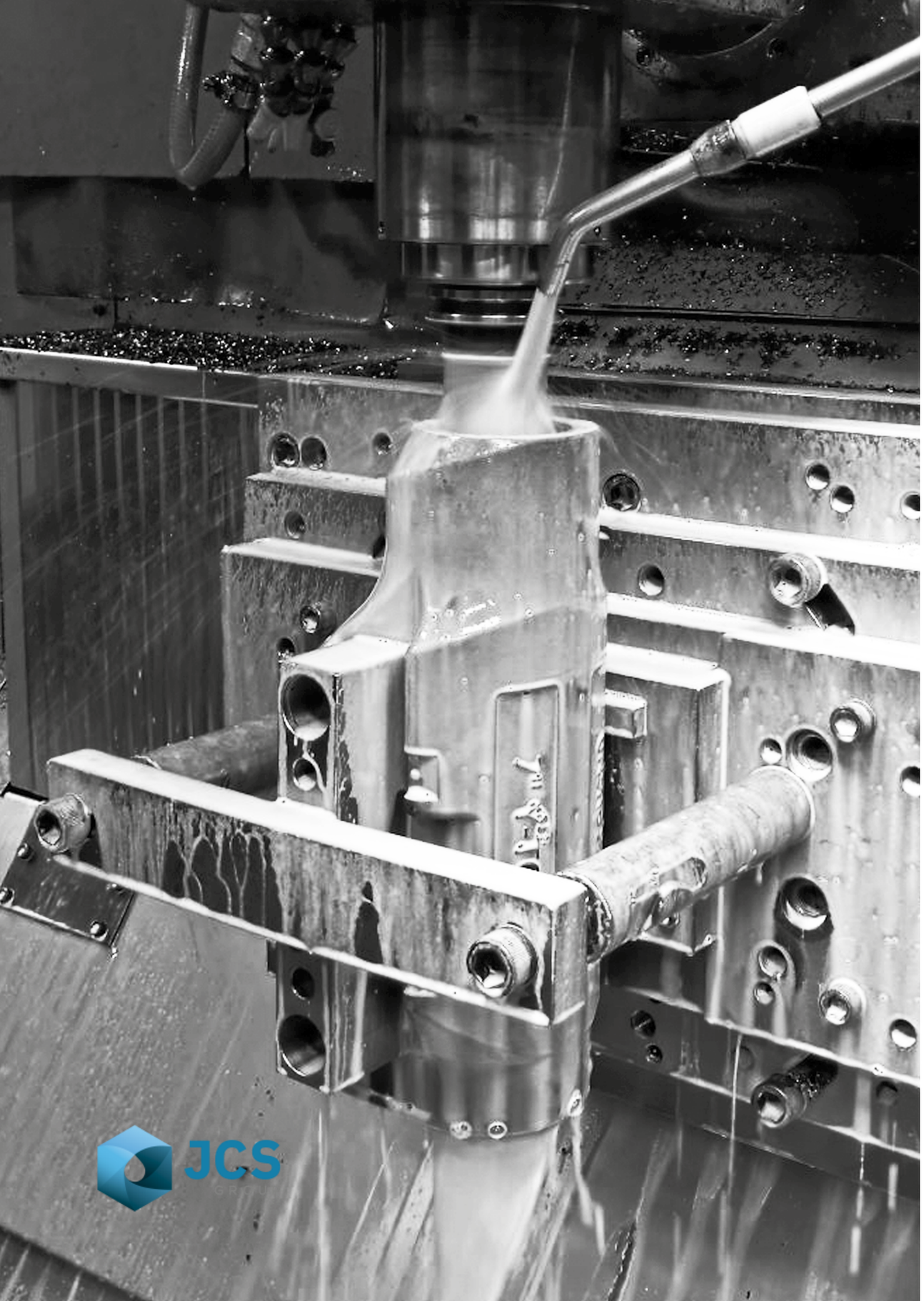
UMS flowell

JCS GROUP

ESP Bypass Systems

(Y-tool) CATALOGUE

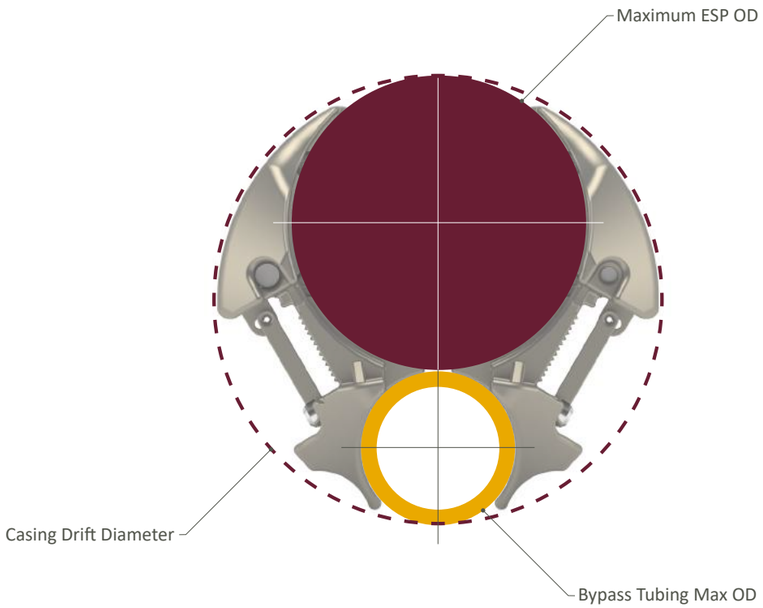
Contents



Sizing Information

	Maximum OD of ESP (in)							
	3.19	3.750	3.870	4.000	4.56	5.13	5.400	5.625
Casing size	Maximum Bypass tubing OD (in)							
7” 23-26lb/ft	2.875	2.375	2.125	2.125	-	-	-	-
7” 29-35lb/ft	2.375	2.125	2.125	-	-	-	-	-
9-5/8” 40-47lb/ft	5.000	4.500	4.500	4.250	3.500	2.875	2.875	2.875
9-5/8” 53.5lb/ft	5.000	4.500	4.500	4.250	3.500	2.875	2.875	2.750

Standard Bypass Tubing data			
Tubing size and weight per foot	OD (in)	ID (in)	Internal Drift (in)
5.00” 15lb/ft	5.000	4.408	4.283
4-1/2” 12.6lb/ft	4.500	3.958	3.833
4-1/4” 10lb/ft	4.250	3.756	3.631
3-1/2” 9.2lb/ft	3.500	2.992	2.847
2-7/8” 6.4lb/ft	2.875	2.441	2.347
2-3/4” 4.4lb/ft	2.750	2.430	2.340
2-3/8” 4.6lb/ft	2.375	1.995	1.901
2-1/8” 2.4lb/ft	2.125	1.811	1.717



UMS Flowell Tubing Thread Properties

FCJ (Flowell Coupled Joint)													
Dimensional Data							Make up Data L80 Grade			Performance Properties L80 Grade			
Pipe OD (in)	Nominal Weight (lb/ft)	Wall Thickness (in)	Pipe ID (in)		Drift (in)	Make up Loss (in)	Min (ft-lbs)	Optimum (ft-lbs)	Max (ft-lbs)	Burst (psi)	Collapse (psi)	Tensile (kips)	Compression (kips)
1.900	3.64	0.200	1.500		1.406	2.267	420	560	700	14,737	15,069	85	85
2.375	4.6	0.190	1.995		1.901	2.517	810	900	990	11,200	11,776	104	104
2.875	6.4	0.217	2.441		2.347	2.771	1,530	1,700	1,870	10,567	11,165	145	145
3.500	9.2	0.254	2.992		2.867	3.060	2,610	2,900	3,190	10,160	10,540	207	207
4.500	12.6	0.271	3.958		3.833	3.253	3,500	3,940	4,380	8,431	7,501	288	288
F2J (Flowell Flush Joint)													
Dimensional Data							Make-Up Data L80 Grade			Performance Properties L80 Grade			
Pipe OD (in)	Nominal Weight (lb/ft)	Wall Thickness (in)	Pipe ID (in)	Swaged Pin ID (in)	Drift (in)	Make up Loss (in)	Min (ft-lbs)	Optimum (ft-lbs)	Max (ft-lbs)	Burst (psi)	Collapse (psi)	Tensile (kips)	Compression (kips)
1.050	1.5	0.154	0.742	0.704	-	1.28	*80	*100	*120	*7,700	*7,409	*5.9	*3
2.125	2.4	0.157	1.811	-	1.717	2.00	-	-	-	-	-	*17 **28	*9 **15
2.375	2.6	0.109	2.157	-	2.063	1.282	-	-	-	-	-	*13	*7
2.375	4.6	0.190	1.995	1.957	1.901	2.19	250	300	350	11,200	11,776	47	19
2.750	4.4	0.160	2.430	-	2.336	2.00	-	-	-	-	-	**27	**14
2.875	6.4	0.217	2.441	2.377	2.347	2.60	400	500	600	10,567	11,165	67	28
2.875	6.4	0.217	2.441	-	2.400	2.00	-	-	-	-	-	64	26
4.250	10.0	0.248	3.756	-	3.631	3.25	-	-	-	-	-	**78	**40
5.500	15.5	0.275	4.950	-	4.825	3.50	-	-	-	-	-	170	80
5.500	15.5	0.275	4.950	4.875	4.825	3.50	2,400	2,600	2,800	7,000	4,990	170	80

* Figures based on 316 stainless steel seamless tube 30ksi minimum yield.

** Figures based on grade E355 carbon steel seamless tube 50ksi minimum yield.

All other make up and performance properties based on 80ksi base material.

Items with a drift of 1.717" and above are suitable for a standard 1-11/16" (1.6875") OD Production Logging Tool.

Items without torque figures, and without burst and collapse ratings are non-sealing connections used as a conduit tube only.

Performance properties based on API 5C3 calculations.

Standard Metallic Material Options And Codes

UMS Flowell standard metallic materials are NACE MR-0175 compliant. A list of common standard materials used for our downhole equipment is shown below.

		Part Type		
Part Number Suffix	Material Type	Tubing	Machined Components	Castings
13CR	13% Chrome stainless steel	API 5CT L80 13CR	AISI 410/420MOD 80KSI minimum yield, 22RC maximum hardness	ASTM A487 Grade CA6NM Class B, 23RC Maximum hardness
L801	Low alloy steel	API 5CT L80 Type 1	-	-
4140	Low alloy steel	API 5CT L80 Type 1	AISI 4140 80KSI minimum yield, 22RC maximum hardness	-
4130	Low alloy steel	-	-	AISI 4130 80KSI 22RC maximum hardness

Some exceptions to the above are;
1) Structural downhole standard fastener material – Inconel 718 120KSI minimum yield, 40 RC maximum.
2)Non structural downhole fastener material 316 or 304 stainless steel
3)Non API stainless tubing – 316 stainless steel.
4) Non API carbon steel tubing – EN 10296-1-2003 grade E235 or E355
5) Downhole service tools such as isolation tools, coil tubing plugs and stinger assemblies are 17-4 PH stainless steel 105ksi minimum yield, 35RC maximum hardness.
6) All downhole service tools such as standing valves, isolation tools, wireline logging plugs and coil tubing plugs are provided in stainless steel as standard to increase service and storage life. These parts are not offered in a low alloy steel unless otherwise requested by a customer.

13Cr material is generally used for dominant C02 corrosion applications, and the low alloy steel (L80 Type 1) is used for applications where high concentrations of H2S can potentially cause sulphide stress corrosion cracking. Limitations are shown in the table below.

Material	Max. pH2S	Max. pCO2	Upper Temp Limit (°F)	Min PH	Max. Chlorides (ppm)	Typical pCO2/ pH2S	Dominant Corrosion
13CR	1.5 psi	1450 psi	302	5.5	100000	>500	CO2
Low alloy steel	Unlimited	15 psi	475	5.5	100000	<20	H2S

Partial pressure of gas = system total absolute pressure (downhole pressure) x mole fraction of gas present.

For example, if the mole fraction of C02 was 0.2 and the bottom hole pressure was 3,000psi, the partial pressure of C02 (pCO2)= 0.2x3000 = 600psi, and the mole fraction of H2S was 0.0002, partial pressure of H2S (pH2S) = 0.0002x 3000 = 0.6psi.

The bottom hole temperature is 275°F. The dominant corrosion would be CO2 and 13Cr material should be selected.

Other factors may affect material selection, and where appropriate you should consult the customer, and/or with a suitable corrosion engineering expert.

Standard Seal Material Options And Codes

UMS Flowell standardise elastomers in Fluoroelastomers (FKM) material which is commonly known as the trade name Viton. Other elastomers are available and in some applications non elastomeric seals are provided.

Elastomer Material			
Environment	HNBR	Viton*	Aflas*
Maximum recommended temperature	325°F	400°F	400°F
Minimum recommended temperature	minus 40°F	40°F	75°F
Crude oil	OK	OK	OK
Natural gas w/ condensate	OK	OK	OK
Formation or injected water	Up to 300°F	Up to 300°F	OK
H2S	Up to 100ppm	Up to 300°F	OK
CO2 Gas	OK	OK	OK
Water based mud	Up to 300°F	Up to 300°F	OK
Oil based mud	OK	OK	OK
Ester containing mud	NO	OK	OK
Diesel	OK	OK	OK
Brine completion fluid, PH <9	OK	Up to 300°F	OK
Brine completion fluid, PH >9	NO	NO	OK
Sea water	OK	OK	OK
Zinc bromide	NO	Up to 300°F	OK
Amine based inhibitors	Up to 300°F	Up to 200°F	OK
Hydraulic oil, mineral oil	OK	OK	OK
Hydraulic oil, approved synthetic	OK	OK	OK
Water glycol hydraulic fluid, PH <9	Up to 200°F	Up to 200°F	OK
Water glycol hydraulic fluid, PH >9	NO	NO	OK
Hydrocarbon solvents, aliphatic eg Hexane, Kerosene	Up to 325°F	OK	OK
Hydrocarbon Solvents, aromatic eg Xylene, Toluene	Up to 300°F	OK	OK
Hydrocarbon solvents, cholorinated	OK	OK	OK
Hydrocarbon solvents, oxygenated	Up to 300°F	Up to 300°F	OK
Methanol, dry	Up to 300°F	Up to 300°F	OK
HCl acid	Up to 300°F	Up to 300°F	Up to 400°F
HF/HCl	Up to 275°F	Up to 300°F	Up to 400°F
Acetic acid	Up to 275°F	Up to 300°F	OK
Steam	NO	NO	OK

Completion Design Considerations

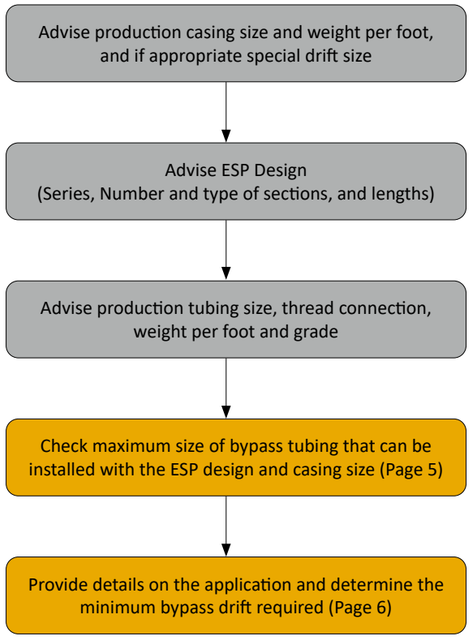
STEP 1 - BASIC INPUT INFORMATION

Determine the maximum OD of tools to go through the bypass tubing first.

