth, easy installation of the spool, eliminating the need to use excessive force which eliminates a common problem associated with other Pitless Units where both seals need to be compressed simultaneously and the spool must be hammered into its final seated position.

STRONGER CONNECTIONS - GREATER LONGEVITY

The well casing and upper barrel connections see FIG.5, are specially designed with extra-long threads to fully encapsulate the full length of the ANSI B1-20.1 standard male NPT thread of the weld nipple and upper barrel thread. This provides a much stronger connection with maximum corrosion resistance and system longevity, only full casing thickness exposed to soil. See FIG.3

FIG.3



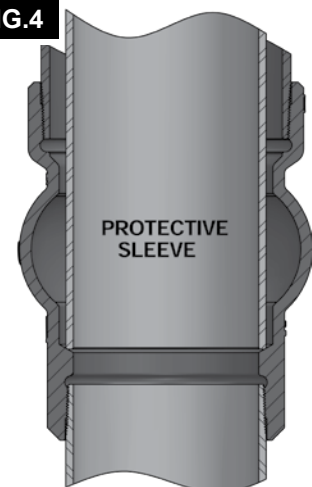
NSF61 CERTIFIED EPOXY COATING

A standard feature, not a special-order option our Ductile housings are epoxy coated inside and out, the precision machined O-ring seats are fully coated for maximum corrosion protection under the seal and the coating provides a very smooth surface for ensuring a positive seal.

HOUSING ACCOMMODATES PROTECTIVE SLEEVES FOR WELL REHABILITATION.

Designed with seat diameters large enough to allow for the insertion of a pipe into the upper barrel past the seating areas, this provides effective protection to the seating areas during insertion and removal of drill bits and other tools used in the well rehabilitation process. See FIG.4

FIG.4



LARGE CONDUIT CONNECTIONS

1-1/4" FPT on 5" units, 2" on the 6" units and 4" on the 8" and larger Pitless Units.

BEST IN CLASS WELL CAPS

BII well caps exceed the most stringent well construction codes, in addition to providing a sanitary well head cover, their locking features meet State and Provincial tamperproof requirements. They are 'watertight' by industry standards, better described as rainproof / vermin proof as they protect the well from the elements such as rain, sleet and snow. Given the well caps are vented they are not water tight from a flooding perspective.

COOL FACTS & FEATURES

LARGE / HIGH CAPACITY AIR VENTS

All BII well caps have 24 mesh stainless steel vent screens, which exceeds both the Water Systems Council (WSC) PAS-97 requirement of 1/2" diameter (0.196 sq. in) with a maximum opening dimension of 1/32". They exceed the most stringent State Regulations (Michigan's Well Construction Code Section R325.1657 - Rule 157) which requires a mesh of not less than 20 mesh, and not more than 30 mesh per inch, with the screen area increasing in size as the well diameter increases. Vents are required to allow the well to breathe as the water level in the well rises or falls during the pumping cycle. Larger well diameters have greater air volume per foot of casing therefore larger vents are often needed to allow ample air volume to pass through the vent when the water level changes rapidly. All well caps and vents are designed to provide protection from physical damage. Details on page 24 (5" Pitless Unit), page 39 (6" Pitless Unit) and page 74 (8"-12" Pitless Unit).

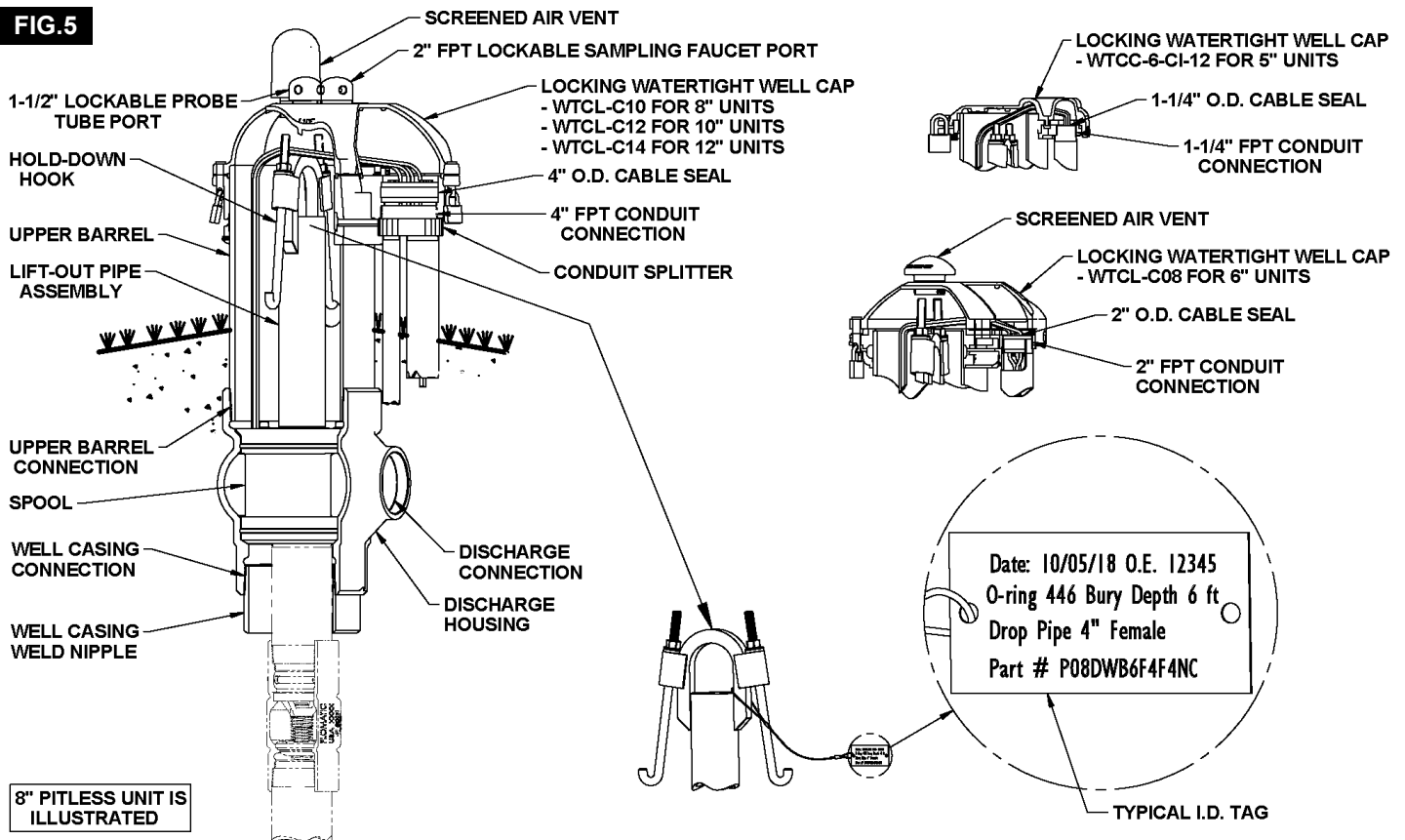
FLOWING WELL UNITS

All Pitless Units can be supplied with separately designed spools for flowing (artesian) well installations. Threaded cable seals which are ordered separately, provide a water tight seal preventing water from entering the upper chamber. Details on page 78.

WATER SAMPLING VALVE (Optional)

Tamper proof, all stainless steel sampling valve make it easy to collect water samples at the well head. Available for 5" and larger well sizes. Details on page 80.

FIG.5



CONDUIT CABLE SEALS (Optional)

Watertight / vermin proof compression seals are available to prevent contamination of the well by surface water, insects or rodents. The seal ensures nothing can enter the well chamber through the conduit. This is a great safeguard for the well in the event the conduit between power source and well head were to be damaged. Details on page 84.

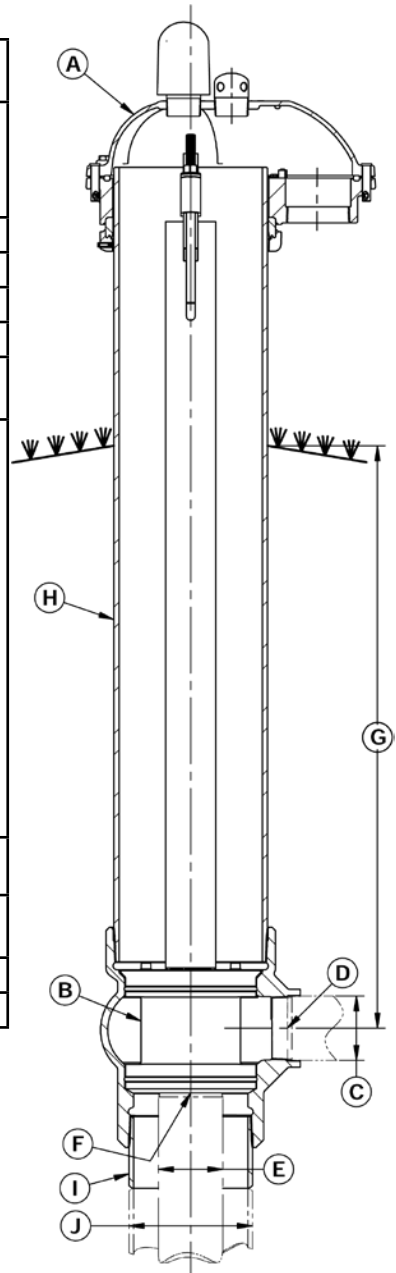
CONDUIT SPLITTERS (Optional)

Available for 4" conduit connections (8" and larger Pitless Units). The splitter is a special 4" MPT bushing that splits the large conduit into two smaller conduit connections (one) 2" FPT for power cable and (one) 1" FPT typically used to run a transducer wire in a separate conduit to eliminate electrical interference. Details on page 86.

EXPLANATION OF PART NUMBER SYSTEM

P 08 D W B 6 F 4 F 4 N C

A	Well Cap: C = Cast Iron, N = No Cap,
B	Well / Spool Type: N = Normal Well (Open Through Passages) F = Flowing Well (Closed Spool with Tapings for Cable Seals).
C	Discharge Connection Size.
D	Discharge Connection Type (FPT).
E	Drop Pipe Connection Size.
F	Drop Pipe Connection Type (FPT).
G	Bury Depth (feet) 3', 4', 5', 6', 7', 8', 9', 10'
H	Upper Barrel Type: "B" = Black Painted Steel with Hold-Down Hooks. "I" = Black Painted Steel with Hold-Down Hooks. Comes with Isolation Flange Package. Suggested option for connecting a stainless steel pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion. "S" = Schedule 20 (0.25" wall) 304 Stainless Steel. "H" = Standard / Schedule 40 (0.375" wall) 304 Stainless Steel. "P" = Schedule 40 PVC (Note" Hold-Down Hooks are not available).
I	Well Casing Connection = W (Weld Nipple) as standard option.
J	Material: D (Ductile Iron) or S (Stainless Steel).
	Well Casing Size. 5', 6', 7', 8', 10' and 12'
	Pitless Unit (Spool Type).



EXAMPLE

P 12 S W H 8 F 6 F 6 F C

	Cast Iron Well Cap.
	Flowing Well (Closed Spool with Tapings for Cable Seals).
	6" Discharge Connection.
	FPT Discharge Connection.
	6" Drop Pipe Connection.
	FPT Drop Pipe Connection.
	8 Foot Bury Depth.
	Schedule 40 (0.375" wall) 304 Stainless Steel Upper Barrel (Pitless Casing).
	12" Weld Nipple to connect to Well Casing.
	304 Stainless Steel Pitless.
	12" Well Casing.
	Spool Type Pitless Unit.

DIAMETER & LENGTH CONVERSION CHARTS

Pipe is identified by "nominal" size related only loosely to actual dimensions. Inch pipe products are called NPS or "nominal pipe size" and their metric equivalents are called DN or "diameter nominal". The metric designations conform to International Standards Organization (ISO) usage and apply to all plumbing piping.

NOMINAL PIPE SIZE CONVERSION TO METRIC SIZE					
mm	inch		mm	inch	
3.2	1/8"		50	2"	200
6.4	1/4"		65	2-1/2"	250
9.5	3/8"		80	3"	300
15	1/2"		90	3-1/2"	350
20	3/4"		100	4"	400
25	1"		115	4-1/2"	450
32	1-1/4"		125	5"	500
40	1-1/2"		150	6"	

► for larger pipe use 25 mm = 1"

METRIC TO IMPERIAL LENGTH								
metre	inch	feet	metre	inch	feet	metre	inch	feet
			2.0	78.7"	6.6	4.0	157.5"	13.1
0.1	3.9"	0.3	2.1	82.7"	6.9	4.1	161.4"	13.5
0.2	7.9"	0.7	2.2	86.6"	7.2	4.2	165.4"	13.8
0.3	11.8"	1.0	2.3	90.6"	7.5	4.3	169.3"	14.1
0.4	15.7"	1.3	2.4	94.5"	7.9	4.4	173.2"	14.4
0.5	19.7"	1.6	2.5	98.4"	8.2	4.5	177.3"	14.8
0.6	23.6"	2.0	2.6	102.4"	8.5	4.6	181.1"	15.1
0.7	27.6"	2.3	2.7	106.3"	8.9	4.7	185.0"	15.4
0.8	31.5"	2.6	2.8	110.2"	9.2	4.8	189.0"	15.7
0.9	35.4"	3.0	2.9	114.2"	9.5	4.9	192.9"	16.1
1.0	39.4"	3.3	3.0	118.1"	9.8	5.0	196.9"	16.4
1.1	43.3"	3.6	3.1	122.0"	10.2	5.1	200.8"	16.7
1.2	47.2"	3.9	3.2	126.0"	10.5	5.2	204.7"	17.1
1.3	51.2"	4.3	3.3	129.9"	10.8	5.3	208.7"	17.4
1.4	55.1"	4.6	3.4	133.9"	11.2	5.4	212.6"	17.7
1.5	59.1"	4.9	3.5	137.8"	11.5	5.5	216.5"	18.0
1.6	63.0"	5.2	3.6	141.7"	11.8	5.6	220.5"	18.4
1.7	66.9"	5.6	3.7	145.7"	12.1	5.7	224.4"	18.7
1.8	70.9"	5.9	3.8	149.6"	12.5	5.8	228.3"	19.0
1.9	74.8"	6.2	3.9	153.5"	12.8	5.9	232.3"	19.4

► Meters to Inches - Multiply by X 39.3701 ► Meters to Feet - Multiply by X 3.28084

ENGINEERING SPECIFICATIONS

SAMPLE ENGINEERING SPECIFICATIONS FOR PITLESS UNITS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

Pitless Unit System including well cap, lift-out bail, hold-down hooks, lift out pipe, discharge body with support ring, spool with or without pressure equalizing passages.

1.02 SUBMITTALS

A. All bidders shall submit as part of their bid:

1. The Manufacturer and Model of the Pitless Unit to be installed.
2. Detailed Specifications with Drawings of the System furnished by the manufacturer.

PART 2 PRODUCTS

2.01 PITLESS UNIT

The Pitless Unit shall be equal to Boshart Industries, Model _____. The Pitless Unit shall be certified to both NSF/ANSI/CAN-61 and NSF/ANSI 372. Conform to the Recommended Standards for Water Works, Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers, Health Education Services, Albany, NY. Certified to meet or exceed the requirements of the Water Systems Council PAS-97 (2019) and A.S.S.E. 1093-2019 Standards.

2.01.01 WELL CAP

The watertight cap shall be certified to meet or exceed the requirements of the Water Systems Council PSA-97 (2019) and A.S.S.E. 1093-2019 Standards. Shall be secured to the Pitless casing by means of a compression gasket. Designed so that the top of the cap can be removed without affecting the sealed conduit or wiring. The watertight cap will have protected downward facing stainless steel screened well vent(s). Construction of the cap and well vent will be of heavy-duty gray cast iron and powder coated with durable blue finish.

2.01.02 UPPER CASING

The Upper Casing is factory assembled to the discharge body, and the lift out and hold-down mechanism are factory assembled. Spool and well caps are packaged to prevent any chance of damage during shipping. Upper casing thickness must conform to the Recommended Standards for Water Works and be coated with a rust protective coating. The upper casing must provide a watertight connection from the discharge body to the well cap. The discharge port center line to be _____ feet below grade, and the Pitless upper casing to extend _____ feet above grade.

2.01.03 SPOOL

The spool shall include _____ NPT per ANSI B 1.20.1 male or female drop pipe connection and shall be constructed of lead-free heavy-duty ductile iron, with a lead-free NSF61 Certified, epoxy coating on wetted surface or be constructed of stainless steel.

The spool will have O-ring grooves machined into the spool retaining the O-rings when setting or pulling the system.

The positive pressure O-ring seals shall be constructed of Nitrile rubber (Acrylonitrile Butadiene Copolymer) or equivalent. Spool shall be designed to accommodate probe tubes or water samplers and NPT ports for discharge pressure taps. O-ring protection shall be provided to prevent the seals from dragging on the upper casing when the pump is installed or removed.

2.01.04 DISCHARGE BODY

The Discharge Body shall be constructed of lead-free heavy-duty ductile iron, with a lead-free NSF61 Certified, epoxy coating on wetted surface or be constructed of stainless steel.

Discharge body designed to be strong enough to prevent distortion due to vertical movement of discharge pipe, eliminating the risk of the spool binding in the discharge body. Minimum I.D. of the discharge body to be equal to or greater than I.D. of the well casing for ease in well servicing.

O-ring seats to be designed to prevent crevice and or galvanic corrosion.

2.01.05 HOLD-DOWN MECHANISM

The Pitless Unit spool shall have a factory assembled hold-down mechanism, capable of preventing rotation of the spool / pipe column relative to the discharge body, at full rated locked rotor torque of the submersible pump motor. The spool must have a factory assembled lift out pipe and bail, capable of _____ lbs. rated load, to allow lifting a water filled drop pipe and pump out of the well for service. Components to be constructed of steel with a corrosion resistant coating.

INSTALLATION INSTRUCTIONS

NOTE: PITLESS UNITS ARE TYPICALLY ATTACHED TO THE WELL CASING BY WELDING.

Always refer to and comply with all applicable well construction's codes.

Always refer to your State and or Provincial local municipal water well regulations for installation requirements.

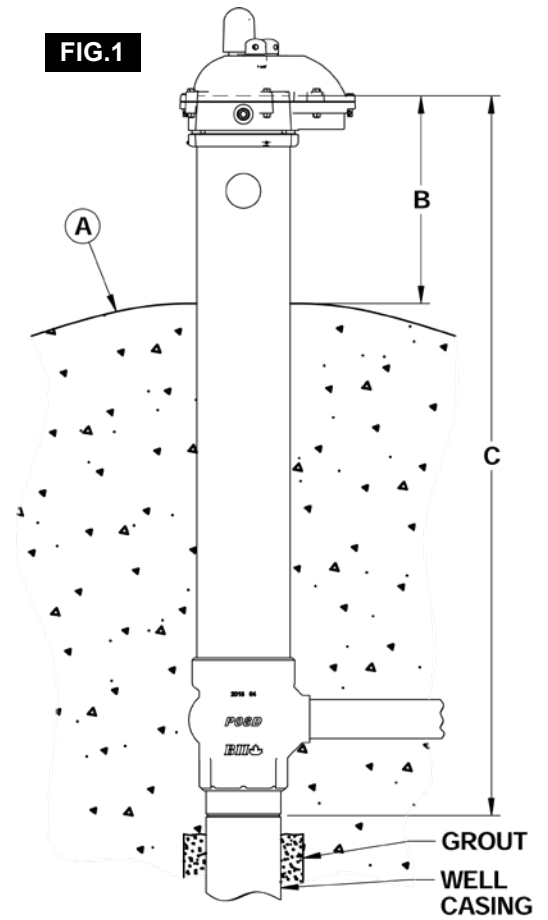
To install an Industrial Pitless Unit, an excavation around the well casing below the frost line is made and well casing cut off at a prescribed level. The upper barrel is then welded or threaded tightly onto the well casing. The submersible motor, pump, and cable are attached to the drop pipe which is lowered into the well with a hoist. When the top of the last section of the drop pipe is one foot above the Pitless case, the lift-out / hold-down hook assembly and spool are then threaded onto the drop pipe. The spool assembly and drop pipe with motor, pump and cable are lowered into place, then the electrical service and well cap are installed.

1. The finished grade (ground level) at the well location must be determined (FIG.1-A). The ground must slope away from Pitless case in all directions.

NOTE: The well casing must be cut off at a distance below the ground level equal to the overall Pitless Unit length (FIG.1-C), less the length of the Pitless Unit upper barrel / Pitless casing which is to extend above the ground (FIG.1-B). All Pitless Units are supplied with 24" of upper barrel to protrude above ground (meets and exceeds the minimum requirements) to provide greater protection against surface contamination (FIG.1-B).

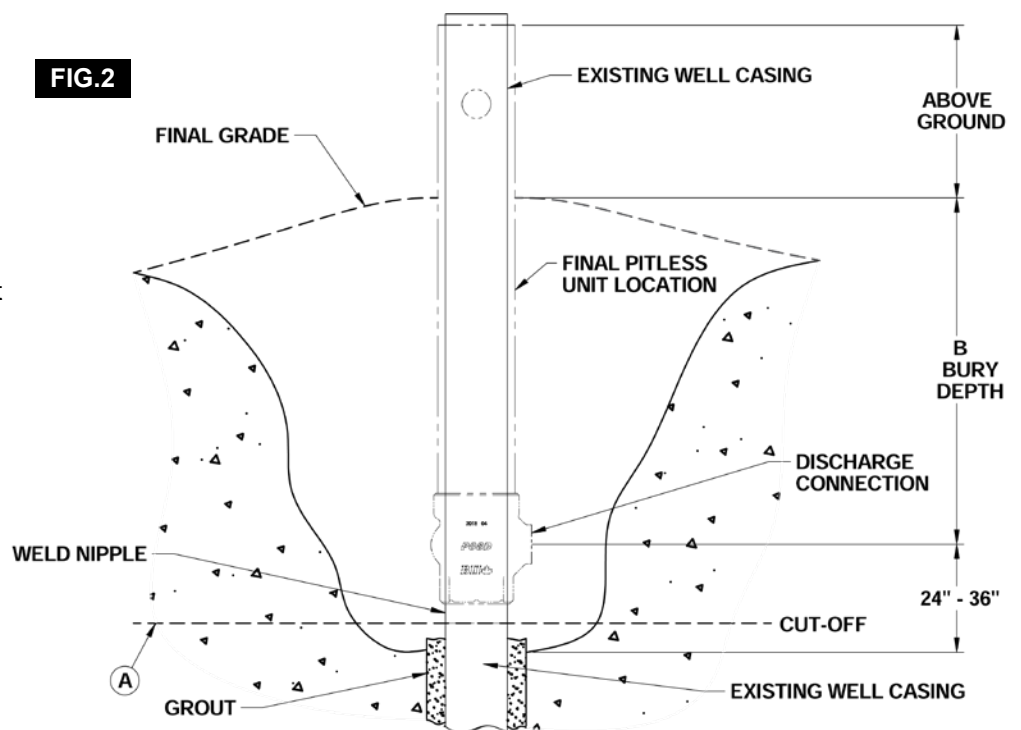
Flood Plain Warning: If the well is in a location where contamination from flooding is possible the well must be constructed in compliance with all applicable well codes which may include 100-year flood level requirements and specialized well venting systems to prevent surface water from entering the well if the well head were to become submersed.

FIG.1



2. Excavate around the well casing according to government regulations where well casing is to be cut off (FIG.2-A). Excavate to provide adequate room to work, 24" to 36" deeper than the bury depth or center of discharge connection (FIG.2-B) is suggested. Then remove grout from existing well casing to just below the cut off level (FIG.2).

FIG.2



CAUTION: Always make sure to shore up the hole to protect against cave-in, according to government safety regulations

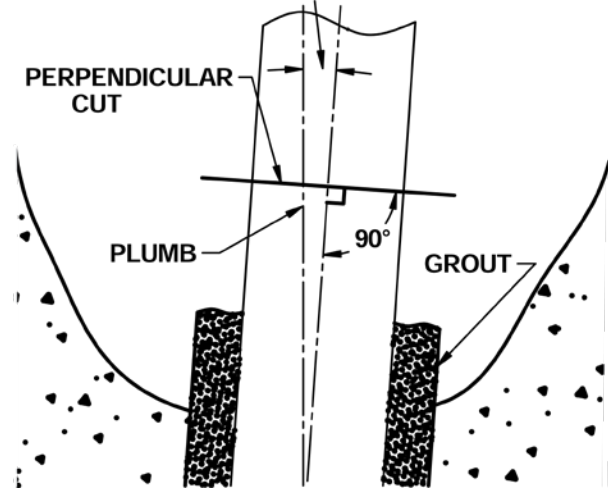
INSTALLATION INSTRUCTIONS

3. Cut off the well casing perpendicular to the well casing center line (FIG.3). The use of a universal pipe cutter tool equipped with a blade designed to cut large diameter steel pipe / well casing will make a high-quality, straight, square and smooth cut. A rough or uneven cut will make welding more difficult and could reduce the quality of the weld connection.

TIP: If cutting casing with a torch, the use of a cutting torch guide is recommended. Just clamp around the casing, rest the cutting tip on the guide and cut a nice straight line.

FIG.3

DEVIATION FROM PLUMB IS EXAGGERATED FOR ILLUSTRATION PURPOSES



4. Using lift straps secured below the hold-down hook pods (FIG.4-A), which double as lifting strap pods to ensure the lifting straps do not slip while Pitless Unit is hoisted into position on the well casing. Rotate the discharge outlet (FIG.4-B) to the desired location for service line. All Pitless Units are designed to be joined either by welding or threading the unit to the well casing.

NOTE: Quick connect / mechanical joint options are available and can be utilized providing they meet the well construction codes for jurisdiction.

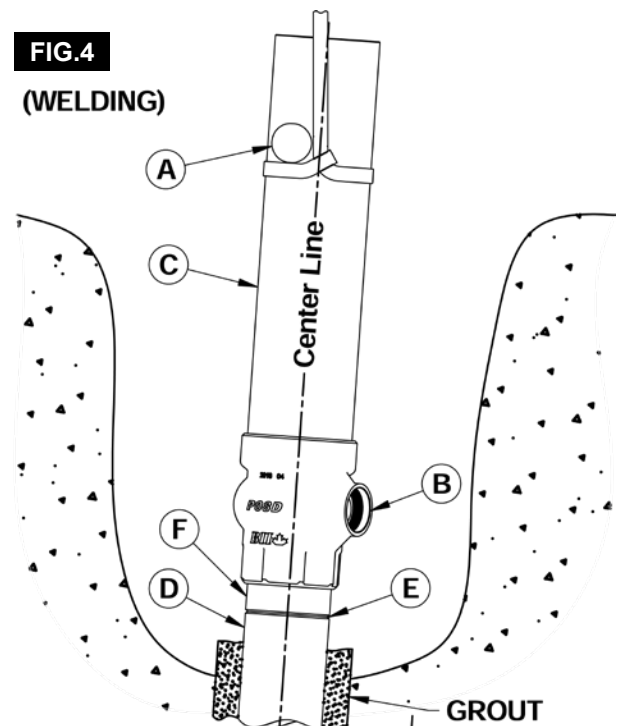
IMPORTANT: It is essential that the center line of the Pitless case (FIG.4-C) and well casing be the same (FIG.4-D). Joint between the well casing and the Pitless Unit must be watertight (FIG.4-E).

Welding the Pitless Unit to the Well Casing: All BII Pitless Units are supplied with beveled weld nipple (FIG.4-F) installed (hand tightened only). The nipple must be installed with a high-quality thread sealant and tightened by the installer. The use of an external type pipe joint aligning clamp is recommended to ensure proper well casing to Pitless Unit alignment and to securely hold the Pitless Unit in position while the connection is welded.

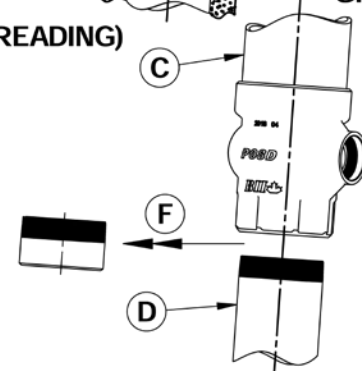
Threading the Pitless Unit to the Well Casing: The beveled weld nipple is loosely installed to allow for easy removal. In the event the well casing is already threaded, simply remove the weld nipple (FIG.4-F) and thread the Pitless Unit (FIG.4-C) directly to the threaded well casing (FIG.4-D).

FIG.4

(WELDING)



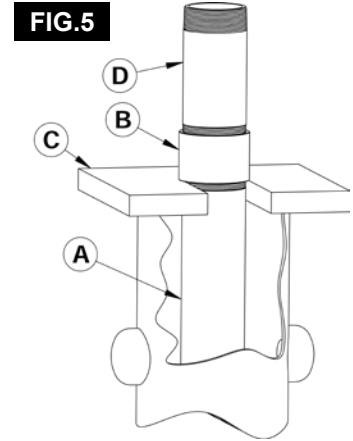
(THREADING)



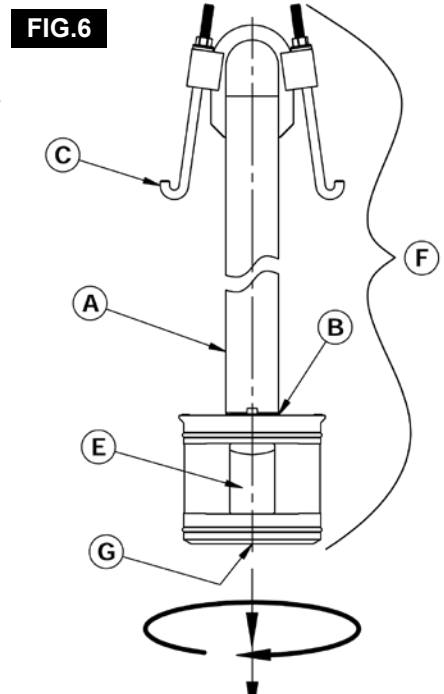
INSTALLATION INSTRUCTIONS

5. The submersible motor, pump and cable are attached to the drop pipe and then lowered into the well. When the top of the last section of the drop pipe (FIG.5-A) is one foot or more above the Pitless casing (upper barrel). Typically, the last length of pipe has a well coupling installed (FIG.5-B) which is used to support the weight of the pump column using a heavy duty "U" plate (FIG.5-C) or some form of clamping device. A short piece of drop pipe is then threaded into the coupling to connect to the spool / lift out assembly.

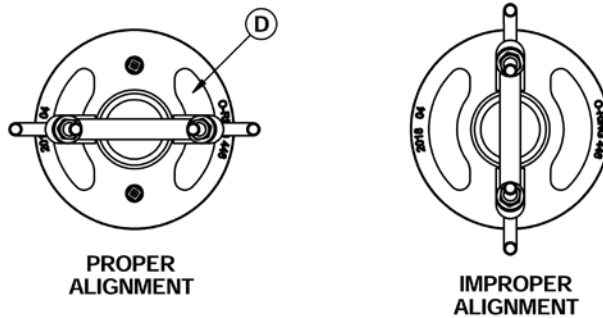
TIP: The use of a short section of pipe (FIG.5-D) eliminates issues with the lifting range of the crane or hoist reducing the length of the first section to be lifted (lift pipe and spool assembly) to get to the first drop pipe connection when pulling the pump for servicing or replacement.



6. Thread the lift out pipe (FIG.6-A) into the top lift pipe connection of the spool (FIG.6-B). Wrench tighten and make sure to align the hold-down hooks (FIG.6-C) in line with the center of the crescent-shaped through passages (FIG.6-D). This will ensure the water passage (FIG.6-E) will align with the discharge connection for maximum flow when the spool is set, and the hooks are engaged in the hold-down pods on the Pitless casing (FIG.6 top view). Screw the spool assembly onto the drop pipe.



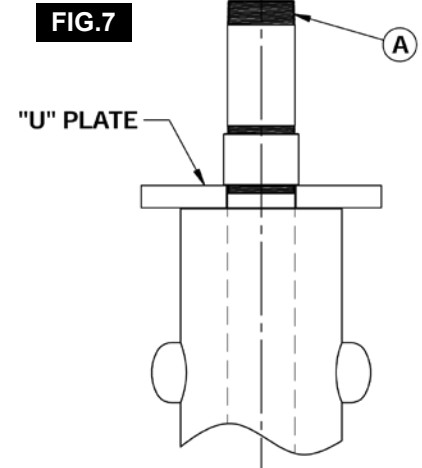
TOP VIEW



7. Lower and thread the spool & lift-out assembly (FIG.6-F) into the drop pipe (FIG.7-A pipe column) and then into the bottom drop pipe connection of the spool (FIG.6-G).

8. With the spool & lift-out assembly securely fastened, the wiring which is attached to the pipe column can now be fed through the passages and secured to the lift out pipe to get the wiring to the well head.

9. Prior to seating the spool, wipe the rubber O-ring seals and the O-ring seats in the discharge housing with a clean cloth and then coat with a heavy layer of silicone grease which is approved for potable water and food processing applications. Silicone grease is not water soluble and it provides excellent lubrication during installation and aids proper seating of rings.



INSTALLATION INSTRUCTIONS

10. First, verify that the water passage in the spool will align with the discharge outlet in the Pitless housing (if not refer to Step #6).

TIP: Verification is easy. Simply check that the two-pressure zone tapings (FIG.10-A) are in alignment with the discharge outlet (FIG.10-B), with the hooks in alignment with the hold-down pods. Then, slowly lower the pipe column into place. The spool is set when the lower plate of the spool rests against the support ring in the Pitless housing.

