Catalog of Pumps

MUTH PUMP

SAND SAND

FARR PLUNGER PUMPS

WWW.MUTHPUMP.COM

"By farr we make your rod pumps the best in the industry"

661-588-8700

Our Mission Statement

Muth Pump is dedicated to giving our customers the highest return on their investment, by “Farr”.

We accomplish this by producing a down hole rod pump that will stay in the ground several times longer than our competitors.

Initially, the Farr pumps and plungers will cost a little more, but cost savings will come in the form of longer production life (generally 300%).

This will result in fewer well pulling’s, fewer pump repairs, less down time, more production, fewer personnel on the lease, which reduces the chances of environmental, health and safety issues.

Our goal is to resolve the customer’s problems, not repeat the same old pump repairs on the same old problems over and over. We want to give the customer the results that will exceed their expectations.

Table of Contents

Muth Pump is a supplier of conventional (API type) insert & tubing pumps for the oil and gas industry. We also manufacture and sell state of the art specialty pumps that resolve problems that have plagued the oil and gas industry for more than a hundred years.

The president of **Muth Pump** has 53 years working in the oil and gas industry after being honorably discharged from the U.S. Navy in 1963. He has seen it all over the years. He has become extremely frustrated through the years with the down hole rod pump manufacturers and suppliers to the oil and gas industry. Why haven't there been any significant improvements to resolve issues like gas locking, sanding issues and very short pumping run life???

This is why **Muth Pump** has invested over two million dollars over twenty years into research and development (R & D) to resolve these issues.

Check out the ***specialty*** pumps that we have developed as a result of our R & D work over the years.

Conventional API Pumps

API RW Pumps

API RH Pumps

API TH Tubing Pumps

Specialty Pumps

“Farr” Plunger Pumps

The “Farr” plunger was developed to stop solids (sand) from getting between the plunger and the pump barrel. When this situation exists, the abrasive solids will cause the two metal surfaces to wear faster than normal. As these two surfaces wear, the pump efficiency of the pump is eroded to a point where the pump needs to be pulled and replaced. (See Major Design Flaw)

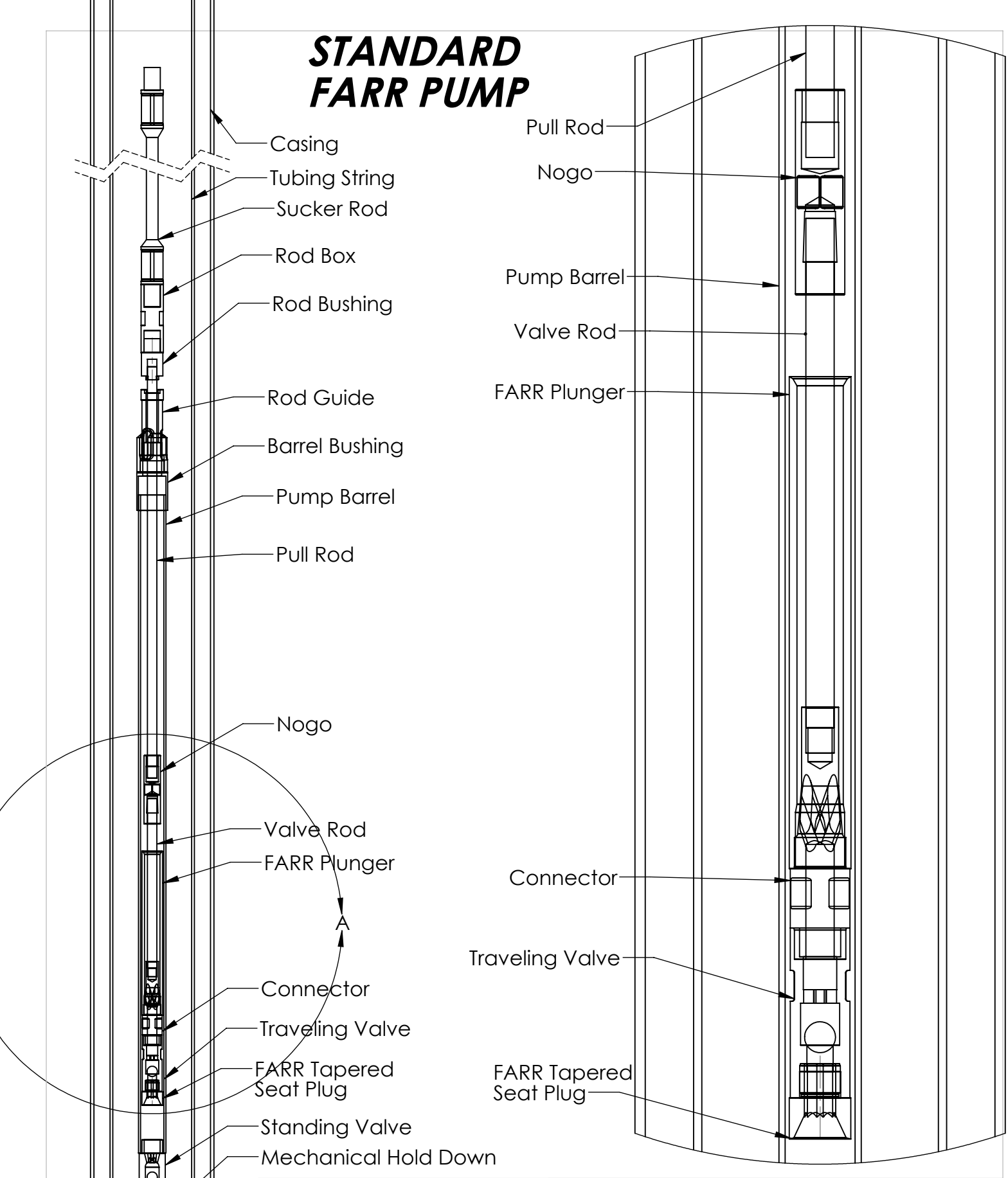
The solids will also cause the plunger to get stuck inside the pump barrel, which will result in the pump having to be pulled.

With the newly patented design of the Farr plunger, all of the fluid and solids are diverted inward into the center of the plunger by 97%. This virtually leaves next to nothing to wear out the pumps surfaces.