Check what size of bypass tubing is required.

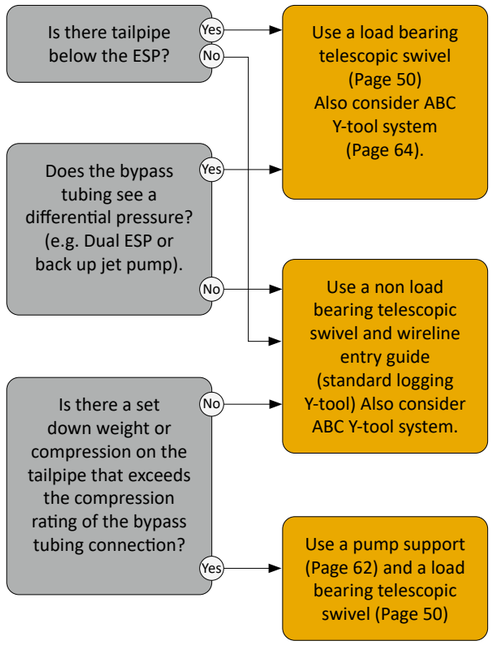
Does the bypass tubing size fit in the well casing with the ESP design? If it doesn't fit can the ESP design or casing be changed?

Find out what the Y-tool system is going to be used for.



STEP 2 - APPLICATION SPECIFICS

Standard bypass installation tools have a 20 Tonne SWL. Where installation load exceeds this, please consult our engineering department.



STEP 3 - NIPPLE SIZE SELECTION

1. Decide if a Top Nipple is necessary.
(We recommend selecting a Top Nipple even if it is not required for future proofing or contingency purposes, however the through bore requirements may restrict the system design and the Top Nipple may be removed).

2. Standard plug designs have a top NO-GO shoulder. Always check the NO-GO fits through any restriction above the considered nipple size such as a landing nipple above the Y-tool, production tubing drift or top nipple.

3. Always check what diameter of tools need to pass through the bypass tubing and ensure that the Y-tool nipples are large enough.

4. Example :

A customer has 3-1/2" 9.2# production tubing with a 2.812 X profile landing Nipple below a packer and above the Y-tool. The customer wants to use a Y-tool for coil tubing logging with 1.75" coil.

The casing is 9-5/8" 47# with 562 series ESP. What are the options? Page 5 – maximum bypass tubing is 2-7/8" 6.4# with a 2.347" drift. Page 6 – available standard nipple sizes smaller than 2.812 = 2.75, 2.625, 2.562, 2.312, 2.25, 2.062, 1.875.

Pages 87 & 89 – available coil tubing plug sizes for 1.75" coil and 2-7/8" bypass tubing = 2.625" and 2.750". No-Go diameter for 2.625" plug = 2.730" No-Go diameter for 2.750" plug = 2.800".

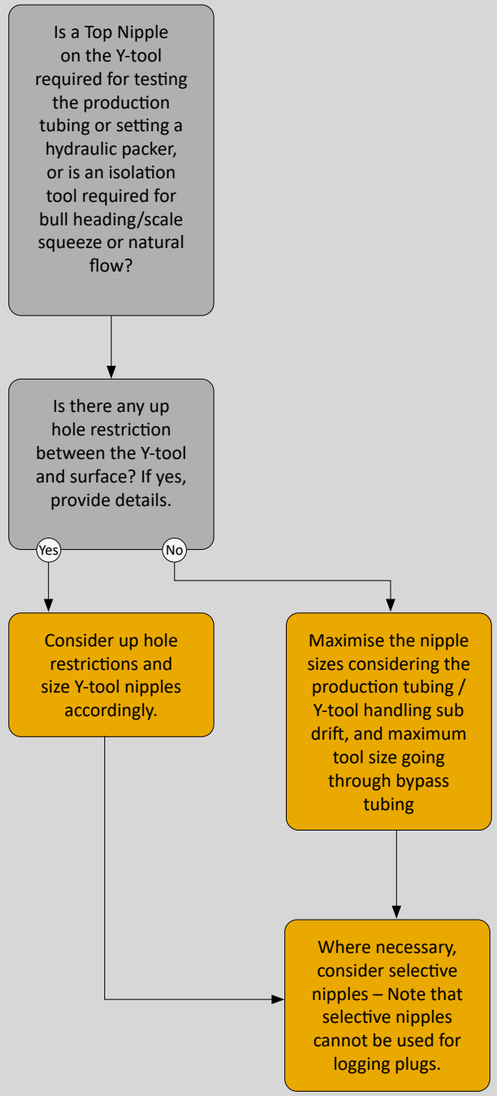
Both fit through the 2.812 X profil nipple, and the 2.625" plug No-Go fits through the2.750" nipple.

Option 1 – 2.750" Top Nipple with 2.625" bypass nipple.
Option 2 – No Top Nipple and a 2.750" bypass nipple.

Further discussions with the client reveal that they need to install a Top Nipple for an isolation tool to do a scale squeeze.

Pages 92 & 94 shows the Isolation tool configurations and the 2.750" x 2.625" has a Top No-Go of 2.800" which fits through the 2.812" X profile nipple. Go with Option 1. The bypass nipple still has a larger ID than the bypass tubing.

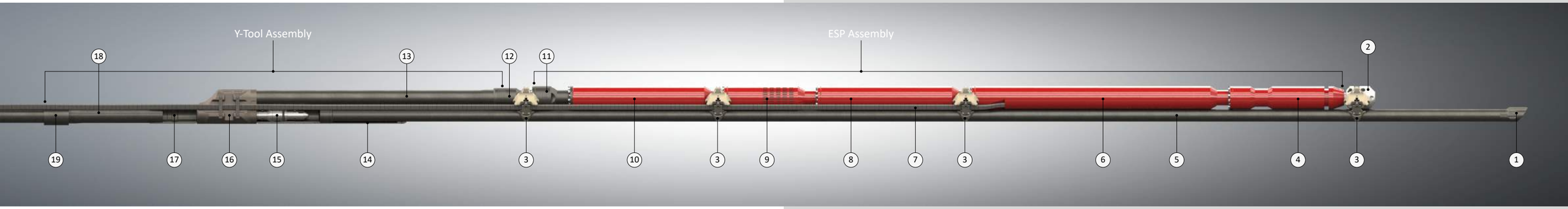
Finally check the OD of the largest item required to go through the bypass tubing. If it doesn't fit, check if the ESP design can be changed, or the casing changed to allow larger bypass tubing.



Y-Tool Bypass System With Wireline Entry Guide Or X-Over

Y-TOOL COMPLETIONS

1. Wireline Entry Guide (or X-over)
2. Motor Base Plug
3. Bypass Clamp
4. ESP Gauge
5. Flush Joint Bypass Tubing
6. ESP Motor
7. MLE Cable
8. ESP Seal Protector
9. ESP Pump Intake
10. ESP Pump
11. Discharge Pressure Sub
12. Discharge Head
13. Pump Sub
14. Telescopic Swivel
15. Bypass Nipple & Blanking Plug
16. Y-Tool
17. Top Nipple
18. Handling Sub
19. Production Tubing Connection



The Y-tool system allows intervention below the ESP without the need to pull the ESP system.

The bypass tubing can also be used for natural flow periods and stimulation by either isolating the ESP automatically with a Y-valve or using a slickline deployed isolation sleeve.

In addition to this a sliding sleeve with nipple can be used with a jet pump to provide backup production if the ESP fails to allow continuation of production until a workover can be performed.

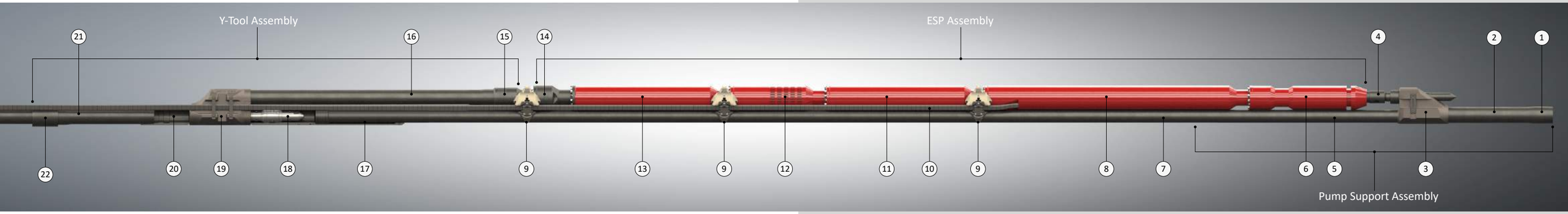
Applications include:

- Wireline logging below the pump
- Coiled tubing logging below the pump
- Retrieval of plugs below the pump
- Memory gauge deployment below the pump
- Backup production with a jet pump when the ESP fails
- Bridge plug setting for water shutoff
- Tubing-conveyed perforating gun deployment and detonation below the pump
- Well stimulation through coiled tubing or by-pass tubing (scale squeeze, acidizing, water ingress treatment)
- Wireline perforating below the pump
- Bottom hole samples deployment

Single ESP With Y-Tool And Pump Support

Y-TOOL COMPLETIONS

1. Tailpipe Tubing Connection
2. Handling Sub
3. Pump Support Block
4. Spear
5. Handling Sub
6. ESP Gauge
7. Flush Joint Bypass Tubing
8. ESP Motor
9. Bypass Tubing Clamp
10. MLE Cable
11. ESP Seal Protector
12. ESP Pump Intake
13. ESP Pump
14. Discharge Pressure Sub
15. Discharge Head
16. Pump Sub
17. Telescopic Swivel
18. Bypass Nipple & Blanking Plug
19. Y-Tool
20. Top Nipple
21. Handling Sub
22. Production Tubing Connection



The Pump Support Sub is an optional component of the Y-tool bypass system. It is primarily used when running dual ESP's or when tailpipe is to be run below the ESP and located into a Polished Bore Receptacle (PBR).

The purpose of the Pump Support Sub is to share any compressive loading between the bypass tubing and the the ESP during installation and operation (set down weight), and tensile loading to the bypass tubing upon retrieval of the system.

The pump support also allows the system to be built with the bypass tubing taking all the string weight. The ESP is simply supported by the pump support block ensuring no tensile loading of the string weight is supported by the ESP flange bolts.

An example of when a pump support would be used is as follows. The Y-tool system comprises of 2-7/8" 6.4# L80 F2J tubing with a tensile strength of 67,000lbs and a compressive strength of 28,000lbs.

The tailpipe below the ESP has a perforated joint and a seal assembly with a no-go locator which stabs into a seal bore packer. A set down (slack off) weight is applied to engage the seal assembly seals and land the seal assembly.

Prior to the job, a tubing stress analysis is carried out and shows when the well is flowing the tubing string thermally expands. Due to the restriction of the No-Go locator, the tubing is not free to expand and the compressive force on the tubing string is shown to exceed the compressive strength of the bypass tubing.

The ESP compressive strength is greater than the expected load so a pump support is selected.

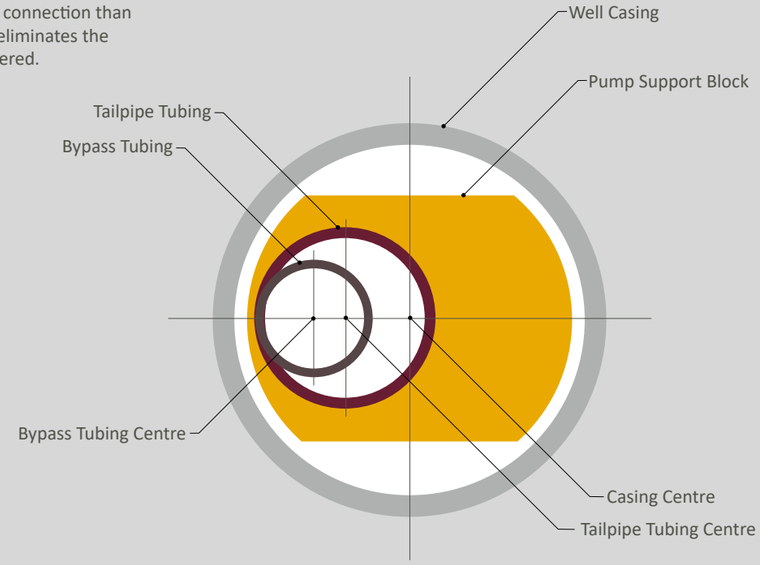
The ESP weight should always be considered when using a pump support in relation to the tensile capacity of the system for installation.

For instance, 2-7/8" 6.4# L80 F2J tubing has a tensile strength of 67,000lbs without a safety factor. If the ESP weight is 12,000lbs then the available tensile capacity is 67,000lbs minus 12,000lbs which is 55,000lbs without a safety factor.

Another advantage of the pump support is that it acts as a tubing centre shift adapter between the bypass tubing and the tailpipe. The tailpipe below the pump support block is tangentially in line with the bypass tubing shifting the tailpipe towards the well centre. This is a particular advantage when you have a liner.

Without the pump support, the tailpipe can be more difficult to get into the liner, and bending of the tubing can create a forced dog leg that could potentially prevent a long production logging tool string from passing through the dog leg.