11. Engage the hold-down hooks onto the well casing inside the hold-down hook pods and tighten.

12. Install lower and middle ring assembly of the well cap following instructions provided with the well cap. Leave the cover off for the time being. Details on page 24 (5" Pitless Unit), page 39 (6" Pitless Unit) and page 74 (8"-12" Pitless Unit).

13. Complete electrical service.

NOTE: If you have ordered a conduit cable seal, see page 84 and or conduit splitter follow the installation instructions provided. Details on page 86.

14. Complete installation of well cap cover (following instructions provided with the well cap). Details on page 24 (5" Pitless Unit), page 39 (6" Pitless Unit) and page 74 (8"-12" Pitless Unit).

15. Connect discharge outlet to distribution line.

TIP: You may want to consider the installation of a swing joint (FIG.15) on the discharge which can provide extra protection of the discharge joint / service line against damage due to settling of soil and soil expansion due to frost.

16. The unit is now ready to operate under power and should be run for enough time to ensure confidence that there are no leaks present at any of the connections.

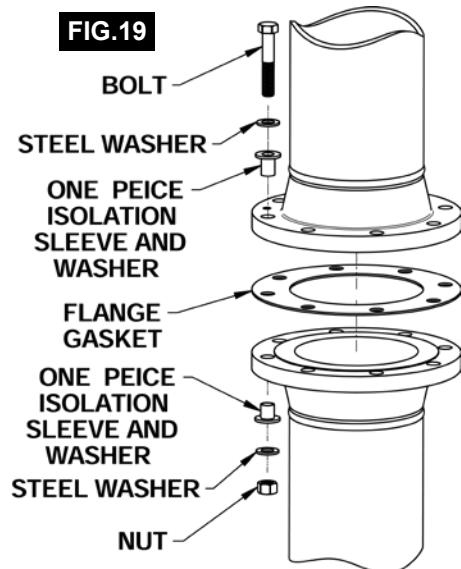
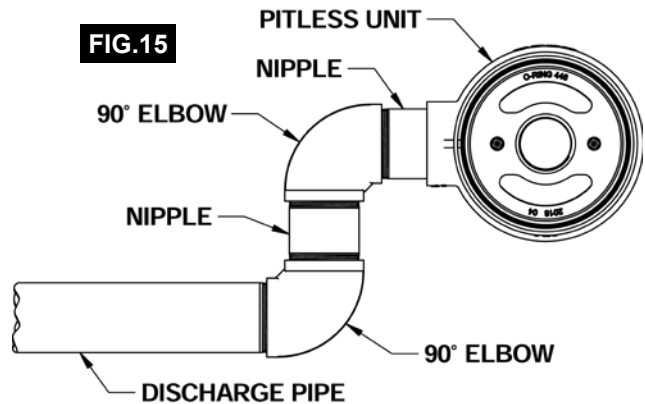
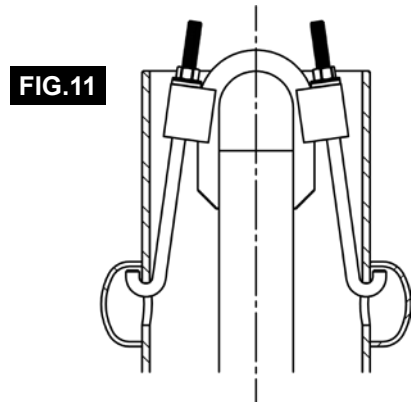
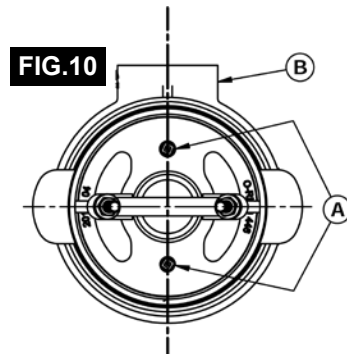
17. The excavated hole should not be back filled until the unit is running satisfactory.

18. Great care must be exercised to compact the fill under discharge service line during the back-filling process.

Always follow all regulations governing the sealing of the bore hole and Pitless / well casing as well as the codes for surface drainage away from the well head. Some areas may simply require a specified surface grade while other jurisdictions may require a cement pad.

IMPORTANT: Joining Dissimilar Metals Should Be Avoided.

TIP: Solution on "Preventing Galvanic Corrosion" page.



INSTALLATION INSTRUCTIONS

PREVENTING GALVANIC CORROSION

Galvanic corrosion occurs when two dissimilar metals come into electrical contact with a conductive electrolyte. FIG.1 shows the three prerequisites in graphic form. This is a situation which could occur if a 304 Stainless Steel Pitless Adapter was directly attached to a steel well, casing and / or upper barrel. Direct contact of these metals will at minimum, marginally increase corrosion. The degree of galvanic corrosion will vary dependent on the composition / conductivity of the soil which is in contact with the Pitless Unit. The soils will act as the electrolyte.

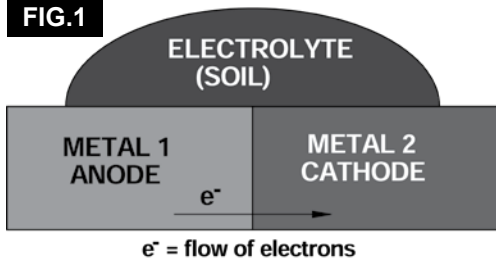


FIG.2

Material with large area	G=Good U=Uncertain P=Poor	Material with small area		
		Carbon Steel Cast Iron	Zinc Galvanized Steel	Stainless Steel
Carbon Steel Cast Iron		G*	G*	G*
Zn Galvanized Steel		P	G	G*
Stainless Steel		P	P	G

* Although combining these partner metals only has a negligible influence on material, this combination is not recommended because of the high self-corrosion of the less noble partner material.

SOLUTION... Flanged Connections using Isolation Kits.

Boshart recommends a flanged connection with isolation bolt kit when joining dissimilar metals. The gasket and non-metallic sleeves act as an insulator FIG.3.

NOTE: Some State Codes / Authorities having Jurisdiction may not allow a buried flange connection. In these situations, there maybe no other option other than to join the dissimilar metals directly.

BOTH OPTIONS AVAILABLE! If a stainless Pitless Unit is to be joined to a steel upper barrel or well casing, we can provide a unit with or without the isolation flanges. Simply identify desired connection on order form. For Isolation Kit select Type "I" Upper Barrel.

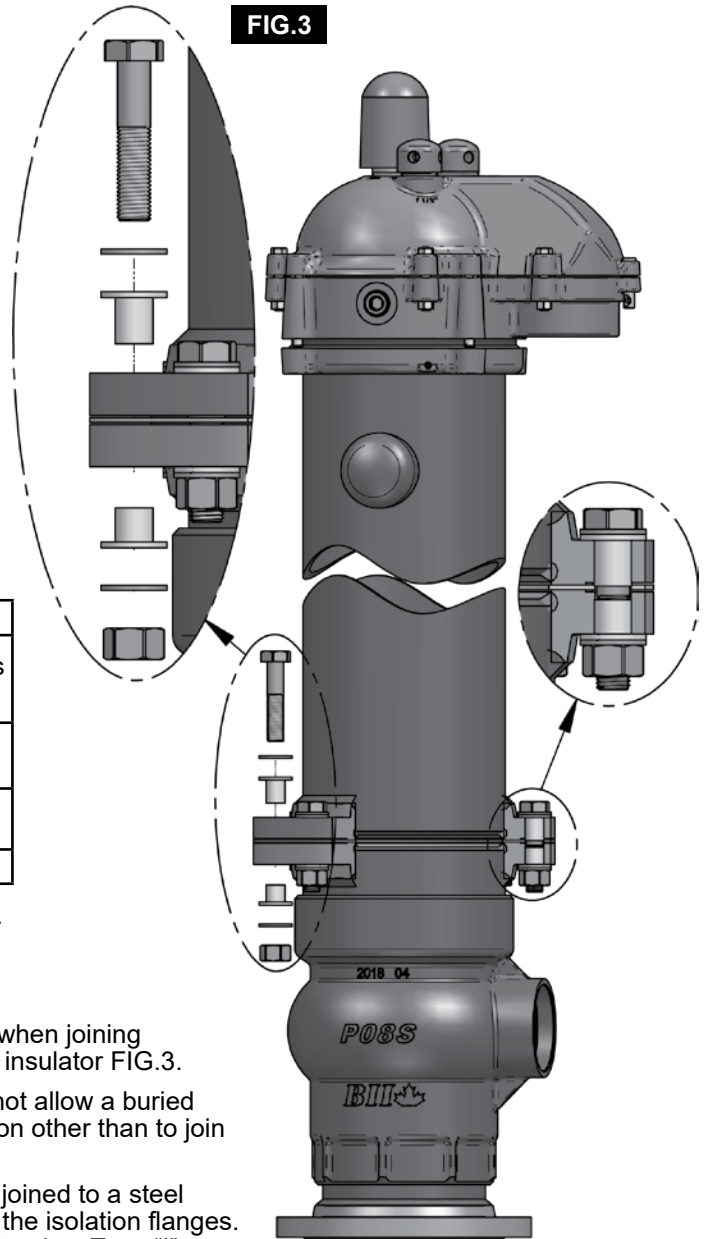
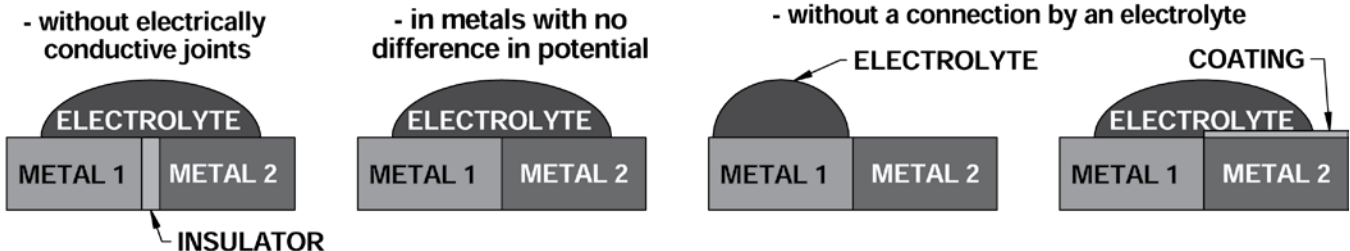


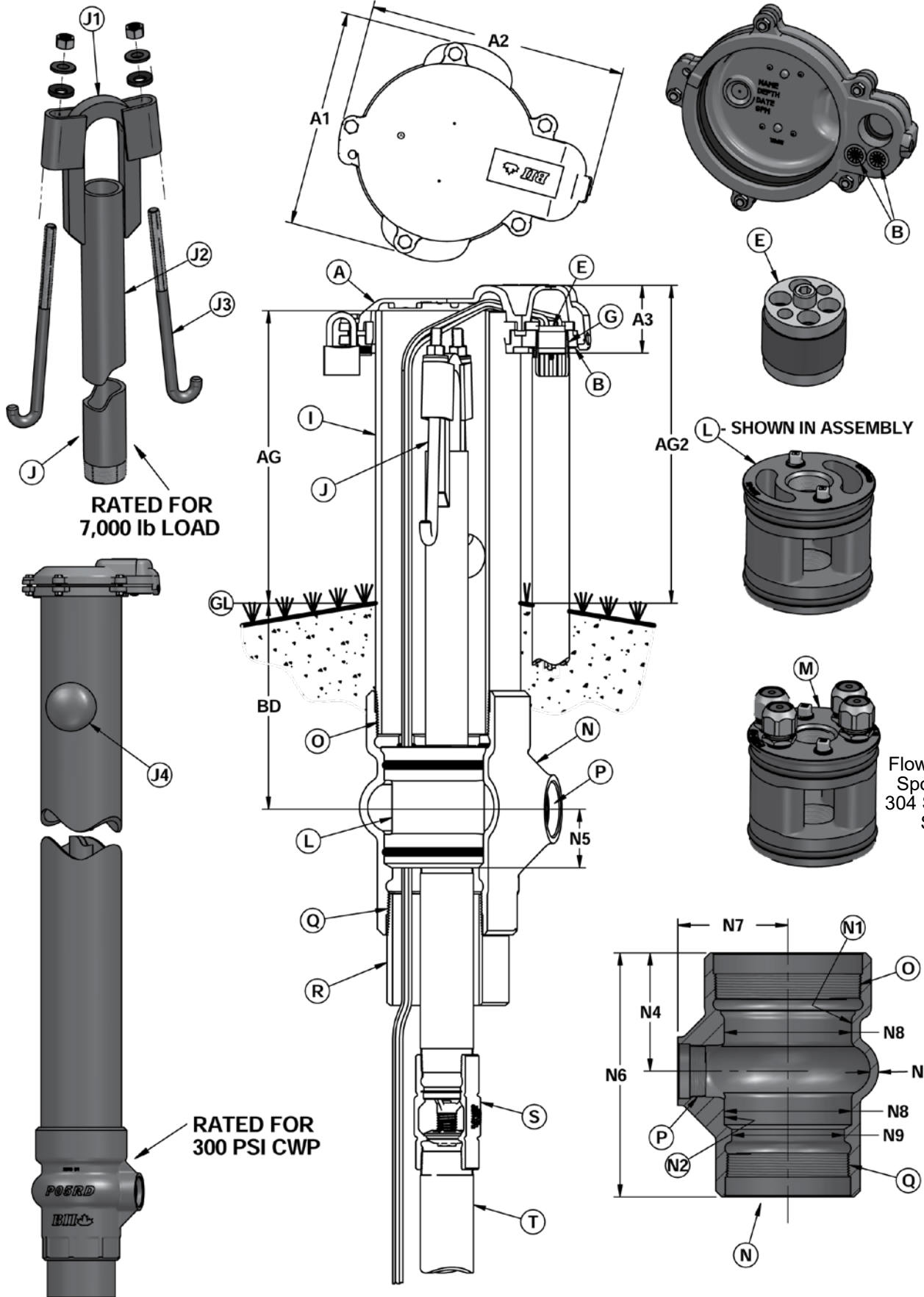
FIG.4 Conditions in which galvanic corrosion cannot occur:



CAUTION: Galvanic corrosion is very complex with many variables. Boshart Industries is providing general information to be used as a guide only, to explain the benefit of insulating dissimilar metals. It is the sole responsibility of the system designer to determine suitable joining methods based on the specifics of the project and applicable well construction codes. **ALWAYS CONSULT WITH A QUALIFIED CORROSION EXPERT!**

5" RESIDENTIAL DUCTILE IRON PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - COMPONENTS



5" RESIDENTIAL DUCTILE IRON PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - SPECIFICATIONS

A - 6" Locking Watertight / Sanitary Well Cap: A1: 9.65", A2: 11.35", A3: 3.00" Details on page 24.

B - Well Vents: Two vents 0.74" in diameter furnished with 24 mesh stainless steel downward facing screens in lower ring of well cap.

N/A - On 5" Pitless Units the well cap cover is removed to access probe tubes to insert monitoring equipment down the well. (Item "C" Lockable Probe Tube Port available on 8" and larger Pitless Units only).

N/A - On 5" Pitless Units the well cap cover is removed to access the sampling faucets operating rod for collection of water sample. (Item "D" 2" FPT Lockable Sampling Faucet Port available on 8" and larger Pitless Units only).

E - 1-1/4" O.D. Cable Seal: Prevents contaminants from entering the well through the conduit, by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

N/A - On 5" Pitless Units additional ports can be installed through the well cap top cover using bulk head fittings to accommodate installation of additional accessories such as chlorinators or sensor cables (Item "F" 1" FPT Accessory Ports available on 8" and larger Pitless Units only).

G - 1-1/4" FPT Conduit Connection: Accommodates heavy gauge pump cable and / or a conduit seal. Details on page 84.

N/A - On 5" Pitless Units conduit splitters due to size limitations are not available. (Item "H" 4" MPT Conduit Splitter available on 8" and larger Pitless Units only).

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 25.14" from ground level to top of cap.

I - 6" I.D. Upper Barrel: 6-5/8" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.280" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 40 0.280" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 7,000 lb. load. **J1:** Lift-Out Bail (3/4" bar) for lifting hook. **J2:** 1-1/2" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: Ductile Iron construction with large through / equalization passages. Spool has a 1-1/2" FPT lift out connection 2" FPT drop pipe connection and two 1/2" FPT pressure zone tapings. Details on page 18.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with four 3/4" FPT tapings for cable seals. Details on page 18. Spool has a 1-1/2" FPT lift out connection, 2" FPT drop pipe connection & two 1/2" FPT pressure zone tapings. Details on page 18.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-ring Seat. **N2:** Lower O-ring Seat. **N3:** 3/8" Wall. **N4:** 5.3" Center of Discharge to top of Pitless housing. **N5:** 2.63" Center of Discharge to bottom of Spool. **N6:** 10.94" total length of discharge housing. **N7:** 4.94" center of well to face of discharge connection. **N8:** O-ring seat diameter is >5-9/16" to allow insertion of 5" protective sleeve. **N9:** 5.04" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 6" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 2" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flange. (accessories all sold separately, see order form).

Q - Well Casing Connection: 5" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 5" Beveled Steel Weld Nipple: 5" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

5" RESIDENTIAL DUCTILE IRON PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in Ductile Iron for strength and durability. Fully coated with NSF 61 Certified Epoxy for maximum corrosion resistance.

L1 - 1-1/2" FPT Lift Out Connection.

L2 - 2" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 5.100" I.D. No. AS568-430 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

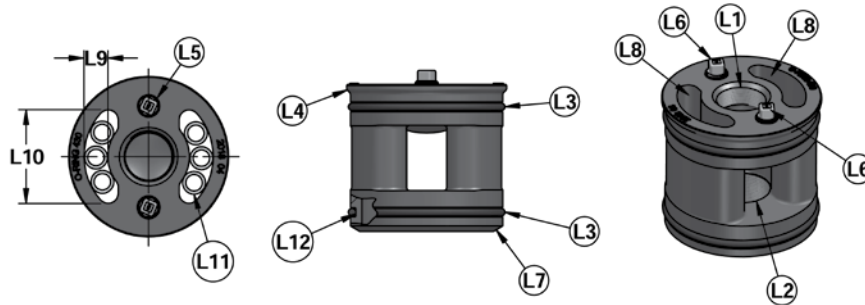
L8 - 0.89" wide by 3.47" long crescent shaped through / pressure equalization passages allow for easy installation of up to 2/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 0.89" wide through passage.

L10 - 3.47" long through passage.

L11 - Through passages allow three 1/2" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves are fully coated with Epoxy for MAXIMUM corrosion protection under the O-rings.



5" WELL CASING X 2" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with four 3/4" FPT tappings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 1-1/2" FPT Lift Out Connection.

M2 - 2" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.275" Sectional Diameter x 5.100" I.D. No. AS568-430 North American Standard, Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

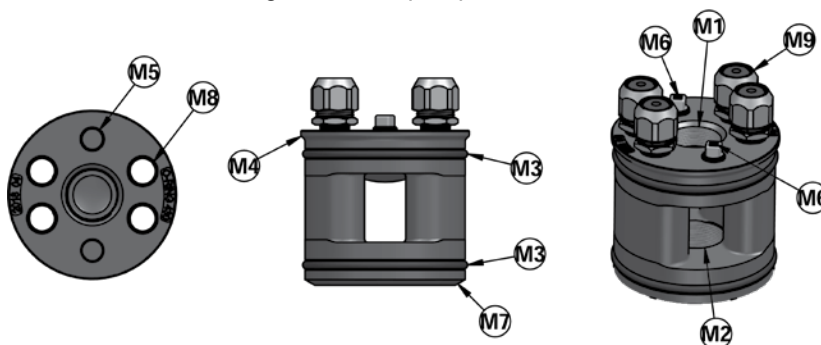
M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 3/4" FPT through passage tappings (four total).

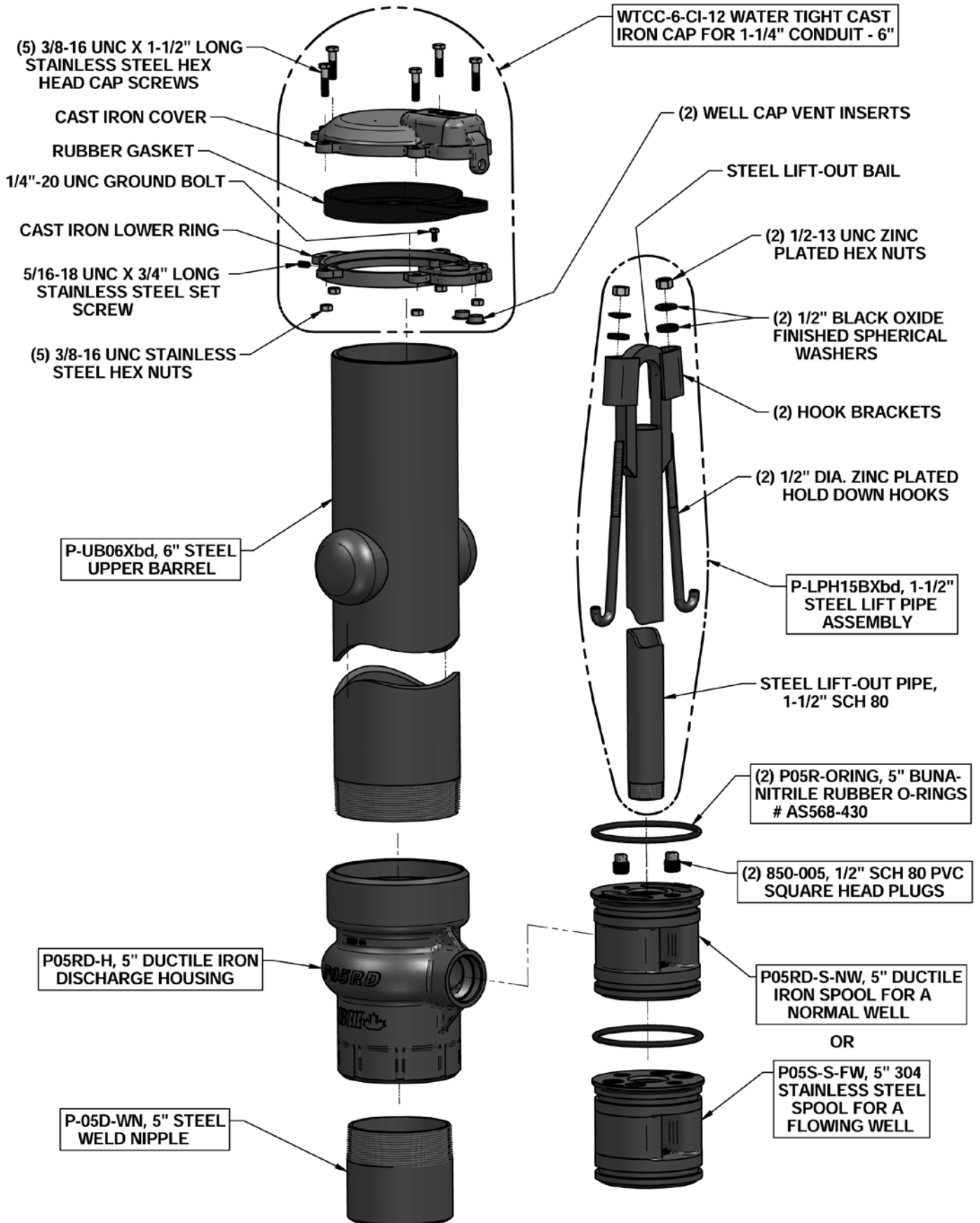
M9 - 3/4" MPT Cable Seals (sold separately, see page 78) typically installed in all four of the 3/4" FPT through passage tappings, unless the installation is using three wire pump cable.



Flowing Well Spools are
304 Stainless Steel

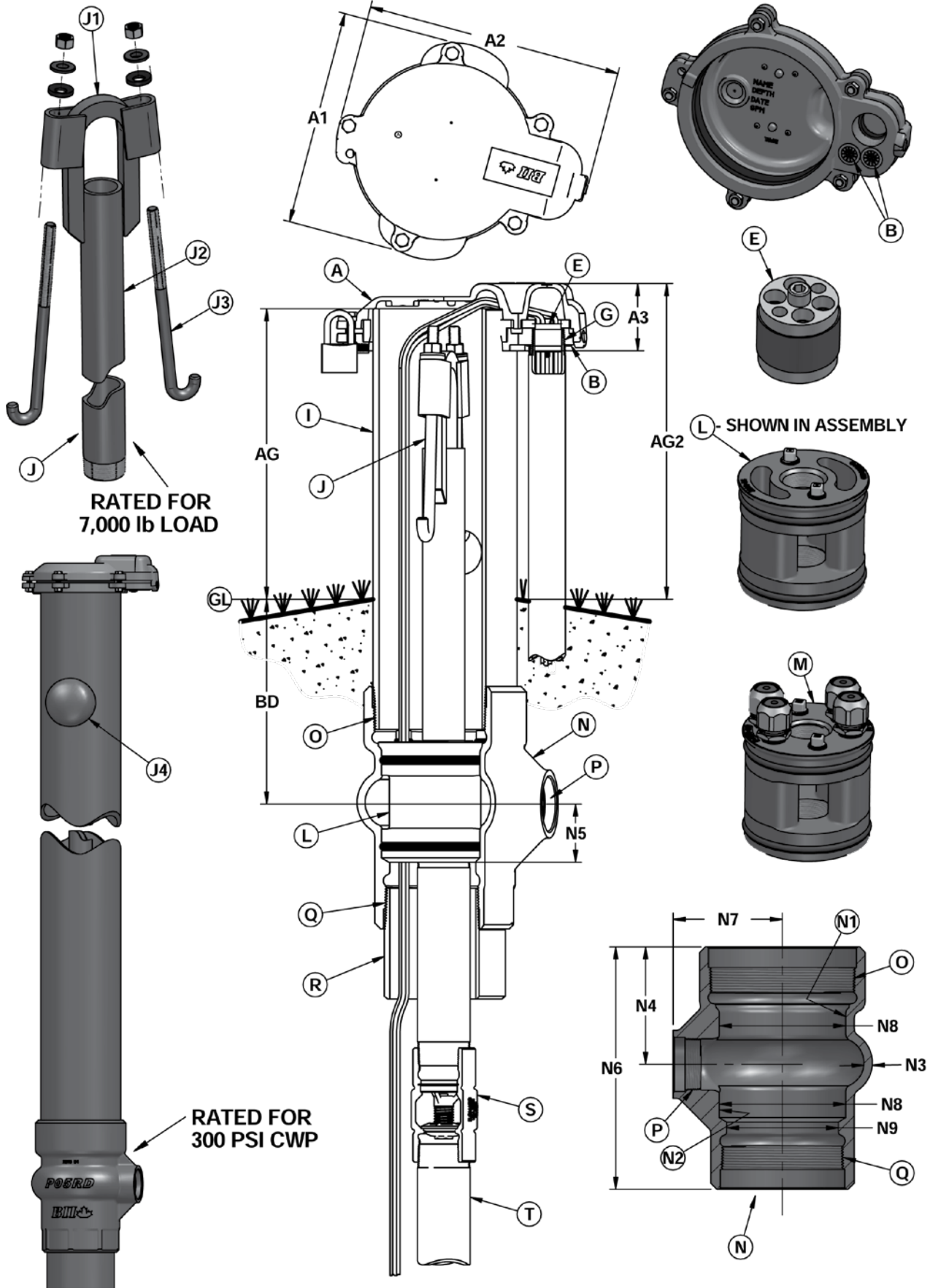
5" RESIDENTIAL DUCTILE IRON PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - PARTS BREAKDOWN



5" RESIDENTIAL 304 STAINLESS STEEL PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - COMPONENTS



5" RESIDENTIAL 304 STAINLESS STEEL PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - SPECIFICATIONS

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B - Well Vents: Two vents 0.74" in diameter furnished with 24 mesh stainless steel downward facing screens in lower ring of well cap.

N/A - On 5" Pitless Units the well cap cover is removed to access probe tubes to insert monitoring equipment down the well. (Item "C" Lockable Probe Tube Port available on 8" & larger Pitless Units only).

N/A - On 5" Pitless Units the well cap cover is removed to access the sampling faucets operating rod for collection of water sample. (Item "D" 2" FPT Lockable Sampling Faucet Port available on 8" & larger Pitless Units only).

E - 1-1/4" O.D. Cable Seal: Prevents contaminants from entering the well through the conduit, by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

N/A - On 5" Pitless Units additional ports can be installed through the well cap top cover using bulk head fittings to accommodate installation of additional accessories such as chlorinators or sensor cables (Item "F" 1" FPT Accessory Ports available on 8" & larger Pitless Units only).

G - 1-1/4" FPT Conduit Connection: Accommodates heavy gauge pump cable and / or a conduit seal. Details on page 84.

N/A - On 5" Pitless Units Conduit Splitters due to size limitations are not available (Item "H" 4" MPT Conduit Splitter available on 8" & larger Pitless Units only).

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 25.14" from ground level to top of cap.

I - 6" I.D. Upper Barrel: 6-5/8" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.280" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 40 0.280" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 7,000 lb. load, **J1:** Lift-Out Bail (3/4" bar) for lifting hook. **J2:** 1-1/2" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust & ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 304 Stainless Steel construction with large through / equalization passages. Spool has a 1-1/2" FPT lift-out connection 2" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 22.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with four 3/4" FPT tappings for cable seals. Details on page 22. Spool has a 1-1/2" FPT lift out connection, 2" FPT drop pipe connection & two 1/2" FPT pressure zone tappings. Details on page 22.

N - 304 Stainless Steel Housing - Rated 300 PSI CWP: **N1:** Upper O-ring Seat. **N2:** Lower O-ring Seat. **N3:** 3/8" Wall. **N4:** 5.30" Center of Discharge to top of Pitless housing. **N5:** 2.63" Center of Discharge to bottom of Spool. **N6:** 10.94" total length of discharge housing. **N7:** 4.94" center of well to face of discharge connection. **N8:** O-ring seat diameter is >5-9/16" to allow insertion of 5" protective sleeve. **N9:** 5.04" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 6" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 2" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 5" FPT connection designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil. Supplied with 304 Stainless Steel weld nipple, for welding to casing. **NOTE:** When joining dissimilar metals (stainless steel to steel) flanges / isolation kit should be used to eliminate galvanic corrosion.

R - 5" Beveled Steel Weld Nipple: 5" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

5" RESIDENTIAL 304 STAINLESS STEEL PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel for strength, durability and corrosion resistance.

L1 - 1-1/2" FPT Lift Out Connection.

L2 - 2" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 5.100" I.D. No. AS568-430 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tapplings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

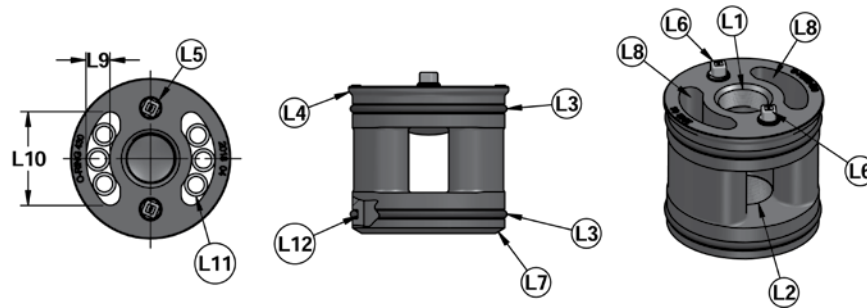
L8 - 0.89" wide by 3.47" long crescent shaped through / pressure equalization passages allow for easy installation of up to 2/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 0.89" wide through passage.

L10 - 3.47" long through passage.

L11 - Through passages allow three 1/2" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



5" WELL CASING X 2" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with four 3/4" FPT tapplings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these tapplings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 1-1/2" FPT Lift Out Connection.

M2 - 2" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.275" Sectional Diameter x 5.100" I.D. No. AS568-430 North American Standard, Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

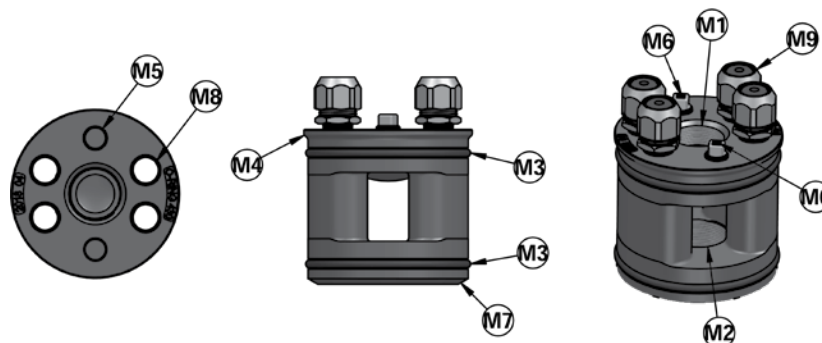
M5 - 1/2" FPT pressure zone tapplings in the spool's top plate for a water sampling valve or other accessories (two total).