According to numerus studies from around the world by oil and gas companies, the Farr plunger adds on average 300% increase to the run life of their down hole rod pumps. A few have reported as much as 600%.

Needless to say, the Farr plunger is the back bone of Muth Pump, affording oil and gas companies around the world to save hundreds of thousands of dollars in costly well pulling and pump repairs. Not counting the fact that fewer well pulls means; fewer rigs on the lease, fewer personnel, and fewer health, safety and environmental issues for the company.

STANDARD FARR PUMP



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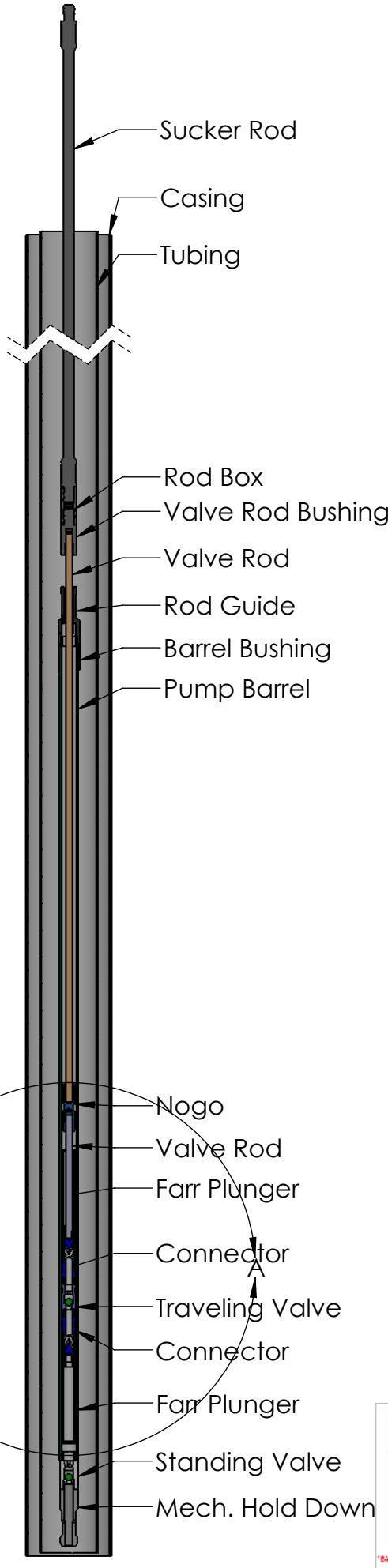
SIZE	DWG. NO.	REV.
A	STANDARD FARR PUMP	
	WEIGHT:	SHEET 1 OF 1

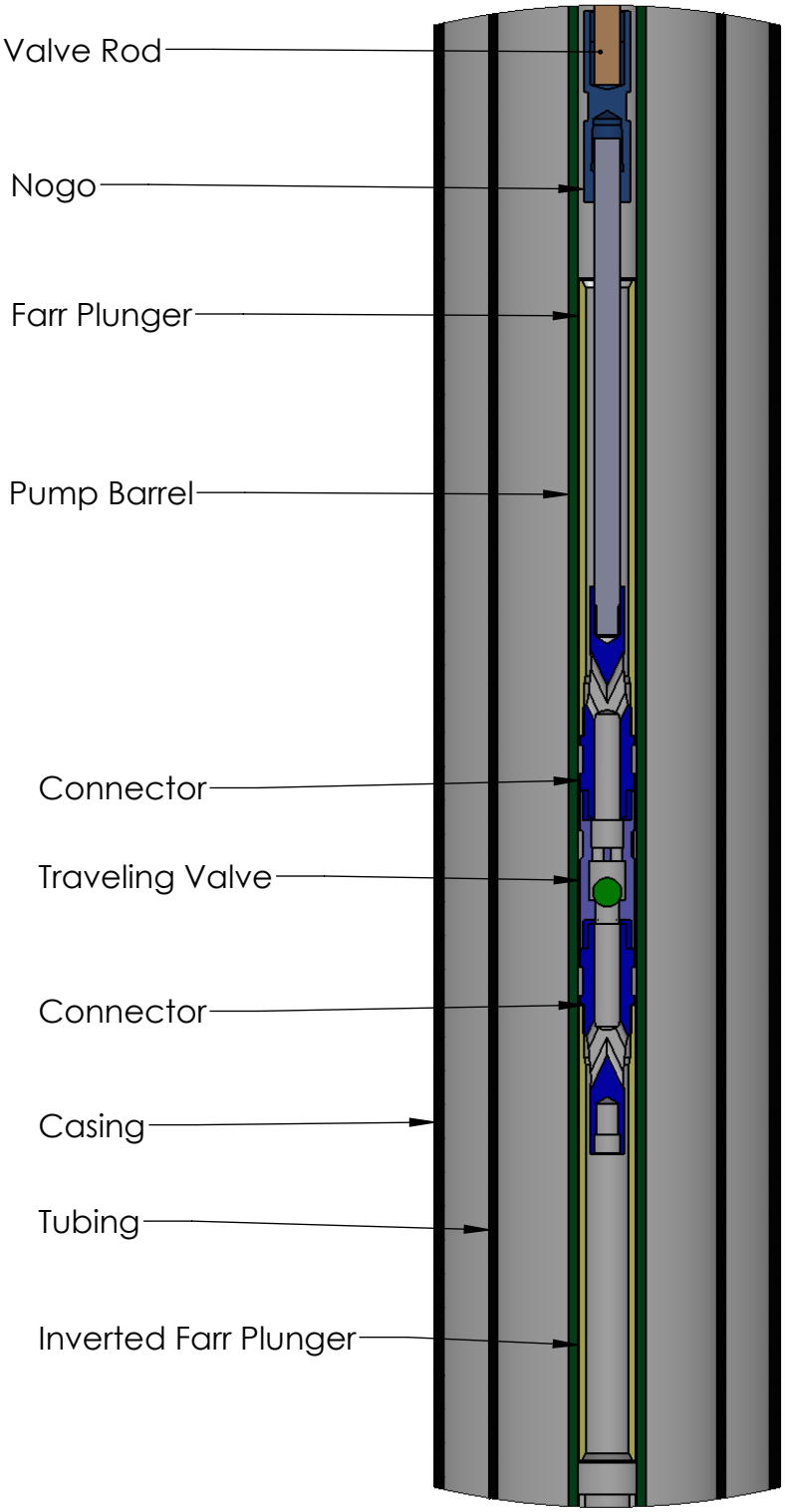
Specialty Pumps

Double Ended Farr Pumps

Over the years we have noticed a few Farr plungers that have had a shorter run life than the normal 300% run life. We found in most of these cases it was due to flour sand migrating up from the bottom of the pump and sticking the plunger. This is way we developed the double ended Farr to prevent flour sand from sneaking in from under the Farr plunger where there is not a taper like on top. Now sand is funneled into the center of the plunger regardless if it comes in from the top or the bottom of the pump.