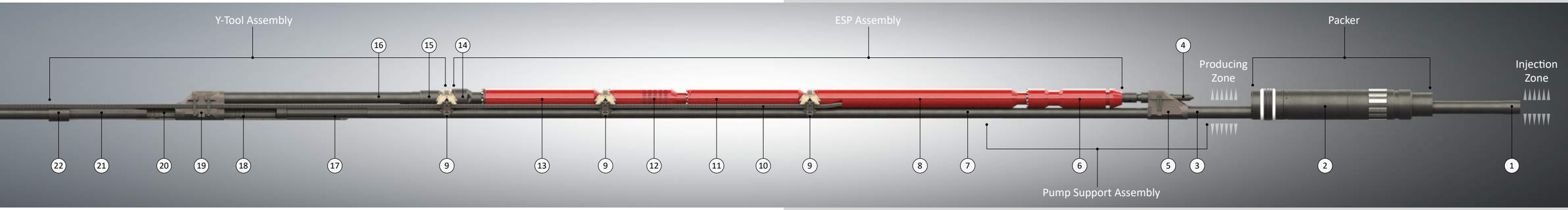
The created dog leg severity is increased the closer the ESP is to the liner top. Having a larger tailpipe connection than bypass connection on the pump support eliminates the problems that potentially can be encountered.



Dump Flood - Single ESP With Pump Support

Y-TOOL COMPLETIONS

1. Tailpipe Tubing Connection
2. Packer
3. Handling Sub
4. Spear
5. Pump Support Block
6. ESP Gauge
7. Flush Joint Bypass Tubing
8. ESP Motor
9. Bypass Tubing Clamp
10. MLE Cable
11. ESP Seal Protector
12. ESP Pump Intake
13. ESP Pump
14. Discharge Pressure Sub
15. Discharge Head
16. Pump Sub
17. Telescopic Swivel
18. Bypass Nipple
19. Y-Tool
20. Top Nipple
21. Handling Sub
22. Production Tubing Connection



Water injection is a common method of increasing a depleting oil reservoir pressure to increase the reservoir productivity. Conventional water flood projects may not be economically viable.

A low-cost method can be done with an existing producing well that has watered out, by installing an electrical submersible pump (ESP) and produce water from the existing production zone and inject it into an injection zone.

UMS Flowell's Y-tool with pump support can be used with an ESP for dump flood applications as an alternative to inverted ESPs using conventional ESPs. The system is run without a blanking plug installed in the bypass nipple.

The production zone and injection zone are isolated with a packer and the master valve on the Christmas tree is closed. When the ESP is started the water from the production zone is produced through the bypass tubing into the injection zone.

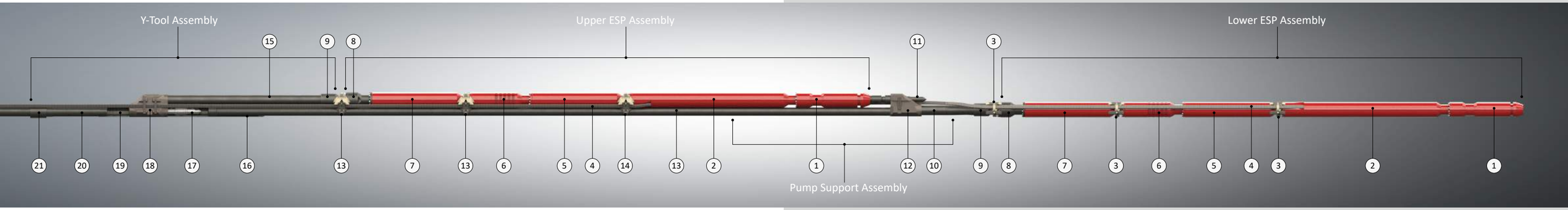
Applications include:

- Producing water from one zone and injecting it into another zone using conventional ESP equipment

Dual ESP With Single Y-Tool & Pump Support – Redundancy

Y-TOOL COMPLETIONS

1. ESP Gauge
2. ESP Motor
3. MLE Protector
4. MLE Cable
5. ESP Seal Protector
6. ESP Pump Intake
7. ESP Pump
8. Discharge Pressure Sub
9. Discharge Head
10. Handling Sub
11. Spear
12. Pump Support Block
13. Flush Joint Bypass Tubing
14. Bypass Tubing Clamp
15. Pump Sub
16. Telescopic Swivel
17. Bypass Nipple & Blanking Plug
18. Y-Tool
19. Top Nipple
20. Handling Sub
21. Production Tubing Connection



Normally the upper ESP is run until failure. Once failed production can be resumed by starting the lower ESP. This extends production time and to allows a workover to be planned to eliminate deferred production.

Switch over between ESPs can be done in a variety of ways. Automatic switchover is achieved by either having ESP check valves above each pump, or incorporating a Y-valve.

Slickline switchover is achieved by having a blanking plug in the Y-tool for producing the upper ESP, and replacing the blanking plug with an isolation sleeve for producing with the lower ESP.

Advantages:

- Extends production by having redundancy in the event of primary ESP failure

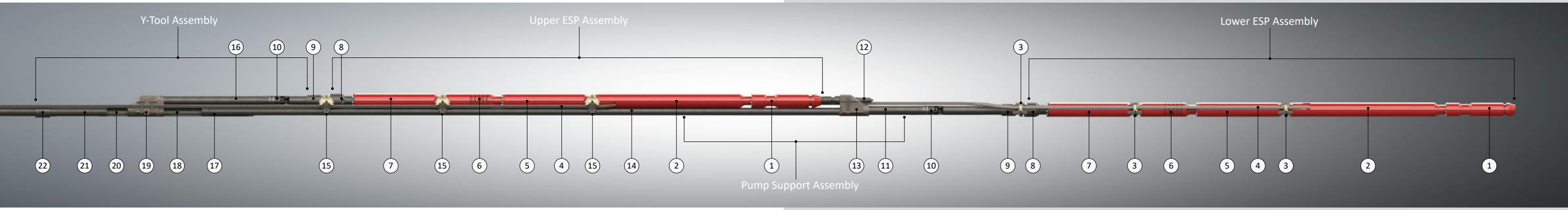
Disadvantages:

- No access to the reservoir below with the ESPs installed

Dual ESP With Single Y-Tool And Pump Support – High Flow (Parallel Pumping)

Y-TOOL COMPLETIONS

1. ESP Gauge
2. ESP Motor
3. MLE Protector
4. MLE Cable
5. ESP Seal Protector
6. ESP Pump Intake
7. ESP Pump
8. Discharge Pressure Sub
9. Discharge Head
10. Check Valve
11. Handling Sub
12. Spear
13. Pump Support Block
14. Flush Joint Bypass Tubing
15. Bypass Tubing Clamp
16. Pump Sub
17. Telescopic Swivel
18. Bypass Nipple
19. Y-Tool
20. Top Nipple
21. Handling Sub
22. Production Tubing Connection



The parallel pumping system allows both ESPs to run simultaneously to combine the flow for high flow systems where a matching flow rate single ESP will not fit inside the well casing size.

The upper and lower ESP discharge pressures are matched using variable speed drives (VSDs) to prevent reverse flow. Each ESP is fitted with a check valve to prevent reverse flow and to allow production should one of the ESPs fail. This system is typically used in high flow geothermal wells.

Advantages:

- Provides high flow production in casing where an industrial pump won't fit

Disadvantages:

- No access to the reservoir below with the ESPs installed

Typical Applications:

- Geothermal wells

Dual ESP
With Dual Y-Tool

Y-TOOL COMPLETIONS

1. Wireline Entry Guide (or X-over)
2. Motor Base Plug
3. Bypass Tubing Clamp
4. ESP Gauge
5. Flush Joint Bypass Tubing
6. ESP Motor
7. MLE Cable
8. ESP Seal Protector
9. ESP Pump Intake
10. ESP Pump
11. Discharge Pressure Sub
12. Discharge Head
13. Pump Sub
14. Telescopic Swivel
15. Bypass Nipple & Blanking Plug
16. Y-Tool
17. Top Nipple
18. Handling Sub
19. Spear
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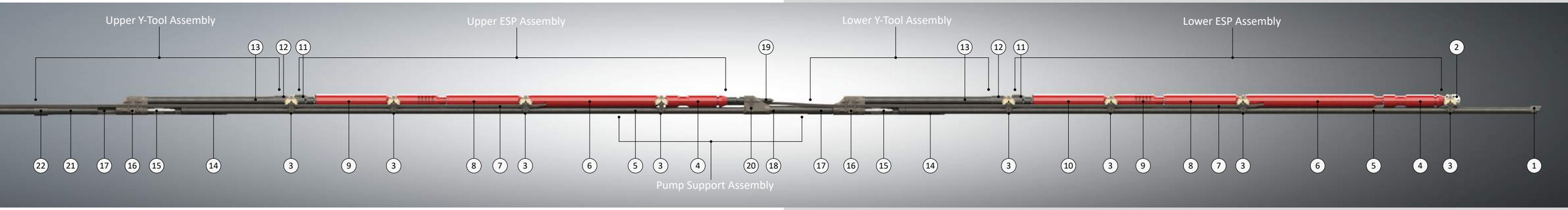
22. Production Tubing Connection



The dual ESP dual Y-tool system allows redundancy if one of the ESP fails and allows access to the reservoir below the ESPs through the bypass tubing without the need to pull the ESPs.

The system can also be used as a parallel pumping system with access to the reservoir below.

Advantages:

- Extends production by having redundancy in the event of primary ESP failure
- Allows access to the reservoir below without the need to pull the ESPs

Y-Tool Sub Assembly

The UMS Flowell Y-tool sub assembly comprises of the following items:

- 6ft handling sub with a top connection to suit the customer's production tubing
- Optional top nipple used to set a plug to test the production tubing or set a packer, and used with an isolation tool to straddle the y-tool body for bullheading the well or isolating the upper ESP when running dual y-tool ESP completions
- Y-tool used to create a junction between the bypass and the ESP discharge
- Bypass nipple used for setting a blanking plug, wireline plug, coil tubing plug, and a lower profile for the isolation tool used in combination with the top nipple
- Adjustable swivel with 15-inch stroke adjustment for make to the bypass tubing
- 10ft pump sub for make up to the ESP pump discharge head
- Blanking plug set in the bypass nipple to prevent recirculation through the bypass tubing when running the ESP
- Optional bypass tubing crossover for reducing bypass tubing size.

The parts are torqued, pressure tested and drifted as an assembly ready for make up to the ESP system on the well site.

FEATURES & BENEFITS

- Fully torqued and tested
- Full material traceability
- Robust construction
- Can be used for single and dual ESP logging bypass systems
- Can also be used for systems with tailpipe below the ESP

SPECIFICATIONS

- Low alloy steel or 13Cr material options to API 5CT
- 5000psi MWP

Specifications - Y-Tool Sub Assembly

7” Casing Table

7” Casing									
Part Number	Min Casing size	OD (in)	Top Connection	Bypass Connection	Pump Connection	Top Nipple size	Bypass Nipple Size	Material	Comments
7YT-0013	7 32#	5.94	2-7/8” 6.5# EUE	2-1/8” 2.4# F2J	2-7/8” 6.5# EUE	N/A	1.875” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0033	7 32#	5.94	2-7/8” 6.5# EUE	2-1/8” 2.4# F2J	2-3/8” 4.7# EUE	N/A	2.312” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0036	7 32#	5.94	2-7/8” 6.5# EUE	2-1/8” 2.4# F2J	2-7/8” 6.5# EUE	2.312” D	1.875” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0031	7 32#	5.94	2-7/8” 6.4# VAM TOP	2-1/8” 2.4# F2J	2-3/8” 4.7# EUE	2.312” D	1.875” D	13CR	Non-load Bearing Teleswivel
7YT-0030	7 32#	5.94	2-7/8” 6.4# VAM TOP	2-1/8” 2.4# F2J	2-7/8” 6.5# EUE	2.312” D	1.875” D	13CR	Non-load Bearing Teleswivel
7YT-0034	7 32#	5.94	2-7/8” 6.5# EUE	2-3/8” 4.6# F2J	2-3/8” 4.6# EUE	N/A	2.312” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0015	7 32#	5.94	3-1/2” 9.3# EUE	2-1/8” 2.4# F2J	2-7/8” 6.5# EUE	N/A	1.875” D	13CR	Non-load Bearing Teleswivel
7YT-0017	7 32#	5.94	3-1/2” 9.3# EUE	2-3/8” 4.6# F2J	2-7/8” 6.5# EUE	2.750” D	2.312” D	L80 Type 1	Non-load Bearing Teleswivel (Extended Isolation tool required)
7YT-0024	7 32#	5.94	3-1/2” 9.3# EUE	2-1/8” 2.4# F2J	2-3/8” 4.7# EUE	N/A	1.875” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0029	7 32#	5.94	3-1/2” 9.3# EUE	2-1/8” 2.4# F2J	2-3/8” 4.7# EUE	2.312” D	1.875” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0032	7 32#	5.94	3-1/2” 9.3# EUE	2-1/8” 2.4# F2J	2-3/8” 4.7# EUE	2.312” D	1.875” D	13CR	Non-load Bearing Teleswivel
7YT-0035	7 32#	5.94	3-1/2” 9.3# EUE	2-3/8” 4.6# F2J	2-3/8” EUE	2.312” D	1.875” D	13CR	Non-load Bearing Teleswivel (Schlumberger bypass tubing)
7YT-0021	7 32#	5.94	3-1/2” 9.3# EUE	2-3/8” 4.6# PTJ	2-3/8” 4.7# EUE	N/A	2.312” A	13CR	Non-Load bearing Teleswivel (Schlumberger plug and bypass tubing)
7YT-0025	7 32#	5.94	3-1/2” 9.3# EUE	2-3/8” 4.6# PTJ	2-7/8” 6.5# EUE	N/A	2.312” D	13CR	Non-load Bearing Teleswivel (Schlumberger bypass tubing)
7YT-0043	7 32#	5.90	3-1/2” 9.3# EUE	2-3/8” 4.6# F2J	2-7/8” 6.5# EUE	N/A	2.312” D	L80 Type 1	Non-load Bearing Teleswivel
7YT-0038	7 32#	5.90	3-1/2” 9.3# EUE	2-3/8” 4.6# F2J	2-3/8” 4.7# EUE	2.750” D	2.312” D	L80 Type 1	Load Bearing Teleswivel
7YT-0044	7 32#	5.94	3-1/2” 9.3# EUE	2-3/8” 4.6# F2J	2-7/8” 6.5# EUE	2.750” D	2.312” D	L80 Type 1	Load Bearing Teleswivel
7YT-0042	7 26#	6.10	3-1/2” 9.3# EUE	2-3/8” 4.6# F2J	2-3/8” 4.6# EUE	2.812” D	2.750” D	L80 Type 1	Non-load Bearing Teleswivel (Integral bypass nipple)
7YT-0045	7 23#	6.20	3-1/2” 9.2# FOX	2-7/8” 6.4# F2J	2-7/8” 6.4# VAM TOP	2.812” D	2.750” D	L80 Type 1	Load Bearing Teleswivel (Integral bypass nipple)
7YT-0047	7 26#	6.10	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J LB	2-3/8” 4.6# EUE	2.812” D	2.750” D	L80 Type 1	Non-load Bearing Teleswivel (Integral bypass nipple, 2.400” Bypass Special Drift)