M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

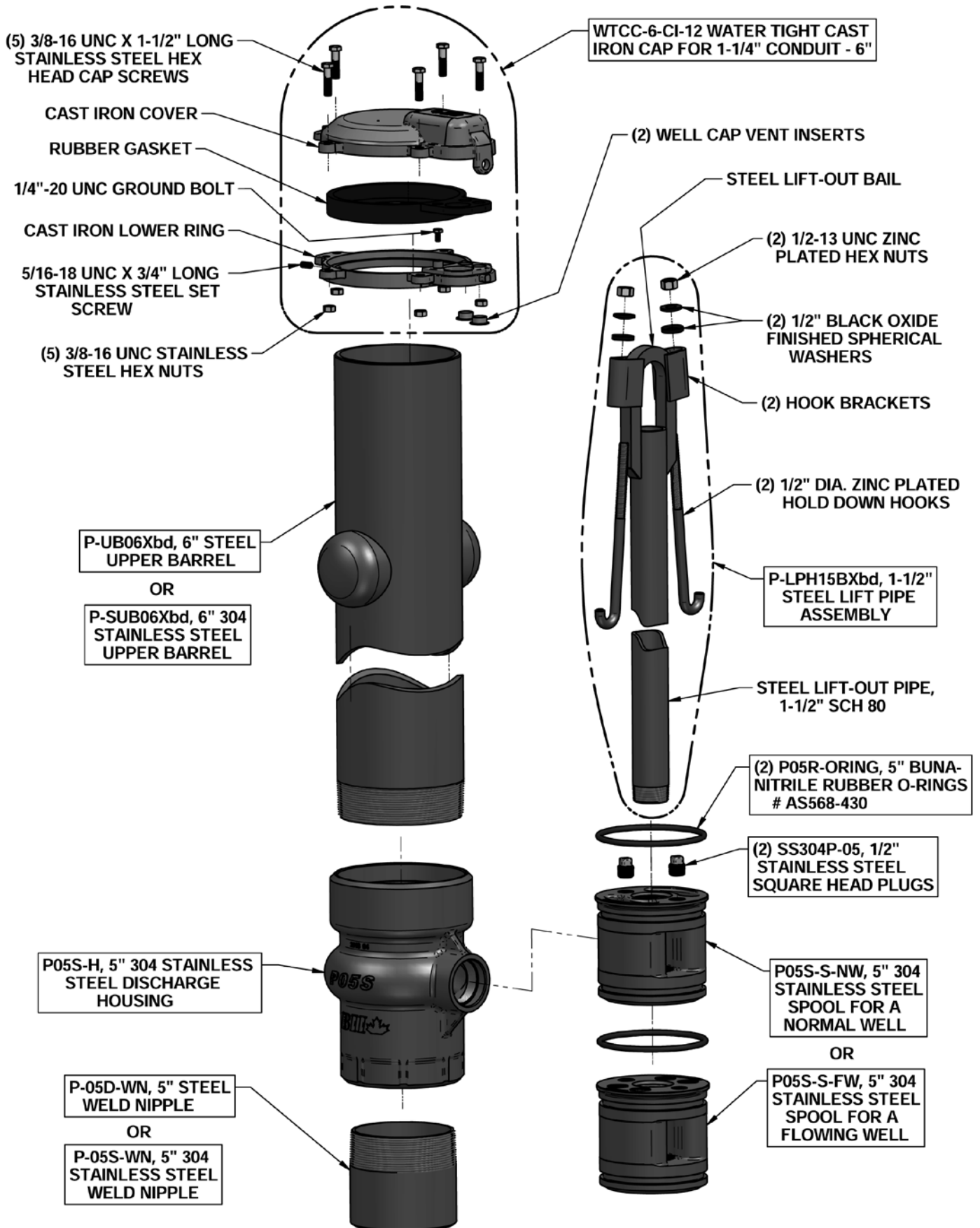
M8 - 3/4" FPT through passage tapplings (four total).

M9 - 3/4" MPT Cable Seals (sold separately, see page 78). Typically installed in all four of the 3/4" FPT through passage tapplings, unless the installation is using three wire pump cable.



5" RESIDENTIAL 304 STAINLESS STEEL PITLESS UNIT

5" WELL CASING X 2" FPT DROP PIPE - PARTS BREAKDOWN



5" PITLESS UNIT WELL CAP

WTCC SERIES CAST IRON WATERTIGHT WELL CAP FOR 6-5/8" O.D. UPPER BARREL

- Wide, soft, tapered gasket for easy installation onto the casing (FIG.1-B).
- Deep, forgiving pocket designed for sealing unevenly cut casing - gasket will seal as far as 1-1/2" from the top of the casing (FIG.2-B).
- Two 3/4" diameter screened vents which meet or exceed all current requirements (FIG.1-A).
- Locking, tamper-proof design (FIG.1-C).
- Unique grounding post ensures a positive gasket seal while providing easy access to the ground screw.
- Durable blue powder coat paint for a great look and superior corrosion resistance.
- Five bolt design for even compression and a positive seal.
- Increased clearance for the pump cable (FIG.2-A).
- New stainless steel set screws for corrosion resistance and superior gripping power to the casing.
- One piece gasket design for ease of installation and better sealing capabilities.



FIG.1



FIG.2



Part No.	Casing Size (in)		Conduit Connection	Air Vents (sq in)	Unit Weight (lb)
	I.D	O.D			
WTCC-6-CI-12	6", 6-1/4"	6-5/8"	1-1/4" FPT	(1) 1/2"	10.50

5" PITLESS UNIT WELL CAP INSTALLATION INSTRUCTION

WTCC SERIES TWO PIECE WELL CAPS FOR STEEL CASING

Step 1 - Loosen the 5 nuts and bolts (FIG.A) off until there is no compression on the rubber gasket. Keep them finger snug so castings are touching the gasket.



Step 2 - Place cap onto well casing making sure the conduit connection (FIG.B) is pointing in the desired direction, push straight down on the well cap until the well cap bottoms out - well casing seats touch the under side of the cap.



Step 3 - Tighten the set screw (FIG.C & D) in the bottom ring.

Note: Having the well cap assembled ensures the lower ring is secured in the proper position for reassembly after pump installation.



Step 4 - Remove the 5 nuts and bolts securing the top cover to the lower ring. Then remove cover by tilting cover upward at the rear of the cap and sliding it forward to release the top cover from the locking tab (FIG.E) at the front of the cap at the conduit connection. You will see the casing protruding through the gasket approx. 3/8" (FIG.F). You are ready to install the pump.



Step 5 - Replace top cover by hooking the top cover over the locking tab (FIG.E) at the conduit connection of the well cap, then lowering the rear of the cap until it is completely down over the sealing gasket.



Step 6 - Replace the 5 sets of nuts and bolts and hand tighten. Then tighten bolts in the sequence as illustrated in Fig. G. Tighten each bolt to a maximum torque of 100 in/lbs (8.3 ft/lbs) in sequence rounds; Round 1: 30%, Round 2: 60%, Round 3: 100%. Overtightening may result in damage to the well cap.



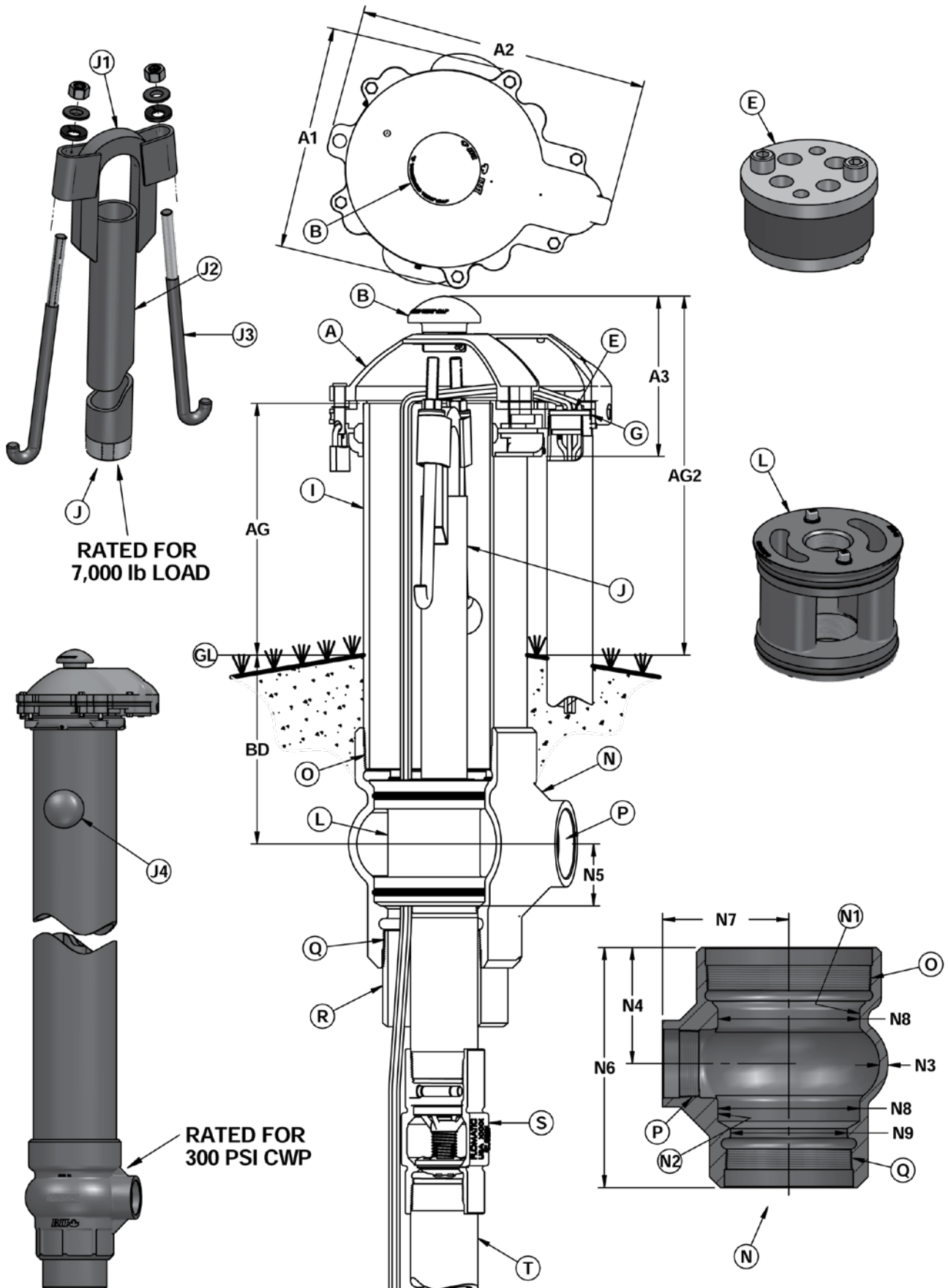
Caution! - Extreme cold temperatures cause rubber to become less pliable. Allow the unit to climatize to room temperature before install to overcome any difficulty compressing the rubber gasket.

Step 7 - Place pad-lock (FIG.H) directly in front of set screw.



6" RESIDENTIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 2" FPT DROP PIPE - COMPONENTS



6" RESIDENTIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 2" FPT DROP PIPE - SPECIFICATIONS

A - 8" Locking Watertight / Sanitary Well Cap: A1: 11.63", A2: 15", A3: 8.34" Details on page 38.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

N/A - On 6" Pitless Units the well cap cover is removed to access probe tubes to insert monitoring equipment down the well. (Item "C" Lockable Probe Tube Port available on 8" & larger Pitless Units only).

N/A - On 6" Pitless Units the well cap cover is removed to access the sampling faucets operating rod for collection of water sample. (Item "D" 2" FPT Lockable Sampling Faucet Port available on 8" & larger Pitless Units only).

E - 2" O.D. Conduit Cable Seal: Prevents contamination from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84)

N/A - On 6" Pitless Units additional ports can be installed through the well cap top cover using bulk head fittings to accommodate installation of additional accessories such as chlorinators or sensor cables (Item "F" 1" FPT Accessory Ports available on 8" & larger Pitless Units only).

G - 2" FPT Conduit Connection: Accommodates heavy gauge pump cable and / or a conduit seal. Details on page 84.

N/A - On 6" Pitless Units, Conduit Splitters are not available due to size limitations (Item "H" 4" MPT conduit splitter available on 8" & larger Pitless Units only).

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 30" from ground level to top of vent.

I - 8" I.D. Upper Barrel: 8-5/8" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.322" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 7,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 1-1/2" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: Ductile Iron construction with large through / equalization passages. Spool has a 1-1/2" FPT lift out connection 2" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 28.

N/A - "M" Flowing Well (Type F) Spool: N/A for 6" Residential model. Use 6" Industrial Pitless Unit with 3" Drop Pipe for flowing well applications.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-ring Seat. **N2:** Lower O-ring Seat. **N3:** 3/8" Wall. **N4:** 5.5" Center of Discharge to top of Pitless housing. **N5:** 2.50" Center of Discharge to bottom of Spool. **N6:** 11.25" total length of discharge housing. **N7:** 5.75" center of well to face of discharge connection **N8:** O-ring seat diameter is >6-5/8" to allow insertion of 6" protective sleeve. **N9:** 6.06" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 8" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 2" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 6" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 6" Beveled Steel Weld Nipple: 6" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

6" RESIDENTIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 2" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in Ductile Iron for strength and durability, fully coated with NSF 61 Certified Epoxy for maximum corrosion resistance.

L1 - 1-1/2" FPT Lift Out Connection.

L2 - 2" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 6.725" I.D. No. AS568-440 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tapings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

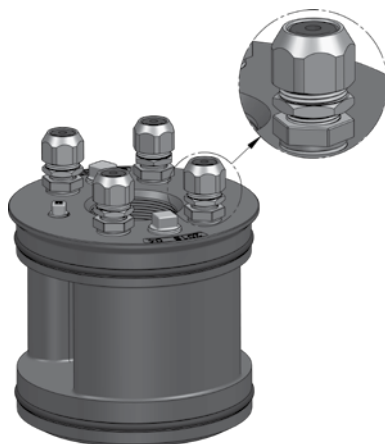
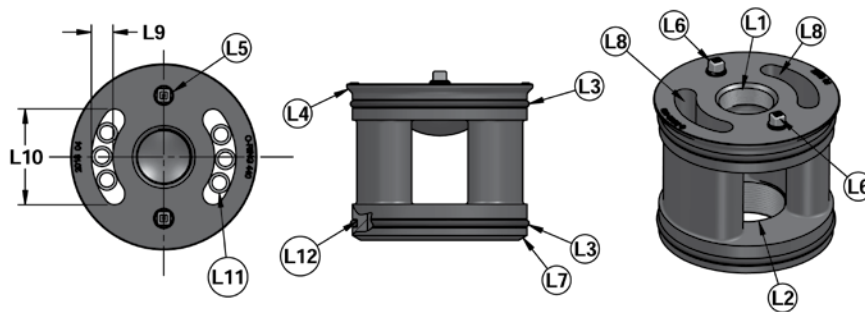
L8 - 1.5" wide by 3.96" long crescent shaped through / pressure equalization passages allow for easy installation of up to 2/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 1.5" wide through passage.

L10 - 3.96" long through passage.

L11 - Through passages allow three 1" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves are fully coated with Epoxy for MAXIMUM corrosion protection under the O-rings.

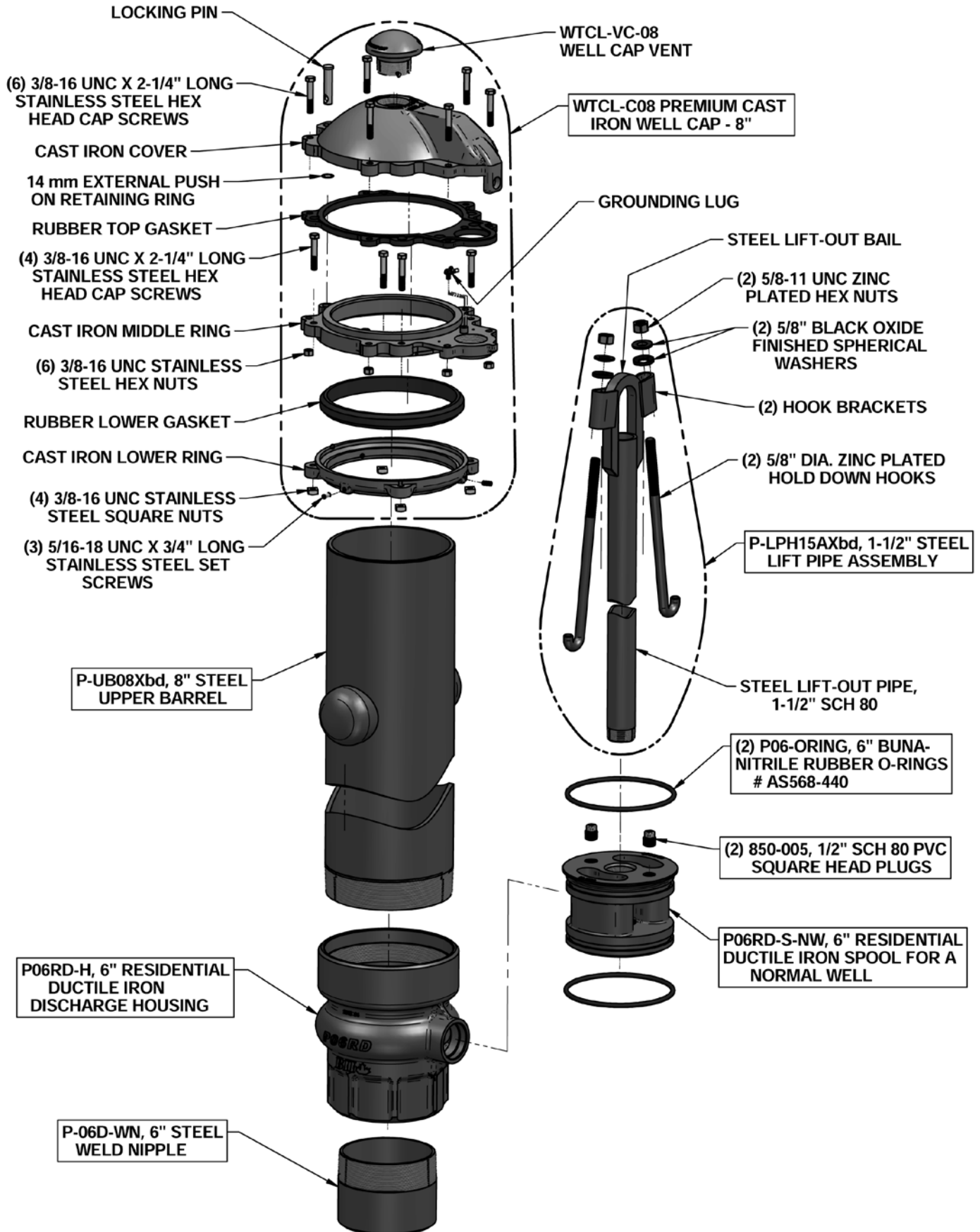


Flowing well spool for 6" Ductile Iron Pitless Unit

Currently only available in 6" Industrial Pitless Unit with 3" FPT drop pipe connection.

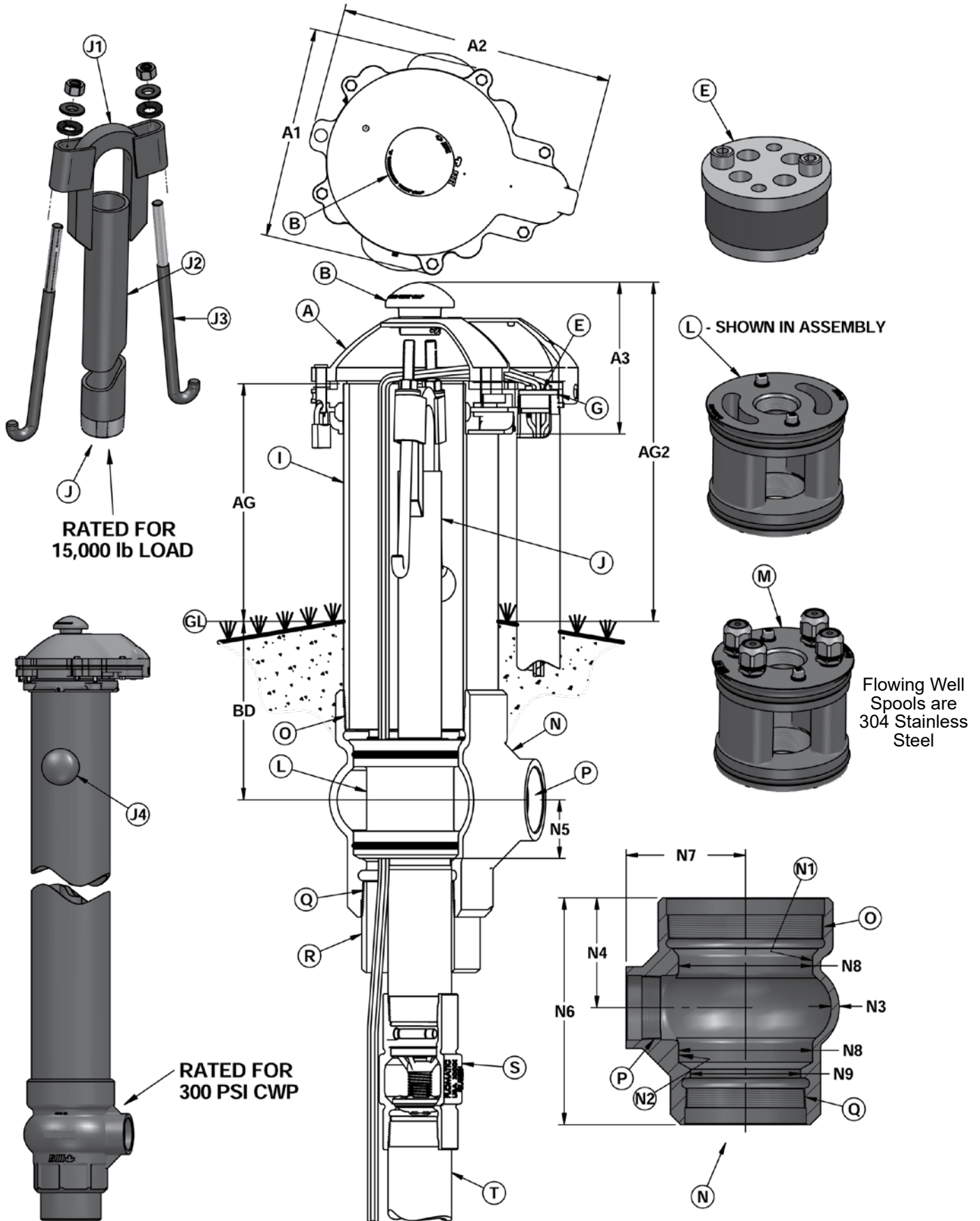
6" RESIDENTIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 2" FPT DROP PIPE - PARTS BREAKDOWN



6" INDUSTRIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - COMPONENTS



6" INDUSTRIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - SPECIFICATIONS

A - 8" Locking Watertight / Sanitary Well Cap: **A1:** 11.63", **A2:** 15", **A3:** 8.34" Details on page 38.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

N/A - On 6" Pitless Units the well cap cover is removed to access probe tubes to insert monitoring equipment down the well. (Item "C" Lockable Probe Tube Port available on 8" & larger Pitless Units only).

N/A - On 6" Pitless Units the well cap cover is removed to access the sampling faucets operating rod for collection of water sample. (Item "D" 2" FPT Lockable Sampling Faucet Port available on 8" & larger Pitless Units only).

E - 2" O.D. Conduit Cable Seal: Prevents contaminants from entering the well through the conduit, by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

N/A - On 6" Pitless Unit's additional ports can be installed through the well cap top cover using bulk head fittings to accommodate installation of additional accessories such as chlorinators or sensor cables (Item "F" 1" FPT Accessory Ports available on 8" & larger Pitless Units only).

G - 2" FPT Conduit Connection: Accommodates heavy gauge pump cable and / or a conduit seal. Details on page 84.

N/A - On 6" Pitless Units Conduit Splitters due to size limitations are not available (Item "H" 4" MPT Conduit Splitter available on 8" and larger Pitless Units only).

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 30" from ground level to top of vent.

I - 8" I.D. Upper Barrel: 8-5/8" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.322" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 40 0.322" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 15,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 2" Schedule 80. Lift-Out Pipe **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: Ductile Iron construction with large through / equalization passages. Spool has a 2" FPT lift out connection 3" FPT drop pipe connection and two 1/2" FPT pressure zone tapings. Details on page 33.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with four 3/4" FPT tappings for cable seals. Details on page 33. Spool has a 2" FPT lift out connection, 3" FPT drop pipe connection & two 1/2" FPT pressure zone tappings. Details on page 33.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 7/16" Wall. **N4:** 6.04" Center of Discharge to top of Pitless housing. **N5:** 3.21" Center of Discharge to bottom of Spool. **N6:** 12.48" total length of discharge housing. **N7:** 6.56" center of well to face of discharge connection. **N8:** O-ring seat diameter is >6-5/8" to allow insertion of 6" protective sleeve. **N9:** 6.06" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 8" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 3" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 6" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 6" Beveled Steel Weld Nipple: 6" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

6" INDUSTRIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in Ductile Iron for strength and durability, fully coated with NSF 61 Certified Epoxy for maximum corrosion resistance.

L1 - 2" FPT Lift Out Connection.

L2 - 3" FPT Drop Pipe Connection. Changes to size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 6.725" I.D. No. AS568-440 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tapings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

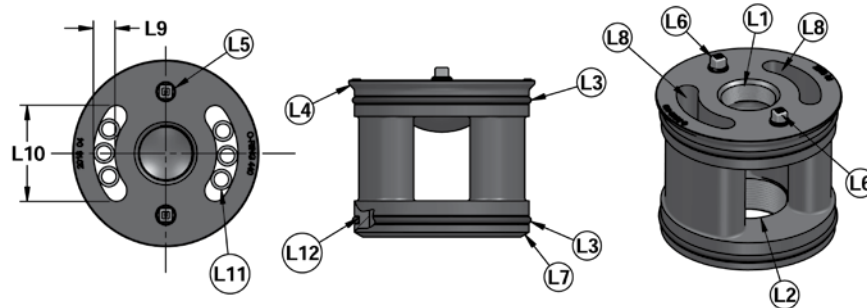
L8 - 0.90" wide by 4" long crescent shaped through / pressure equalization passages allow for easy installation of up to 2/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 0.90" wide through passage.

L10 - 4" long through passage.

L11 - Through passages allow three 1/2" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves are fully coated with Epoxy for MAXIMUM corrosion protection under the O-rings.



6" WELL CASING X 3" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with four 3/4" FPT tapings. Pump cable, sensor wires and chlorination equipment etc. pass through individually. Cable seals threaded into these tapings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 2" FPT Lift Out Connection.

M2 - 3" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.275" Sectional Diameter x 6.725" I.D. No. AS568-440 North American Standard, Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

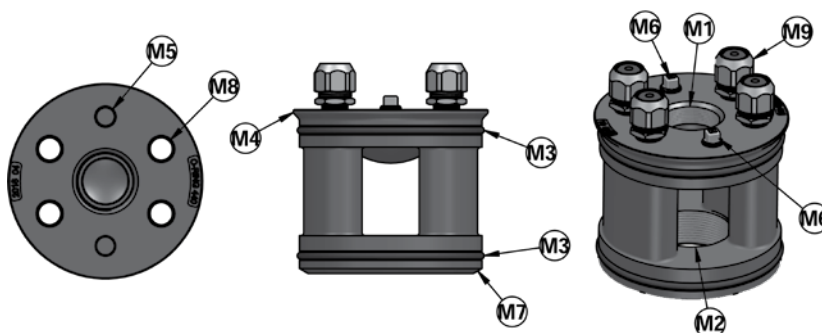
M5 - 1/2" FPT pressure zone tapings in the spool's top plate for a water sampling valve or other accessories (two total).

M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 3/4" FPT through passage tapings (four total).

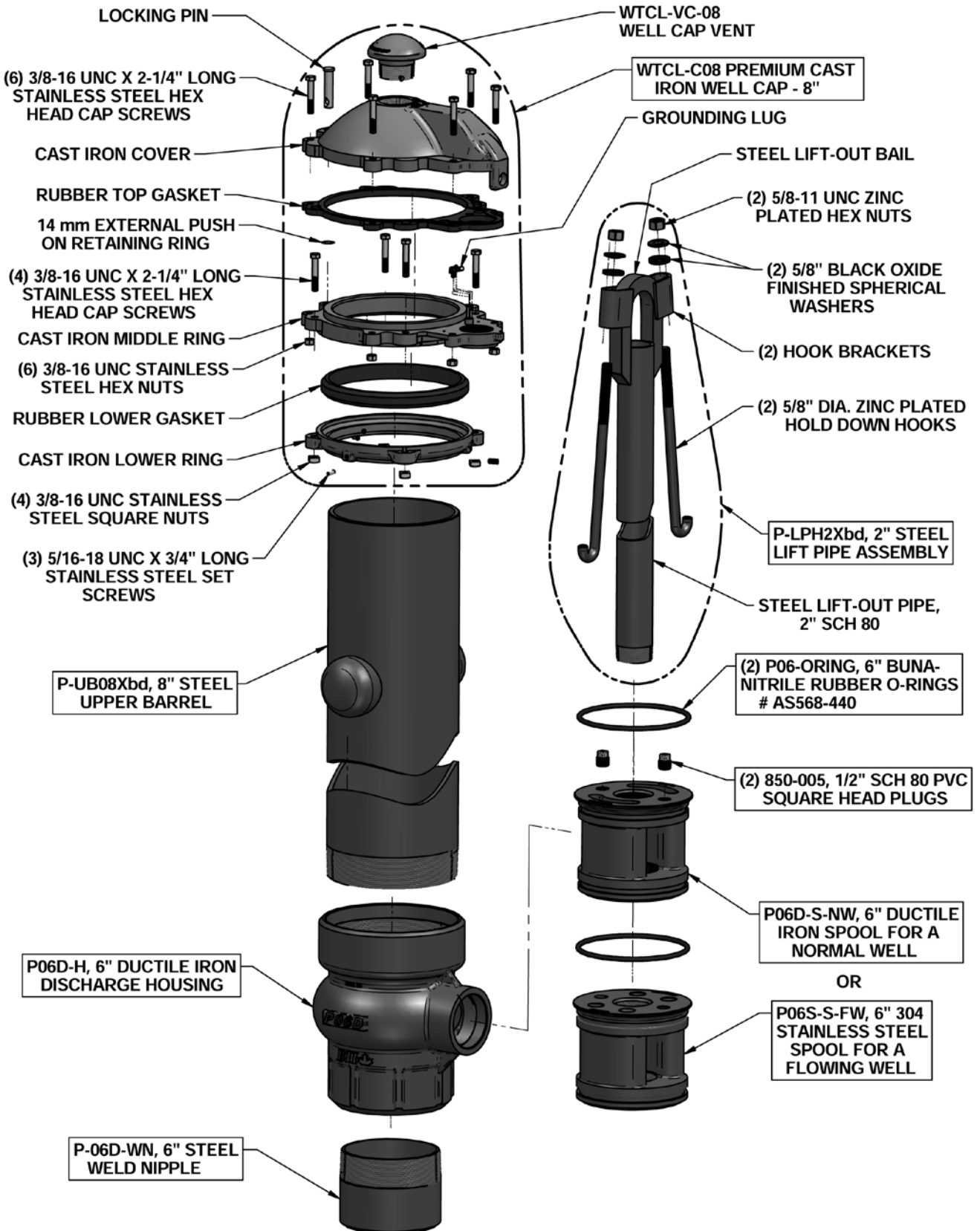
M9 - 3/4" MPT Cable Seals (sold separately, see page 78), typically installed in all four of the 3/4" FPT through passage tapings, unless the installation is using three wire pump cable.



Flowing Well Spools are
304 Stainless Steel

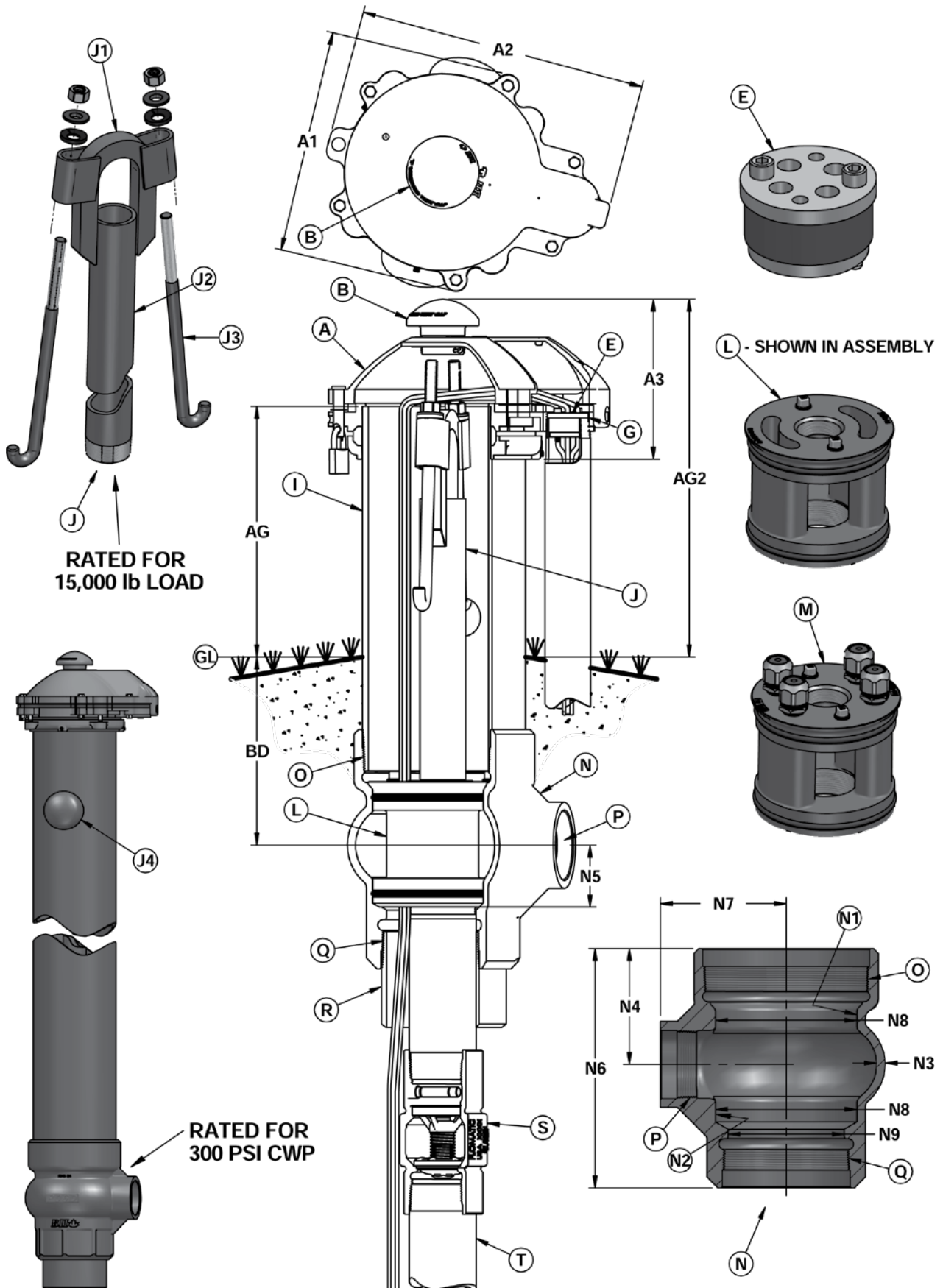
6" INDUSTRIAL DUCTILE IRON PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - PARTS BREAKDOWN



6" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - COMPONENTS



6" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - SPECIFICATIONS

A - 8" Locking Watertight / Sanitary Well Cap: **A1:** 11.63", **A2:** 15", **A3:** 8.34" Details on page 38.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

N/A - On 6" Pitless Units the well cap cover is removed to access probe tubes to insert monitoring equipment down the well, (Item "C" Lockable Probe Tube Port available on 8" & larger Pitless Units only).