Double Ended
Farr Pump Assembly





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PATENT PENDING 14/224979

SIZE	DWG. NO.	REV.
A	Farr Pump Assembly DE	
	WEIGHT:	SHEET 1 OF 1

THFM
Tubing Pump Assembly

The **THFM** is a **T**ubing pump, **H**eavy wall, **F**arr plunger and **M**echanical hold down pump. It is designed to pump solids while maintaining higher pump efficiencies and longer pump run times. Even though it is a tubing pump with a wild mechanical (removable) standing valve #36-42, it is designed to be run as a Slim Hole (oversized tubing pump) to maintain the integrity of the specially designed Farr plunger #FR4. We recommend running the Farr plunger #FR4 inside the pump barrel with an FARR™ Coupling Tool l #DN6 for two reasons: one - eliminating the possibility of damage to the plunger while lowering it through the tubing on the sucker rod string in crooked holes, second - by mishandling (rough use) by the well pulling crew.

Assembling in the pump shop

Assembling of the THFM should be the same as if it were a regular THE or THM tubing pump. After the pump barrel #24 is assembled with the upper #22 and lower nipple extensions #26 and the seating nipple #27, place the standing valve assemble #36-42 in the pump barrel assembly #21-27 and seat it into the seating nipple #27. The lower extension nipple #26 should never be longer than two (2') feet. Place the Farr plunger assembly #DN6-#35 inside the pump barrel assembly #21-27 and latch the puller #35 (lock type) to the pin #36 of the standing valve assembly #36-42. The polish rod #DN2 between the Farr plunger #FR4 and the FARR™ Coupling Tool pin #DN6 should be long enough so the pin of the FARR™ Coupling Tool #DN6 will stick out of the pump barrel assembly #21-27 and be up in the tubing above. ***Warning*****,** do not attach the body of the FARR™ Coupling Tool to the pin of the FARR™ Coupling Tool. If the body is attached to the pin, you will not be able to separate them without disassembling the body of the FARR™ Coupling Tool. It is designed to connect down hole and not release until at the surface.

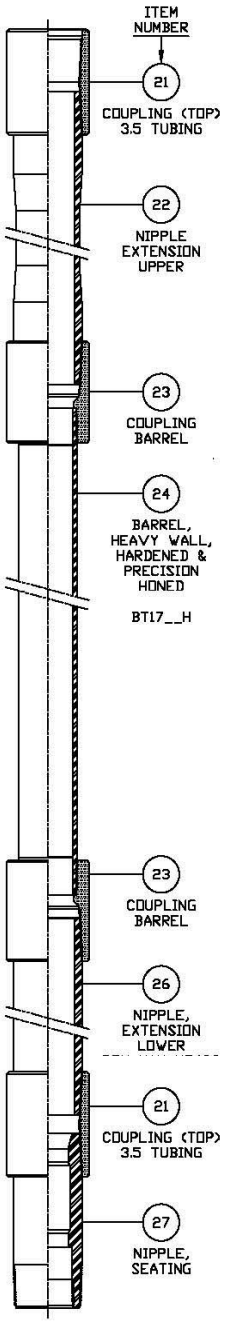
Running Procedure

Pick up the complete Pump Barrel Assembly #21-27 with the FARR™ Plunger Assembly #DN6-35 and the Standing Valve Assembly #36-42 inside of the barrel and place in the hole. Run the complete assembly in the hole with the tubing string to the desired depth and land the tubing on the well head. Pick up the first stand of sucker rods and place the body of the FARR™ Coupling Tool #DN6 on the bottom of the string. Run the sucker rod sting in the hole until the Body of the FARR™ Coupling Tool #DN6 latches on to the Pin of the FARR™ Coupling Tool #DN6. Once on, it will not release. Release the plunger assembly #DN6-35 from the standing valve #36-42 by setting weight down on the rod string and rotating left or right to disengage the puller #35 on the plunger ("J" slot) from the pin #36 on the standing valve. Pull plunger up to desired pumping depth in the barrel. Hang the well on and start pumping.

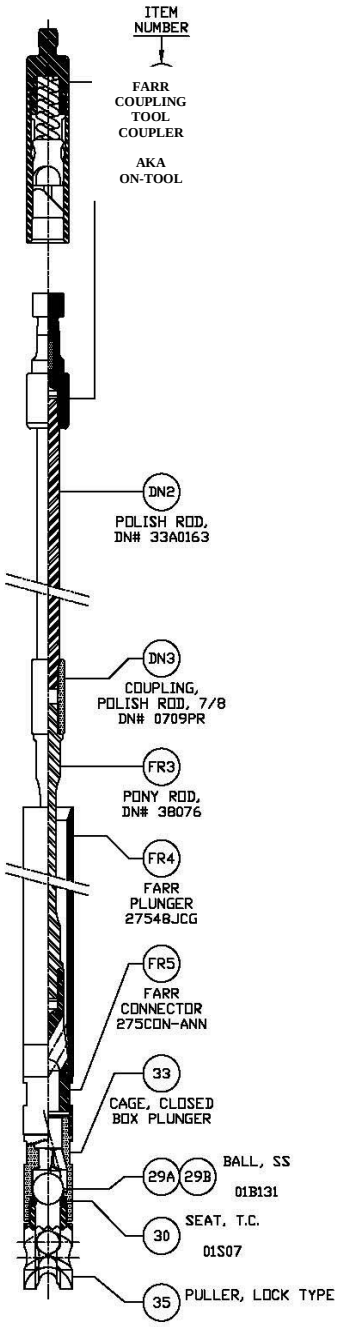
Pulling Procedure

Lower rod string down to engage the puller #35 on the plunger ("J" slot) to the pin #36 on the standing valve. Pull the standing valve #36-42 and plunger #DN6-35 assemblies out of the hole with the rod string just as you would if it was a regular tubing (THE or THM) pump.