9-5/8” Casing Table

9-5/8” CASING									
Part Number	Min. Casing size	OD (in)	Top Connection	Bypass Connection	Pump Connection	Top Nipple Size	Bypass Nipple Size	Material	Comments
958YT-0063	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.250” D	2.125” D	13CR	Load Bearing Teleswivel
958YT-0007	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.562” D	2.312” D	13CR	Load Bearing Teleswivel
958YT-0069	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.750” R	2.312” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0100-13CR	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.750” D	2.312” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0100-4140	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.750” D	2.312” D	13CR	Non-Load Bearing Teleswivel
958YT-0012-13CR	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.750” D	2.562” D	13CR	Non-Load Bearing Teleswivel
958YT-0012-4140	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.750” D	2.562” D	13CR	Non-Load Bearing Teleswivel
958YT-0077	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.750” D	2.562” D	13CR	Load Bearing Teleswivel
958YT-0050-13CR	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	N/A	2.750” D	13CR	Non-Load Bearing Teleswivel
958YT-0050-4140	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	N/A	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0062	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	N/A	2.750” D	13CR	Load Bearing Teleswivel
958YT-0026	9-5/8 ALL	8.00	3-1/2” 9.2# VAM TOP	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	N/A	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0020	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.812” D	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0074	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.812” D	2.750” D	L80 Type 1	Load Bearing Teleswivel
958YT-0068	9-5/8 ALL	8.00	3-1/2” 9.3# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.812” F	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0059	9-5/8 58.4#	8.25	3-1/2” 9.3# EUE	3-1/2” 9.2# VAM FJL	2-7/8” 6.5# EUE	N/A	2.812” D	L80 Type 1	Load Bearing Teleswivel
958YT-0046	9-5/8 58.4#	8.25	4-1/2” 12.6# VAM TOP	2-3/8” 4.6# F2J	3-1/2” 9.3# EUE	3.125” D	2.750” D	13CR	Load Bearing Teleswivel
958YT-0044	9-5/8 53.5#	8.30	4-1/2” 12.6# VAM TOP	3-1/2” 9.2# VAM FJL	3-1/2” 9.2# VAM TOP	N/A	2.750” A	13CR	Load Bearing Teleswivel
958YT-0076	9-5/8 58.4#	8.25	4-1/2” 12.6# VAM TOP	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	N/A	2.750” D	L80 Type 1	Load Bearing Teleswivel
958YT-0036	9-5/8 ALL	8.00	4-1/2” 12.75# EUE	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.812” D	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0045	9-5/8 47#	8.407	4-1/2” 12.6# VAM TOP	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	2.812” D	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0116	9-5/8 47#	8.407	4-1/2” 12.6# VAM TOP	2-7/8” 6.4# F2J	3-1/2” 9.2# VAM TOP	2.812” D	2.750” D	L80 Type 1	Load Bearing Teleswivel
958YT-0117	9-5/8 47#	8.407	4-1/2” 12.6# VAM TOP	2-7/8” 6.4# F2J	3-1/2” 9.2# VAM TOP	2.812” D	2.750” D	L80 Type 1	Load Bearing Teleswivel (Short stroke ABC Y-tool)
958YT-0038	9-5/8 58.4#	8.25	4-1/2” 12.6# VAM TOP	2-7/8” 6.4# F2J	3-1/2” 9.3# EUE	3.125” D	2.750” D	L80 Type 1	Non-Load Bearing Teleswivel
958YT-0071	9-5/8 58.4#	8.25	4-1/2” 12.6# VAM TOP	2-7/8” 6.4# F2J	4-1/2” 12.75# EUE	3.125” D	2.750” D	13CR	Load Bearing Teleswivel
958YT-0029	9-5/8 53.5#	8.30	4-1/2” 12.6# VAM TOP	3-1/2” 9.2# VAM FJL	3-1/2” 9.2# VAM TOP	3.125” A	2.875” A	13CR	Load Bearing Teleswivel (Schlumberger blanking plug)
958YT-0082	9-5/8 53.5#	8.35	4-1/2” 12.6# VAM TOP	4-1/4” 10# F2J	2-7/8” 6.5# EUE	3.812” D	3.812” D	L80 Type 1	Load Bearing Teleswivel (Bypass Nipple Bottom No Go 3.700” ID)
958YT-0118	9-5/8 53.5#	8.35	4-1/2” 12.6# SEAL-LOCK APEX	4-1/4” 10# F2J	2-7/8” 6.5# EUE	3.812” D	3.812” D	L80 Type 1	Load Bearing Teleswivel (Bypass Nipple Bottom No Go 3.700” ID)
958YT-0061	9-5/8 53.5#	8.35	4-1/2” 12.6# VAM TOP	4-1/2” 12.6# VAM FJL	2-7/8” 6.5# EUE	3.812” D	3.812” D	L80 Type 1	Load Bearing Teleswivel (Bypass Nipple Bottom No Go 3.700” ID)

Handling Sub

A Handling Sub is provided at the top of the Bypass Y-Tool Assembly to ensure ease of handling at the well site and to prevent damage to components within the system during installation.

The Handling Sub is an integral part of the fully torqued and pressure tested Y-Tool Assembly.

A Crossover is provided if necessary to interface with production tubing string thread.

FEATURES & BENEFITS

- Box x Pin thread
- Top connection to suit production tubing
- 6ft length as standard

SPECIFICATIONS

- Low alloy steel or 13Cr material options to API 5CT
- 5000psi MWP

Technical Specifications - Handling Sub

Part Number	Box Thread	Pin Thread	Internal Drift
PJ-3500-93- EUBXFCJP-6	3-1/2” 9.3# EUE	3-1/2” 9.2# F2J	2.867”
PJ-3500-92- VTBXFCJP-6	3-1/2” 9.2# VAM TOP	3-1/2” 9.2# F2J	2.867”
PJ-2875-65- EUBXFCJP-6	2-7/8” 6.5# EUE	2-7/8” 6.4# F2J	2.347”
PJ-2875-64- VTBXFCJP-6	2-7/8” 6.4# VAM TOP	2-7/8” 6.4# F2J	2.347”

Type “D” Top Nipple

The Type “D” Top Nipple is positioned above the Y-Tool to provide the operator with a seal bore profile within the pressure tested assembly.

Seating of a Plug or Standing Valve in the Top Nipple seal bore enables the operator to pressure test the production tubing to surface without the requirement of a check valve above the pump discharge head, ensuring a fully tested system from ESP to wellhead. The Standing Valve can also be used to set a hydraulic ESP packer.

The Top Nipple is also utilised to accommodate an Isolation Tool. The Isolation Tool is located in the Bypass Nipple and Top Nipple and is used to isolate the ESP and allows bullheading of fluids directly through the Bypass Tubing, or allows the upper ESP to be isolated in dual y-tool ESP applications when running the lower ESP.

FEATURES & BENEFITS

- Top NO-GO feature
- “D” Type locking profile for plugs
- Seal bore for plugs and isolation tool
- Other profiles and sizes available on request

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 5000psi MWP

Technical Specifications - Type “D” Top Nipple

Part Number	Casing Size	Box Thread	Pin Thread	Seal Diameter
N-2250D-0001	9-5/8”	3-1/2” FCJ	3-1/2” FCJ	2.250”
N-2312D-0002	7”	2-7/8” FCJ	2-7/8” FCJ	2.312”
N-2562D-0001	9-5/8”	3-1/2” FCJ	3-1/2” FCJ	2.562”
N-2750D-0002	9-5/8”	3-1/2” FCJ	3-1/2” FCJ	2.750”
N-2812D-0001	9-5/8”	3-1/2” FCJ	3-1/2” FCJ	2.812”
N-2812D-0002	9-5/8”	4-1/2” FCJ	3-1/2” FCJ	2.812”
N3812D-0001*	9-5/8”	4-1/2” FCJ	4-1/2” FCJ	3.812”

* (without no-go)

Type “A” Top Nipple

The Type “A” Top Nipple is positioned above the Y-Tool to provide the operator with a seal bore profile within the pressure tested assembly.

Seating of a Plug or Standing Valve in the Top Nipple seal bore enables the operator to pressure test the production tubing to surface without the requirement of a check valve above the pump discharge head, ensuring a fully tested system from ESP to wellhead. The Standing Valve can also be used to set a hydraulic ESP packer.

The Top Nipple is also utilised to accommodate an Isolation Tool. The Isolation Tool is located in the Bypass Nipple and Top Nipple and is used to isolate the ESP and allows bullheading of fluids directly through the Bypass Tubing, or allows the upper ESP to be isolated in dual y-tool ESP applications when running the lower ESP.

FEATURES & BENEFITS

- Top NO-GO feature
- “A” Type locking profile for plugs
- Seal bore for plugs and isolation tool
- Other profiles and sizes available on request

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 5000psi MWP

Technical Specifications - Type “A” Top Nipple

Part Number	Casing Size	Box Thread	Pin Thread	Seal Diameter
N3125A-0002	9-5/8”	4-1/2” FCJ	4-1/2” FCJ	3.125"
N3125A-0003 **	9-5/8”	4-1/2” FCJ	4-1/2” FCJ	3.125”
N2812A-0003	9-5/8”	3-1/2” FCJ	3-1/2” FCJ	2.812”

** Y-Valve Configuration

Y-Tool

The UMS Flowell Y-Tool provides the facility by which the electrical submersible pump assembly is deployed with By-Pass Tubing to allow access to the well in order that logging and/or intervention work may be carried out below without retrieval of the completion.

The Y-Tool provides a single connection to the production string above and has a By-Pass connection below directly in line with the production string to allow the passage of logging tools to the well below via the By-Pass Tubing.

A second connection at the base of the Y-Tool allows the electrical submersible pump assembly to be suspended. The Y-Tool has a groove on either side to allow the passage of the ESP power cable, MLE or other auxiliary service lines. These lines are secured in the Y-Tool groove with cable clips thus ensuring full protection during deployment.

The internal profile of the Y-Tool is designed to ensure a smooth flow path from ESP discharge to production tubing and that the fishing profiles of Blanking Plugs used to prevent recirculation of produced fluids remain free of debris and sand build up whilst simultaneously protecting the fishing profiles of these plugs from damage by erosion.

FEATURES & BENEFITS

- Compact design
- Precision investment casting
- Fitted with cable retaining clips
- 7” and 9-5/8” casing sizes

SPECIFICATIONS

- 5000psi MWP
- Low alloy steel or 13Cr material to NACE MR-0175

Technical Specifications - Y-Tool

Part Number	OD	Top Box Thread	Bypass Box Thread	Pump Box Thread
7YT-0012-1	5.940”	2-7/8” 6.4# FCJ	2-7/8” 6.4# FCJ	2-3/8” 4.6# FCJ
7YT-0012-2	5.940”	2-7/8” 6.4# VAM TOP	2-7/8” 6.4# VAM TOP	2-3/8” 4.6# VAM TOP
7YT-0039*	6.200”	3-1/2” 9.2# FCJ	2-7/8” 6.4# FCJ	2-3/8” 4.6# F2J
7YT-0046*	5.950”	3-1/2” 9.2# FCJ	2-7/8” 6.4# FCJ	1.900” 3.64# FCJ
7YT-0051	6.200”	2-7/8” 6.4# FCJ	2-7/8” 6.4# FCJ	2-3/8” 4.6# F2J
958YT-0006-1	8.000”	3-1/2” 9.2# FCJ	3-1/2” 9.2# FCJ	3-1/2” 9.2# FCJ
958YT-0006-2	8.000”	3-1/2” 9.2# VAM TOP	3-1/2” 9.2# VAM TOP	3-1/2” 9.2# VAM TOP
958YT-0032	8.250”	4-1/2” 12.6# FCJ	3-1/2" 9.2# FCJ	3-1/2” 9.2# FCJ
958YT-0058	8.250”	3-1/2” 9.2# FCJ	3-1/2” 9.2# FCJ	2-7/8” 6.4# FCJ
958YT-0060	8.350”	4-1/2” 12.6# FCJ	4-1/2” 12.6# FCJ	2-7/8” 6.4# FCJ

* Y-Tool with integral 2.750” Type D nipple profile

Y-Valve

Just like standard Y-Tools, the Y-Valve allows for access below an Electric Submersible Pump (ESP) and allows for well logging operations and traditional well intervention without pulling the completion.

However, the Y-Valve provides automatic switch over without the need of running slickline or coil to remove a blanking plug.

FEATURES & BENEFITS

- Same features and benefits as standard Y-Tools
- No slickline intervention required (blanking plug)
- Operates at low flow rates
- Nipple profile in Y-Tool block for plugs (blanking plug, wireline plug, coil tubing plug) with the double hinge on the flapper to allow the shuttle to fully open
- Seats against pump side when spring force overcomes head differential

Technical Specifications - Y-Valve

Part Number	OD	Top Box Thread	Bypass Pin Thread	Pump Pin Thread	Top Nipple	Bypass Nipple
958AYT-065	8.30”	4-1/2" 12.6# VAM TOP	3-1/2" 9.2# VAM FJL	3-1/2” 9.2# Vam Top	N/A	2.750” Type D
958AYT-068	8.30"	4-1/2” 12.6# VAM TOP	3-1/2” 9.2# VAM FJL	3-1/2” 9.2# Vam Top	3.125” Type A	2.875” Type D
958AYT-072	8.30"	4-1/2" 12.6# VAM TOP	3-1/2” 9.2# VAM FJL	3-1/2” 9.2# Vam Top	N/A	2.750” Type A
958AYT-075	8.30”	4-1/2” 12.6# VAM TOP	3-1/2” 9.2# VAM FJL	3-1/2” 9.2# Vam Top	3.125” Type A	2.875” Type A

Flapper Mechanism - Open Position

Flapper Mechanism - Closed Position

Pump Sub

The UMS Flowell Pump Sub provides a connection from the electrical submersible pump discharge head to the UMS Flowell Y-Tool.