N/A - On 6" Pitless Units the well cap cover is removed to access the sampling faucets operating rod for collection of water sample. (Item "D" 2" FPT Lockable Sampling Faucet Port available on 8" & larger Pitless Units only).

E - 2" O.D. Conduit Cable Seal: Prevents contamination from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

N/A - On 6" Pitless Units additional ports can be installed through the well cap top cover using bulk head fittings to accommodate installation of additional accessories such as chlorinators or sensor cables etc. (Item "F" 1" FPT Accessory Ports available on 8" & larger Pitless Units only).

G - 2" FPT Conduit Connection: Accommodates heavy gauge pump cable and / or a conduit seal. Details on page 84.

N/A - On 6" Pitless Unit's Conduit Splitters due to size limitations, are not available (Item "H" 4" MPT Conduit Splitter available on 8" & larger Pitless Units only).

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 30" from ground level to top of vent.

I - 8" I.D. Upper Barrel: 8-5/8" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.322" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 40 0.322" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 15,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 2" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 304 Stainless Steel construction with large through / equalization passages. Spool has a 2" FPT lift out connection 3" FPT drop pipe connection and two 1/2" FPT pressure zone tapings. Details on page 36.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with four 3/4" FPT tapings for cable seals. Details on page 36. Spool has a 2" FPT lift out connection, 3" FPT drop pipe connection & two 1/2" FPT pressure zone tapings. Details on page 36.

N - 304 Stainless Steel Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 3/8" Wall **N4:** 6.04" Center of Discharge to top of Pitless housing. **N5:** 3.21" Center of Discharge to bottom of Spool. **N6:** 12.48" total length of discharge housing. **N7:** 6.56" center of well to face of discharge connection. **N8:** O-ring seat diameter is >6-5/8" to allow insertion of 6" protective sleeve. **N9:** 6.06" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 8" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 3" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 6" FPT connection designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil. Supplied with 304 Stainless Steel weld nipple, for welding to casing. **NOTE:** When joining dissimilar metals (stainless steel to steel) flanges / isolation kit should be used to eliminate galvanic corrosion.

R - 6" Beveled Steel Weld Nipple: 6" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

6" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel for strength, durability and corrosion resistance.

L1 - 2" FPT Lift Out Connection.

L2 - 3" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 6.725" I.D. No. AS568-440 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

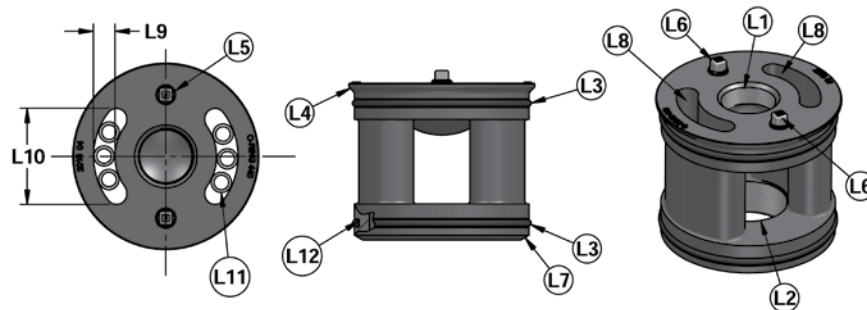
L8 - 0.90" wide by 4" long crescent shaped through / pressure equalization passages allow for easy installation of up to 2/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 0.90" wide through passage.

L10 - 4" long through passage.

L11 - Through passages allow three 1/2" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



6" WELL CASING X 3" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools, have closed tops, with four 3/4" FPT tappings. Pump cable, sensor wires and chlorination equipment etc. pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 2" FPT Lift Out Connection.

M2 - 3" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.275" Sectional Diameter x 6.725" I.D. No. AS568-440 North American Standard, Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

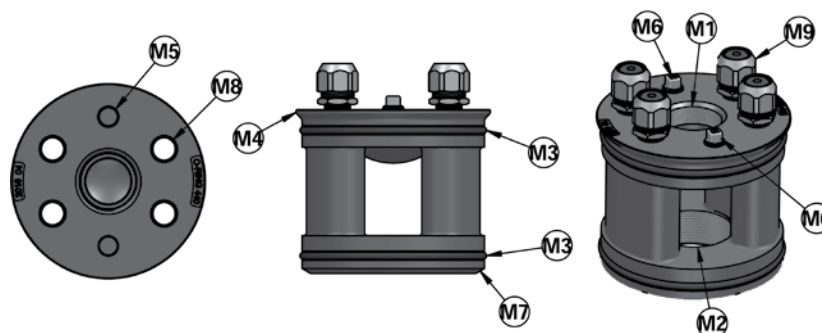
M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

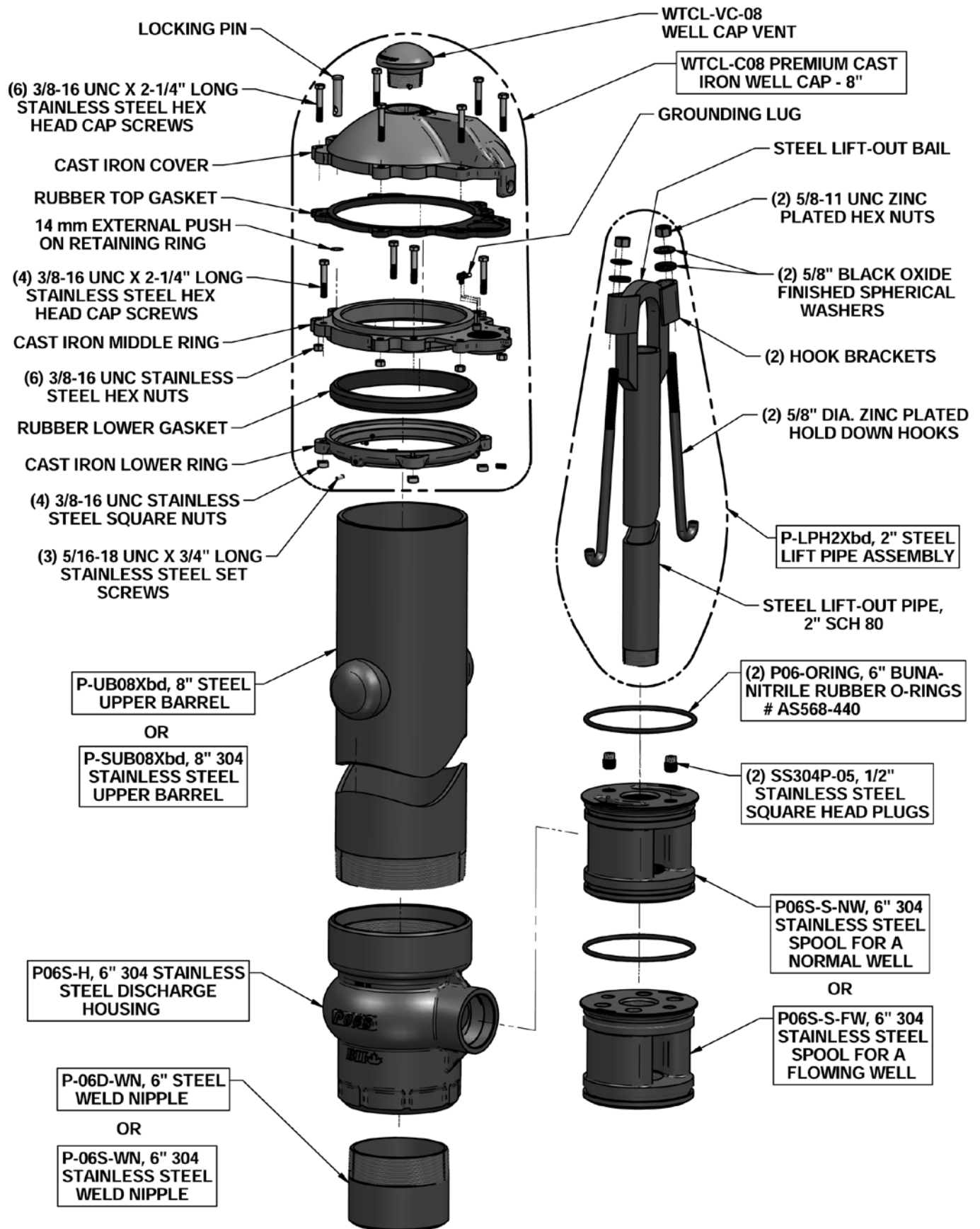
M8 - 3/4" FPT through passage tappings (four total).

M9 - 3/4" MPT Cable Seals (sold separately, see page 78), typically installed in all four of the 3/4" FPT through passage tappings, unless the installation is using three wire pump cable.



6" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

6" WELL CASING X 3" FPT DROP PIPE - PARTS BREAKDOWN



NOTES

6" PITLESS UNIT WELL CAP

PREMIUM 8" WATERTIGHT CAST IRON LOCKING CAP FOR 8-5/8" O.D. UPPER BARREL

- Absolutely the EASIEST & FASTEST heavy duty well cap to install. Easy to access well for maintenance.
- Only tools required are two 9/16" wrenches and one 5/32" Allen wrench.
- Three-piece heavy-duty design, cast from high quality grey cast iron with a durable blue powder coat paint which is baked to ensure superior quality.
- All fasteners are stainless steel for maximum corrosion resistance.
- Thick, soft SBR rubber gasket ensures a positive watertight compression seal to the well casing.
- Large 2" FPT conduit connection provides lots of room for heavy gauge submersible pump cables.
- Large 2" mushroom vent cap with stainless steel screen is included to ensure the cap is vermin proof.
- Replacement of the vent with a standard 2" MPT plug quickly converts this vented well cap into a truly watertight cap where and when required.
- Caps are supplied with a ground bolt and two tongue ring terminal connectors. Three stainless steel grounding set screws bond the well cap to the well casing (steel).
- Locking feature provides a secure / tamper proof design. Simply insert a pad lock through the stainless steel locking pin.
- Personalizing is available by means of an engraved aluminum plate which is affixed by drive rivets.



Part No.	Casing Size (in)		Conduit Connection	Air Vents (sq in)	Unit Weight (lb)
	I.D	O.D			
WTCL-C08	8"	8-5/8"	2" FPT	(1) 2" MVC	32.04

6" PITLESS UNIT WELL CAP INSTALLATION INSTRUCTION

WTCL-C SERIES PREMIUM CAST IRON WATERTIGHT WELL CAPS FOR STEEL & PVC CASING FOR 8-5/8" O.D. UPPER BARREL

REQUIRED TOOLS: (2) 9/16" wrenchs & (1) 5/32" allen wrench

FIG.A



Step 1 - Using two 9/16" wrenches, remove the six bolts (FIG.A) and remove cover by lifting upward at the rear of the cap and sliding it forward to release the top cover from the locking tab (FIG.I).

FIG.B



Step 2 - Flip back the rubber gasket (FIG.B). No need to remove the ground bolt and ring terminals (FIG.C) from middle ring to expose the 4 bolts which hold the center ring and the lower ring castings together. Using a 9/16" wrench, loosen bolts until there is no compression on the rubber casing gasket seal.

NOTE: Do NOT remove the square nuts. The nuts are recessed into lower ring casting to ensure the well cap is tamper proof, the nuts will not turn when tightening the bolts.

FIG.C

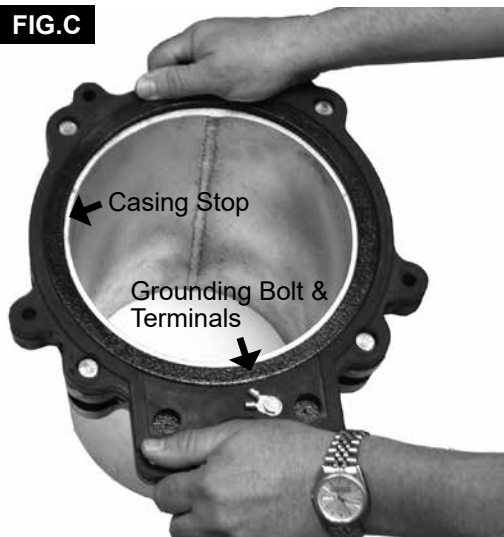
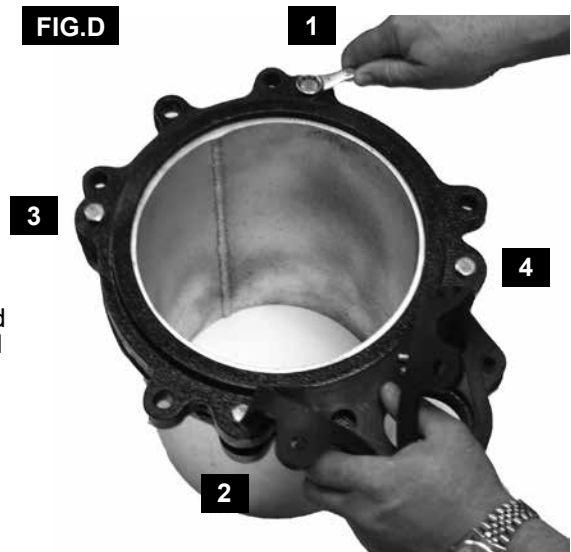


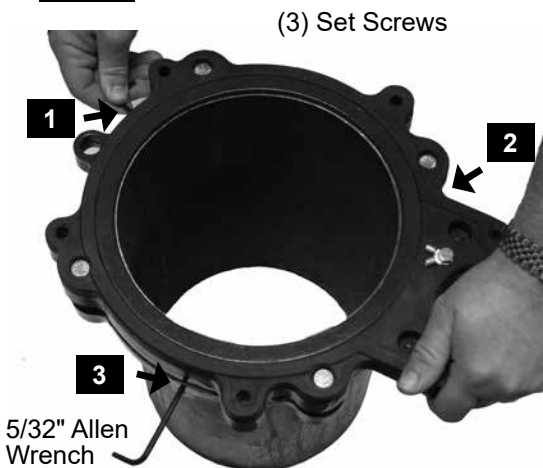
FIG.D



Step 3 - Place lower assembly onto the well casing (FIG.C) slide down until the casing contacts the casing stops at the top of the middle ring casting.

NOTE: Casing should be cut off straight and be free of burrs to ensure a proper fit.

FIG.E



Step 4 - Tighten four bolts hand tight then tighten an additional two turns in the sequence shown (FIG.D) to compress the casing gasket equally between the lower and middle ring to make a watertight seal.

NOTE: The lower well cap assembly will be secure you should not be able to twist or lift the lower assembly by hand. If the lower assembly can be moved tighten each bolt one additional turn and repeat until the assembly is tight on the well casing.

Step 5 - Tighten three grounding set screws in the lower ring (FIG.E) using a 5/32" allen wrench

NOTE: Grounding set screws are only effective in steel well casing applications.

Caution: Grounding requirements may vary depending on state or local electrical codes - Always check and follow your local electrical codes, and contact your electrical inspector for details.

6" PITLESS UNIT WELL CAP INSTALLATION INSTRUCTION

FIG.F



Step 6 - Reposition the top cover gasket over the four bolt heads in middle ring (FIG.F).

Step 7 - Thread the 2" MPT mushroom vent cap (FIG.G) in top cover, ensure vent cap is threaded in deep enough to allow installation of the Stainless Steel cotter key through the hole in the lower portion of the thread (FIG.H). This cotter key ensures the vent cannot be removed maintaining the integrity of the locking / tamper proof design of the well cap.

FIG.G



FIG.H

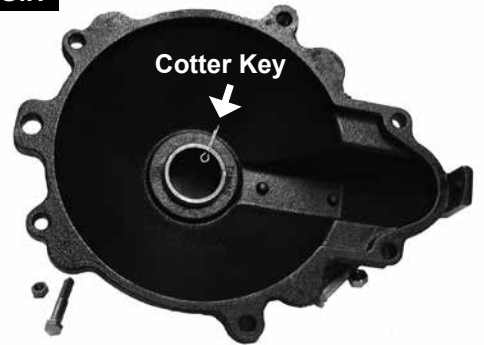
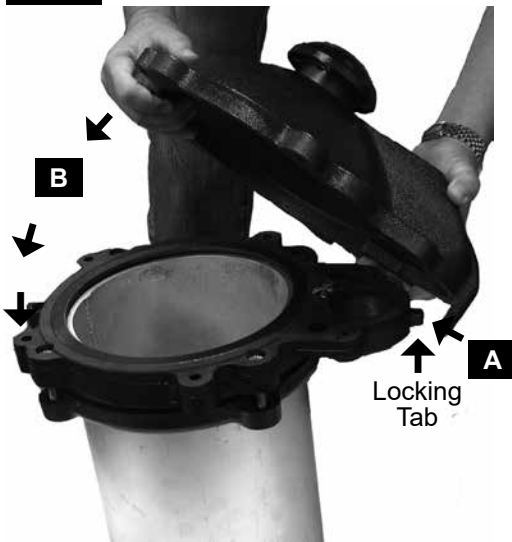


FIG.I



Step 8 - Replace top cover by (A) hooking it over the locking tab (FIG.I) at the conduit connection of the well cap, then (B) lowering the rear of the cap until it is completely down over the sealing gasket.

Step 9 - Replace the six sets of nuts and bolts hand tight only. Then using two 9/16" wrenches tighten all bolts an additional two turns in the sequence as illustrated in (FIG.J) ensuring that the gasket is compressed evenly between the castings all the way around. DO NOT over tighten.

FIG.J

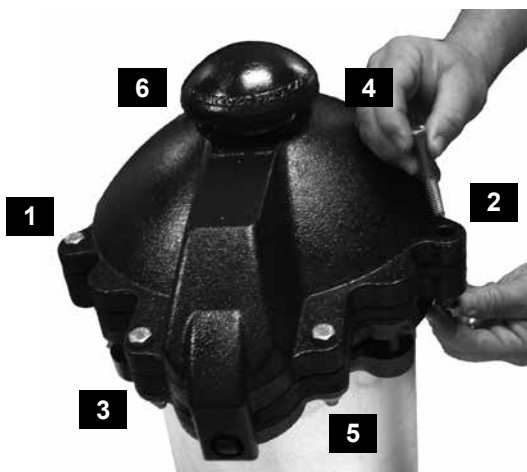


FIG.K



Step 10 - Insert padlock through locking pin hole (FIG.K).

NOTE: Pad lock is not included. It is recommended to use a 1/4" diameter "U" shank lock.

8" INDUSTRIAL DUCTILE IRON PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - SPECIFICATIONS

A - 10" Locking Watertight / Sanitary Well Cap: A1: 14.18", A2: 20.21", A3: 16" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool, for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Conduit Cable Seal: Prevents contamination from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Parts: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to, one 2" FPT (pump cable) & one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 34" from ground level to top of vent.

I - 10" I.D. Upper Barrel: 10-3/4" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.365" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 40 0.365" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 30,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 3" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: Ductile Iron construction with large through / equalization passages. Spool has a 3" FPT lift out connection 4" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 44.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with six 1" FPT tappings for cable seals. Details on 44. Spool has a 3" FPT lift out connection, 4" FPT drop pipe connection & two 1/2" FPT pressure zone tappings. Details on page 44.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall. **N4:** 7.05" Center of Discharge to top of Pitless housing. **N5:** 4.52" Center of Discharge to bottom of Spool. **N6:** 15-3/8" total length of discharge housing. **N7:** 7.65" center of well to face of discharge connection. **N8:** O-ring seat diameter is >8-5/8" to allow insertion of 8" protective sleeve. **N9:** 7.98" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 10" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 4" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged (accessories all sold separately, see order form).

Q - Well Casing Connection: 8" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint & maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 8" Beveled Steel Weld Nipple: 8" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

8" INDUSTRIAL DUCTILE IRON PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in Ductile Iron for strength, and durability. Fully coated with NSF 61 Certified Epoxy for maximum corrosion resistance.

L1 - 3" FPT Lift Out Connection.

L2 - 4" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 8.425" I.D. No. AS568-446 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange, prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tapings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

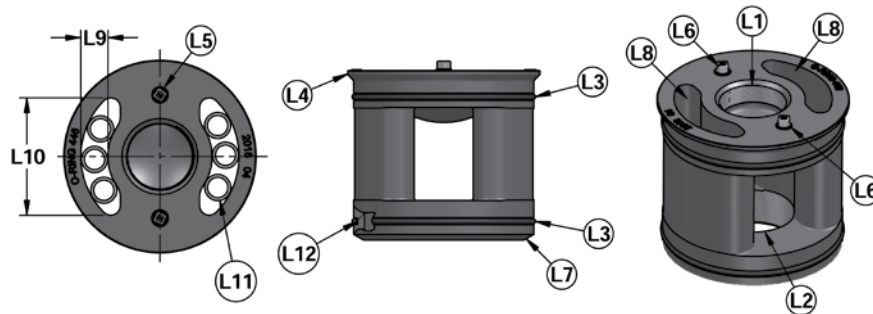
L8 - 1.375" wide by 5.96" long crescent shaped through / pressure equalization passages allow for easy installation of up to 2/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 1.375" wide through passage.

L10 - 5.96" long through passage.

L11 - Through passages allow three 1" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



8" WELL CASING X 4" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools, have closed tops, with six 1" FPT tappings. Pump cable, sensor wires and chlorination equipment etc. pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 3" FPT Lift Out Connection.

M2 - 4" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.275" Sectional Diameter x 8.475" I.D. No. AS568-446 North American Standard, Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange, prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

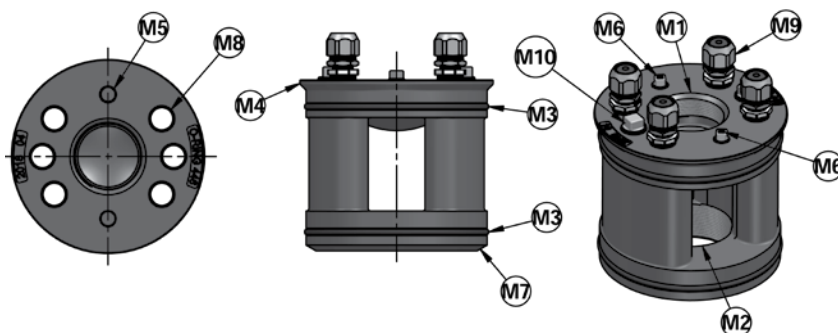
M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 1" FPT through passage tappings (six total).

M9 - 0.75" MPT Cable Seals (sold separately, see page 78), typically installed in four of the six 1" FPT through passage tappings, reduced to 3/4" FPT using 1" MPT x 3/4" FPT PVC Reducing Bushings #439-131.

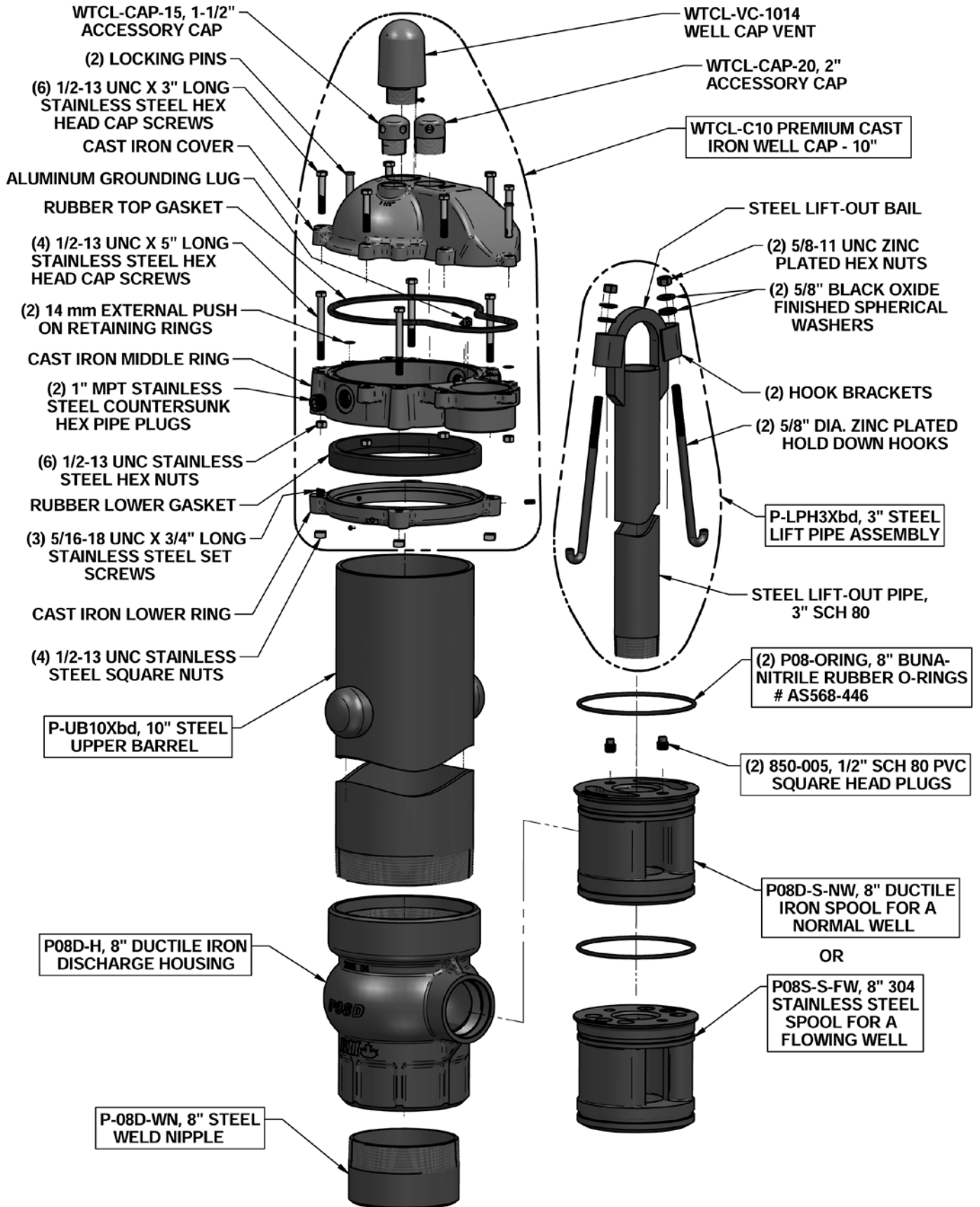
M10 - 1" MPT square head plugs, installed in two of the six 1" FPT through passage tappings.



Flowing Well Spools are
304 Stainless Steel

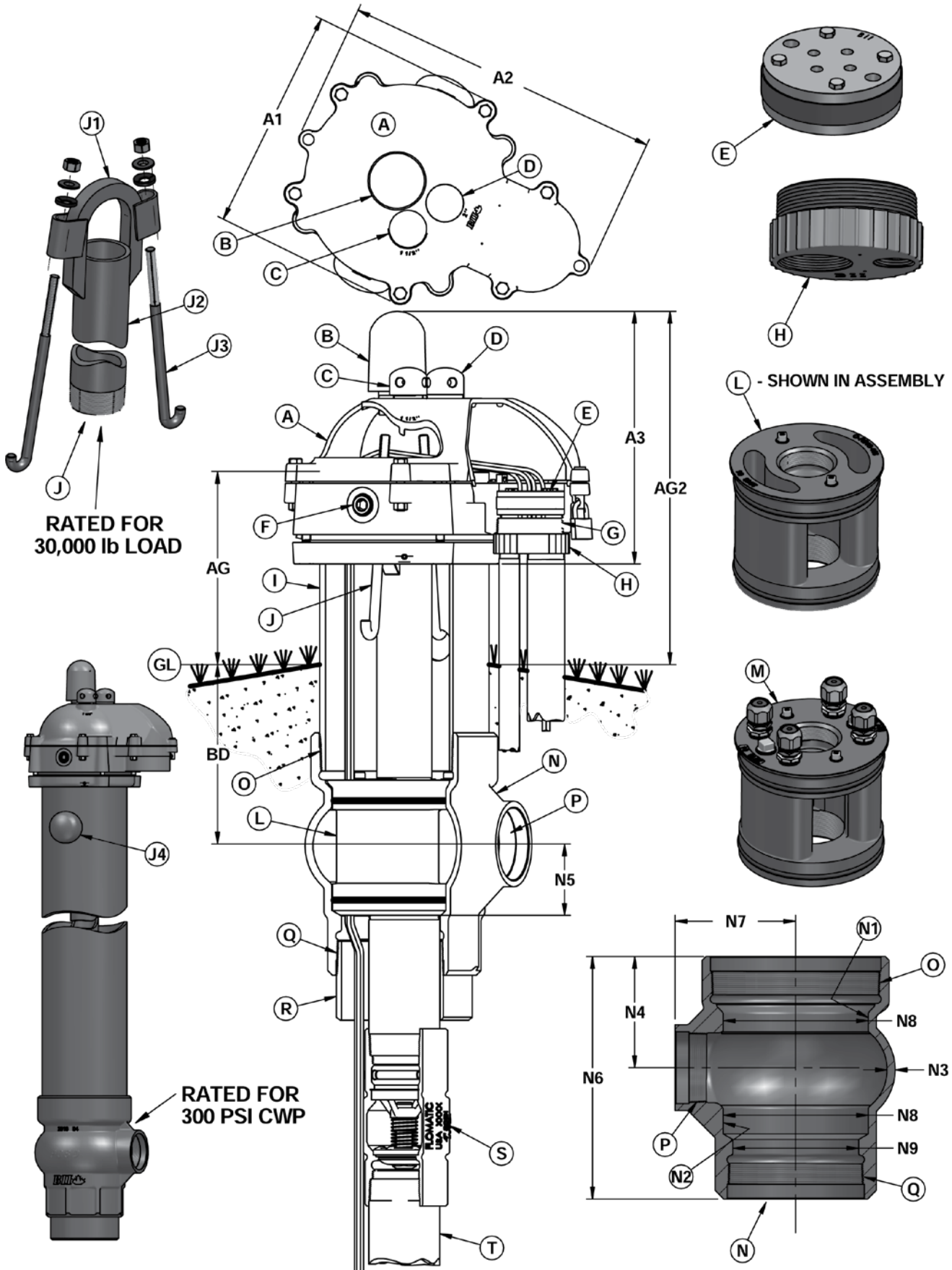
8" INDUSTRIAL DUCTILE IRON PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - PARTS BREAKDOWN



8" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - COMPONENTS



8" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - SPECIFICATIONS

A - 10" Locking Watertight / Sanitary Well Cap: A1: 14.18", A2: 20.21", A3: 16" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Conduit Cable Seal: Prevents contaminants from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to one 2" FPT (pump cable) & one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 34" from ground level to top of vent.

I - 10" I.D. Upper Barrel: 10-3/4" O.D. Options: **(B)** Black Painted Steel Std./Sch. 40 0.365" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 40 0.365" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 30,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 3" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 304 Stainless Steel construction with large through / equalization passages. Spool has a 3" FPT lift out connection, 4" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 48.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with six 1" FPT tappings for cable seals. Details on page 48. Spool has a 3" FPT lift out connection, 4" FPT drop pipe connection & two 1/2" FPT pressure zone tappings. Details on page 48.

N - 304 Stainless Steel Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 3/8" Wall **N4:** 7.05" Center of Discharge to top of Pitless housing. **N5:** 4.52" Center of Discharge to bottom of Spool. **N6:** 15-3/8" total length of discharge housing. **N7:** 7.65" center of well to face of discharge connection. **N8:** O-ring seat diameter is >8-5/8" to allow insertion of 8" protective sleeve. **N9:** 7.98" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 for ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 10" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 4" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 8" FPT connection designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil. Supplied with 304 Stainless Steel weld nipple for welding to casing. **NOTE:** When joining dissimilar metals (stainless steel to steel) flanges / isolation kit should be used to eliminate galvanic corrosion.

R - 8" Beveled 304 Stainless Steel Weld Nipple: 8" MPTx Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

8" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel for strength, durability and corrosion resistance.

L1 - 3" FPT Lift Out Connection.