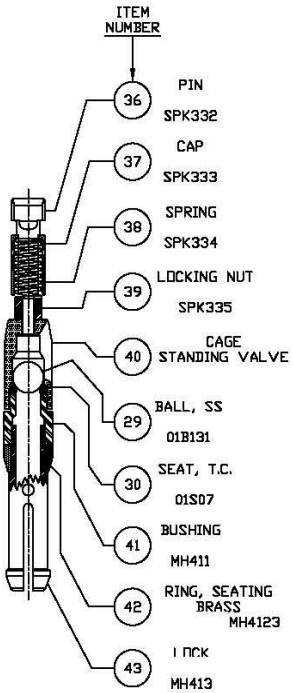
TUBING ASSEMBLY



FARR PLUNGER ASSEMBLY



STANDING VALVE ASSEMBLY



	MAINTENANCE SUPPORT SERVICES	ITEM NO: ITEM #21 THRU # 43
2 3/4" FARR / FULL BARREL TUBING PUMP ASSEMBLY		2.75 TBG PUMP

Specialty Pumps

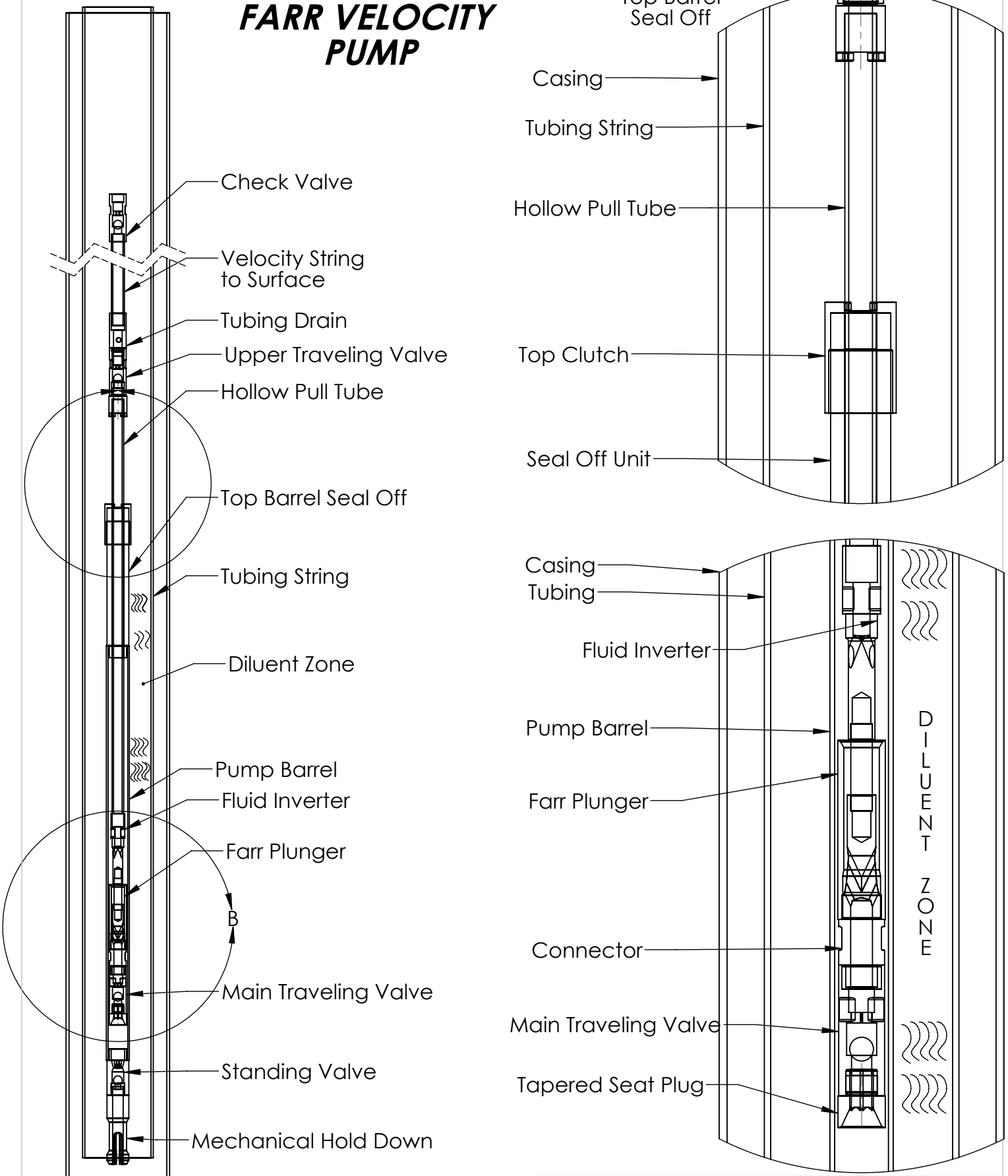
Farr ”Velocity” Pumps

The Velocity Pump has the same sand handling characteristics as does the Standard Farr pump with some additional attributes such as anti-gas locking capabilities. If you are in a pumped off condition, it will actually pump gas until the fluid level returns to the pump. In other words, the hydrostatic fluid column in the tubing will not hold the traveling valve closed which is what causes gas locking situations. This is an excellent pump for de-watering gas wells especially if there is any sand in the produced fluid. Also, it can be used with a pump off controller or time clock to shut down the pump temporally.

This pump is equipped with a fluid inverter which allows the pump to pump on both the up and down stroke. So you have a steady stream of fluid going up the tubing regardless if the rods are going up or down. The fluid inverter also generates a very high velocity (jet like) to the fluid as it leaves the pump. This is why we call it a velocity pump.

Another advantage to the Velocity pump is you can replace the solid rod string with coil tubing or macaroni tubing (1-1/2” or 1-1/4”) to maintain the velocity and lift the sand all the way to the surface. This will prevent the sand form settling out in the larger I.D. tubing string (2-7/8” or 2-3/8”) and sanding up the tubing.