The Pump Sub is an integral part of the fully torqued and pressure tested assembly which ensures a totally leak free system from pump discharge to well head.

The standard length of the pump sub is 10ft to allow the system to deflect due to the mismatch in centres at the y-tool compared to the ESP and bypass tubing.

FEATURES & BENEFITS

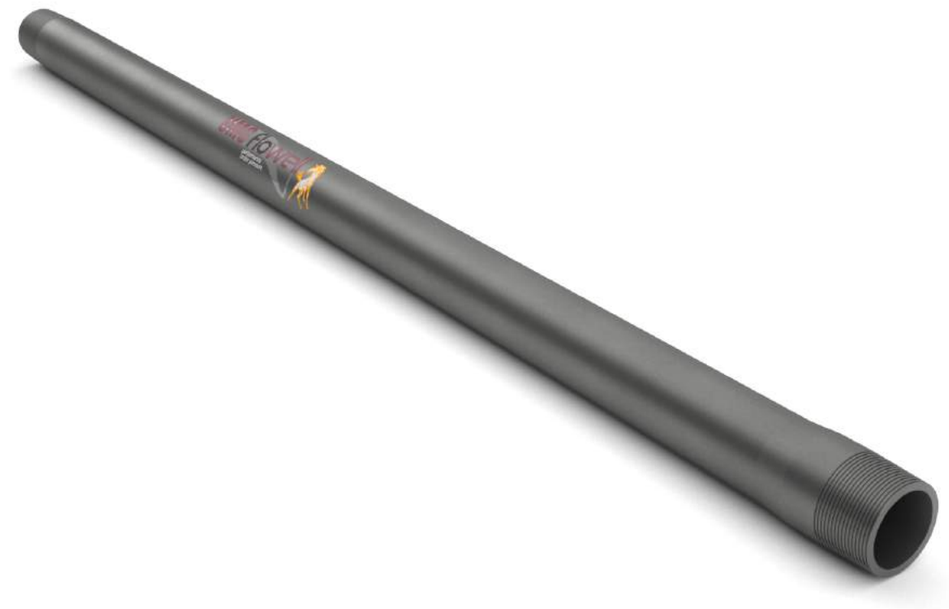
- Pin x Pin thread
- Bottom connection to suit ESP discharge head
- 10ft standard length

SPECIFICATIONS

- Low alloy steel or 13Cr material options to API 5CT
- 5000psi MWP

Technical Specifications - Pump Sub

Part Number	Top Pin Thread	Bottom Pin Thread	Internal Drift
PJ-3500-93- EUXFCJ-10	3-1/2" 9.2# FCJ	3-1/2" 9.3# EUE	2.867"
PJ-3500-93- VTXFCJ-10	3-1/2" 9.2# FCJ	3-1/2" 9.2# VAM TOP	2.867"
PJ-2875-65-EUXFCJ-10	2-7/8" 6.4# F2J	2-7/8" 6.5# EUE	2.347"
PJ-2875-64- VTXFCJ-10	2-7/8" 6.4# F2J	2-7/8" 6.4# VAM TOP	2.347"
PJ-2375-47- EUXFCJ-10	2-3/8" 4.6# F2J	2-7/8" 4.7# EUE	1.901"
PJ-2375-46- VTXFCJ-10	2-3/8" 4.6# F2J	2-7/8" 4.6# VAM TOP	1.901"



Type “D” Bypass Nipple

The UMS Flowell Bypass Nipple is situated at the top of the Bypass immediately below the Y-Tool to provide a seal bore profile into which a Blanking Plug may be seated. These are supplied with various seal bore and thread sizes to interface with Y-Tool and By-Pass Tubing.

The seal bore also provides the sealing location for the lower part of the isolation tool, wireline logging plug and coil tubing logging plug. The Bypass Nipple forms an integral part of the fully torqued and pressure tested Y-Tool Assembly to provide a totally leak free completion and to ensure the correct positioning of the fishing profiles of plugs used to prevent recirculation.

FEATURES & BENEFITS

- Top NO-GO feature
- “D” Type locking profile
- Seal bore for plugs
- Optional seal on bottom thread for dual completions or tailpipe below ESP

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 5000psi MWP

Technical Specifications - Type “D” Bypass Nipple

Part Number	Casing	Upper Pin Thread	Lower Pin Thread	Seal Diameter
N1875D-0001	7”	2-7/8” 9.4# FCJ	2.900-6 STUB ACME	1.875”
TSN-1875D-0002	9-5/8”	3-1/2” 9.2# FCJ	3.560-6 STUB ACME	1.875”
N2125D-0001	9-5/8”	3-1/2” 9.2# FCJ	3.560-6 STUB ACME	2.125”
TSN-2312D-0001	9-5/8”	3-1/2” 9.2# FCJ	3.560-6 STUB ACME	2.312”
N2312D-0004	7”	2-7/8” 9.4# FCJ	2.900-6 STUB ACME	2.312”
N-2562D-0002	9-5/8”	3-1/2” 9.2# FCJ	3.560-6 STUB ACME	2.562”
TSN-2750D-0001	9-5/8”	3-1/2” 9.2# FCJ	3.560-6 STUB ACME	2.750”
N2812D-0003	9-5/8”	3-1/2” 9.2# FCJ	4.375-10 STUB ACME	2.812”
N3812D-0002*	9-5/8”	4-1/2” 12.6# FCJ	4.750-6 STUB ACME	3.812”

* Bottom No-Go

Type “A” Bypass Nipple

The UMS Flowell Bypass Nipple is situated at the top of the Bypass immediately below the Y-Tool to provide a seal bore profile into which a Blanking Plug may be seated. These are supplied with various seal bore and thread sizes to interface with Y-Tool and By-Pass Tubing.

The seal bore also provides the sealing location for the lower part of the isolation tool, wireline logging plug and coil tubing logging plug. The Bypass Nipple forms an integral part of the fully torqued and pressure tested Y-Tool Assembly to provide a totally leak free completion and to ensure the correct positioning of the fishing profiles of plugs used to prevent recirculation.

FEATURES & BENEFITS

- Top NO-GO feature
- “A” Type locking profile
- Seal bore for plugs
- Optional seal on bottom thread for dual completions or tailpipe below ESP

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 5000psi MWP

Technical Specifications - Type “A” Bypass Nipple

Part Number	Casing	Upper Pin Thread	Lower Pin Thread	Seal Diameter
N1875A-0001	7”	2-7/8” 6.4 FCJ	2.9375-6 STUB ACME	1.875”
N2312A-0004	7”	2-7/8” 6.4 FCJ	2.900-6 STUB ACME	2.312”
N2750A-0010	9-5/8”	3-1/2” 9.2# FCJ	3.560-6 STUB ACME	2.750”

Type “D” Blanking Plug

The UMS Flowell Type “D” Blanking Plugs are set in the teleswivel nipple to plug the bypass port of the y-tool when producing the well with the ESP. The blanking plugs are normally preset in the y-tool assembly at the factory and pressure tested.

The plugs are a compact design with locking dogs located above the seals to prevent damage to the nipple seal area. The plugs are run on slickline with a Camco style JD running tool. A fluid bypass feature in the plug prevents the plug from swabbing in the well fluid when running in hole.

The plugs have a top no-go profile and are set in the nipple by jarring down. Jarring down shears screws on an internal shaft and sets the locking dogs in the nipple profile. This movement allows the secondary set of shear pins to engage and locks the plug in place and closes the equalizing ports.

The external ‘V’ packing on the plug completes the seal with the nipple. The plugs are retrieved by jarring upwards on the fishing neck. Upward jarring shears the pins on the shaft which allows upward movement of the internal shaft to disengage the locking dogs and opens the pressure equalising ports to facilitate retrieval.

FEATURES & BENEFITS

- Compact design
- Fluid bypass and equalising feature
- Jar down to set / Jar up to release
- 1.875”, 2.312”, 2.562”, 2.750”, 2.812” sizes for “D” type nipples
- 1.188” external fish neck except 1.875” design which has 1.00” fish neck
- Dress kit to change nipple sizes (standard base unit design 2.312”- 2.812”)
- Suitable for naturally flowing and non-flowing wells

SPECIFICATIONS

- 5000psi MWP
- Up to 350°F with elastomers
- Low alloy steel or 13Cr material to NACE MR-0175
- Viton or Aflas seals as standard

Technical Specifications - Type “D” Blanking Plug

Part Number	NO-GO Diameter	Seal Diameter	Fish Neck Diameter	Running / Pulling Tool
BP-1875-01	1.901”	1.875”	1.00”	1.250 JDC
BP-2125-01	2.175”	2.125”	1.00”	1.250 JDC
BP-2250-01	2.300”	2.250”	1.00”	1.250 JDC
BP-2312-01	2.350”	2.312”	1.188”	1.500 JDS
BP-2562-01	2.610”	2.562”	1.188”	1.500 JDS
BP-2750-01	2.800”	2.750”	1.188”	1.500 JDS
BP-2812-01	2.865”	2.812”	1.188”	1.500 JDS
BP-3812-01*	3.800”	3.812”	2.313”	3.000 JDC

* Bottom No-Go

SUPERIOR BLANKING PLUG TYPE “A” NIPPLE

The UMS Flowell Superior Blanking Plugs are suitable for deploying in modified Camco Type “A” Y-tool bypass nipples which were the legacy profiles used by Phoenix Petroleum. This legacy profile continues with Zenith Oilfield and Schlumberger Y-tool products.

The UMS Flowell Superior Blanking Plug is an alternative and improved plug for the Type “A” nipple profile and provides the following features and benefits.

FEATURES & BENEFITS

- Top NO-GO design
- Fluid bypass when running in hole
- Equalizing feature when pulling
- Balanced shaft design to prevent unseating with pressure below
- Simple operation (Jar down to set / Jar up to release)
- 1.875”, 2.312”, 2.625”, 2.750”, 2.812”, 2.875” for Type A Nipples
- 1.75” External Fish Neck on all Superior Blanking Plugs apart from the 1.875” Superior Blanking Plug which has a 1.375” External Fish Neck
- Locking Dog design instead of a collet lock to prevent scoring of the seal bore when pulling and setting
- Front end debris seal to clean the seal bore when running into the nipple
- Bi-Directional Seals for holding pressure from above and below
- Suitable for naturally flowing and non-flowing wells
- Retrofit for Phoenix Petroleum Type “A” nipples (Zenith Oilfield and Schlumberger Y-tool nipple profiles)
- Can be used as a barrier plug when set in a top nipple

SPECIFICATIONS

- 5000psi MWP from above or below
- Up to 350°F with elastomers
- Low alloy steel or 17/4 ST.ST
- Viton or Aflas seals as standard
- Non elastomeric seals available upon request

JCS GROUP

Technical Specifications - Superior Blanking Plug

Part Number	No-Go Diameter	Seal Diameter	Fish Neck Diameter	Running / Pulling Tool
SBP-1875-01	1.900”	1.875”	1.375”	2.000” JDC
SBP-2312-01	2.350”	2.312”	1.75”	2.500” JDC
SBP-2625-01	2.675”	2.675”	1.75”	2.500” JDC
SBP-2750-01	2.800”	2.750”	1.75”	2.500” JDC
SBP-2812-01	2.865”	2.812”	1.75”	2.500” JDC
SBP-2875-01	2.930”	2.875”	1.75”	2.500” JDC

UMS flowell

Telescopic Swivel

The UMS Flowell Telescopic Swivel is made up to the Bypass Nipple and allows the rotational make-up of the bypass tubing to complete the assembly of the system at the well site.

The adjustable swivel has 15inch stroke to allow for adjustment of bypass tubing space out as required.

Two variants of the Telescopic Swivel are available, a load bearing and non load bearing configuration. The load bearing configuration is used where a pressure tight seal is required and where tailpipe below the ESP is run. The load bearing telescopic swivel is also used for Dual ESP applications.

FEATURES & BENEFITS

- Option of load bearing version for dual completions or tailpipe below the ESP
- Designs for 9-5/8” and 7” Y-tool systems
- Reducing crossovers available for smaller bypass tubing

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 15” stroke

JCS GROUP

Technical Specifications - Telescopic Swivel

Part Number	Casing Size	Box Thread	Pin Thread	Type	Stroke
TSN-00007	9-5/8”	3.560-6 STUB ACME	2-7/8” 6.4# F2J	Non-Load Bearing	15”
TSN-00010	7”	2.900-6 STUB ACME	2-3/8” 4.6# F2J	Non-Load Bearing	15”
TSN-00031	9-5/8”	3-1/2” 7.7# VAM TOP (PIN)	3-1/2” 9.2# VAM FJL	Load Bearing (Sub-Assy with Bypass Nipple)	15”
TSN-00037	9-5/8”	3.560-6 STUB ACME	2-7/8” 6.4# F2J	Load Bearing	15”
TSN-00047	9-5/8”	3-1/2” 7.7# VAM TOP (PIN)	3-1/2” 9.2# VAM FJL	Load Bearing (Sub-Assy with Bypass Nipple)	15”
TSN-00052	7”	2.900-6 STUB ACME	2-3/8” 4.6# F2J	Non-Load Bearing	15”
TSN-00053	9-5/8”	3-1/2” 9.2# FCJ (PIN)	3-1/2” 9.2# VAM FJL	Load Bearing (Sub-Assy with Bypass Nipple)	20”
TSN-00057	9-5/8”	4-1/2” 12.6# FCJ (PIN)	4-1/2” 12.6# VAM FJL	Load Bearing (Sub-Assy with Bypass Nipple)	15”
TSN-00062	7”	2.900-6 STUB ACME	2-3/8" 4.6# PTJ	Non-Load Bearing	15”
TSN-00068	7”	2-7/8" 6.4# FCJ (PIN)	2-7/8” 6.4# F2J	Load Bearing (Y-Tool Integral Bypass Nipple, Sub-Assy with Bypass Nipple)	15”
TSN-00072	9-5/8”	3.560-6 STUB ACME	2-7/8” 6.4# F2J	Load Bearing (ABC Y-Tool, Short Stroke)	5”

UMS flowell

Bypass Tubing Reducing Crossover

The UMS Flowell Bypass Tubing Crossover is used when converting the connection on the Telescopic Swivel to a smaller size of bypass tubing.