L2 - 4" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.275" Sectional Diameter x 8.475" I.D. No. AS568-446 North American Standard, Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

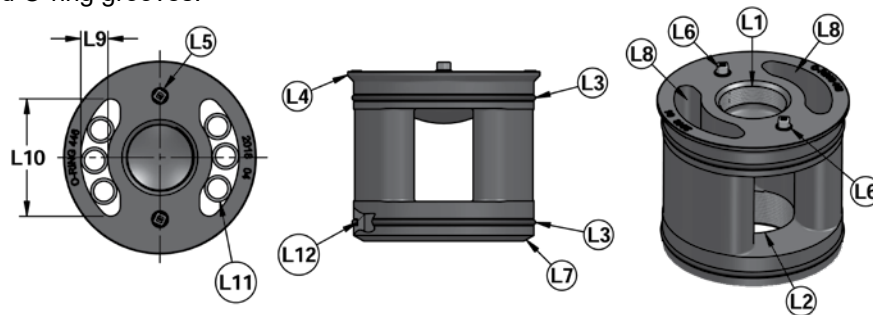
L8 - 1.375" wide by 5.96" long crescent shaped through / pressure equalization passages allow for easy installation of up to 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and or monitoring equipment through the spool into the well chamber.

L9 - 1.375" wide through passage.

L10 - 5.96" long through passage.

L11 - Through passages allow three 1" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



8" WELL CASING X 4" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with six 1" FPT tappings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 3" FPT Lift Out Connection.

M2 - 4" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.275" Sectional Diameter x 8.475" I.D. No. AS568-446 North American Standard, Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

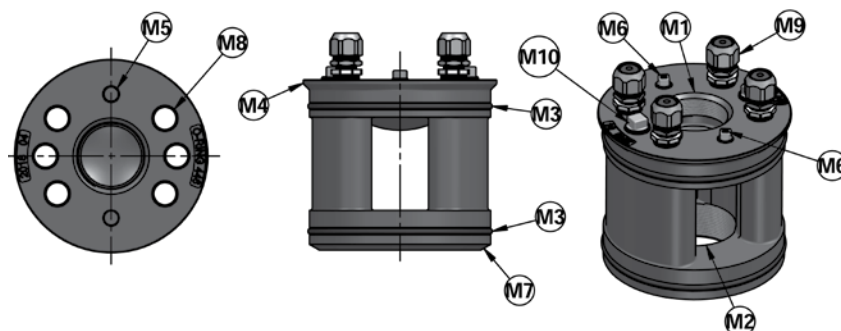
M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 1" FPT through passage tapings (six total).

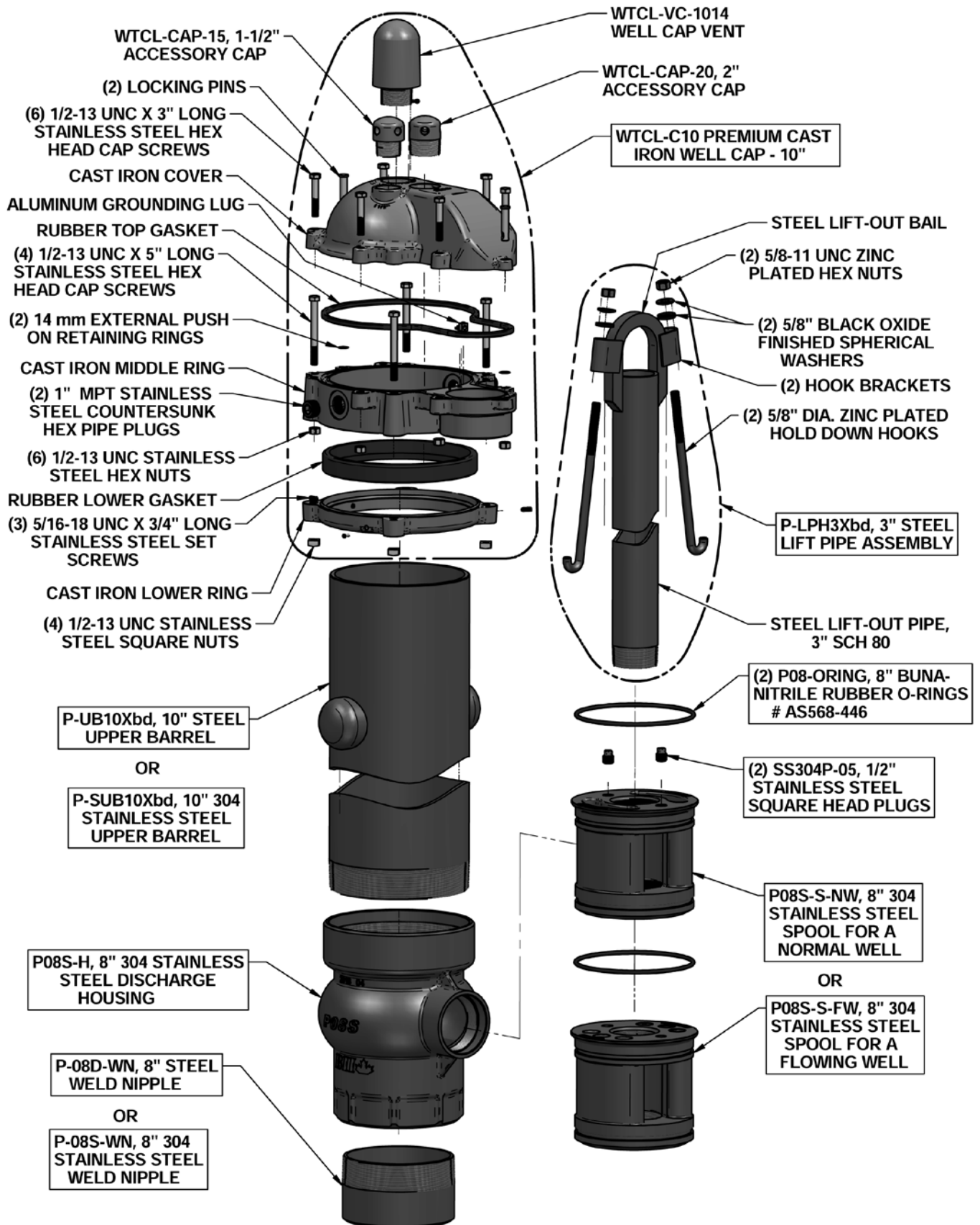
M9 - 0.75" MPT Cable Seals (sold separately, see page 78), typically installed in four of the six 1" FPT through passage tappings, reduced to 3/4" FPT using 1" MPT x 3/4" FPT PVC Reducing Bushings #439-131.

M10 - 1" MPT square head plugs, installed in two of the six 1" FPT through passage tappings.



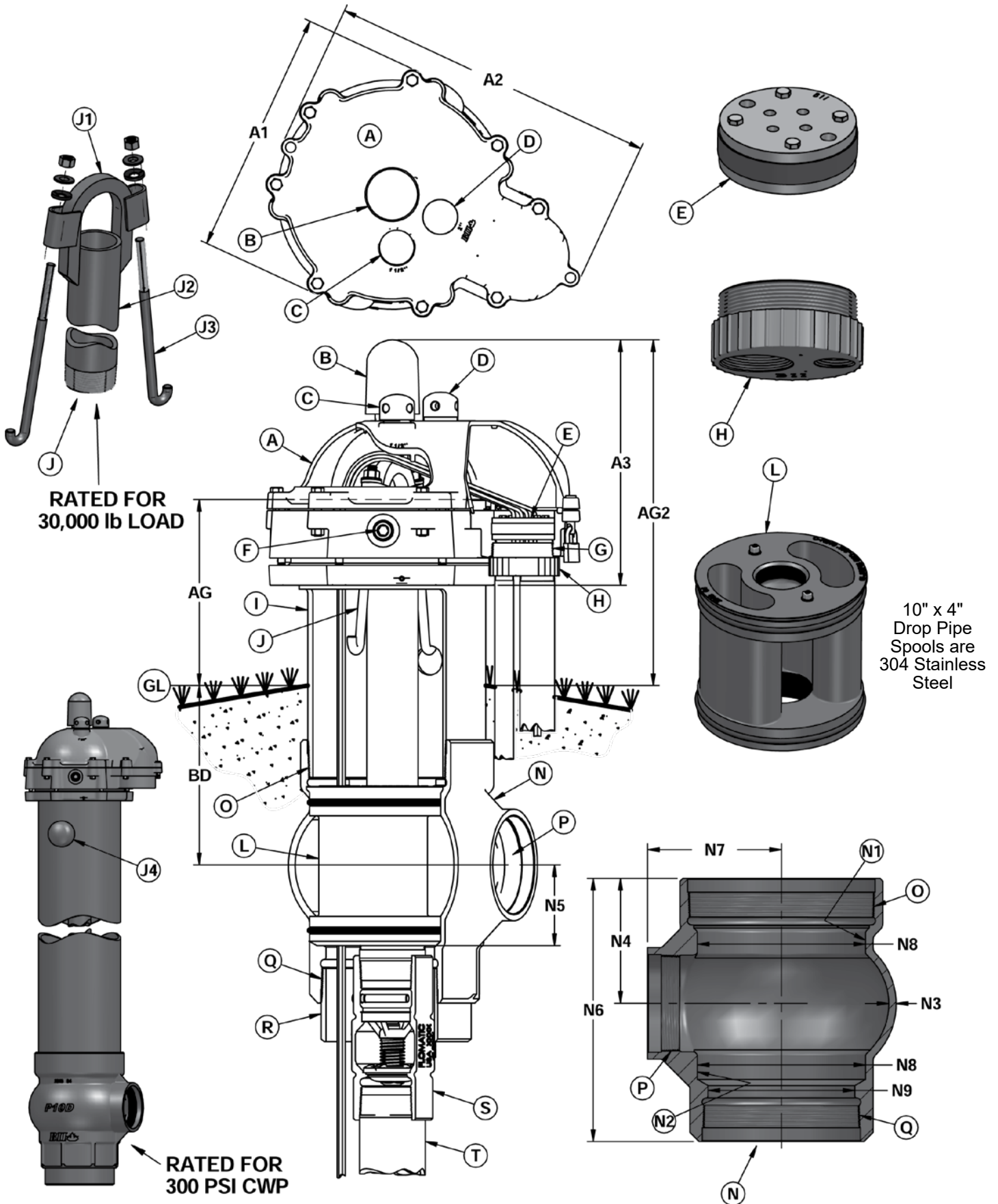
8" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

8" WELL CASING X 4" FPT DROP PIPE - PARTS BREAKDOWN



10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - COMPONENTS



10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - SPECIFICATIONS

A - 12" Locking Watertight / Sanitary Well Cap: A1: 16.63", A2: 22.33", A3: 16-3/4" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool, for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Conduit Cable Seal: Prevents contaminants from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to one 2" FPT (pump cable) and one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 35" from ground level to top of vent.

I - 12" I.D. Upper Barrel: 12-3/4" O.D. Options: **(B)** Black Painted Steel Std. 0.375" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std. 0.375" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 30,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 3" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 10" x 4" Drop Pipe Spools are 304 Stainless Steel construction with large through / equalization passages. Spool has a 3" FPT lift out connection, 4" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 52.

N/A - "M" Flowing Well (Type F) Spool: N/A for 6" Residential model. Use 10" Industrial Pitless Unit with 6" Drop Pipe for flowing well applications.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall. **N4:** 8.55" Center of Discharge to top of Pitless housing. **N5:** 5.51" Center of Discharge to bottom of Spool. **N6:** 18" total length of discharge housing. **N7:** 9.15" center of well to face of discharge connection. **N8:** O-ring seat diameter is >10-3/4" to allow insertion of 10" protective sleeve. **N9:** 10.02" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 12" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 6" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 10" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 10" Beveled Steel Weld Nipple: 10" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

The 10" Ductile Iron Pitless Unit with 4" drop pipe connection uses a 304 Stainless Steel spool. Cast 304 Stainless Steel construction provides strength, durability and corrosion resistance.

L1 - 3" FPT Lift Out Connection.

L2 - 4" FPT Drop Pipe Connection changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.375" North American Standard. Sectional Diameter x 10.563" I.D. Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tapings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

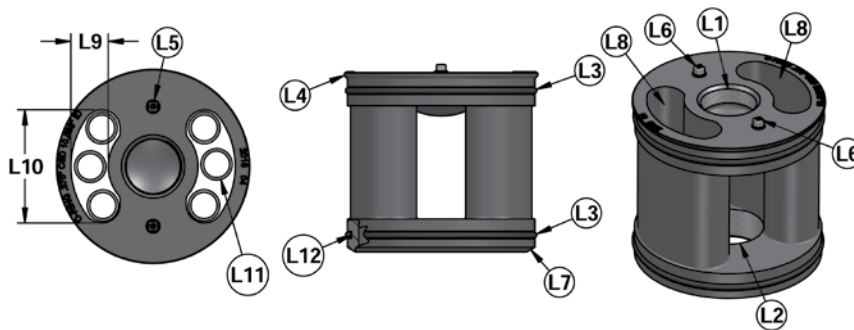
L8 - 2.25" wide by 6.80" long crescent shaped through / pressure equalization passages allow for easy installation of heavy 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 2.25" wide through passage.

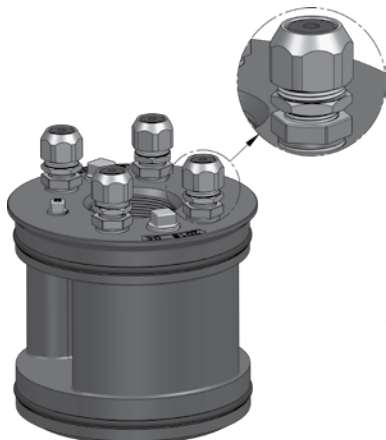
L10 - 6.80" long through passage.

L11 - Through passages allow three 1-1/2" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



10" x 4" Drop Pipe
Spools are 304
Stainless Steel

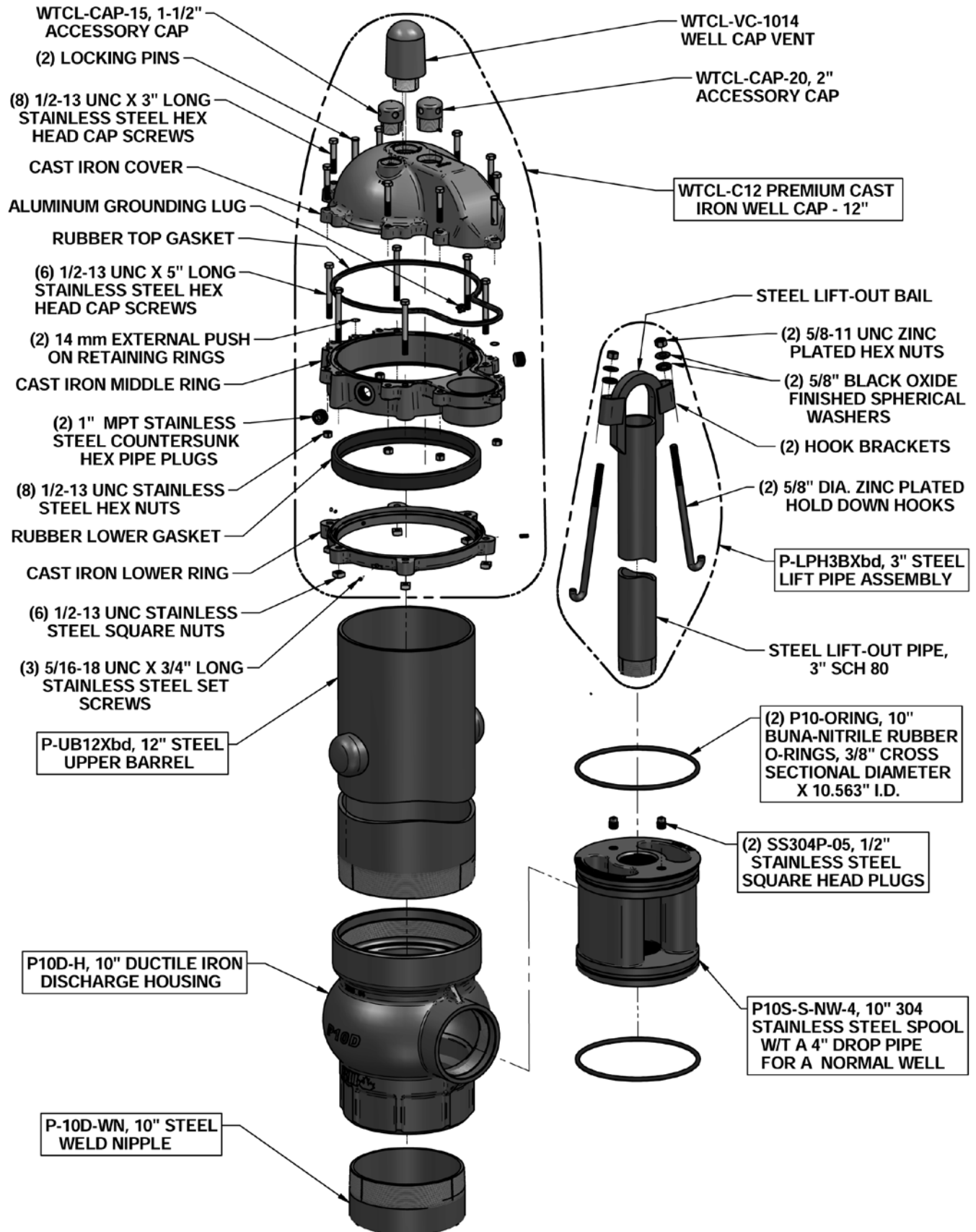


Flowing well spool for 10" Ductile Iron Pitless Unit.

Currently only available with 6" FPT drop pipe connection.

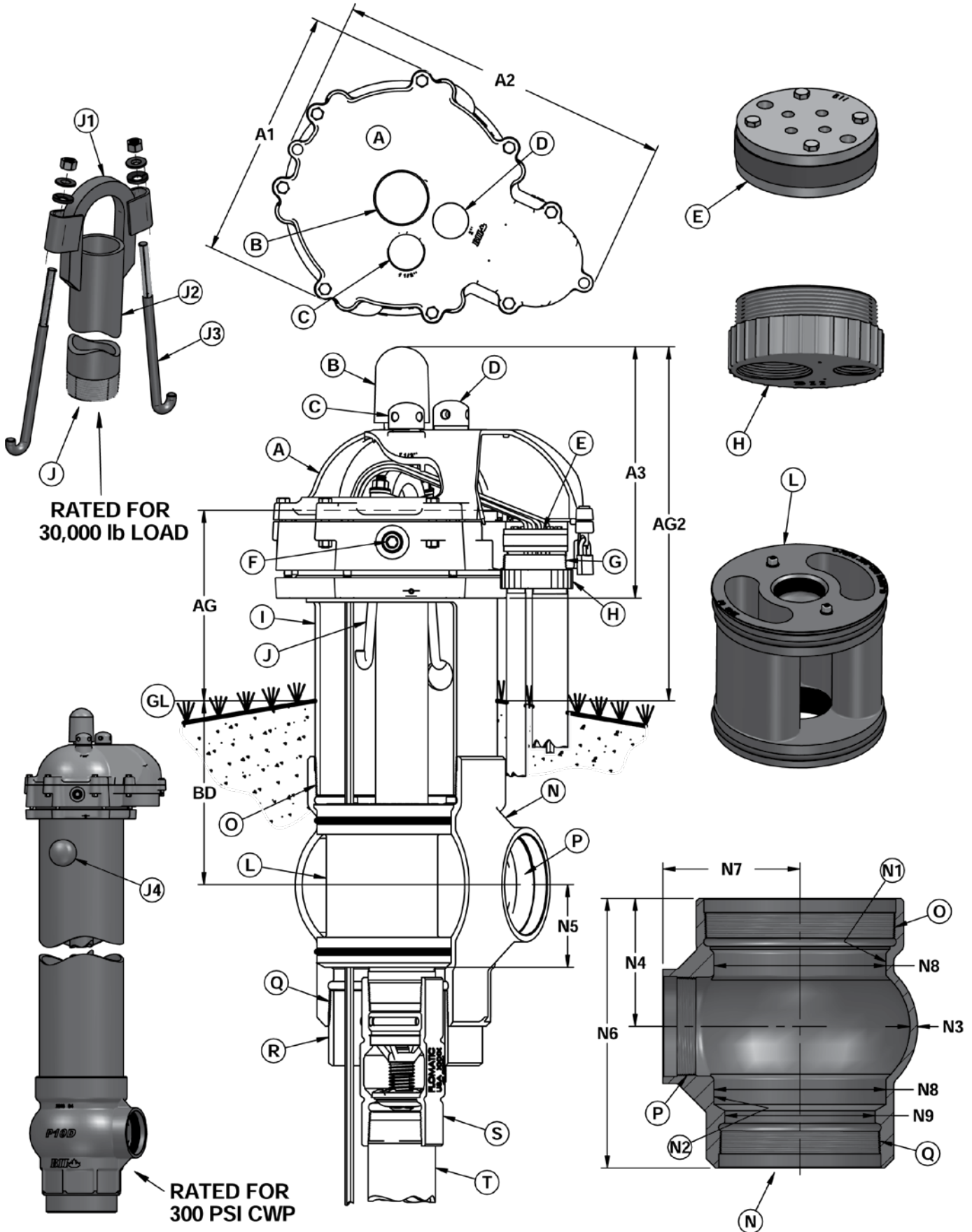
10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - PARTS BREAKDOWN



10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - COMPONENTS



10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - SPECIFICATIONS

A - 12" Locking Watertight / Sanitary Well Cap: **A1:** 16.63", **A2:** 22.33", **A3:** 16-3/4" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Conduit Cable Seal: Prevents contaminants from entering the well through the conduit, by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to one 2" FPT (pump cable) & one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 35" from ground level to top of vent.

I - 12" I.D. Upper Barrel: 12-3/4" O.D. Options: **(B)** Black Painted Steel Std. 0.375" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std. 0.375" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 30,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 3" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 304 Stainless Steel construction with large through / equalization passages. Spool has a 3" FPT lift out connection, 4" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 56.

N/A - "M" Flowing Well (Type F) Spool: N/A for 6" Residential model. Use 10" Industrial Pitless Unit with 6" Drop Pipe for flowing well applications.

N - 304 Stainless Steel Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall. **N4:** 8.55" Center of Discharge to top of Pitless housing. **N5:** 5.51" Center of Discharge to bottom of Spool. **N6:** 18" total length of discharge housing. **N7:** 9.15" center of well to face of discharge connection. **N8:** O-ring seat diameter is >10-3/4" to allow insertion of 10" protective sleeve. **N9:** 10.02" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 12" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 6" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 10" FPT connection designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil. Supplied with 304 Stainless Steel weld nipple, for welding to casing. **NOTE:** When joining dissimilar metals (stainless steel to steel) flanges / isolation kit should be used to eliminate galvanic corrosion.

R - 10" Beveled 304 Stainless Steel Weld Nipple: 10" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel for strength, durability and corrosion resistance.

L1 - 3" FPT Lift Out Connection.

L2 - 4" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.375" North American Standard. Sectional Diameter x 10.563" I.D. Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

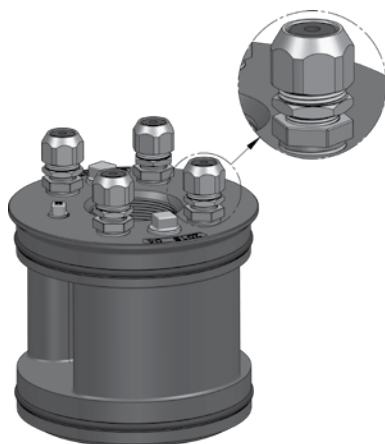
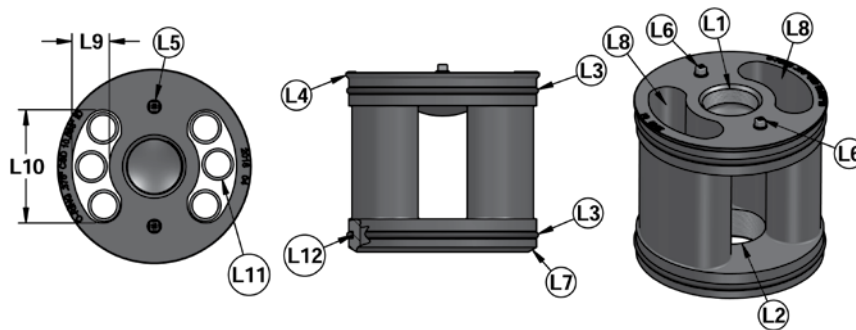
L8 - 2.25" wide by 6.80" long crescent shaped through / pressure equalization passages allow for easy installation of up to 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 2.25" wide through passage.

L10 - 6.80" long through passage.

L11 - Through passages allow three 1-1/2" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.

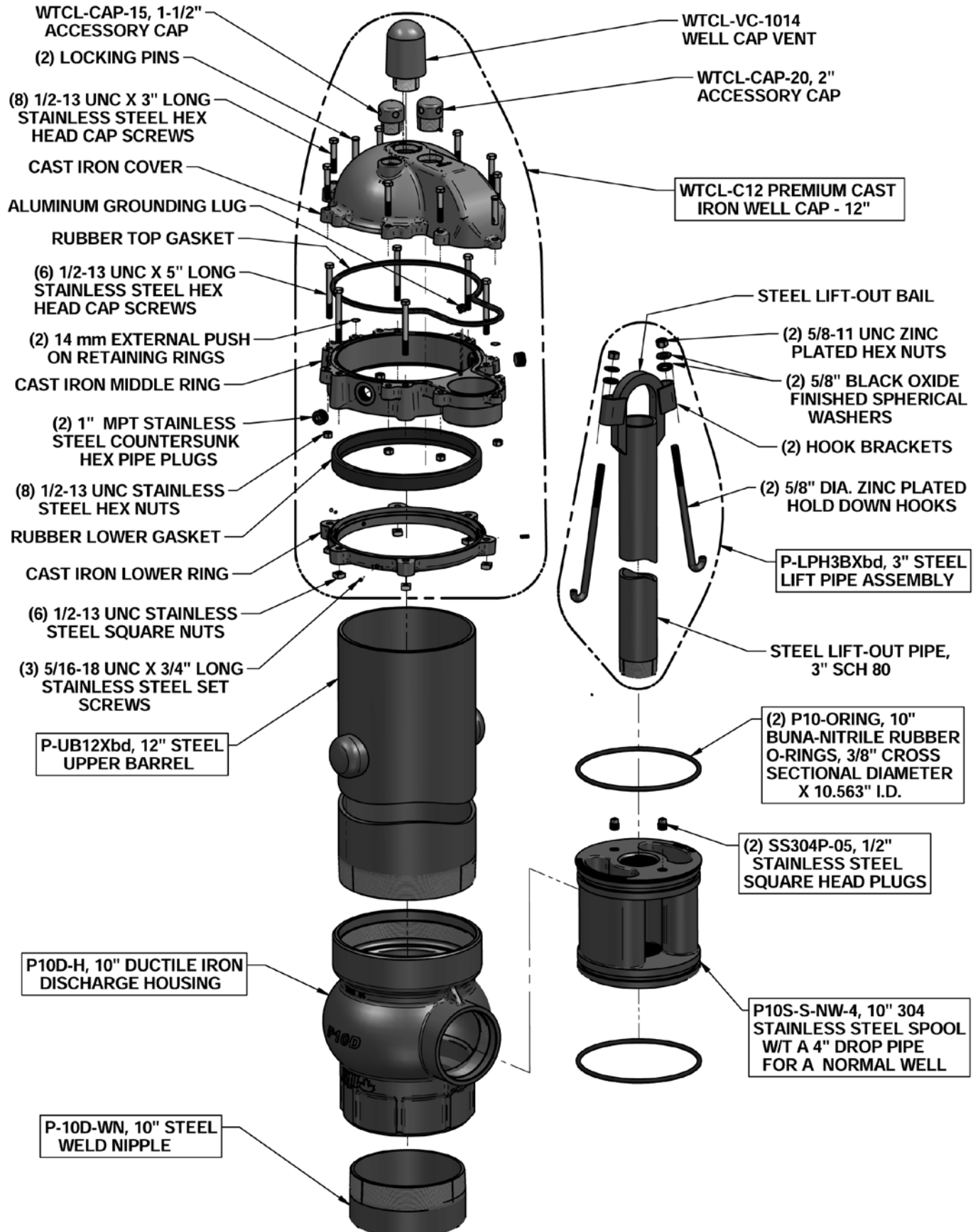


Flowing well spool for 10" Stainless Pitless Unit.

Currently only available with 6" FPT drop pipe connection.

10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 4" FPT DROP PIPE - PARTS BREAKDOWN



10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - SPECIFICATIONS

A - 12" Locking Watertight / Sanitary Well Cap: **A1:** 16.63", **A2:** 22.33", **A3:** 16-3/4" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool, for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately)

E - 4" O.D. Conduit Cable Seal: Prevents contamination from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to one 2" FPT (pump cable) and one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 35" from ground level to top of vent.

I - 12" I.D. Upper Barrel: 12-3/4" O.D. Options: **(B)** Black Painted Steel Std. 0.375" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std. 0.375" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 48,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 4" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: Ductile Iron construction with large through / equalization passages. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 60.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with six 1" FPT tappings for cable seals. Details on page 60. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 60.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall. **N4:** 8.55" Center of Discharge to top of Pitless housing. **N5:** 5.51" Center of Discharge to bottom of Spool. **N6:** 18" total length of discharge housing. **N7:** 9.15" center of well to face of discharge connection. **N8:** O-ring seat diameter is >10-3/4" to allow insertion of 10" protective sleeve. **N9:** 10.02" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 12" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 6" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 10" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 10" Beveled Steel Weld Nipple: 10" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in Ductile Iron for strength and durability, fully coated with NSF 61 Certified Epoxy for maximum corrosion resistance.

L1 - 4" FPT Lift Out Connection.

L2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.375" North American Standard. Sectional Diameter x 10.563" I.D. Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

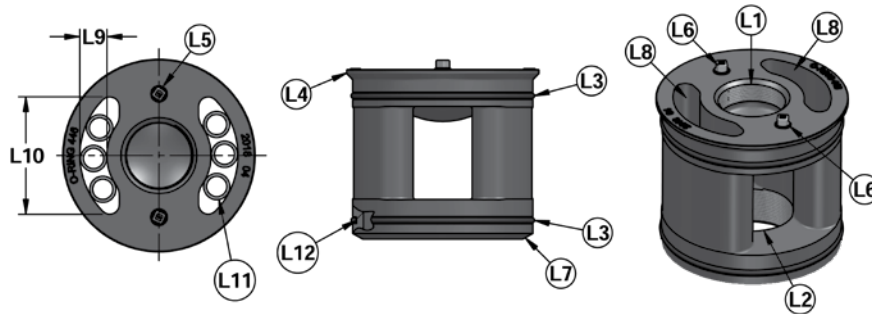
L8 - 1.375" wide by 6.25" long crescent shaped through / pressure equalization passages allow for easy installation of heavy 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and or monitoring equipment through the spool into the well chamber (two total).

L9 - 1.375" wide through passage.

L10 - 6.25" long through passage.

L11 - Through passages allow three 1" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves are fully coated with Epoxy for MAXIMUM corrosion protection under the O-rings.



10" WELL CASING X 6" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with six 1" FPT tappings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 4" FPT Lift Out Connection.

M2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.375" North American Standard. Sectional Diameter x 10.563" I.D. Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

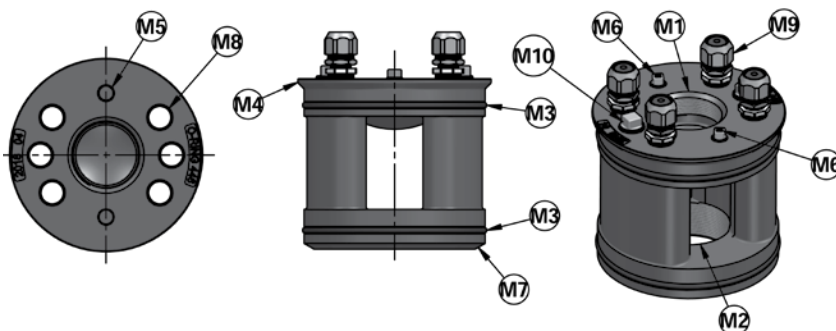
M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 1" FPT through passage tappings (six total).

M9 - 3/4" MPT Cable Seals (sold separately, see page 78), typically installed in four of the six 1" FPT through passage tappings, reduced to 3/4" FPT using 1" MPT x 3/4" FPT PVC Reducing Bushings #439-131.