FARR VELOCITY PUMP



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SIZE	DWG. NO.	REV.
A	FARR VELOCITY PUMP	
SCALE 1:10	WEIGHT:	SHEET 1 OF 1

Specialty Accessories

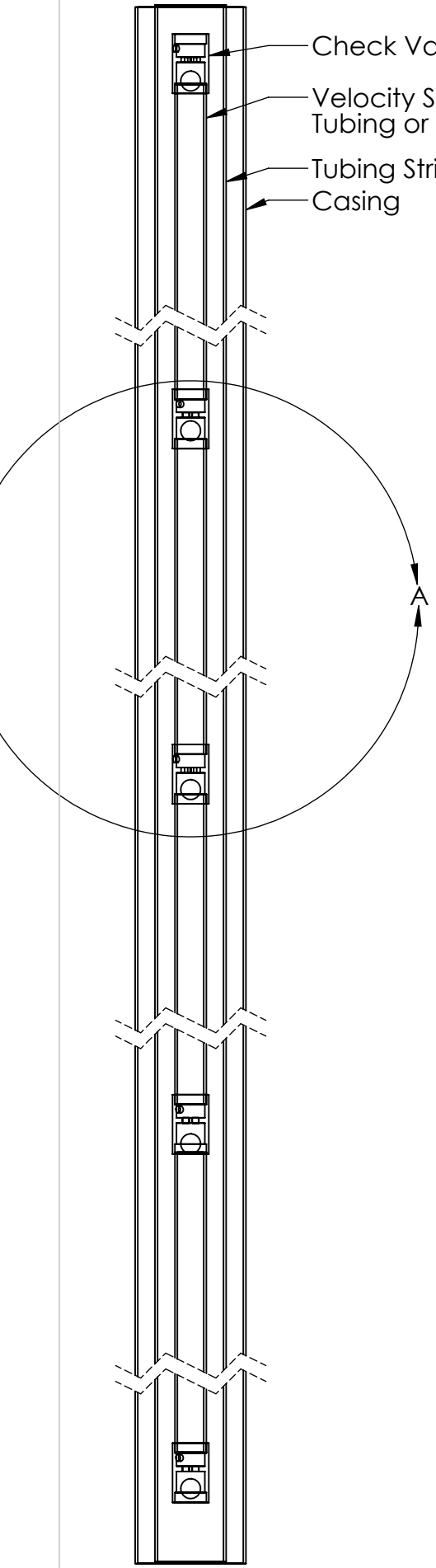
”Velocity String”

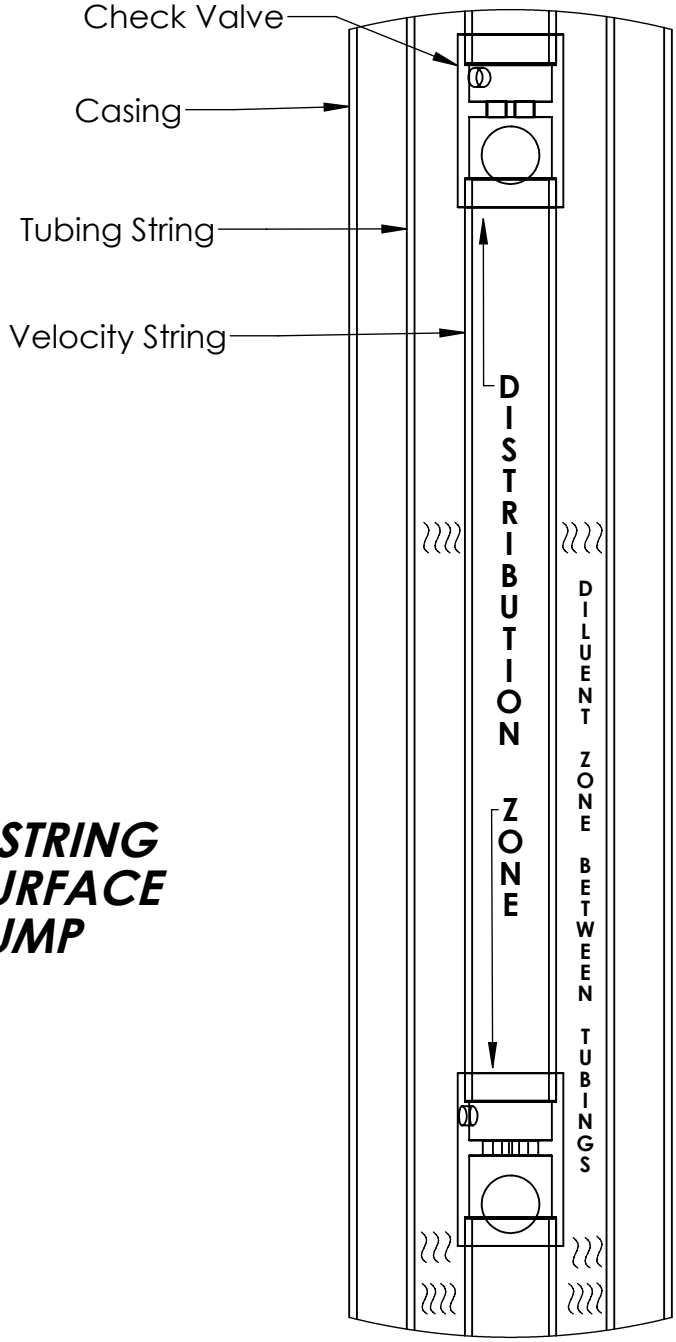
Between the Velocity Pump and the Surface.

The Velocity String was designed to take advantage of the high velocity output of fluid from the velocity pump. The velocity string is coil tubing (small I.D.) or macaroni tubing that replaces the rod string inside the main tubing (large I.D.). This is called concentric tubing strings (one inside another one). The velocity string will actually move up and down powering the pump by the pumping unit at the surface. If the pump discharges the sandy fluid into the larger I.D. tubing it will lose its velocity and sand will settle out of solution and sand up the tubing. If the pump discharges the sandy fluid into the smaller I.D. tubing, it will maintain the velocity of the sandy fluid all the way to the surface and will not let the sand settle out of solution.

In a conventional pump system with a rod string inside the tubing string, all of the abrasive sandy fluid is between the rods and tubing causing rod and tubing failures. In the velocity string system, all of the abrasive sandy fluid is in the small I.D. tubing or coil tubing where there are no rods. Thus greatly reducing premature rod and tubing failures.