This is required where the standard size of tubing will not fit into the casing drift alongside the ESP.

FEATURES & BENEFITS

- Box x Pin thread
- Other threads available on request

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 5000psi MWP

Technical Specifications - Bypass Tubing Reducing Crossover

Part Number	Box Thread	Pin Thread
XO-287237-01	2-7/8" 6.4# F2J	2-3/8" 4.6# F2J
XO-237212-01	2-3/8" 4.6# F2J	2-1/8" 2.4# F2J

Bypass Tubing

UMS Flowell Bypass Tubing is positioned alongside the electrical submersible pump assembly to provide unobstructed, fully protected passage for coiled tubing or wireline toolstrings.

The Bypass Tubing has a smooth internal profile to remove the possibility of hang-up of the coiled tubing or wireline strings.

UMS Flowell F2J premium (metal to metal seal) flush joint thread is provided as standard, however other threads can be provided upon request.

FEATURES & BENEFITS

- Box x Pin thread
- Other threads available on request
- 15ft standard length, other lengths available
- No coupling- Flush outside diameter to maximize space

SPECIFICATIONS

- Low alloy steel or 13Cr material options to API 5CT
- 5000psi MWP
- 2-1/8" OD tubing offered in carbon steel and 316 stainless steel materials

Technical Specifications - Bypass Tubing

Part Number	Box Thread	Pin Thread	Length	Internal Drift
PJ-2875-64-F2J-15	2-7/8" 6.4# F2J	2-7/8" 6.4# F2J	15ft	2.347"
PJ-2375-46-F2J-15	2-3/8" 4.6# F2J	2-3/8" 4.6# F2J	15ft	1.901"
PJ-2125-24-F2J-15	2-1/8" 2.4# F2J	2-1/8" 2.4# F2J	15ft	1.717"
42510F2JBP15CS	4-1/4" 10# F2J	4-1/4" 10# F2J	15FT	TBC

Other Lengths Available

Bypass Tubing Clamp

The UMS Flowell Bypass Tubing Clamp is designed to provide full protection to the ESP MLE cable and auxiliary control/ injection lines whilst ensuring adequate flow area around the completion and to maintain the maximum stand-off between the ESP assembly and the casing to give cooling to the electric motors.

The 9-5/8” bypass clamp has adjustable jaws to allow fitting onto 400 to 562 series ESP necks. The clamp has gripping features to secure the clamp to the bypass tubing. The standard clamp fits 2-7/8” bypass tubing. Fitting inserts to the clamp allows the clamp to be changed to 2-3/8” bypass tubing.

The 9-5/8” x 2-7/8” Bypass Clamp has been load tested to 0.86 ton before slippage occurred. The clamps have universal cable clips on either side to grip ¼” discharge pressure lines and the ESP MLE cable.

The 7” bypass clamp can be machined for 2-3/8” or 2-1/8” bypass tubing, and for 338 series to 400 series ESP neck sizes. This clamp also comes with a universal cable clip to grip ¼” discharge pressure lines and the ESP MLE cable.

FEATURES & BENEFITS

- Precision investment castings
- Robust designs
- Universal clamp for 9-5/8” casing
- Grip features to prevent slippage, load tested to 0.86 ton
- Universal cable clip designs for flat MLE and ¼” discharge pressure line

SPECIFICATIONS

- Low alloy steel or 13Cr material options

Technical Specifications - Bypass Tubing Clamp

Bypass Clamp				
Part Number	Casing Szie	Clamp Od	ESP Size	Bypass Tubing Szie
TD12-096	7”	5.960”	Universal 300/400 Series	2-1/8”
TD12-100	7”	5.960”	Universal 300 Series	2-3/8”
BPC-0700-014C	7”	6.000”	Novomet 319 Series	2-7/8”
BPC-09625-005	9-5/8”	8.350”	500 Series	2-3/8”
BPC-09625-013	9-5/8”	8.350”	Universal 500 Series	2-7/8”
BPC-09625-034	9-5/8”	8.350”	400/500 Series fixed neck sizes - refer to drawing table	2-7/8”
BPC-09625-034	9-5/8”	8.350”	Universal 400 Series	2-7/8”
BPC-09625-069	9-5/8”	8.350”	Universal 500 Series - ABC Installation	2-7/8”
BPC-09625-051	9-5/8”	8.350”	Universal 500 Series - Flatpack (Ecuador specific)	2-7/8”
BPC-09625-100	9-5/8”	8.350”	Universal 400 Series	3-1/2”
BPC-09625-059	9-5/8”	8.250”	Novomet 406 Series	4-1/4”
BPC-09625-048	9-5/8”	8.375”	Universal 300 Series	4-1/2”
BPC-10750-0003	10-3/4”	9.53”	Machined Neck for 500 Series	3-1/2”
BPC-10750-0008	10-3/4”	9.53”	SLB 562 Protector (Trident MLE Pothead)	3-1/2”

Wireline Entry Guide

The UMS Flowell Wireline Entry Guide (WEG) is made up to the bottom of the last joint of bypass tubing below the ESP. The WEG ensures a smooth guided re-entry of the wireline or coil tubing tool strings back into the bypass tubing after completion of logging or well intervention.

The smooth edges prevent cutting of wireline or slickline cable during logging operations.

FEATURES & BENEFITS

- Full mule shoe design
- Smooth internal corners
- Finned features for centralization
- Compact design
- Precision investment casting

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- 3.8” OD to fit inside 4-1/2” liner

Technical Specifications - Wireline Entry Guide

Part Number	Box Thread	Outside Diameter
WEG-00002	2-7/8” 6.4# F2J	3.80”
WEG-00004	2-3/8” 4.6# F2J	3.80”
WEG-00005	2-1/8” 2.4# F2J	3.80”
WEG-00008*	2-7/8” 6.4# F2J	3.13”
WEG-00011	4-1/4” 10# F2J	4.83”
WEG-00012	2-7/8” 6.4# F2JLB	3.80”
WEG-00013	2-3/4” 4.4# F2J	3.80”
WEG-00015	2-1/8” 2.4# F2J	2.13” (54mm)

* Plain Re-Entry Guide

Motor Base Plug

The UMS Flowell Motor Base Plug has a 2-3/8” EUE pin up for making up to the motor base or ESP gauge base. The Motor Base Plug provides a dummy neck for attaching the first bypass clamp at the bottom of the ESP thus securing the bypass tubing at this location.

It also protects the lowermost ESP component when running downhole
The motor base plug is hollow which makes it more lightweight. This also prevents trapped pressure at the EUE connection.

The base of the Motor base plug has a 2-3/8” EUE box for suspending optional accessories below the ESP such as memory gauge carriers or sacrificial anodes.

FEATURES & BENEFITS

- Hollow lightweight design that prevents trapped pressure in the threads
- 2-3/8” API EUE Pin x Box design
- Compact design
- Precision investment casting

SPECIFICATIONS

- Low alloy steel or 13Cr material options
- OD to suit ESP

Technical Specifications - Motor Base Plug

Part Number	Motor	Outside Diameter	Neck Diameter	Pin Thread
MBP-0005	540	5.39”	3.25”	2-3/8” EUE
MBP-0006	456	4.55”	3.00”	2-3/8” EUE
MBP-0007	375	3.75”	2.44”	2-3/8” EUE
MBP-0008	456	4.55"	3.00”	2-3/8” EUE
MBP-0010	540	5.39”	3.25"	2-3/8” NUE
MBP-0011	319	3.19”	1.95”	2-3/8” NUE
MBP-0012	406	4.06”	2.52”	2-3/8” NUE
MBP-0013	456	4.06”	2.52”	2-3/8” EUE

Pump Support For Y-Tool Applications

The Pump Support Sub is an optional component of the bypass system. It is primarily used when running dual ESP's or when tailpipe is to be run below the ESP and located into a PBR.

The purpose of the Pump Support Sub is to transfer any compressive loading to the ESP and tensile loading to the bypass tubing upon retrieval of the system.

FEATURES & BENEFITS

- Allows compressive loads to be transferred onto the ESP rather than the weaker y-tool bypass tubing
- Allows tensile loads to be transferred through the bypass tubing rather than the weaker ESP flange bolts
- Available for 10-3/4", 9-5/8", 7-5/8" & 7" casing sizes
- 2-3/8" EUE swivel for make up to the ESP motor base or ESP gauge
- Simple installation

SPECIFICATIONS

- Available in low alloy or 13Cr metallurgy
- Choice of threaded connections
- Tensile strength dependent on the bypass tubing
- Thread weights and grades to suit application
- Supplied in a torqued and pressure tested sub assembly with an 8ft bypass tubing pup joint and 6ft tailpipe pup joint as standard for handling
- Requires bypass tubing to be spaced out between the Y-tool and pump support using standard bypass tubing lengths and in addition with spacer bypass tubing pup joints supplied in 1ft, 2ft, 3ft, 5ft and 8ft lengths. Fine adjustment is made with the telescopic swivel which has 15" stroke as standard.

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Technical Specifications - Pump Support For Y-Tool Applications

Part Number	OD	Pump Pin Thread	Bypass Box Thread	Bypass Pin Thread
7PS-00014	5.80"	2-3/8" 4.7# EUE	2-3/8" 4.6# F2J	3-1/2" 9.3# EUE
7PS-00015	5.80"	2-3/8" 4.7# EUE	2-1/8" 2.4# F2J	3-1/2" 9.3# EUE
7PS-00020	6.10"	2-3/8" 4.6# NUE	2-7/8" 6.4# F2J	2-7/8" 6.4# FOX
7PS-00021	6.10"	2-3/8" 4.6# NUE	2-7/8" 6.4# F2J	3-1/2" 9.2# VAM TOP
958PS-018	8.00"	2-3/8" 4.7# EUE	2-7/8" 6.4# F2J	3-1/2" 9.3# EUE
958PS-027**	8.00"	2-3/8" 4.7# EUE	2-7/8" 6.4# F2J	3-1/2" 9.3# EUE
958PS-029	8.25"	2-3/8" 4.7# EUE	2-3/8" 4.6# F2J	4-1/2" 12.6# VAM TOP
958PS-033	8.00"	2-3/8" 4.6# NUE	2-7/8" 6.4# F2J	2-7/8" 6.5# EUE
958PS-039	8.00"	2-3/8" 4.7# EUE	2-7/8" 6.4# F2J	4-1/2" 12.6# VAM TOP
958PS-049	8.10"	2-3/8" 4.6# NUE	4-1/4" 10# F2J	4-1/2" 12.6# VAM TOP
958PS-052	8.00"	2-3/8" 4.6# NUE	2-7/8" 6.4# F2J	3-1/2" 9.2# VAM TOP

** Same as 958PS-018 but machined from solid

UMS flowell performance under pressure

ABC Bypass System (Y-Tools)

The patent pending UMS Flowell ABC Bypass System is a simpler, faster installation than conventional y-tool installations. No pre job space out is required with the ESP components, the bypass tubing minimum length is simply the ESP length plus fifteen feet.

The bypass tubing is installed first with conventional handling equipment and when complete, it is suspended in a hoist or two tiers worktable. The ESP is then installed with special bypass clamps which slide down the bypass tubing.

Finally, the Y-tool is picked up and made up the ESP pump and lowered to allow the bypass swivel to be made up. To view the method of installation please visit our Youtube channel.

SYSTEM REQUIREMENTS

- Standard Y-tool assembly with either telescopic or non-telescopic swivel
- Flush Joint Bypass Tubing (15ft or 30ft)
- Bell Type Wireline Entry Guide instead of a half mule shoe
- Wireline Entry Guide
- Special Bypass Tubing Clamps (no grip on the bypass tubing)
- Special Motor Base Plug for clamping the ESP motor or ESP gauge base to the bypass tubing
- Optional Special Two-Tier Worktable
- Handling equipment comprised of a Worktable, Safety Clamp and
- Swivel Lift Nubbin for handling the bypass tubing
- Conventional service tools as the standard Y-tool system (standing valve, isolation tool, wireline logging plug, coil tubing logging plug)

Technical Specifications - ESP Bypass System

Maximum OD of ESP (in)						
	3.750	3.870	4.000	5.130	5.400	5.625
Casing size	Maximum bypass tubing OD (in)					
7” 23-26ln/ft	2.375	2.125	2.125	-	-	-
7” 29-35lb/ft	2.125	2.125	-	-	-	-
9-5/8” 40-47lb/ft	2.875	2.875	2.875	2.875	2.875	2.875
9-5/8” 53.5lb/ft	2.875	2.875	2.875	2.875	2.875	2.375

Standard Bypass Tubing data			
Tubing size and weight	OD (in)	ID (in)	Internal Drift (in)
2-7/8” 6.4lb/ft	2.875	2.441	2.347
2-3/8” 4.6lb/ft	2.375	1.995	1.901
2-1/8” 2.4lb/ft	2.125	1.811	1.717

Technical Specifications - ABC Work Table

ABC Work Table				
Work Table Part No.	Bpass Cartridge Part No.	Bypass Tubing Size	Table SWL	Bypass Cartridge SWL
WT-00077-3500	WT-00100-3500	3-1/2”	20 Ton	2 Ton
WT-00077-2875	WT-00100-2875	2-7/8”	20 Ton	2 Ton
WT-00077-2375	WT-00100-2375	2-3/8”	20 Ton	2 Ton
WT-00077-2125	WT-00100-2125	2-1/8”	20 Ton	2 Ton

Technical Specifications - ABC Bypass Clamp

Bypass Clamp				
Part Number	Casing Szie	Clamp Od	ESP Size	Bypass Tubing Szie
BPC-09625-069	9-5/8”	8.350”	Universal 500 Series - ABC Installation	2-7/8”

Technical Specifications - ABC Safety Sub

ABC Safety Sub			
Part Number	Shoulder Dia	Box Thread	Pin Thread
XO-00390	3.222”	2-7/8” 6.4# F2J	2-7/8” 6.4# F2J

Technical Specifications - ABC Re-Entry Guide

ABC Re-Entry Guide		
Part Number	Outer Diameter	Box Thread
WEG-00008	3.13”	2-7/8” 6.4# F2J

Bypass Safety Clamp

The UMS Flowell Bypass Safety Clamp provides a means of supporting the weight of the bypass tubing or the string weight during assembly of the system when landed on the ESP work table (stove pipe).