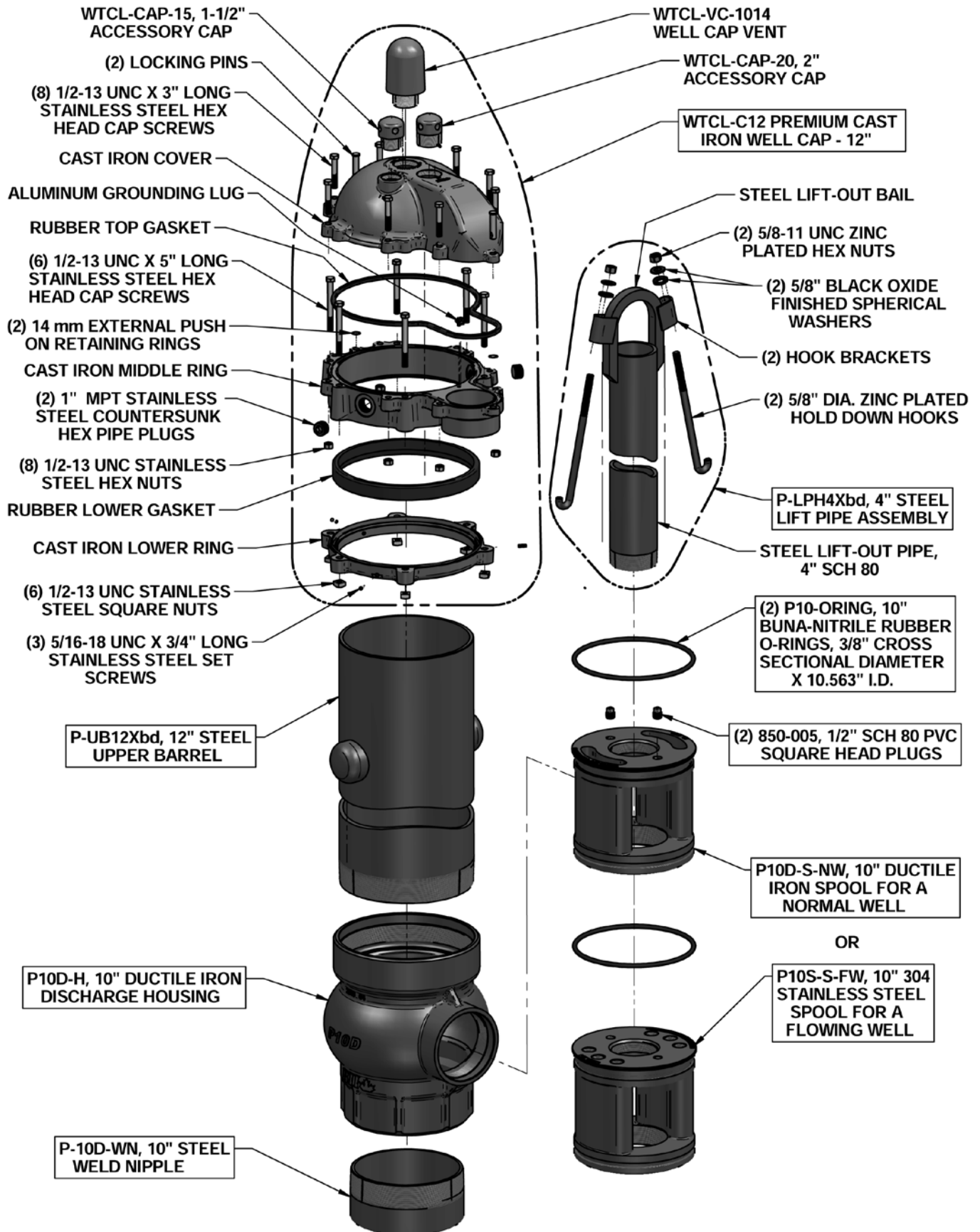
M10 - 1" MPT square head plugs, installed in two of the six 1" FPT through passage tappings.



Flowing Well Spools are
304 Stainless Steel

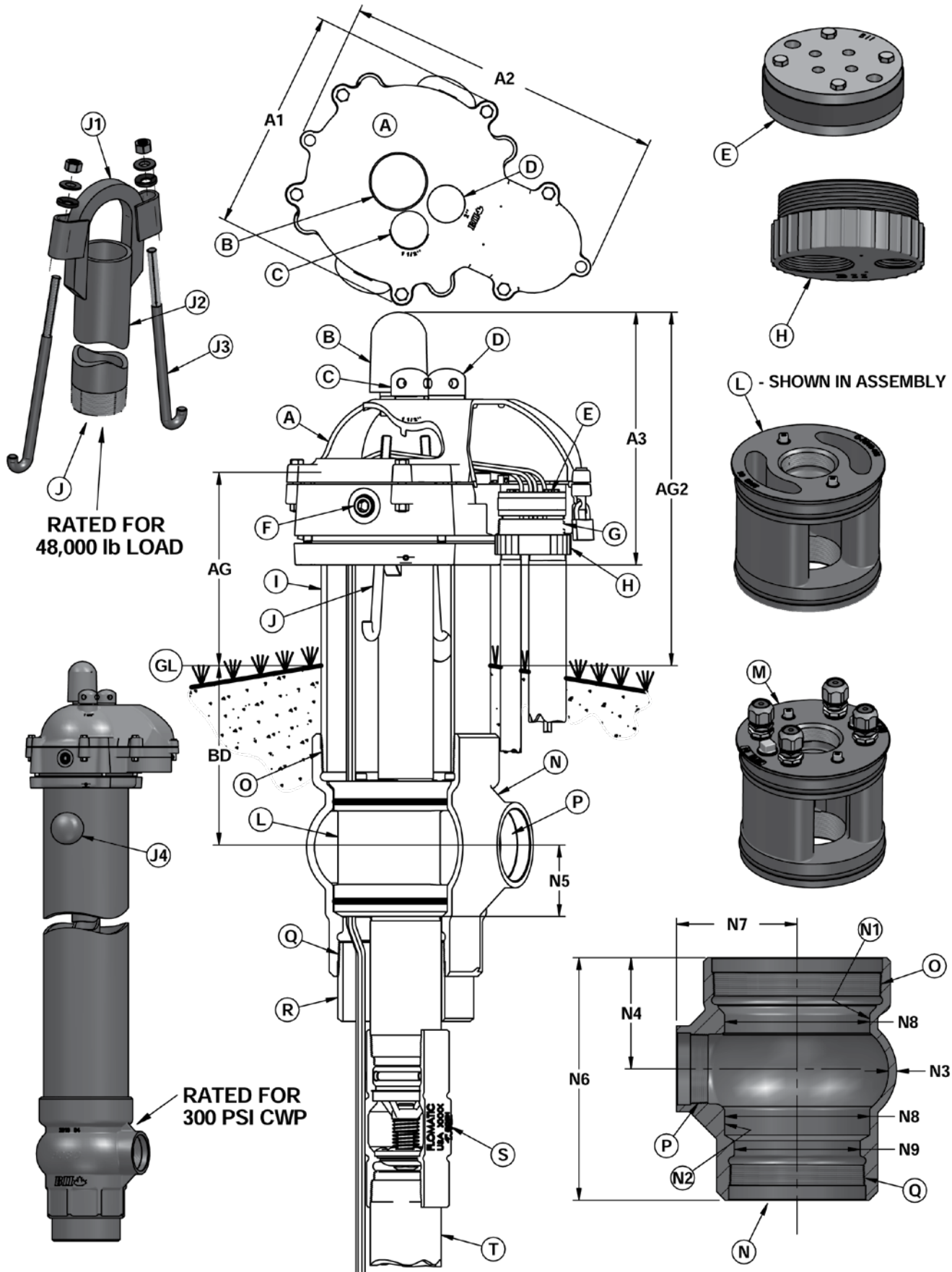
10" INDUSTRIAL DUCTILE IRON PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - PARTS BREAKDOWN



10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - COMPONENTS



10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - SPECIFICATIONS

A - 12" Locking Watertight / Sanitary Well Cap: A1: 16.63", A2: 22.33", A3: 16-3/4" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool, for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Conduit Cable Seal: Prevents contaminants from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to one 2" FPT (pump cable) & one 1" FPT (sensor cable). Detail on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 35" from ground level to top of vent.

I - 12" I.D. Upper Barrel: 112-3/4" O.D. Options: **(B)** Black Painted Steel Std. 0.375" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std. 0.375" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 48,000 lb. load, **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 4" Schedule 80 Lift-Out Pipe **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 304 Stainless Steel construction with large through / equalization passages. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 64.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with six 1" FPT tappings for cable seals. Details on page 64. Spool has a 3" FPT lift out connection, 4" FPT drop pipe connection and two 1/2" FPT pressure zone tapings. Details on page 64.

N - 304 Stainless Steel Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall **N4:** 8.55" Center of Discharge to top of Pitless housing. **N5:** 5.51" Center of Discharge to bottom of Spool. **N6:** 18" total length of discharge housing. **N7:** 9.15" center of well to face of discharge connection. **N8:** O-ring seat diameter is >10-3/4" to allow insertion of 10" protective sleeve. **N9:** 10.02" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ▶ Globe Body ▶ Clear-Way ▶ Staggered Seats ▶ Stronger Connections ▶ NSF 61 Epoxy Coating ▶ Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 12" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 6" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 10" FPT connection designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil. Supplied with 304 Stainless Steel weld nipple for welding to casing. **NOTE:** When joining dissimilar metals (stainless steel to steel) flanges / isolation kit should be used to eliminate galvanic corrosion.

R - 10" Beveled 304 Stainless Steel Weld Nipple: 10" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel for strength, durability and corrosion resistance.

L1 - 4" FPT Lift Out Connection.

L2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.375" North American Standard. Sectional Diameter x 10.563" I.D. Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

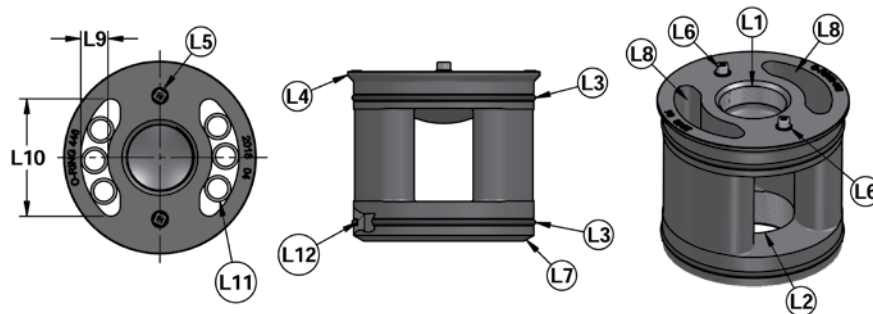
L8 - 1.375" wide by 6.25" long crescent shaped through / pressure equalization passages allow for easy installation of heavy 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and or monitoring equipment through the spool into the well chamber (two total).

L9 - 1.375" wide through passage.

L10 - 6.25" long through passage.

L11 - Through passages allow three 1" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



10" WELL CASING X 6" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with six 1" FPT tappings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 4" FPT Lift Out Connection.

M2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.375" North American Standard. Sectional Diameter x 10.563" I.D. Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

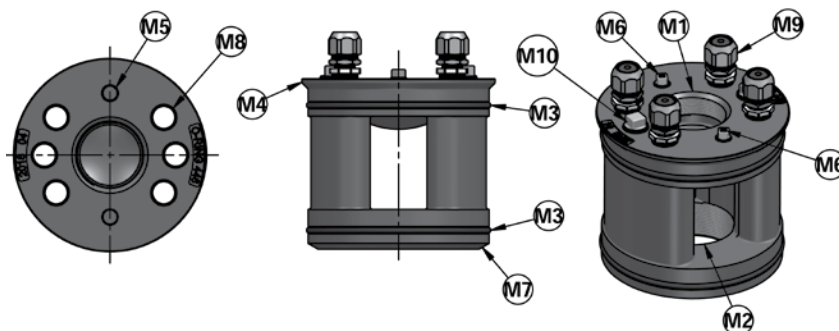
M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 1" FPT through passage tappings (six total).

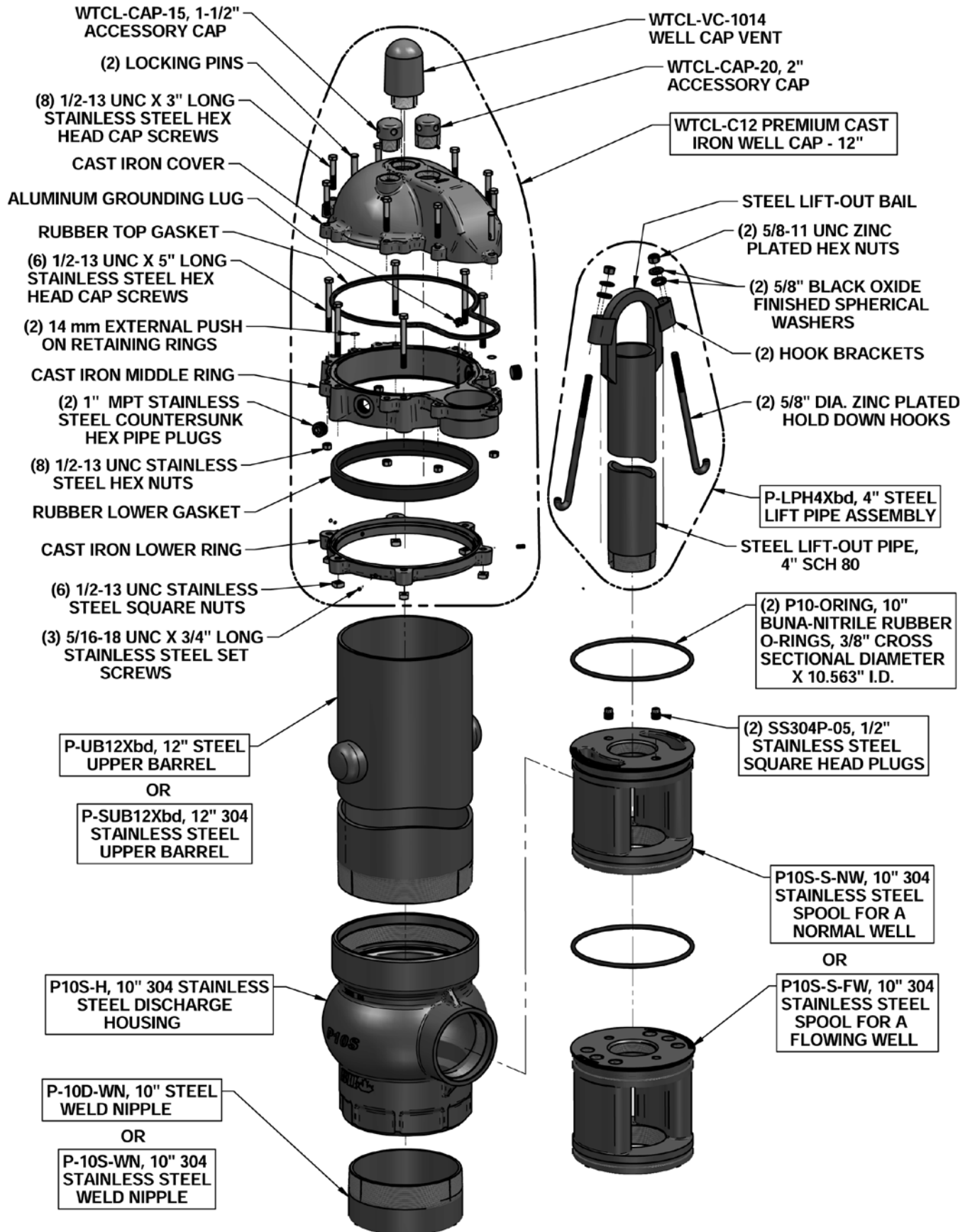
M9 - 3/4" MPT Cable Seals (sold separately, see page 78), typically installed in four of the six 1" FPT through passage tappings, reduced to 3/4" FPT using 1" MPT x 3/4" FPT PVC Reducing Bushings #439-131.

M10 - 1" MPT square head plugs, installed in two of the six 1" FPT through passage tappings.



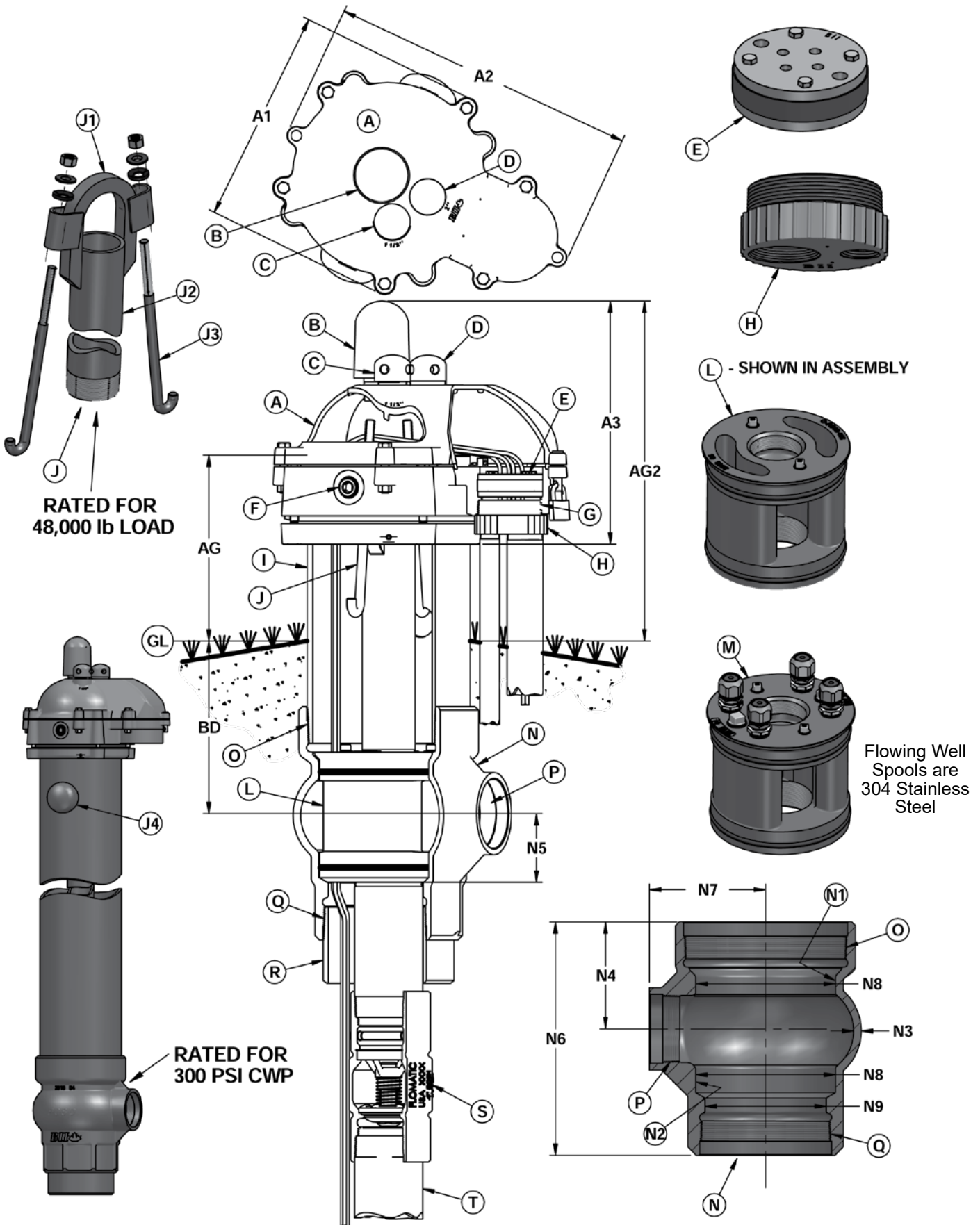
10" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

10" WELL CASING X 6" FPT DROP PIPE - PARTS BREAKDOWN



12" INDUSTRIAL DUCTILE IRON PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - COMPONENTS



12" INDUSTRIAL DUCTILE IRON PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - SPECIFICATIONS

A - 14" Locking Watertight / Sanitary Well Cap: A1: 17.93", A2: 23.49", A3: 17-3/4" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool, for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Cable Seal: Prevents contaminants from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to, one 2" FPT (pump cable) & one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 36" from ground level to top of vent.

I - 14" O.D. Upper Barrel (UB): 14" O.D. Options: **(B)** Black Painted Steel Std./Sch. 30 0.375" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 30 0.375" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 48,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 4" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: Ductile Iron construction with large through / equalization passages. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 68.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with six 1-1/4" FPT tappings for cable seals. Details on page 68. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 68.

N - Ductile Iron Housing - Rated 300 PSI CWP: **N1:** Upper O-Ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall. **N4:** 8.80" Center of Discharge to top of Pitless housing. **N5:** 5.51" Center of Discharge to bottom of Spool. **N6:** 18.45" total length of discharge housing. **N7:** 9.83" center of well to face of discharge connection. **N8:** O-ring seat diameter is >12-3/4" to allow insertion of 12" protective sleeve. **N9:** 11.94" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 14" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 6" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 12" FPT connection supplied with a beveled weld nipple, ready for welding directly to the well casing. The weld nipple eliminates field welding of dissimilar materials (Ductile Iron casting to steel well casing). Connection is designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil.

R - 12" Beveled Steel Weld Nipple: 12" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

12" INDUSTRIAL DUCTILE IRON PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in Ductile Iron for strength and durability, fully coated with NSF 61 Certified Epoxy for maximum corrosion resistance.

L1 - 4" FPT Lift Out Connection.

L2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.375" North American Standard. Sectional Diameter x 11.900" I.D. Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

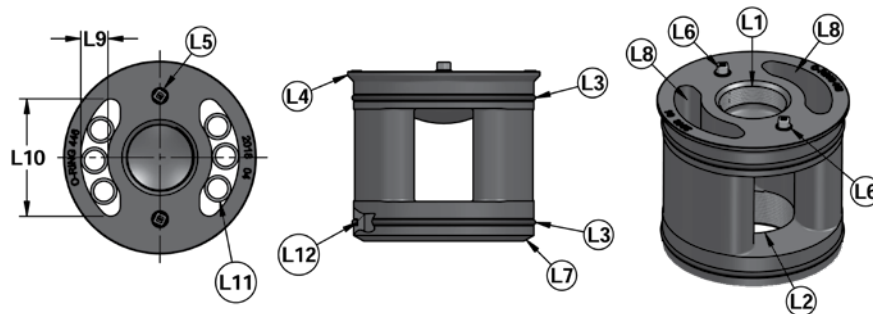
L8 - 1.96" wide by 7.25" long crescent shaped through / pressure equalization passages allow for easy installation of heavy 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 1.960" wide through passage.

L10 - 7.25" long through passage.

L11 - Through passages allow three 1-1/4" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves are fully coated with Epoxy for MAXIMUM corrosion protection under the O-rings.



12" WELL CASING X 6" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with six 1-1/4" FPT tappings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 4" FPT Lift Out Connection.

M2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe Size are made by using swaged nipples (sold separately).

M3 - 0.375" North American Standard. Sectional Diameter x 11.900" I.D. Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

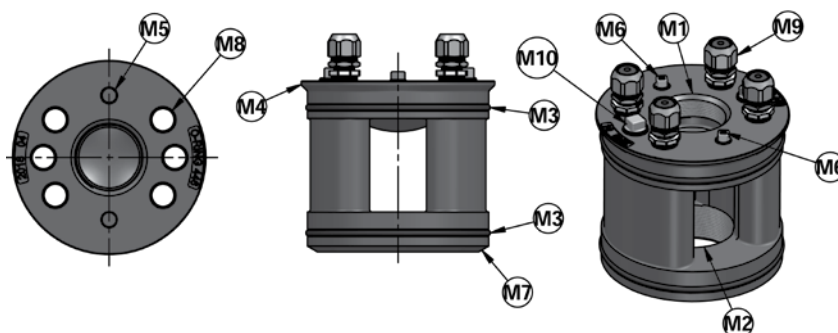
M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 1-1/4" FPT through passage tappings (six total).

M9 - 3/4" MPT Cable Seals (sold separately, see page 78), typically installed in four of the six 1-1/4" FPT through passage tappings, reduced to 3/4" FPT using 1-1/4" MPT x 3/4" FPT PVC Reducing Bushings #439-167.

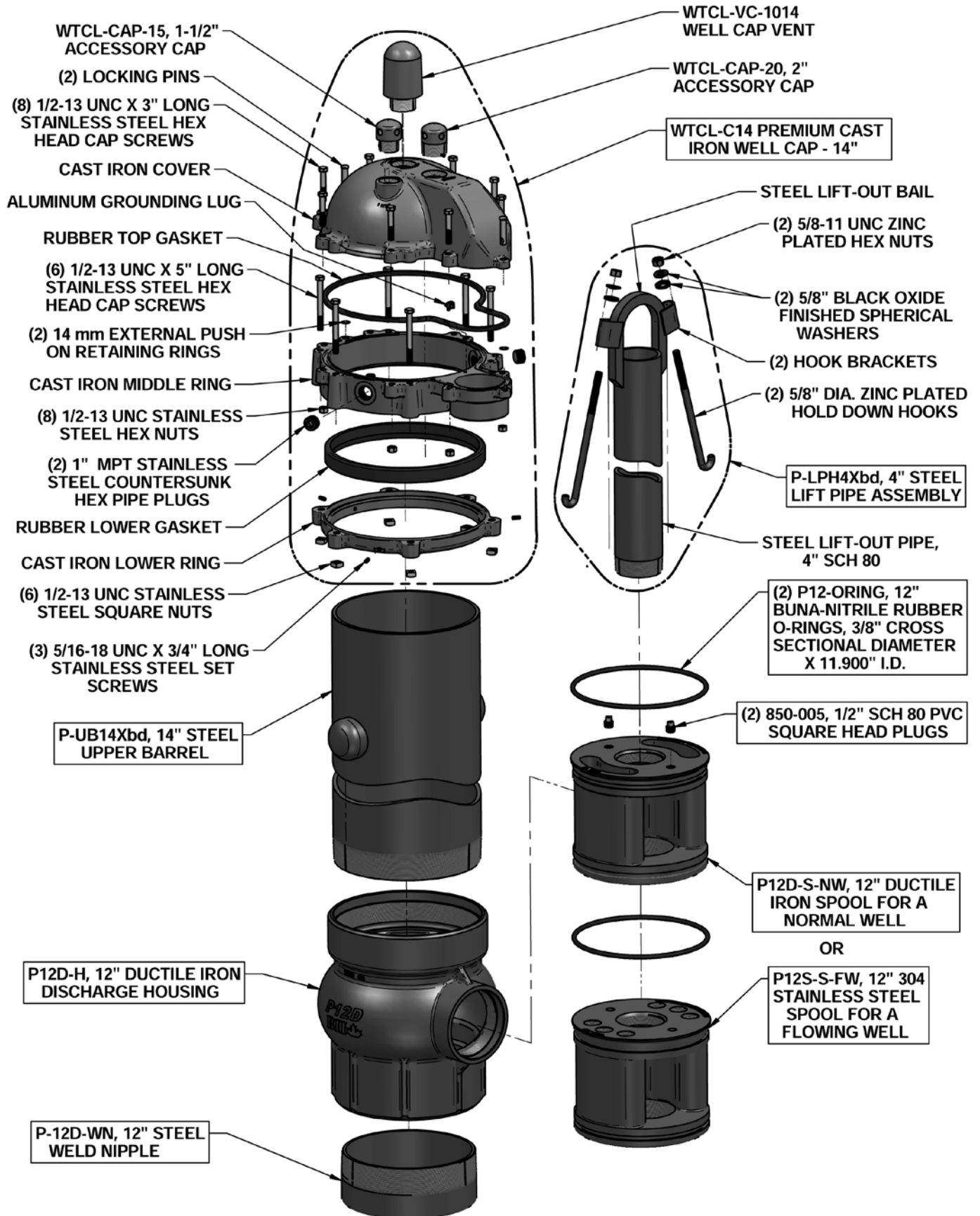
M10 - 1-1/4" MPT square head plugs, installed in two of the six 1-1/4" FPT through passage tappings.



Flowing Well Spools are
304 Stainless Steel

12" INDUSTRIAL DUCTILE IRON PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - PARTS BREAKDOWN



12" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - SPECIFICATIONS

A - 14" Locking Watertight / Sanitary Well Cap: A1: 17.93", A2: 23.49", A3: 17-3/4" Details on page 74.

B - 2" MPT Tamper Proof Screened Air Vent: 24 Mesh stainless steel screen is protected by cover. Supplied with stainless steel locking pin.

C - 1-1/2" FPT Lockable Probe Tube Port: Provides easy access to well to insert monitoring equipment through a probe tube aligned with spool through passage. (Stainless steel locking pin for padlock sold separately).

D - 2" FPT Lockable Sampling Faucet Port: Aligns with pressure zone tapping in spool, for installation of a sampling faucet. Supplied with 2" MPT lockable cap plug. (Stainless steel locking pin for padlock sold separately).

E - 4" O.D. Cable Seal: Prevents contaminants from entering the well through the conduit by providing a watertight / vermin proof seal. Construction: 304 Stainless Steel plates / Nitrile Rubber gasket (cable seals sold separately, details on page 84).

F - 1" FPT Accessory Ports: Two auxiliary tappings in the middle ring of well cap allow for easy field installation of additional accessories such as chlorinators or sensor cables etc.

G - 4" FPT Conduit Connection: Accommodates heavy gauge pump cable and a conduit splitter. Details on page 86.

H - Conduit Splitter: Converts 4" FPT conduit to, one 2" FPT (pump cable) & one 1" FPT (sensor cable). Details on page 86.

AG - Above Ground: 24" from ground level to top of upper barrel. **AG2 - Total Above Ground:** 36" from ground level to top of vent.

I - 14" O.D. Upper Barrel: 14" O.D. Options: **(B)** Black Painted Steel Std./Sch. 30 0.375" wall with Hold-Down Hooks, **(I)** Black Painted Steel with Isolation Flanges with Hold-Down Hooks. Suggested option for connecting a SS pitless discharge housing to steel upper barrel / well casing to eliminate contact of dissimilar metals and galvanic corrosion, **(S)** 304 SS 0.25" wall with Hold-Down Hooks, **(H)** 304 SS Std./Sch. 30 0.375" wall with Hold-Down Hooks, **(P)** PVC No Hold-Down Hooks. Bury Depth specified when ordering. All units supplied with 24" of upper barrel casing above ground, meeting or exceeding known codes. Always comply with all applicable well construction codes and flood protection requirements for your area.

J - Hold-Down Hook Assembly: Rated for 48,000 lb. load. **J1:** Lift-Out Bail (1" bar) for lifting hook. **J2:** 4" Schedule 80 Lift-Out Pipe. **J3:** Hooks mechanically engage with the upper barrel to prevent both VERTICAL movement due to up-thrust and ROTATIONAL movement due to start-up torque or locked rotor condition. **J4:** Pods on the upper barrel provide a means for hooks to engage with the upper barrel and double as safety stops for lifting straps during installation. Black painted finish.

L - Normal (Type N) Spool: 304 Stainless Steel construction with large through / equalization passages. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 72.

M - Flowing Well (Type F) Spool: 304 Stainless Steel construction with six 1-1/4" FPT tappings for cable seals. Details on page 72. Spool has a 4" FPT lift out connection, 6" FPT drop pipe connection and two 1/2" FPT pressure zone tappings. Details on page 72.

N - 304 Stainless Steel Housing - Rated 300 PSI CWP: **N1:** Upper O-ring Seat. **N2:** Lower O-ring Seat. **N3:** 1/2" Wall. **N4:** 8.80" Center of Discharge to top of Pitless housing. **N5:** 5.51" Center of Discharge to bottom of Spool. **N6:** 18.45" total length of discharge housing. **N7:** 9.83" center of well to face of discharge connection. **N8:** O-ring seat diameter is >12-3/4" to allow insertion of 12" protective sleeve. **N9:** 11.94" housing I.D. at load bearing stop which supports the weight of the spool / pipe column. Details on page 6 ► Globe Body ► Clear-Way ► Staggered Seats ► Stronger Connections ► NSF 61 Epoxy Coating ► Protective Well Rehabilitation Sleeve (not included)

O - Upper Barrel Connection: 14" FPT connection is designed to fully encapsulate the thread on the upper barrel, providing a stronger connection, maximum corrosion resistance and longevity. Only full wall thickness of upper barrel is exposed to soil.

P - Discharge Connection: 6" FPT thread can be easily adapted to various types of service line connections such as swing joint, mechanical joint, or flanged. (accessories all sold separately, see order form).

Q - Well Casing Connection: 12" FPT connection designed to fully engage for a stronger joint and maximum corrosion resistance since only full wall thickness of weld nipple is exposed to soil. Supplied with 304 Stainless Steel weld nipple for welding to casing. **NOTE:** When joining dissimilar metals (stainless steel to steel) flanges / isolation kit should be used to eliminate galvanic corrosion.

R - 12" Beveled 304 Stainless Steel Weld Nipple: 12" MPT x Beveled (hand tightened only, can be removed to use FPT connection).

S - Check Valve: Quality Flomatic check valves available in both ductile iron and stainless steel (sold separately).

T - Drop Pipe: aka Riser Pipe.

BD - Bury Depth: Measured from the center of the discharge connection to finished grade ground level.

GL - Ground Level: Is final grade, which must slope away from the well casing for proper surface water drainage away from the well. Always refer to and comply with applicable well construction codes.

12" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - NORMAL WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel for strength, durability and corrosion resistance.

L1 - 4" FPT Lift Out Connection.

L2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

L3 - 0.375" North American Standard. Sectional Diameter x 11.900" I.D. Nitrile Rubber O-rings.

L4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

L5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

L6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

L7 - Load Bearing Flange.

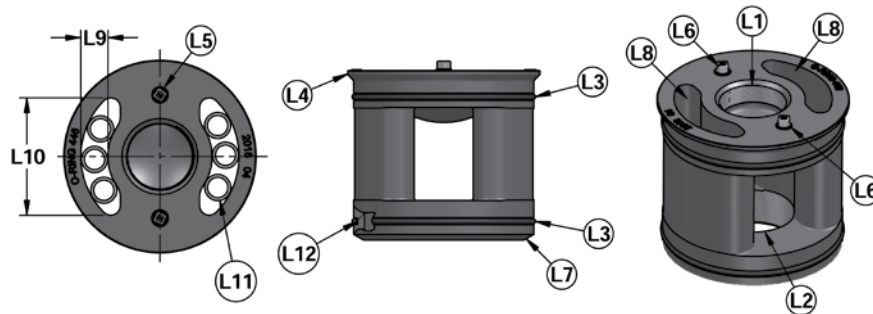
L8 - 1.96" wide by 7.25" long crescent shaped through / pressure equalization passages allow for easy installation of heavy 4/0-gauge, flat pump cable with outer PVC jacket intact providing maximum protection. The passages allow for easy installation of probe tube(s), air lines, chlorination equipment, water testing and / or monitoring equipment through the spool into the well chamber (two total).