Consequently, now you have dry coil tubing (power string) going up and down inside main tubing string. We have created a stagnate diluent zone between the two tubing string that can be filled with a clean lubricating fluid to prevent wear.





VELOCITY STRING BETWEEN SURFACE AND PUMP

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SIZE	DWG. NO.	REV.
A	Velocity String Between Surface & Pump	

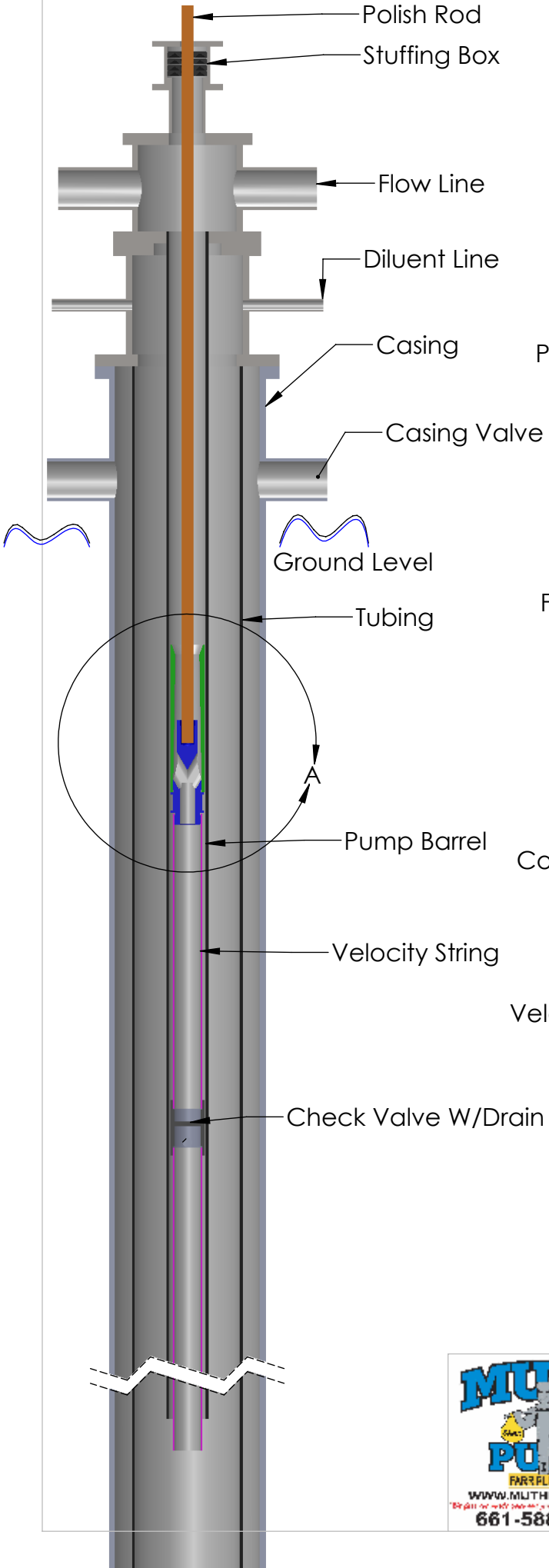
WEIGHT: SHEET 1 OF 1

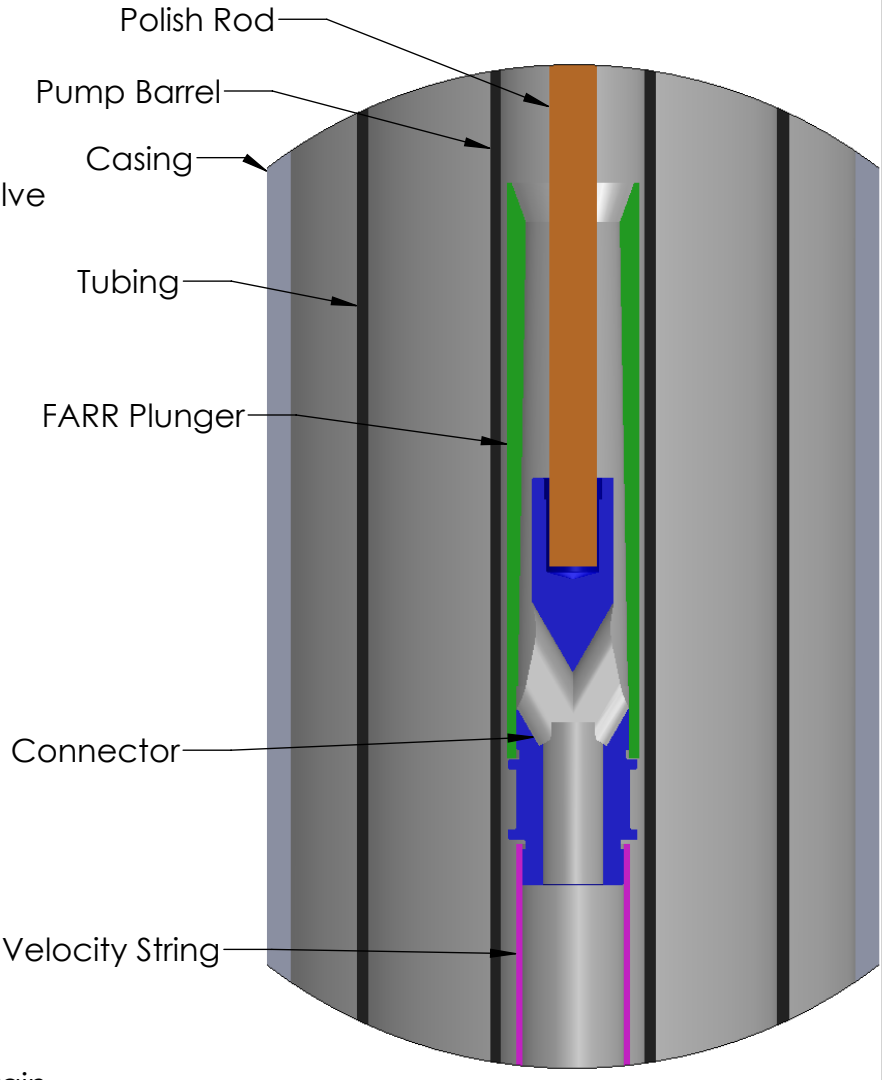
Specialty Accessories

Velocity String ”Surface Unit”

The Surface unit was designed to give a pathway of production fluid between the Velocity string (moving up and down) and the flow line at the surface (stationary) without having a hose flopping up and down at the surface beside the pumping unit. This involves having a sliding sealing unit in the casing between the stationary flow line and the power string tubing. We accomplish this by using an existing farr plunger along with a pump barrel that have a two thousands (.0002) fit. It will also need a couple extra flanges or spools on top of the casing flange at the surface. This allows the flow line, diluent line and the casing vent line to connect through the casing to their separate tubing string, keeping the three separate.