The safety clamp has interchangeable tubing dies to suit the size of bypass tubing.

The safety clamp has a safe working load of 20 tonnes for use on systems with heavy tailpipe or for dual y-tool ESP applications.

FEATURES & BENEFITS

- Lightweight
- Lifting handle locations
- Common body with interchangeable slip dies for 2-3/8” and 2-7/8” tubing
- 4 slip dies per assembly

SPECIFICATIONS

- 20 Ton SWL
- 2-1/8” to 2-7/8” tubing sizes

Technical Specifications - Bypass Safety Clamp

Part Number	SWL	Tubing Szie	Die Part Number
SC-0005	20 ton	2-7/8”	SC-0006
SC-0009	20 ton	2-3/8”	SC-0010
SC-0026-3500	10 Ton	3-1/2”	SC-0024
SC-0026-4000	10 Ton	4”	SC-0023
SC-0026-4500	20 ton	4-1/2”	SC-0018

Bypass Swivel Lift Nubbin

The UMS Flowell Swivel Lift Nubbins allow handling of flush joint casing and tubing. The Swivel lift nubbins have a pin thread to mate with the corresponding flush joint box thread on the casing or tubing.

A 4.75 ton swivel allows single joints to be lifted with the tugger line or crane without the need for single joint elevators. A shoulder on the lift nubbin acts as a dummy coupling and allows the string to be handled with side door or centre latch elevators.

If slip type elevators are used, the dummy coupling shoulder acts as a stop collar in the event that unplanned string slippage occurs.

FEATURES & BENEFITS

- Lightweight
- Available in tubing and casing sizes from 2-1/8” upwards
- Various thread options
- Swivel hoist to allow make up of tubing / casing
- Elevator shoulder for picking up string weight or used as a stop shoulder when using slip type elevators

SPECIFICATIONS

- 4.75 Ton SWL swivel hoist ring
- Elevator shoulder rating dependent on thread size, thread type, grade, and tubing/casing weight

Technical Specifications - Bypass Swivel Lift Nubbin

Part Number	SWL	Pin Thread
SLN-2125-01-F2J	4 Ton	2-1/8" 2.4# F2J
SLN-2375-01-F2J	4.5 Ton	2-3/8” 4.6# F2J
SLN-2875-01-F2J	4 Ton	2-7/8" 6.4# F2J
SLN-2875-01-F2JLB	4 Ton	2-7/8” 6.4# F2JLB
SLN-2875-02-F2J	4 Ton	2-7/8” 6.4# F2J
SLN-4250-01-F2J	15 Ton	4-1/4” 10# F2J
SLN-5500-01-F2J	4 Ton	5-1/2” 15.5# F2J

ESP Work Table
(Stove Pipe)

The UMS Flowell ESP work table (or stove pipe) is a light weight work table used for supporting the weight of the ESP and bypass tubing when installing the system at the well site at a comfortable working height.

The weight of the installation is transferred onto the table by the ESP lifting clamp and/or bypass tubing safety clamp. The standard lightweight table comes fitted with a safety gate feature to prevent swinging of assemblies and weighs 65kg so lifting handles are fitted for easy.

The standard top plate has a 7 inch cut out for up to 675 series ESPs.

FEATURES & BENEFITS

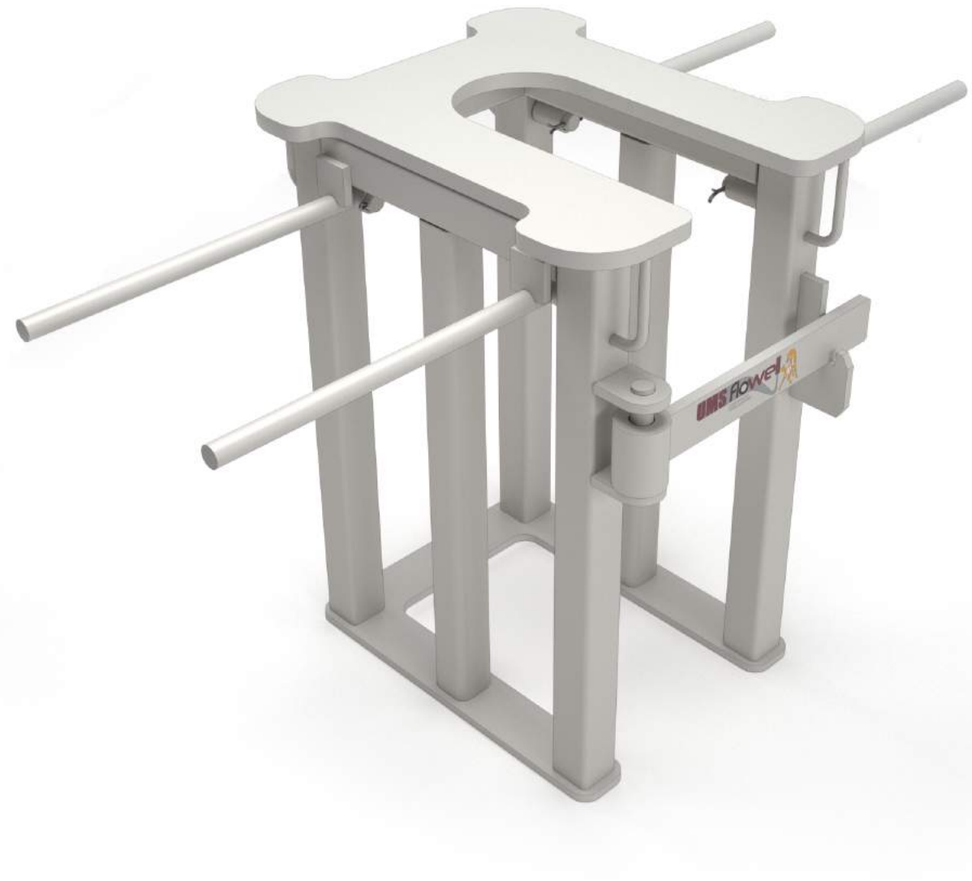
- Lightweight
- Lifting handles
- Safety gate feature
- Optional adapter plate for rotary table if required

SPECIFICATIONS

- 20 Ton SWL
- 7” cutout

Technical Specifications - ESP Work Table

Part Number	SWL	Weight	C-Plate Size
WT-0002	20 Ton	65kg	7”



Standing Valve

The UMS Flowell Standing Valve seats in the Top Nipple situated above the Y-Tool. The Standing Valve allows the tool to be landed in the nipple even with a full column of fluid below and is used to pressure test the production string from top nipple to surface.

The Standing Valve also allows the setting of a hydraulic ESP packer. The standing valve can be set in the Top Nipple on surface prior to running in hole or alternatively with slickline.

The standing valve is a ball seat check valve that allows fluid to pass from below After testing the tubing and bleeding off pressure on surface, the standing valve has an equalizing feature to assist with retrieval using slickline.

FEATURES & BENEFITS

- Compact design
- Holds pressure from above only
- Jar down to set
- Jar up to release
- 2.312”, 2.562”, 2.750”, 2.812” sizes for UMS Flowell nipples
- 1.375” external fish neck
- Dress kit to change nipple sizes (standard base unit design)
- Top NO-GO design
- Pressure equalizing feature

SPECIFICATIONS

- 5000psi MWP
- Up to 350F with elastomers
- 13Cr material with Tuftride QPQ finish
- Viton or Aflas seals as standard

Technical Specifications - Standing Valve

Standing Valve - Type D				
Part Number	No-Go Dia	Seal Dia	Fish Neck Dia	Run/Pull Tool
SV-1875-01	1.901”	1.875”	1.375”	2.000 JDS
SV-2312-01	2.350”	2.312”	1.375”	2.000 JDS
SV-2562-01	2.610”	2.562”	1.375”	2.000 JDS
SV-2750-01	2.800”	2.750”	1.375”	2.000 JDS
SV-2812-01	2.865”	2.812”	1.375”	2.000 JDS

Standing Valve - Type A Superior				
Part Number	No-Go Dia	Seal Dia	Fish Neck Dia	Run/Pull Tool
SSV-1875-01	1.901”	1.875”	1.375”	2.000 JDS
SSV-2312-01	2.350”	2.312”	1.375”	2.000 JDS
SSV-2562-01	2.610”	2.562”	1.375”	2.000 JDS
SSV-2625-01	2.675”	2.625”	1.375”	2.000 JDS
SSV-2750-01	2.800"	2.750”	1.375”	2.000 JDS
SSV-2812-01	2.865"	2.812”	1.375”	2.000 JDS

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Wireline Plug Type “D”

The UMS Flowell Wireline Logging Type “D” Plug allows wireline strings to be suspended below the ESP via the By-Pass Tubing and work can be carried out under both static and dynamic conditions. Wireline Logging Plugs are available in various sizes to suit the Bypass Nipple seal bore diameters. Flow tubes in various sizes are supplied to suit the wireline cable or slickline dimensions.

The wireline plug is seated into the bypass nipple by using a wireline hammer attached to the wireline string at the desired location above the tool string (distance from y-tool to the bottom of the logging interval). The wireline hammer has grapple inserts to secure it to the appropriate size wireline cable.

The wireline logging plug has a spring loaded equalising feature that allows pressure across the plug to be equalised when in contact with the tool string allowing easy retrieval of the plug, this also allows the tool string to be run again without pulling to surface to redress shear pins in the event that the tool string was prematurely or accidentally pulled back into the bypass tubing and unseats the plug.

FEATURES & BENEFITS

- Compact design
- Optional tool catcher
- Jar down with wireline hammer to set
- Pull up with PLT to release
- 2.312”, 2.562”, 2.750”, 2.812” sizes for nipples
- 1.375” external fish neck
- Dress kit to change nipple sizes (standard base unit)
- Top NO-GO design
- Pressure equalizing feature
- No shear pins

SPECIFICATIONS

- 5000psi MWP
- Up to 350°F with elastomers
- 13Cr material with Tuftride QPQ finish
- Viton or Aflas seals as standard

Technical Specifications - Wireline Plug Type “D”

Wireline Plug - Type “D”			
Part Number	NO-GO Dia	Seal Dia	External Fish Neck Dia
WLP-1875-TNG-01	1.901”	1.875”	1.375”
WLP-2125-TNG-01	2.175”	2.125”	1.375”
WLP-2312-TNG-01	2.350”	2.312”	1.375”
WLP-2562-TNG-01	2.610”	2.562”	1.375”
WLP-2750-TNG-01	2.800”	2.750”	1.375”
WLP-3812-01*	3.800”	3.812”	1.375”

*Bottom No-Go

Flow Tube	
Part Number	Wireline / Slickline Dia
WLP-0002-01	0.082”
WLP-0002-02	0.092”
WLP-0002-03	0.108”
WLP-0002-04	0.125”
WLP-0002-05	0.1875”
WLP-0002-06	0.218”
WLP-0002-07	0.226”
WLP-0002-08	0.235”
WLP-0002-09	0.250”
WLP-0002-10	0.312”
WLP-0002-11	0.320”
WLP-0002-12	0.460”
WLP-0002-13	0.469”
WLP-0002-14	0.290”
WLP-0002-15	0.160”

Wireline Plug Type “A” Superior

The UMS Flowell Wireline Logging Type “A” Superior Plug allows wireline strings to be suspended below the ESP via the By-Pass Tubing and work can be carried out under both static and dynamic conditions. Wireline Logging Plugs are available in various sizes to suit the Bypass Nipple seal bore diameters. Flow tubes in various sizes are supplied to suit the wireline cable or slickline dimensions.

The wireline plug is seated into the bypass nipple by using a wireline hammer attached to the wireline string at the desired location above the tool string (distance from y-tool to the bottom of the logging interval). The wireline hammer has grapple inserts to secure it to the appropriate size wireline cable.

The wireline logging plug has a spring loaded equalising feature that allows pressure across the plug to be equalised when in contact with the tool string allowing easy retrieval of the plug, this also allows the tool string to be run again without pulling to surface to redress shear pins in the event that the tool string was prematurely or accidentally pulled back into the bypass tubing and unseats the plug.

FEATURES & BENEFITS

- Compact design
- Optional tool catcher
- Jar down with wireline hammer to set
- Pull up with PLT to release
- 2.312”, 2.562”, 2.750”, 2.812” sizes for nipples
- 1.375” external fish neck
- Dress kit to change nipple sizes (standard base unit)
- Top NO-GO design
- Pressure equalizing feature
- No shear pins

SPECIFICATIONS

- 5000psi MWP
- Up to 350°F with elastomers
- 13Cr material with Tuftride QPQ finish
- Viton or Aflas seals as standard

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Technical Specifications - Wireline Plug Type “A” Superior

Wireline Plug - Type “A”			
Part Number	NO-GO Dia	Seal Dia	External Fish Neck Dia
SWLP-1875-01	1.901”	1.875”	1.375”
SWLP-2125-01	2.175”	2.125”	1.375”
SWLP-2312-01	2.350”	2.312”	1.375”
SWLP-2562-01	2.610”	2.562”	1.375”
SWLP-2625-01	2.675”	2.625”	1.375”
SWLP-2750-01	2.800”	2.750”	1.375”
SWLP-2812-01	2.865”	2.812”	1.375”
SWLP-2875-01	2.925”	2.875”	1.375”

Flow Tube	
Part Number	Wireline / Slickline Dia
WLP-0002-01	0.082”
WLP-0002-02	0.092”
WLP-0002-03	0.108”
WLP-0002-04	0.125”
WLP-0002-05	0.1875”
WLP-0002-06	0.218”
WLP-0002-07	0.226”
WLP-0002-08	0.235”
WLP-0002-09	0.250”
WLP-0002-10	0.312”
WLP-0002-11	0.320”
WLP-0002-12	0.460”
WLP-0002-13	0.469”
WLP-0002-14	0.290”
WLP-0002-15	0.160”

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Wireline Plug Tool Catcher

An optional tool catcher can be used along with the wireline logging plug.

This failsafe allows the wireline tool string to be caught in the tool catcher should the wire break on pulling out. Without the tool catcher, the plug and PLT would need to be fished separately. With the tool catcher, just one fishing trip would be required to retrieve the plug and BHA, without the risk of losing the tool string in the hole.

The tool catcher is a universal design and can catch 1.000” to 1.750” external fish neck sizes.