L9 - 1.96" wide through passage.

L10 - 7.25" long through passage.

L11 - Through passages allow three 1-1/4" PVC probe tubes to be inserted through each passage (six in total possible).

L12 - Precision-machined O-ring grooves.



12" WELL CASING X 6" FPT DROP PIPE - FLOWING WELL SPOOL SPECIFICATIONS

Cast in 304 Stainless Steel, flowing well spools have closed tops with six 1-1/4" FPT tappings. Pump cable, sensor wires and chlorination equipment pass through individually. Cable seals threaded into these tappings make a water tight seal to prevent well water from rising through the spool into the upper barrel chamber and flowing from the well vent, which could result in freeze-up of the upper barrel chamber in sub-zero temperatures. Flowing Well spools are dimensionally interchangeable with the Normal Well spools.

M1 - 4" FPT Lift Out Connection.

M2 - 6" FPT Drop Pipe Connection. Changes to Drop Pipe size are made by using swaged nipples (sold separately).

M3 - 0.375" North American Standard. Sectional Diameter x 11.900" I.D. Nitrile Rubber O-rings in precision-machined grooves.

M4 - O-ring protection flange prevents damage to O-rings as the spool is lowered through the upper barrel into the housing.

M5 - 1/2" FPT pressure zone tappings in the spool's top plate for a water sampling valve or other accessories (two total).

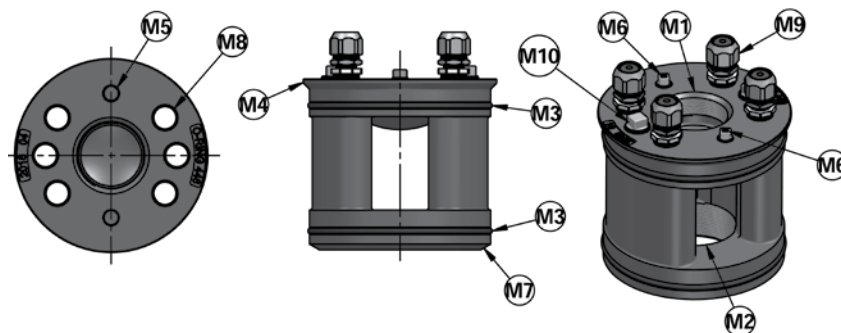
M6 - 1/2" MPT square head plugs which can be removed for installation of accessories (two total).

M7 - Load Bearing Flange.

M8 - 1-1/4" FPT through passage tappings (six total).

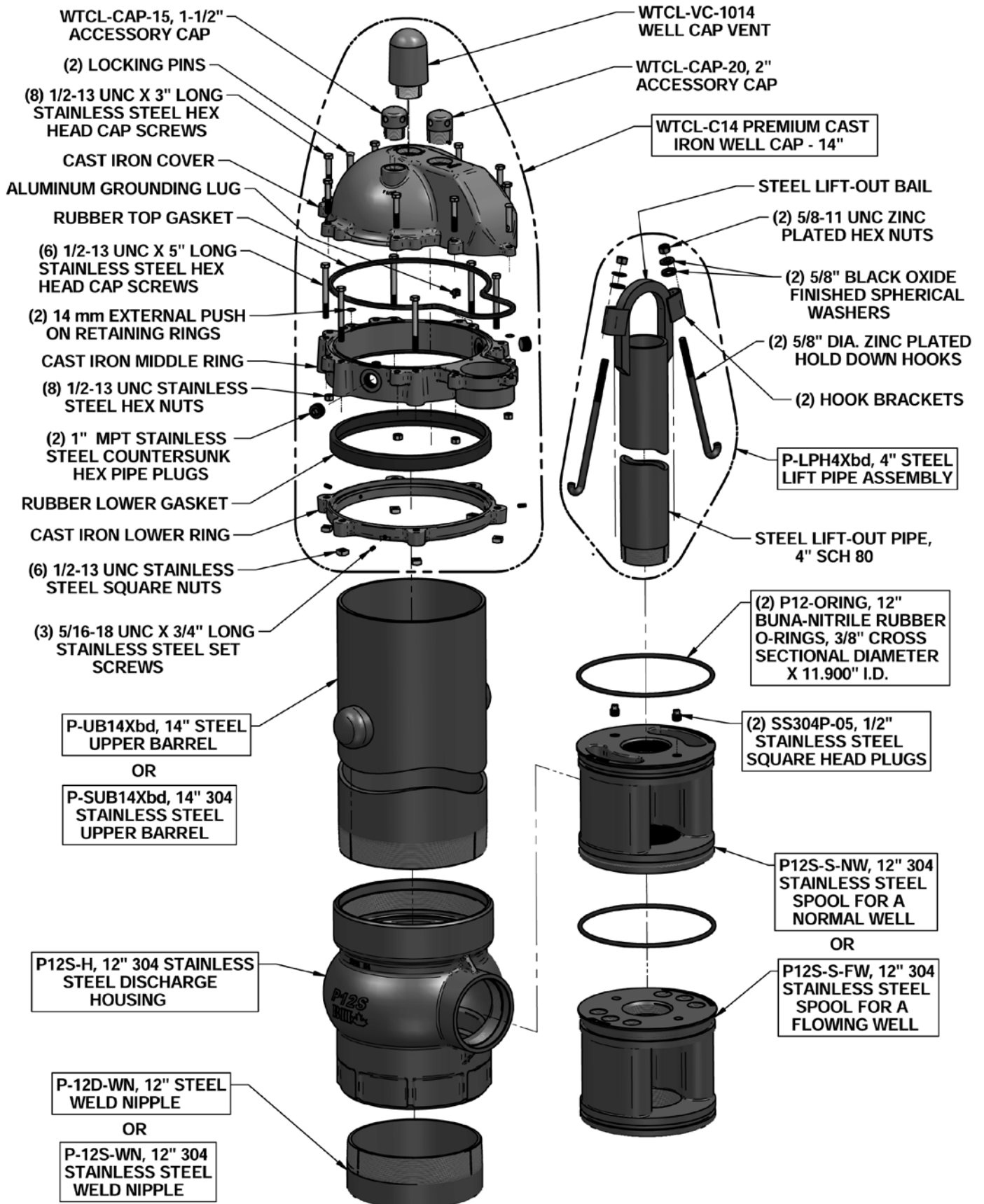
M9 - 3/4" MPT Cable Seals (sold separately, see page 78), typically installed in four of the six 1-1/4" FPT through passage tappings, reduced to 3/4" FPT using 1-1/4" MPT x 3/4" FPT PVC Reducing Bushings #439-167.

M10 - 1-1/4" MPT square head plugs, installed in two of the six 1-1/4" FPT through passage tappings.



12" INDUSTRIAL 304 STAINLESS STEEL PITLESS UNIT

12" WELL CASING X 6" FPT DROP PIPE - PARTS BREAKDOWN



8", 10", 12" PITLESS UNITS WELL CAP

WTCL-C PREMIUM WATERTIGHT CAST IRON CAP WITH SCREENED AIR VENT FOR 10-3/4", 12-3/4" & 14" O.D. UPPER BARRELS

APPLICATION:

For capping 10", 12" and 14" industrial wells to ensure vermin proof / watertight sealing to the well casing.



FEATURES:

- Special design allows for fast and easy installation.
- Provides easy access to the well without interfering with seal to casing or conduit and wiring.
- Large 4" FPT conduit connection provides lots of room for the installation of heavy gauge submersible pump cables.
- Locking feature provides a secure / tamper proof design.
- Large dome vent cap with 60 mesh stainless steel screen provided as standard equipment.
- Easily converts to 100% water proof design by replacing the vent with a plug.
- Comes with two lockable accessory ports.
- Caps are supplied with a grounding terminal and the metal cap is bonded to the steel casing with three set screws.
- Two 1" FPT Ports are provided for field installation of accessories.
- Personalization (optional) is available by means of an engraved aluminum plate which is affixed by drive rivets.

CONSTRUCTION:

- Three-Piece Heavy-Duty design.
- High quality grey cast iron castings.
- Durable blue powder coat paint, which is baked to ensure superior quality finish.
- Thick heavy duty SBR Gaskets.
- All hardware is Stainless Steel for maximum corrosion resistance (No Plated Fasteners).

OPTIONS:

- A Cable Seal (sold separately) fits above the 4" FPT Conduit Port. Details on page 84.
- A Conduit Splitter (sold separately) can be used to split the conduit connection from the 4" FPT into two ports; a 1" FPT, and a 2" FPT. Details on page 86.
- A Depth Tester Kit (sold separately). Details on page 82.

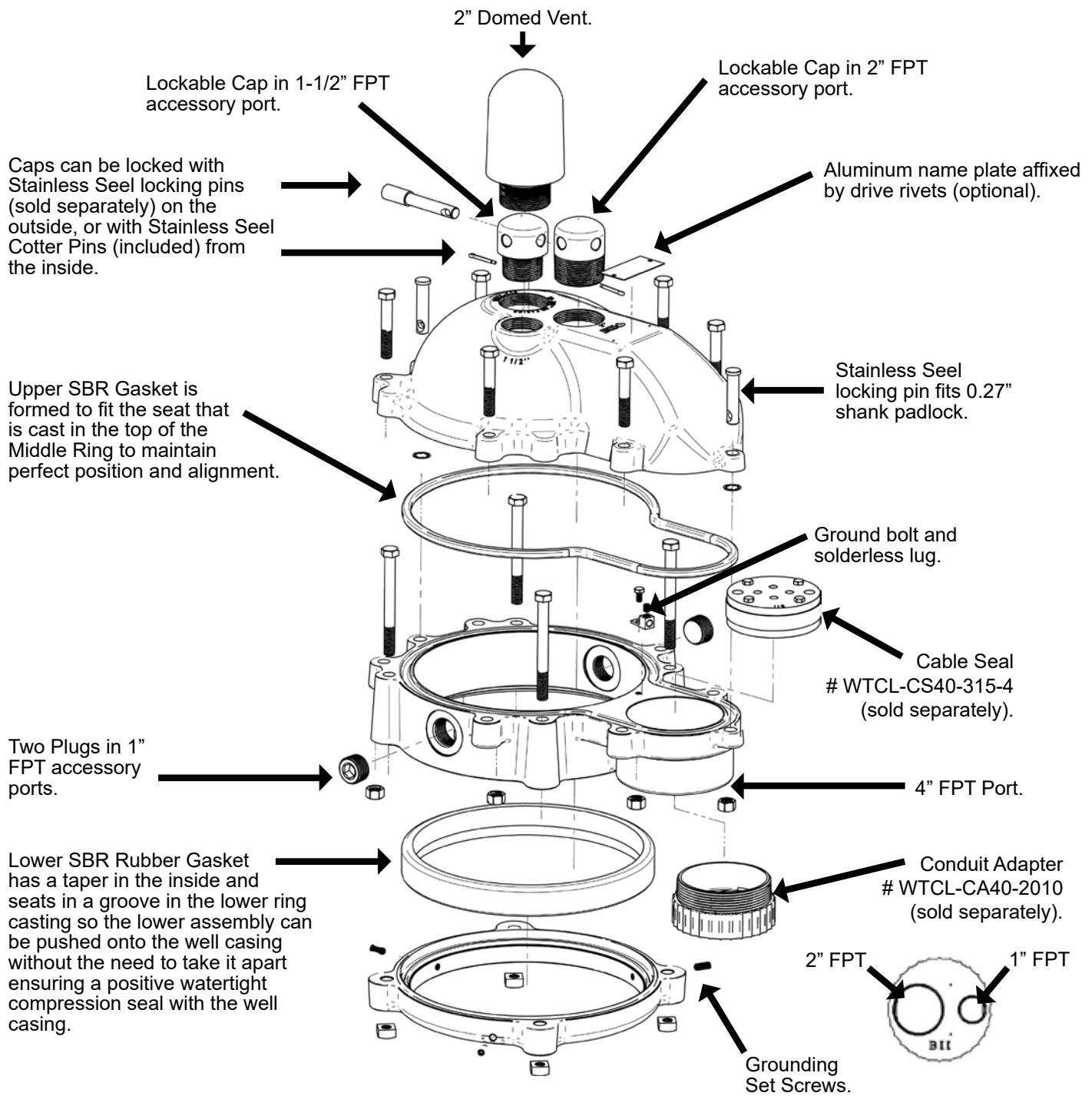
Stop tab allows for easy & accurate positioning of lower assembly.



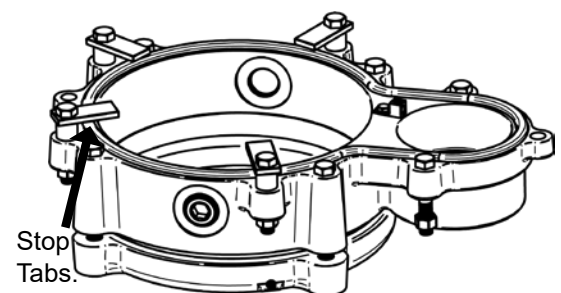
Part No.	Casing Size (in)		Conduit Connection	Air Vents (sq in) / Mesh	Unit Weight (lb)
	I.D	O.D			
WTCL-C10	10.02"	10-3/4"	4" FPT	10.5 / 60	90
WTCL-C12	12.00"	12-3/4"	4" FPT	10.5 / 60	110
WTCL-C14	13.18"	14.00"	4" FPT	10.5 / 60	120

8", 10", 12" PITLESS UNITS WELL CAP

WTCL-C PREMIUM WATERTIGHT CAST IRON CAP WITH SCREENED AIR VENT FOR 10-3/4", 12-3/4" & 14" O.D. UPPER BARRELS



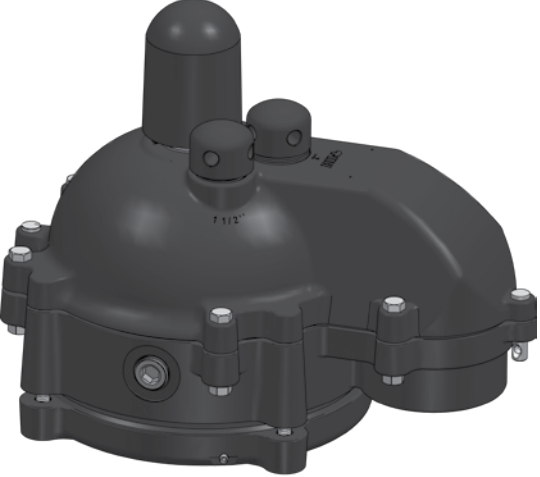
The well caps come out of the box with four casing stop tabs bolted to the lower ring assembly, therefore the top cover does not have to be attached to the lower ring to find the proper location on the casing, and this greatly reduces the weight / awkwardness when affixing the lower compression ring assembly to the well casing. The stop tabs are removed and discarded after the lower assembly is located and tightened.



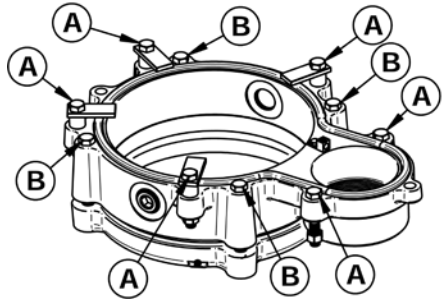
8", 10", 12" PITLESS UNITS WELL CAP INSTALLATION INSTRUCTION

WTCL-C SERIES INTALLATION INSTRUCTIONS

REQUIRED TOOLS: (1) 3/4" wrench, (1) Ratchet with 3/4" Socket & (1) 5/32" Allen Wrench



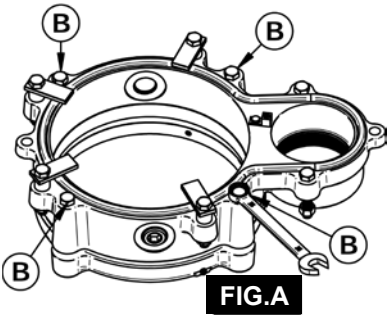
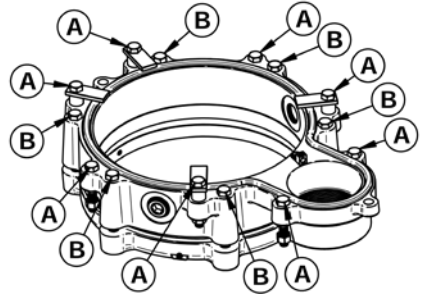
**Type # 1 Bolt Pattern
10" Well Cap WTCL-C10**



- A - 1/2"-13 UNC x 3" Long
Stainless Steel
Hex Head Bolts
with Hex Nuts
- **Type # 1:** 6 places
- **Type # 2:** 8 places

**Type # 2 Bolt Pattern
12" & 14" Well Caps WTCL-C12, & C14**

- B - 1/2"-13 UNC x 5" Long
Stainless Steel
Hex Head Bolts
with Hex Nuts
- **Type # 1:** 4 places
- **Type # 2:** 6 places

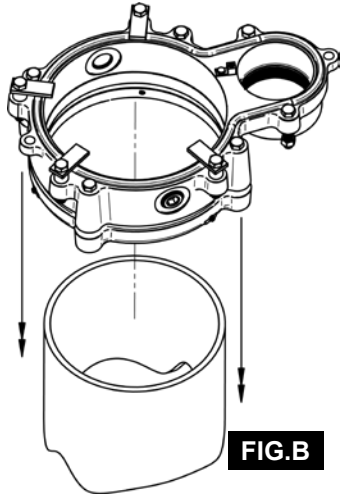
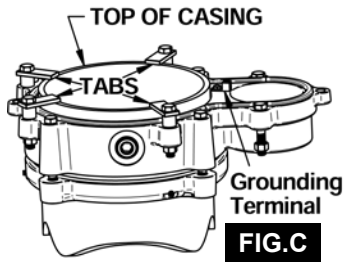


Step 1 - The lower assembly will come out of the box assembled as shown (FIG.A). Using a 3/4" wrench, loosen the B bolts (four places type #1, six places type # 2) which hold the center ring and the lower ring castings together (FIG.A) until there is no compression on the rubber casing gasket seal.

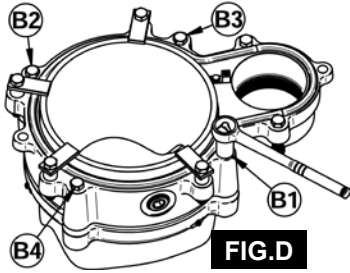
NOTE: Do NOT remove the square nuts. The nuts are recessed into lower ring casting to ensure the well cap is tamper proof. The nuts will not turn when tightening the bolts.

Step 2 - Place lower assembly onto the well casing. (FIG.B) Slide down until the casing contacts the four tabs bolted to the top of the middle ring casting. (FIG.C)

NOTE: Casing should be cut off straight and be free of burrs to ensure a proper fit.



8", 10", 12" PITLESS UNITS WELL CAP INSTALLATION INSTRUCTION



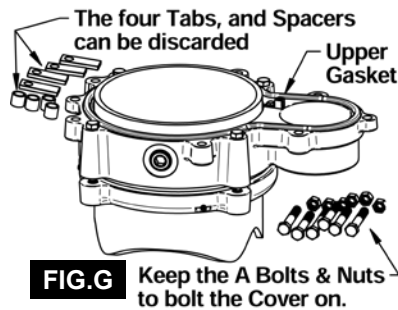
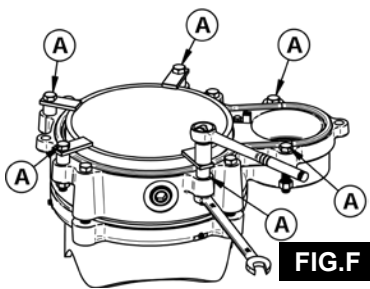
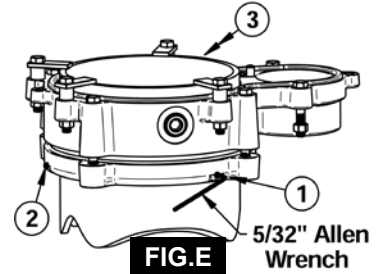
Step 3 - Tighten the B bolts hand tight (four places type # 1, six places type # 2), then tighten an additional two turns in the cross corner type sequence shown (FIG.D) to compress the casing gasket equally between the lower and middle ring to make a watertight seal.

NOTE: The lower well cap assembly will be secure. You should not be able to twist or lift the lower assembly by hand. If the lower assembly can be moved, tighten each bolt one additional turn and repeat until the assembly is tight on the well casing.

Step 4 - Tighten three grounding set screws in the lower ring (FIG.E) using a 5/32" Allen Wrench.

NOTE: Grounding set screws are only effective in steel well casing applications.

Caution: Grounding requirements may vary depending on state or local electrical codes. Always check and follow your local electrical codes and contact your electrical inspector for details.

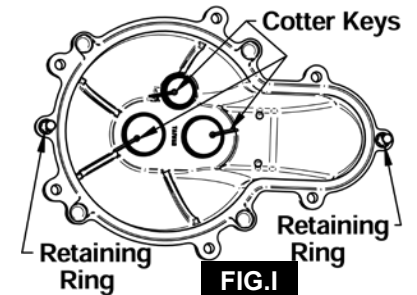
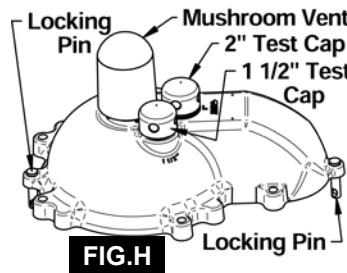


Step 5 - Remove the A bolts and nuts (six places type # 1, eight places type # 2) along with the four sets of tabs and spacers (FIG.F).

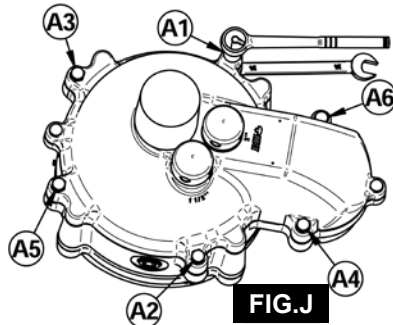
NOTE: Keep the A bolts and nuts. They will be needed later to bolt the top cover on. The tabs and spacers can be discarded (FIG.G).

Step 6 - Make sure that the upper gasket is seated properly in the groove on the top of the middle ring (FIG.G).

Step 7 - Thread the 2" MPT mushroom vent cap, the 2" MPT test cap and the 1-1/2" MPT test cap (FIG.H) in top cover. Ensure that they are threaded in deep enough to allow installation of the Stainless Steel cotter keys through the holes in the lower portion of the threads (FIG.I). These cotter keys ensure that the vent and caps cannot be removed, maintaining the integrity of the locking / tamper proof design of the well cap.



Step 8 - Place the two locking pins through the end holes in the cap (FIG.H) and slide the retaining rings over the locking pins from the bottom (FIG.I). This will keep the locking pins from falling out of the cover when the cover is removed.



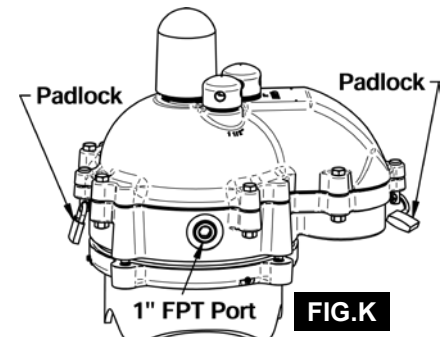
Step 9 - Place top cover on the lower assembly. Make sure that all the holes align and it is completely down over the sealing gasket. The two locking pins should go through the end holes in the middle ring. Place the A Bolts and Nuts through the top cover and middle ring hand tight only (six places type # 1, eight places type # 2).

Using the ratchet with a 3/4" socket and a 3/4" wrench tighten all bolts an additional two turns in the cross corner sequence as illustrated in FIG.J, ensuring that the gasket is compressed evenly between the castings all the way around.

DO NOT over tighten.

Step 10 - Insert padlocks through the locking pin holes (FIG.K) at both ends.

NOTE: Padlocks are not included. It is recommended to use 1/4" diameter "U" shank locks.



NOTE: There is a 1" FPT Port in the middle ring on both sides that can be used to install additional accessories such as chlorinators or sensor etc.

ACCESSORIES

SPOOL CABLE SEALS (FLOWING WELL SPOOLS)

Electrical cables installed through a flowing well Pitless Spool (FIG.1-A) are sealed using “Cable Seals” (B) designed to make a watertight seal that prevents water from rising up through the spool (A) and entering the upper barrel.

Cable seals (sold separately) have either 1/2” or 3/4” MPT Straight NPT threads (C) and may require a reducer bushing (D) to reduce the port (E). See FIG.2 chart for spool tapping sizes and FIG.3 chart for cable seal connection 1/2” or 3/4” depending on pump cable O.D. being installed.

- Gray Nylon Body (FIG.4-E) and Compression Cap Nut (4-B) are resistant to impact and corrosion
- White Nylon Washer (4-C)
- Neoprene O-Ring (4-F)
- Rubber grommets (4-D) are color-coded for easy identification. They provide a liquid-tight seal and restrain cable
- UL File Number: E76954
- CSA File Number: LR32159

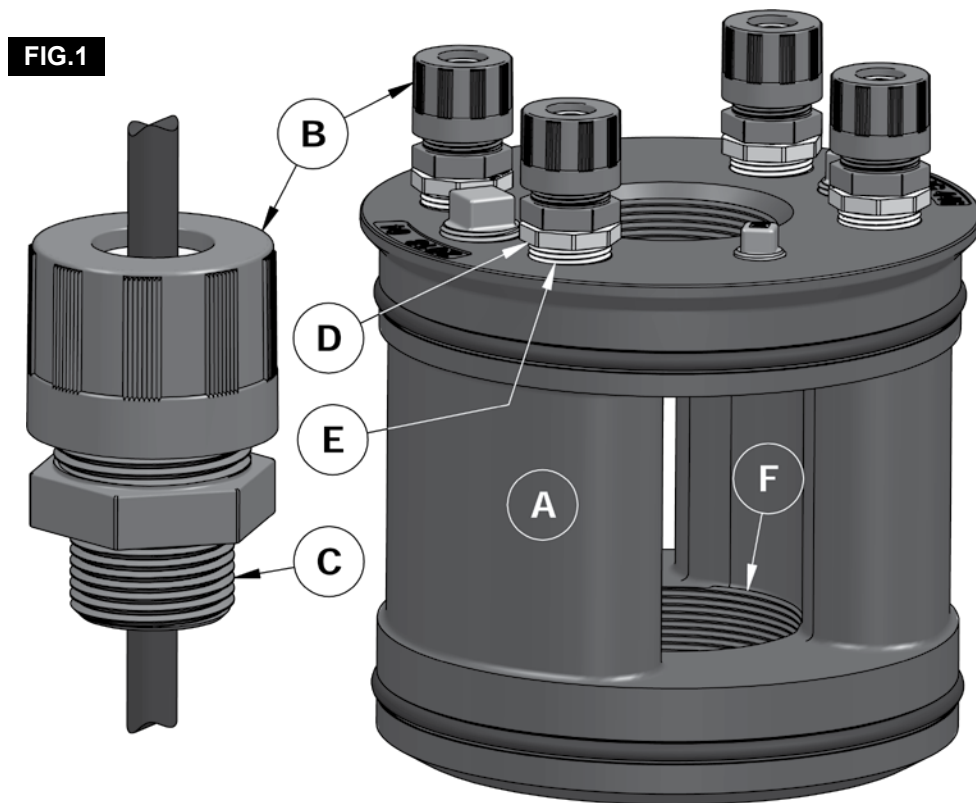


FIG.2

Pitless Unit Size	Drop Pipe FIG.1-F	#of Tapings FIG.1-E	Taping Size FIG.1-E
5"	2" FPT	4	3/4"
6"	2" FPT	Not Available	
6"	3" FPT	4	3/4"
8"	4" FPT	6	1"
10"	4" FPT	Not Available	
10"	6" FPT	6	1"
12"	6" FPT	6	1-1/4"

ACCESSORIES

FIG.3 Cable Seal Part Number	Cable Seal Connection	Cable Dia Range (Inch)		Grommet Colour	US Pump Cable		CAN Pump Cable
		Min.	Max.		PVC Insulation	PVC Insulation / Nylon Jacket	TWU-40C PVC Insulation
					GA GAUGE - (Stands) - Insulation O.D.		
IPA-CS05-0612	1/2" MPT	0.100	0.300	Black	14(1) 0.160" 14(7) 0.198"	14(1) 0.105" 14(19) 0.112" 12(1) 0.122"	
IPA-CS05-1218					0.125	0.187	Yellow
IPA-CS07-1825	3/4" MPT	0.187	0.250	Orange	12(19) 0.189" 10(1) 0.198" 10(19) 0.222"	8(19) 0.220"	14(1) 0.187" 14(7) 0.196" 12(1) 0.205" 12(7) 0.216" 10(1) 0.226" 10(7) 0.237"
IPA-CS07-2537	3/4" MPT	0.250	0.375	Gray	8(19) 0.274" 6(19) 0.315" 4(19) 0.366"	6(19) 0.256" 4(19) 0.325" 3(19) 0.353"	8(1) 0.312" 6(7) 0.348"
IPA-CS07-3743	3/4" MPT	0.375	0.437	Green	2(19) 0.595"	2(19) 0.386"	4(7) 0.395" 3(7) 0.426"
IPA-CS07-4356	3/4" MPT	0.437	0.562	Black	2/0(19) 0.386"	1(19) 0.443" 1/0(19) 0.484" 2/0(19) 0.529"	2(7) 0.458" 1/0(19) 0.550"
IPA-CS07-5062	3/4" MPT	0.500	0.625	Gray	1/0(19) 0.549"	3/0(19) 0.579"	2/0(19) 0.590"
IPA-CS07-6275	3/4" MPT	0.625	0.750	Orange			4/0(19) 0.700"

SPOOL CABLE INSTALLATION

Reduction of the spool tapping may be required
Bushings available see

FIG.2 for spool tapping sizes:

3/4" MPT x 1/2" FPT (P/N 439-101)

1" MPT x 1/2" FPT (P/N 439-130)

1" MPT x 3/4" FPT (P/N 439-131)

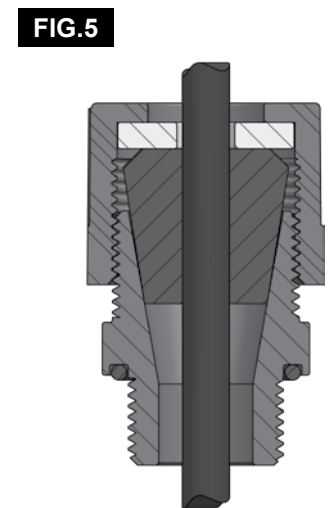
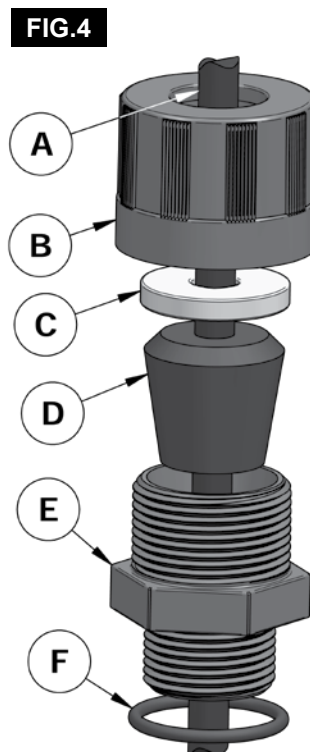
1-1/4" MPT x 1/2" FPT (P/N 439-166)

1-1/4" x 3/4" FPT(P/N 439-167)

2. Install cables seal bodies (E) in spool, make sure to install O-Ring (F) and use quality PTFE thread seal tape to ensure a water tight seal, the straight thread will bottom out and compress the O-ring against the spool.

3. Insert Pump Cable conductors individually through the spool and cable seal grommet (D), Nylon Anti-Friction Compression Washer (C) and Compression Cap Nut (B) as shown in FIG.4.