VELOCITY STRING SURFACE UNIT





DETAIL OF UPPER SEALING UNIT

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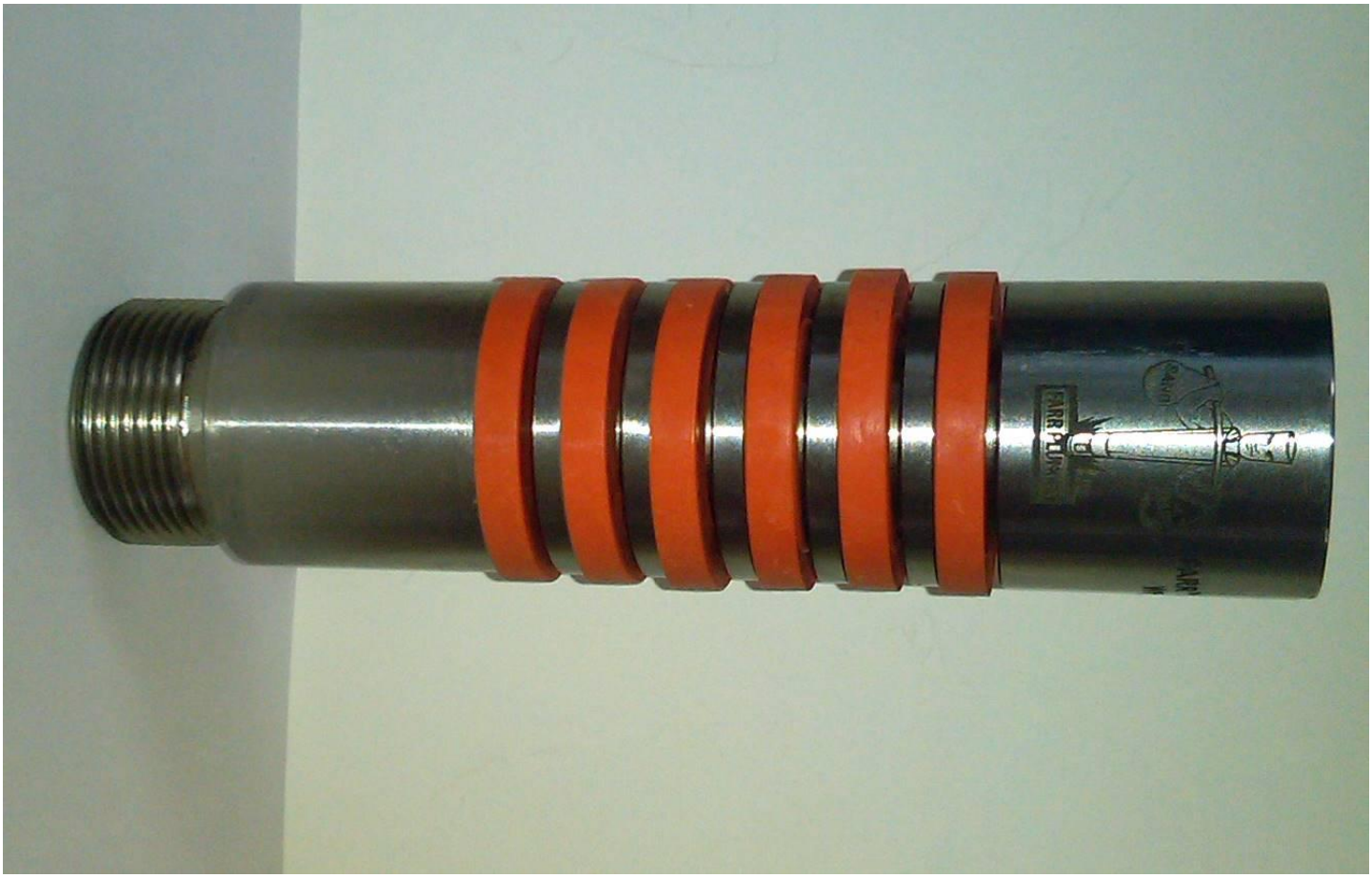
SIZE	DWG. NO.	REV.
A	VELOCITY STRING SURFACE UNIT	

WEIGHT: SHEET 1 OF 1

Farr Wiper Housing

It is highly recommended to run a FARR Wiper housing with FARR Rings in conjunction with the FARR plunger, especially when there is flour (very fine) sand, scale, or coal fines present. All plungers have some slippage between the plungers and pump barrel. It is this slippage (flow) that carries the flour sand down and between the two metal surfaces. By running a wiper between the connector and the traveling valve, this will stop slippage, giving you a total seal off and 100% pump efficiency. The wiper will also prevent the sand from coming up from beneath the plunger, should the plunger be moving downward faster than the sand can settle out of solution. FARR Rings are pressure actuated rings made from a Teflon® base material and are highly resistant to oil filed chemicals and abrasion and can operate in temperatures up to 400ºF.

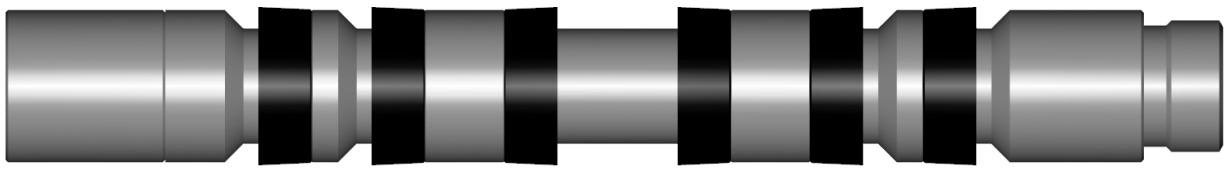


Lubricating Wiper

This wiper was designed for de-watering gas wells where there is very little lubricating properties (or none) in the produced fluid. If there are solids in the produced fluid, this wiper can be run between two opposing “Farr” plungers. If there are no solids, it can be run as a plunger.