4. Tighten the Compression Cap Nut to compress the grommet (FIG.5), until the cable is securely gripped.

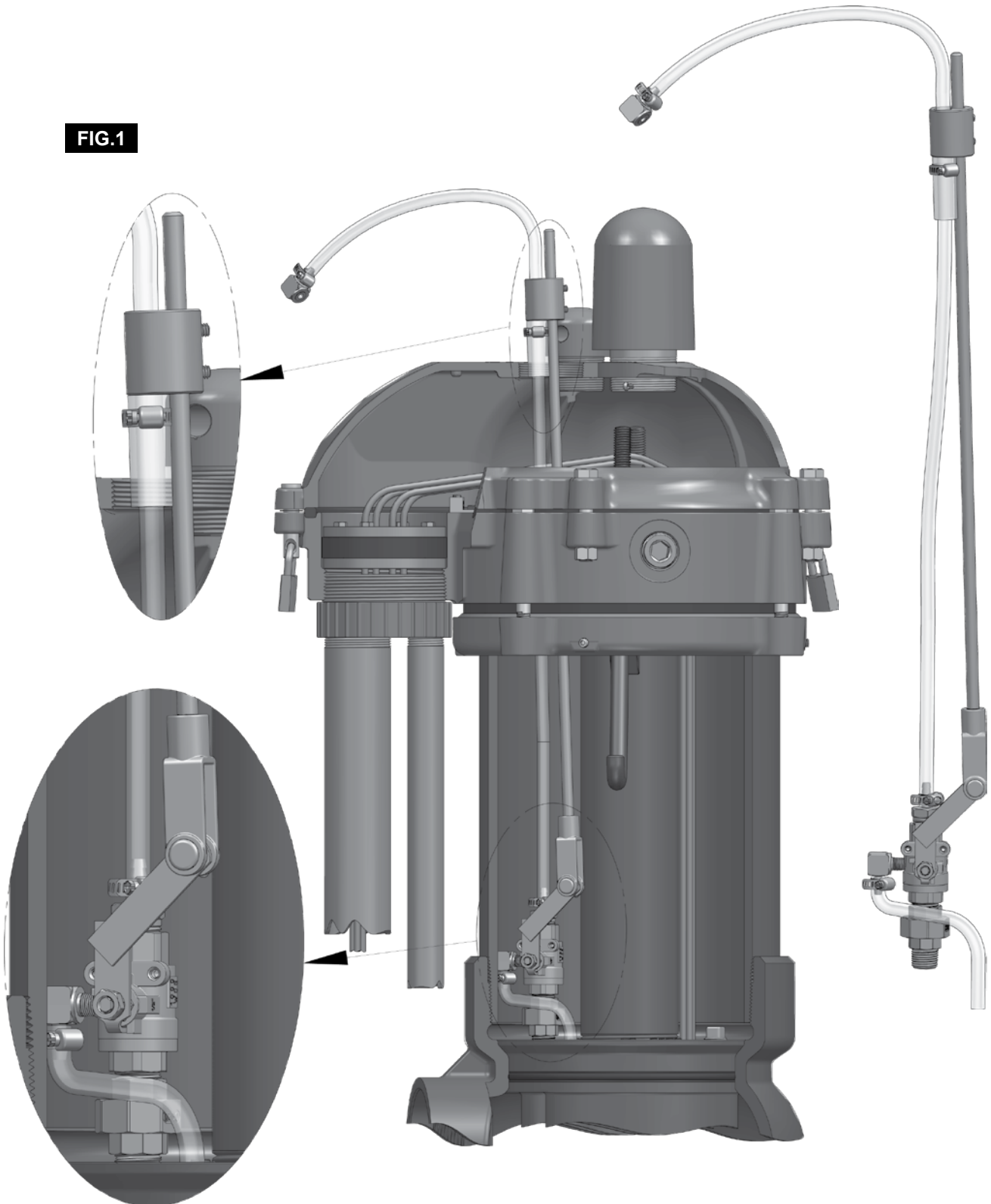


WATER SAMPLING VALVE KIT

Water sampling valves provide a means to acquire a water sample at the well head. The WSVK05-12 water sampling valve kit has a non-freeze design which allows for sampling in all seasons.

The kit comes complete with a valve, lockable cap and union connection for quick and easy installation and operating rod / tubing to accommodate bury depths from 3 ft. to 10 ft. Simply cut to desired length when installing.

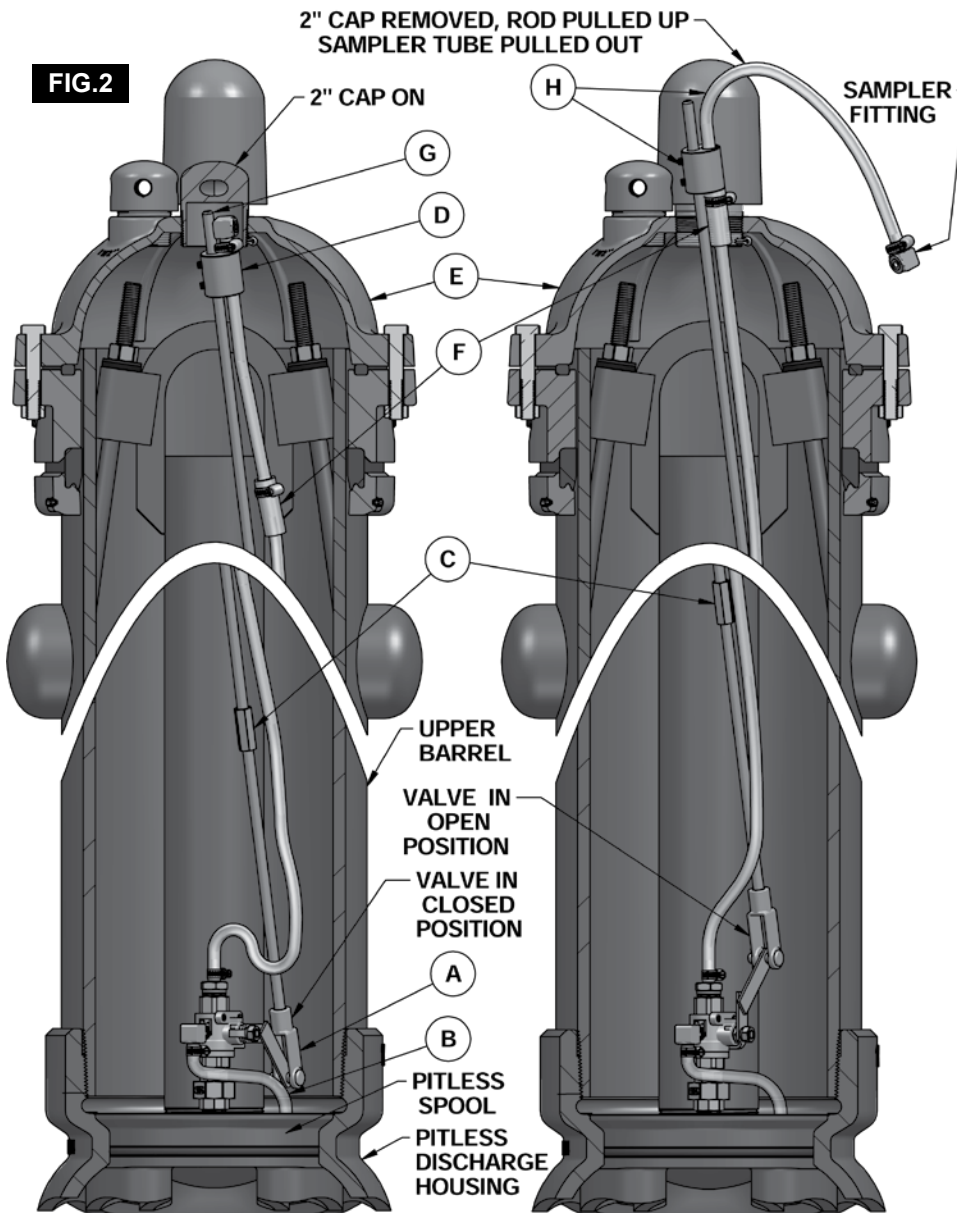
FIG.1



WATER SAMPLING VALVE KIT

WSVK05-12 WATER SAMPLING VALVE INSTALLATION

1. Install the water sampling valve to the pitless spool before the spool is lowered down the upper barrel and seated in the pitless discharge housing. Orientate the water sampling valve so it fits within the inside diameter of the upper barrel (FIG. 2-A).
2. The 2 ft. long tube attached to the ball valve is the drain tube. Feed it down one of the through passages in the spool so water can drain back down the well (FIG. 2-B).
3. Use the threaded coupling to attach the two 6 ft long rods together. **Tip:** the 2nd rod will not be required if the Pitless bury depth is 4 ft. or less. The 2nd rod will be required with any bury depth more than 4 ft. (FIG. 2-C).
4. Slide the 2" long piece of 1/2" tube over the 1/4" sampler tube. Then pull the sampler tube and the rod through the brass tube bushing. Install the sampler fitting in the end of the sampler tube, to ensure that the sampler tube will not slide back down through the bushing, and lock the bushing to the rod with the set screws. This will keep the end of the sampler tube above the top of the upper barrel after the spool is lowered into the pitless discharge housing. The spool can now be installed into the discharge housing (FIG. 2-D).



5. The well cap cover with the 2" cap removed can now be installed. Put the rod with the brass bushing attached up through the open 2" FPT port in the top of the cover. With the valve closed and the cover in place, loosen the set screws in the bushing and adjust the brass bushing so it is below the cover with the sampler fitting on the sampler tube flush with the top of the cover, then mark where the top of the bushing is on the rod. Pull the rod up to the valve open position, align the top of the bushing to the mark on the rod and re-tighten the set screws (FIG. 2-E).

6. Fasten the 2" long piece of 1/2" tube over the 1/4" sampler tube so that when the sampler tube is pulled up, the piece of 1/2" tube will make contact with the brass bushing and pull that up as well. The brass bushing is attached to the rod connected to the ball valve so when pulled up, the ball valve will open (FIG. 2-F).

7. Cut the rod off so it protrudes about 1/4" above the top of the well cap cover when the valve is in the closed position (FIG. 2-G).

8. To open the valve, pull the sampler tube up through the bushing until the short 1/2" tube makes contact. Keep pulling tube up which will pull the rod up until the valve is open. To close the valve, push the rod back down until the valve is closed, then slide the sampler tube back down through the bushing. The 2" cap can be installed over the rod, bushing and sampler tube (FIG. 2-H).

DEPTH TESTER KIT

The WCDTK depth tester kit is available for 5" through 12" Pitless Units. They can be field installed easily in the well cap cover. Unlike other depth testers, which are installed through the pitless unit's upper barrel, this design eliminates the need to remove and re-install the depth tester plumbing each time the pump is removed for servicing.

Part Number
WCDTK

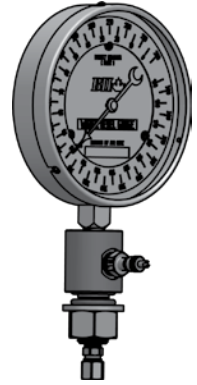


FIG. 2

6" Pitless Unit
(WTCL-C08)
8" C.I. Well Cap

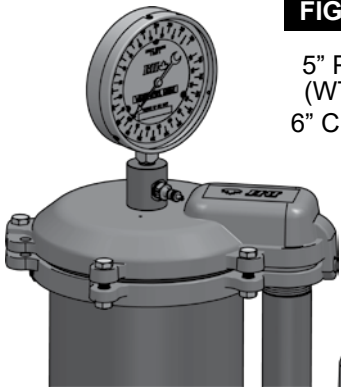


FIG. 1

5" Pitless Unit
(WTCC-6-12)
6" C.I. Well Cap

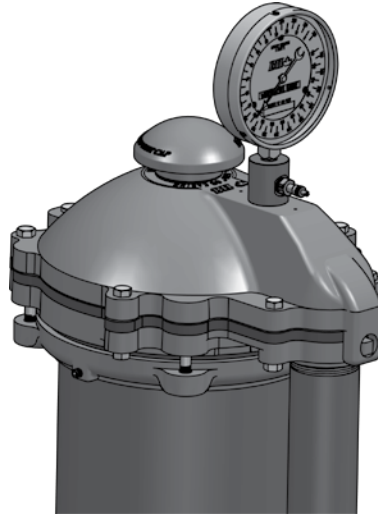


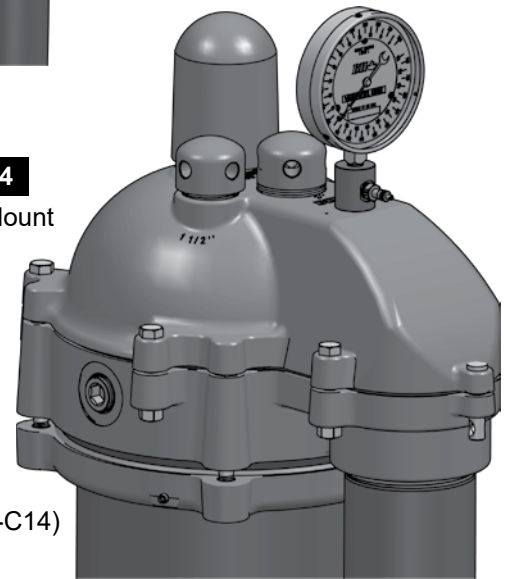
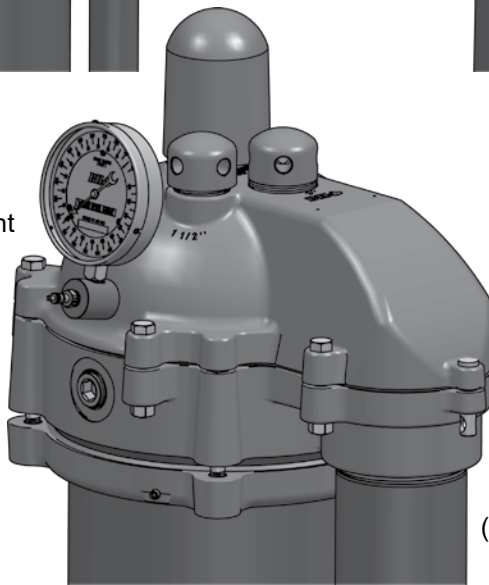
FIG. 4

Top Mount

8", 10" & 12"
Pitless Units
(WTCL-C10, -C12 & -C14)
C.I. Well Caps

FIG. 3

Side Mount



DEPTH TESTER INSTALLATION

1. Determine a suitable location for your installation (FIG. 1) to four for possible locations.
2. Center punch the well cap cover (E) in desired location for the pilot drill bit of the hole saw to prevent wandering.
3. Drill through the well cap (E) using a 3/4" hole saw and remove any burrs.
4. Remove the 3/4" lock nut (H), washer (G) and lower O-ring (F).
5. Insert the depth tester body (B) through the well cap, and replace the lower O-ring, washer and 3/4" lock nut.
6. Tighten the lock nut (H) until the O-rings (D & F) are fully compressed and the depth tester is firmly secured.
7. Attach the 1/4" O.D. air line (J) in the 1/8" MPT x 1/4" compression fitting (I). Make sure to use a stiffener if using plastic tubing.

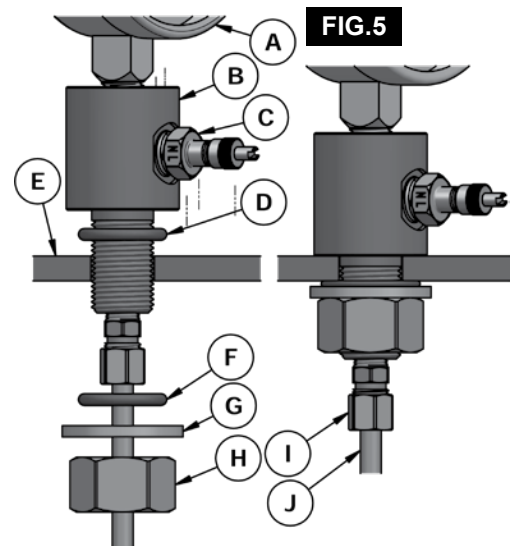


FIG. 5

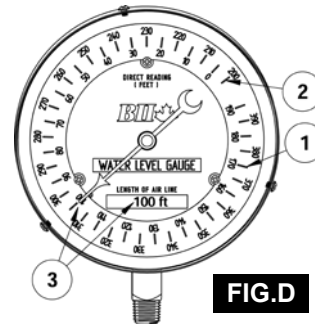
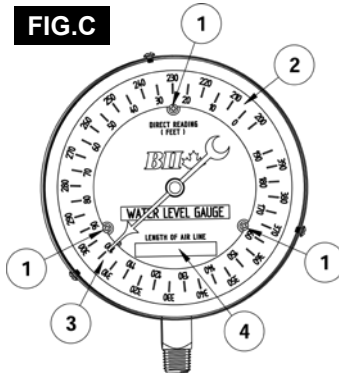
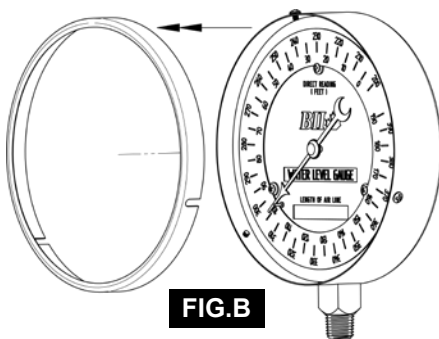
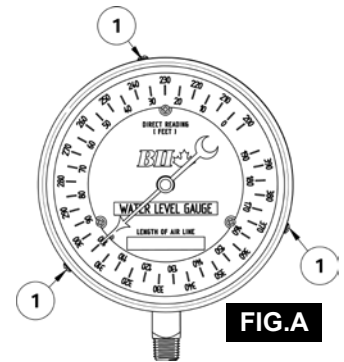
DEPTH TESTER KIT

INSTRUCTIONS FOR PG45-WL 4-1/2" WATER LEVEL GAUGE

To change the setting of the adjustable dial ring, loosen the three screws on the outside of the gauge (FIG.A-1), and remove the ring and glass from the gauge (FIG.B).

Loosen the three lock screws on the gauge face (FIG.C-1) and rotate outer disc (FIG.C-2) by pressing fingers on surface near outer edge until the air line length on the dial aligns with the needle (FIG.C-3). The length of the air line should be marked in the block provided on inner dial (FIG.C-4) to provide a permanent and ever present record of the length of airline (FIG.D). The readings are taken on the inner scale (FIG.D-1) if the air line length is up to 190 ft. Where air line length exceeds 200 ft. the same procedure as outlined above is followed, except that readings are taken on the outer scale of the adjustable dial ring when water level exceeds 190 ft. (200-390 ft.) from surface (FIG.D-2).

The example shown (FIG.D-3) is set at 100 ft. of air line.

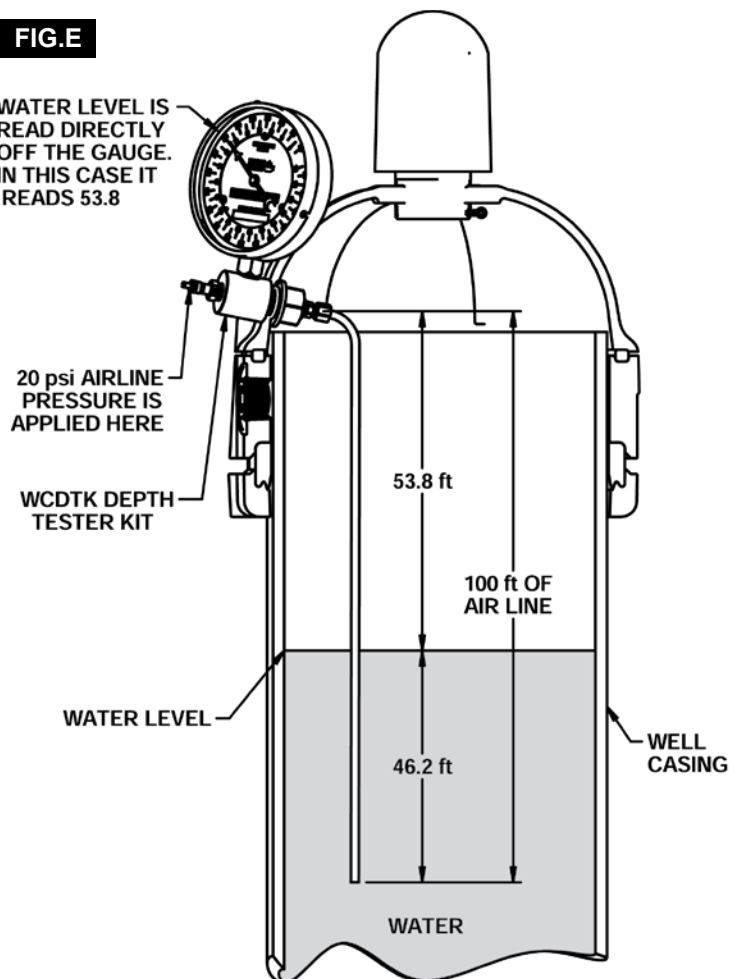


The adjustable dial ring is set for the length of the air line. Air pressure is then applied to the air line, purging the air line of water and causing the pointer to move away from the stop pin in a clockwise direction. When the air line has been completely purged of water the needle will remain stationary, indicating the water level in feet from the surface (FIG. E).

In the example (FIG. E) there is 100 ft. of air line. The air line consists of a small diameter pipe or tube long enough to extend to a point about 20 ft. below the lowest anticipated water level. The air line should be hung vertically without any bends or twists in it, and the exact length should be known. In the example, the bottom end of the air line is 46.2 ft. below the surface of the water, therefore the water level from the top of the well = $100 - 46.2 = 53.8$ ft. When air is blown through the air line, the needle in PG45-WL Water Level Gauge will indicate this water level in feet. (53.8 ft. in this example).

FIG. E

WATER LEVEL IS READ DIRECTLY OFF THE GAUGE. IN THIS CASE IT READS 53.8



CONDUIT CABLE SEAL

The conduit cable seal consists of a top and bottom plate, a rubber gland and hardware (FIG.1-A). They provide a watertight / vermin proof barrier between the conduit (FIG.1-B), ensuring that no contamination can enter the well chamber (FIG.1-C) through the conduit. All seals are provided with four cable holes (FIG.2-A) which are available for a wide selection of pump cables ranging from 14 gauge through 4/0 heavy-duty pump cables. Two additional holes are provided in the top and bottom plates to allow easy field modification to add additional sensor cables through the seal (FIG.2-B). All seals can be easily converted to three cable pump installations by simply inserting a stainless steel pin provided (FIG.5-A) into one of the cable holes (FIG.5-B) and will seal off the hole when the rubber gland is compressed by tightening the bolts (FIG.5-C).

FIG.1

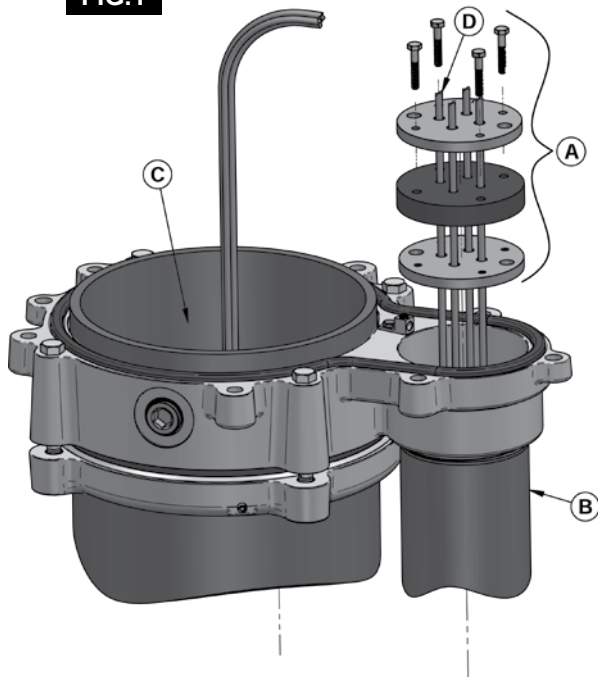


FIG.2

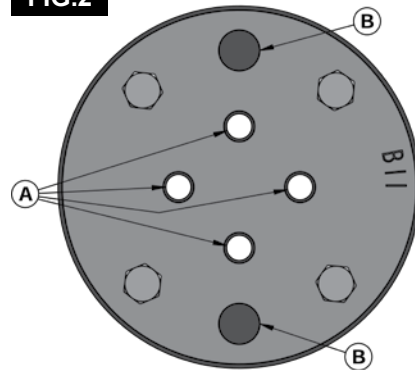


FIG.3

WTCL-CS12
SERIES

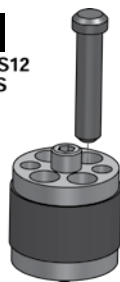


FIG.4

WTCL-CS20
SERIES



FIG.5

WTCL-CS40
SERIES

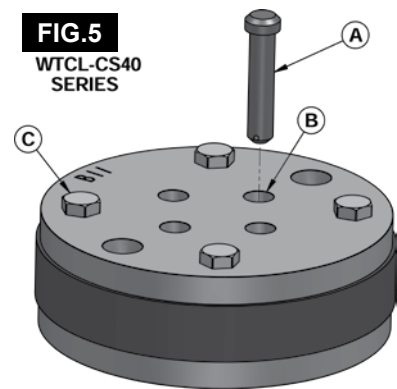


FIG.6

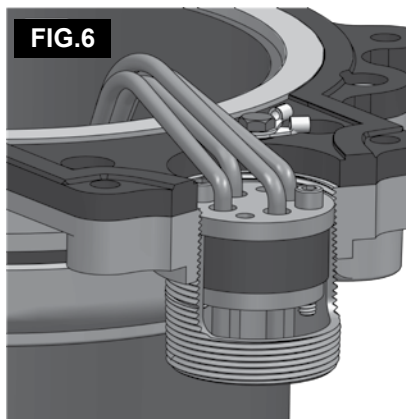
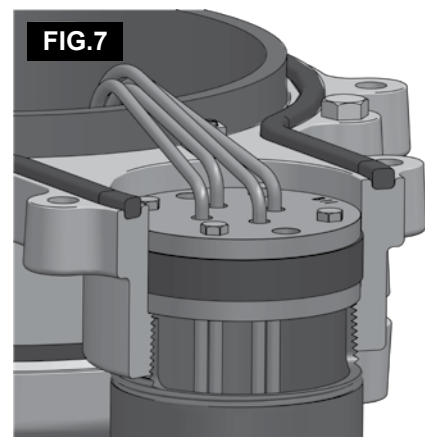


FIG.7



CONDUIT CABLE SEAL

CONDUIT CABLE SEAL SELECTION GUIDE

CAUTION: To be used as a "GUIDE ONLY" - the Outside Diameter (O.D.) of cable may vary from one manufacturer to the next, and may also change without notice. Always verify cable diameters with the applicable wire manufacturer.

1-1/4" Conduit Seal (FIG.3) Part Number	2" Conduit Seal (FIG.4) Part Number	4" Conduit Seal (FIG.5) Part Number	Cable Sealing Range O.D. (In.)		US Pump Cable Size (PVC Insulation)	US Pump Cable Size (PVC Insulation / Nylon Jacket)	TWU-40C Canadian Pump Cable Size (PVC Insulation)
			Min.	Max.			
5" Pitless Units	6" Pitless Units	8", 10" & 12" Pitless Units			GA Gauge (Strands) Ins. O.D.	GA Gauge (Strands) Ins. O.D.	AWG Gauge (Strands) Ins. O.D.
WTCL-CS12-187-4	WTCL-CS20-187-4	WTCL-CS40-187-4	0.087	0.187	14(1) 0.160" 14(7) 0.171" 12(1) 0.179"	14(1) 0.105" 14(19) 0.112" 12(1) 0.122" 12(19) 0.130" 10(1) 0.153" 10(19) 0.164"	14(1) 0.187"
WTCL-CS12-312-4	WTCL-CS20-312-4	WTCL-CS40-312-4	0.187	0.312	12(19) 0.189" 10(1) 0.198" 10(19) 0.222" 8(19) 0.274"	8(19) 0.220" 6(19) 0.256"	14(7) 0.196" 12(1) 0.205" 12(7) 0.216" 10(1) 0.226" 10(7) 0.237" 8(1) 0.312"
	WTCL-CS20-437-4	WTCL-CS40-437-4	0.312	0.437	6(19) 0.315" 4(19) 0.366" 2(19) 0.428"	4(19) 0.325" 3(19) 0.353" 2(19) 0.386"	6(7) 0.348" 4(7) 0.396" 3(7) 0.426"
		WTCL-CS40-563-4	0.437	0.563	1/0(19) 0.549"	1(19) 0.443" 1/0(19) 0.484" 2/0(19) 0.529"	2(7) 0.458" 1/0(19) 0.550"
		WTCL-CS40-700-4	0.563	0.700	2/0(19) 0.595" 3/0(19) 0.610" 4/0(19) 0.670"	3/0(19) 0.579" 4/0(19) 0.635"	2/0(19) 0.590" 4/0(19) 0.700"

CONDUIT CABLE SEAL INSTALLATION

1. Make sure the compression bolts (FIG.5-C) are not applying pressure to the rubber gland (FIG.5-C).
2. Insert the pump cable (FIG.1-D) and additional sensor cables when applicable) up through the cable seal. To install additional sensor cables through the seal requires drilling holes through the rubber gland. Select a drill bit equal to or slightly larger than the diameter of the cable outside diameter and drill the hole(s) centered in the additional holes in the top plate (FIG.2-B).
3. 1-1/4" & 2" CONDUIT SEALS: Make sure the conduit is clean and free of burrs or sharp edges, then press the cable seal down through the well cap into the conduit pipe until the top plate is flush with the top of the conduit pipe (FIG.6).
- 4" CONDUIT SEALS: Press the cable seal down into the pocket above the 4" FPT conduit connection of the well cap until the bottom plate contacts the bottom of the pocket (FIG.7).
4. Verify the wires protrude through the seal to the desired position. Pull additional pump cable through the seal as required.
5. Insert the stainless steel pin (FIG.5-A) in one of the four wire holes (three wire installations Only).
6. Tighten the compression bolt(s) (FIG.5-C) to compress the rubber gland until all the wires are secured / gripped tightly. Apply sufficient pressure on the cable insulation to ensure a water tight seal.

CONDUIT SPLITTER

The WTCL-CS40-2010 Conduit Splitter (FIG.1) provides a means to run the sensor wire in a separate conduit from the submersible pump power cable. Separation is required to eliminate electrical interference issues which would occur if the sensor and power feed cables were run side by side through a single conduit.

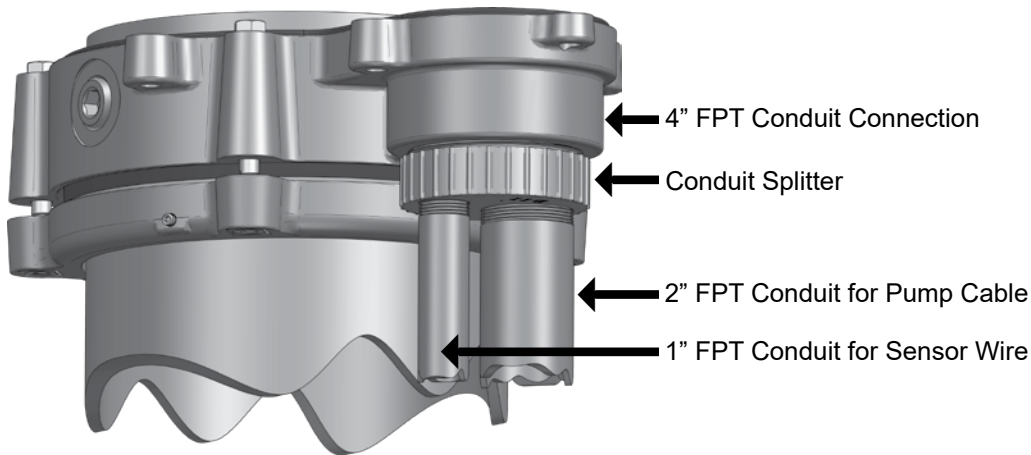
The splitter is threaded into the 4" FPT conduit connection on the 10", 12" & 14" Premium Cast Iron Watertight Well Caps and splits the 4" conduit connection into two conduit connections; one 2" FPT for the power cable and one 1" FPT for the pressure transducer or sensor cable FIG.2

For details on the BII Well Cap Part numbers WTCL-C10 (8" Pitless Units), WTCL-C12 (10" Pitless Units), WTCL-C14 (12" Pitless Units), details on page 74.

FIG.1



FIG.2

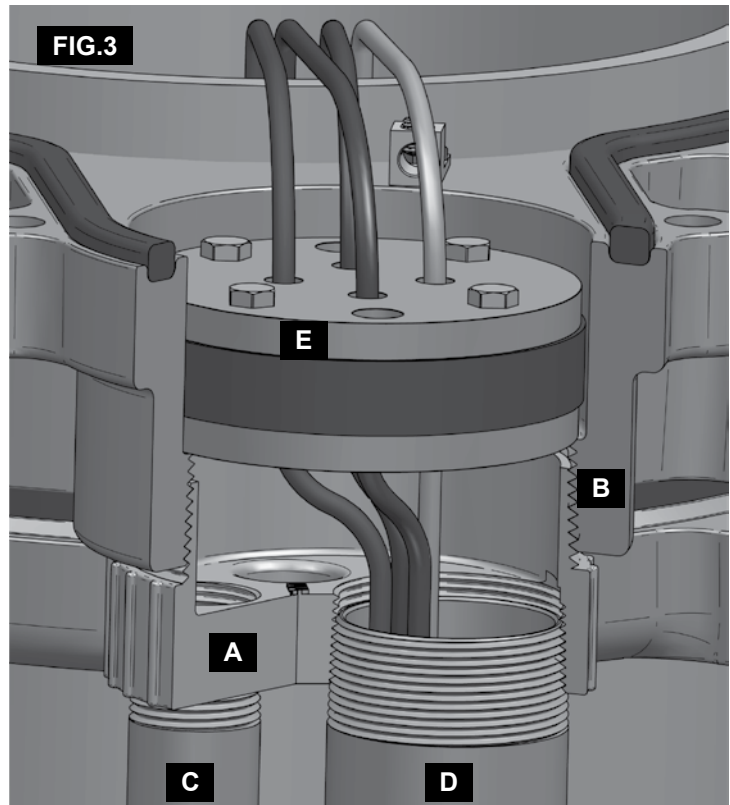


CONDUIT SPLITTER INSTALLATION

1. Make sure pipe connections are clean and free of foreign material.
2. Apply PTFE thread seal tape or thread sealing compound to ensure the pipe joint seals.
3. Hand tighten. The conduit splitter (A) into the 4" conduit connection (B) of the well cap.
4. Wrench tighten. Typical pipe make-up is 1-1/2 turns after hand-tight. Make sure to stop tightening when the 1" FPT and 2" FPT conduit connection are in the desired orientation.

CAUTION: It may not be possible to get an additional 1/2 or full rotation when connection starts getting tight.

5. Install the two conduit pipes C & D and run wires. If installing a conduit cable seal (E), details on page 84.



NOTES

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