We designed this wiper with two cups looking up and two cups down. The cups are interchangeable to have three or four cups looking up or down depending where the majority of the sand is coming from. Also notice the two opposing cups in the center facing one-another. This is the lubricating port. We fill this port (space) with high temperature grease (400%) that will not emulsify with water. This grease is what further lubricates the cups of the wiper and accompanying Farr plungers if any. This will also help extend the run life of the pump.

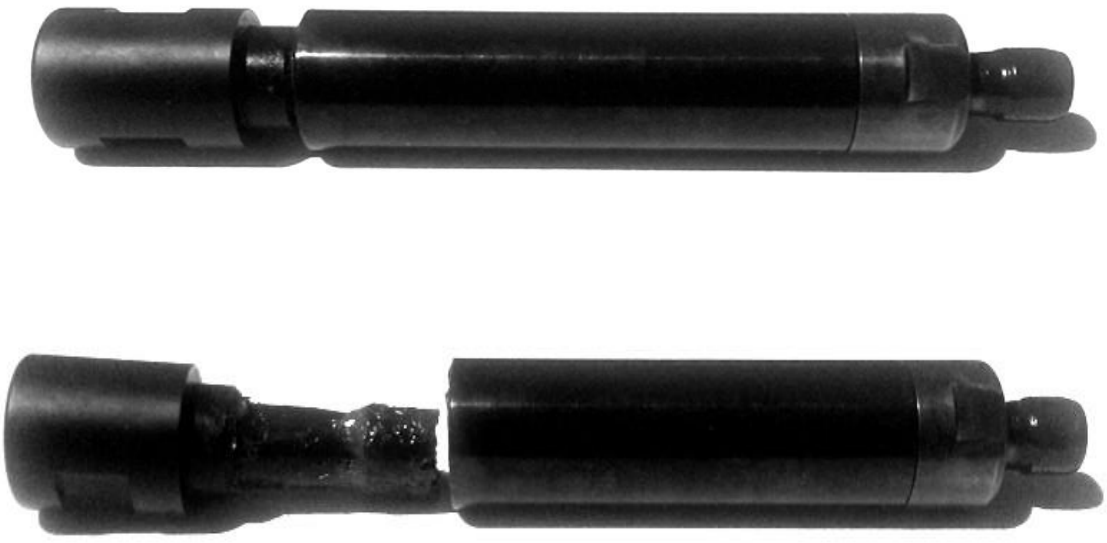
That makes this accessory a very valuable tool as a wiper or plunger in deliquification of gas well operations.



Farr Coupling Tool

When using the FARR Plunger in a Tubing Pump (**THFM**) with a wild or retrievable standing valve, it is highly recommended that you use a FARR Coupling Tool.

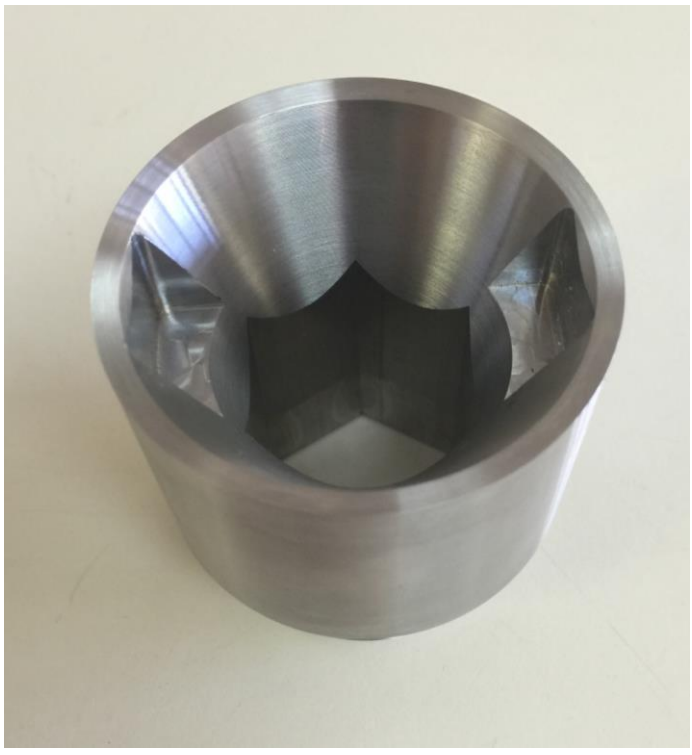
The FARR Coupling Tool is much like an On-Off Tool. However, it is designed to latch together down hole and not release. The purpose for this is to eliminate confusion for the well pulling crew when trying to get on and off the wild standing valve (e.g. If you have to set down and rotate to the right to lock on the standing valve and if you had an on off tool to get on and off the plunger assembly that operated opposite of the standing valve it could get confusing.) With the FARR Coupling Tool it greatly simplifies things, once it's locked on it will not come off until the unit is pulled out of the hole and disassembled.



Farr Tapered Seat Plug

It is highly recommended that you run a FARR Tapered Seat Plug in conjunction with the FARR Plunger. The seat plug is tapered to direct particulate inward into the traveling valve cage and away from the pump barrel wall on the down stroke. It is perfect for use in horizontal wells as it acts as a scoop for any particulate that have settled on the pump barrel wall.

It's also ideal for wells where the pump falls faster than the particulate can settle in solution and gets stuffed between the traveling valve and the pump barrel wall which can cause premature ware or even sticking the pump on the down stroke.



Muth Pump

According to numerous studies from around the world and here in Kern County, our Specialty Pumps stay in the ground on average of ***300% longer*** than all other conventional type pumps.

Just to name a few

Indonesia

Germany

Romania

Mexico

Venezuela

Columbia

Come visit us at 214 Main Street, Taft, Ca. for a *shop tour* of our facilities. We will show you working models of our Specialty Pumps and explain how they work. Lunch is on us. Come one, come all.

(661) 588-8700 or david@muthpump.com