FEATURES & BENEFITS

- Spring loaded fingers
- Catches 1.00” to 1.750” external fish necks
- 2.305” OD
- Fits UMS Flowell Wireline Logging plug by replacing the bull nose at the bottom of the plug

SPECIFICATIONS

- Load capacity 2000kg

Technical Specifications - Wireline Plug Tool Catcher

Part Number	OD	Wireline plug size	Fish neck catch size
WLP-0011	2.305"	2.312” TO 2.750”	1.00” TO 1.750”
WLP-0019	1.860"	1.875” TO 2.250”	0.875” TO 1.375”

Wireline Plug Hammer

The UMS Flowell wireline plug is seated into the bypass nipple by using a wireline hammer attached to the wireline string at the desired location above the tool string (set distance from y-tool to the bottom of the logging interval).

The wireline hammer has hammer inserts to secure it to the appropriate size wireline cable.

FEATURES & BENEFITS

- Slimline design (1.50” OD) for small tubing
- 1.375” external fish neck
- Brass insert for gripping wireline / slickline
- Used in conjunction with PFT Wireline Logging Plug

SPECIFICATIONS

- Weight = 7lbs

Technical Specifications - Wireline Plug Hammer

Part Number	OD	Fish neck size
WLP-HMR-002	1.50”	1.375”

Hammer Insert Part Number	Wireline / Slickline Dia
WLP-HMR-003-01	0.082”
WLP-HMR-003-02	0.092”
WLP-HMR-003-03	0.108”
WLP-HMR-003-04	0.125
WLP-HMR-003-05	0.1875”
WLP-HMR-003-06	0.218”
WLP-HMR-003-07	0.226”
WLP-HMR-003-08	0.235”
WLP-HMR-003-09	0.250”
WLP-HMR-003-10	0.312”
WLP-HMR-003-11	0.320”
WLP-HMR-003-12	0.460”
WLP-HMR-003-13	0.469”
WLP-HMR-003-14	0.290”
WLP-HMR-003-15	0.160”

Coil Tubing Plug Type “D”

The UMS Flowell Coiled Tubing Logging Plug Type “D” can be deployed in all standard UMS Flowell Bypass Systems and is used as a means of sealing between the Bypass Nipple and the coil tubing outside diameter. The plug comes in various combinations of coiled tubing and Bypass Nipple sizes- see table below.

The coil tubing plug is primarily used on production logging runs, and can also be used for clean out operations, and as a means of running downhole samplers below the ESPs on horizontal reservoir sections.

The coil tubing plug is attached to the coil by a connector. The connector is made up to a sleeve that passes through the coil tubing plug and makes up to a crossover below which is made up to the tool string.

The coil tubing plug is released from the internal sleeve when seated in the Bypass Nipple allowing the coil to pass through the logging plug and through the bypass tubing into the reservoir below the ESP. The positive locking mechanism prevents the logging plug lock from unseating too early.

When the coil operations are complete, the internal sleeve above the tool string enters the coil tubing plug allowing the plug to be unseated without any shearing or excessive over pull.

FEATURES & BENEFITS

- Compact design
- Push down to seat
- Pull up to release
- Range of seal sizes from 2.750” to 1.875” with various coil size combinations
- Positive Locking Mechanism

SPECIFICATIONS

- 5000psi MWP
- Up to 350F with elastomers
- 17-4 PH Stainless steel with Tuftride QPQ finish
- Viton or Aflas seals as standard

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Technical Specifications - Coil Tubing Plug Type “D”

Standard Coil Tubing Plugs - Type D				
Coil Tubing Size	Nipple Size	Part Number	Description	Redress Kit Part Number
2.00"	3.812"	CTP3812200001V	3.812" X 2" COIL TUBING PLUG, VITON	RKSCTP3812200001V
2.00"	2.750"	CTP2750200001V	2.750" X 2" COIL TUBING PLUG, VITON	RKSCTP2750200001V
1.75”	3.812"	CTP3812175001V	3.812" X 1.75" COIL TUBING PLUG, VITON	RKSCTP3812175001V
1.75”	2.750"	CTP2750175001V	2.750" X 1.75" COIL TUBING PLUG, VITON	RKSCTP2750175001V
1.75”	2.625"	CTP2625175001V	2.625" X 1.75" COIL TUBING PLUG, VITON	RKSCTP2625175001V
1.50"	3.812"	CTP3812150001V	3.812" X 1.50" COIL TUBING PLUG, VITON	RKSCTP3812150001V
1.50"	2.750"	CTP2750150001V	2.750" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2750150001V
1.50"	2.625"	CTP2625150001V	2.625" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2625150001V
1.50"	2.562"	CTP2562150001V	2.562" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2562150001V
1.50"	2.312"	CTP2312150001V	2.312" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2312150001V

Coil Tubing OD	Bypass Nipple Size							Minimum Bypass Tubing (Nominal OD)
	2.312”	2.562”	2.625”	2.75”	2.812”	2.875”	3.812”	
1.50”	✓	✓	✓	✓	✓	✓	✓	2.125”
1.75”	x	x	✓	✓	✓	✓	✓	2.375”
2.00”	x	x	x	✓	✓	✓	✓	2.875”

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Coil Tubing Plug Type “A”

The UMS Flowell Coiled Tubing Logging Plug Type “D” can be deployed in all standard UMS Flowell Bypass Systems and is used as a means of sealing between the Bypass Nipple and the coil tubing outside diameter. The plug comes in various combinations of coiled tubing and Bypass Nipple sizes- see table below.

The coil tubing plug is primarily used on production logging runs, and can also be used for clean out operations, and as a means of running downhole samplers below the ESPs on horizontal reservoir sections.

The coil tubing plug is attached to the coil by a connector. The connector is made up to a sleeve that passes through the coil tubing plug and makes up to a crossover below which is made up to the tool string.

The coil tubing plug is released from the internal sleeve when seated in the Bypass Nipple allowing the coil to pass through the logging plug and through the bypass tubing into the reservoir below the ESP. The positive locking mechanism prevents the logging plug lock from unseating too early.

When the coil operations are complete, the internal sleeve above the tool string enters the coil tubing plug allowing the plug to be unseated without any shearing or excessive over pull.

FEATURES & BENEFITS

- Compact design
- Push down to seat
- Pull up to release
- Range of seal sizes from 2.750” to 1.875” with various coil size combinations
- Positive Locking Mechanism

SPECIFICATIONS

- 5000psi MWP
- Up to 350F with elastomers
- 17-4 PH Stainless steel with Tuftride QPQ finish
- Viton or Aflas seals as standard

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Technical Specifications - Coil Tubing Plug Type “A” Superior

Standard Coil Tubing Plugs - Type A Superior				
Coil Tubing Size	Nipple Size	Part Number	Description	Redress Kit Part Number
2.00"	3.812"	SCTP3812200001V	3.812" X 2" COIL TUBING PLUG, VITON	RKSCTP3812200001V
2.00"	2.750"	SCTP2750200001V	2.750" X 2" COIL TUBING PLUG, VITON	RKSCTP2750200001V
1.75”	3.812"	SCTP3812175001V	3.812" X 1.75" COIL TUBING PLUG, VITON	RKSCTP3812175001V
1.75”	2.750"	SCTP2750175001V	2.750" X 1.75" COIL TUBING PLUG, VITON	RKSCTP2750175001V
1.75”	2.625"	SCTP2625175001V	2.625" X 1.75" COIL TUBING PLUG, VITON	RKSCTP2625175001V
1.50"	3.812"	SCTP3812150001V	3.812" X 1.50" COIL TUBING PLUG, VITON	RKSCTP3812150001V
1.50"	2.750"	SCTP2750150001V	2.750" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2750150001V
1.50"	2.625"	SCTP2625150001V	2.625" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2625150001V
1.50"	2.562"	SCTP2562150001V	2.562" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2562150001V
1.50"	2.312"	SCTP2312150001V	2.312" X 1.50" COIL TUBING PLUG, VITON	RKSCTP2312150001V

Coil Tubing OD	Bypass Nipple Size							Minimum Bypass Tubing (Nominal OD)
	2.312”	2.562”	2.625”	2.75”	2.812”	2.875”	3.812”	
1.50”	✓	✓	✓	✓	✓	✓	✓	2.125”
1.75”	x	x	✓	✓	✓	✓	✓	2.375”
2.00”	x	x	x	✓	✓	✓	✓	2.875”

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Technical Specifications - Coil Tubing Plug - Roll On Connectors

Roll On Connector									
Coil Tubing Size	Wall thickness (in)								
	.094	.102	0.109	0.125	0.134	0.156	0.175	.190	0.204
2.00”	-	-	Pt No: ROC-2000-109-1	Pt No: ROC-2000-125-1	Pt No: ROC-2000-134-1	Pt No: ROC-2000-156-1	Pt No: ROC-2000-175-1	-	Pt No: ROC-2000-204-1
	-	-	Redress Kit: RKROC-200109-1	Redress Kit: RKROC-200125-1	Redress Kit: RKROC-200134-1	Redress Kit: RKROC-200156-1	Redress Kit: RKROC-200175-1	-	Redress Kit: RKROC-2000-204-1
1.75”	-	-	Pt No: ROC-1750-109-1	Pt No: ROC-1750-125-1	Pt No: ROC-1750-134-1	Pt No: ROC-1750-156-1	-	Pt No: ROC-1750-190-1	Pt No: ROC-1750-204-1
	-	-	Redress Kit: RKROC-175109-1	Redress Kit RKROC-175125-1	Redress Kit RKROC-175134-1	Redress Kit RKROC-175156-1	-	Redress Kit RKROC-175190-1	Redress Kit RKROC-175204-1
1.50”	Pt No: ROC-1500-094-1	Pt No: ROC-1500-102-1	Pt No: ROC-1500-109-1	Pt No: ROC-1500-125-1	Pt No: ROC-1500-134-1	Pt No: ROC-1500-156-1	Pt No: ROC-1500-175-1	-	-
	Redress Kit: RKROC-150094-1	Redress Kit: RKROC-150102-1	Redress Kit: RKROC-150109-1	Redress Kit: RKROC-150125-1	Redress Kit: RKROC-150134-1	Redress Kit: RKROC-150156-1	Redress Kit: RKROC-150175-1	-	-

Technical Specifications - Coil Tubing Plugs - Tool String Crossovers

CTP Tool String Crossover			
Coil Tubing Size	Part Number	Description	Redress Kit P/N
2.00”	XO-CTP-2000-01	2” COIL CROSSOVER, 1.50-10 STUB ACME BOX X 1.8125-10 STUB ACME PIN	RKXOCTP200001
2.00"	XO-CTP-2000-02	2" COIL CROSSOVER, 1-1/2" AMMT BOX X 1.50-10 STUB ACME PIN	RKXOCTP200002
2.00"	XO-CTP-2000-03	2" COIL CROSSOVER, 1.50-10 STUB ACME BOX X 1-1/2" AMMT PIN	RKXOCTP200003
1.75”	XO-CTP-1750-01	1.75” COIL CROSSOVER, 1.50-10 STUB ACME BOX X 1.8125-10 STUB ACME PIN	RKXOCTP175001
1.75”	XO-CTP-1750-02	1.75” COIL CROSSOVER, 1.50-10 STUB ACME BOX X 1” AMMT PIN	RKXOCTP175002
1.75”	XO-CTP-1750-03	1.75” COIL CROSSOVER, 1.50-10 STUB ACME BOX X 1-1/2” AMMT PIN	RKXOCTP175003
1.75"	XO-CTP-1750-04	1.75" COIL CROSSOVER, 1.50-10 STUB ACME BOX X 1-1/2" AMMT PIN	RKXOCTP175004
1.75"	XO-CTP-1750-05	1.750" COIL CROSSOVER, 1" AMMT BOX X 1.50-10 STUB ACME PIN	RKXOCTP175005
1.50”	XO-CTP-1500-02	1.50” COIL CROSSOVER, 1.25-10 STUB ACME BOX X 1” AMMT PIN	RKXOCTP150002
1.50”	XO-CTP-1500-03	1.50” COIL CROSSOVER, 1.25-10 STUB ACME BOX X 1” AMMT PIN	RKXOCTP150003
1.50"	XO-CTP-1500-04	1.50" COIL CROSSOVER, 1.25-10 STUB ACME BOX X 1-1/2" AMMT PIN	RKXOCTP150004
1.50”	CTP-0240	1.50” COIL CROSSOVER, 1.25-10 STUB ACME BOX X 5/8” SUCKER ROD BOX (15/16”-10 UN)	-

Isolation Tool Type “D”

The UMS Flowell Isolation Tool Type “D” is designed to seal in both the Top Nipple and the Bypass Nipple seal bores above and below the Y-Tool to allow bull heading of fluids through the Bypass whilst the ESP assembly is fully isolated. By straddling the Y-Tool, the Isolation Tool ensures that the ESP leg is remote from all fluids.

The Isolation tool is also used in dual y-tool ESP applications to isolate the upper ESP when running the lower ESP system.

A lock on the Top Nipple prevents the isolation tool from being pumped out of the seated position.

The Isolation Tool is deployed and retrieved using standard Otis GS type running tools.

FEATURES & BENEFITS

- Compact design
- Jar down to set
- Jar up to release
- Combination of seal sizes from 2.812” to 1.875”
- Internal fish neck for running / pulling
- Locking dogs for “D” type Top Nipple

SPECIFICATIONS

- 5000psi MWP
- Up to 350°F with elastomers
- 17-4 PH Stainless Steel with Tuftride QPQ finish
- Viton or Aflas seals as standard

Technical Specifications - Isolation Tool Type”D”

Isolation Tool Type “D”					
Part Number	**Upper Seal Diameter**	**Lower Seal Diameter**	**Nominal Internal Fish Neck Diameter**	**Running / Pulling Tool**	**Nipple Profile**
IT-225X187-01	2.250"	1.875"	1-1/2"	1-1/2" OTIS GS	Type D
IT-225X212-01	2.250"	2.125"	1-1/2"	1-1/2" OTIS GS	Type D
IT-231X187-01	2.312"	1.875"	1-1/2"	1-1/2" OTIS GS	Type D
IT-256X231-01	2.562"	2.312"	2"	2" OTIS GS	Type D
IT-275X231-01	2.750"	2.312"	2-1/2"	2-1/2" OTIS GS	Type D
IT-275X262-01	2.750"	2.625"	3"	3" OTIS GS	Type A
IT-275X2562-01	2.750"	2.562"	2-1/2"	2-1/2" OTIS GS	Type D
IT-281X275-01	2.812"	1.750"	2-1/2"	2-1/2" OTIS GS	Type D
IT-3125X2875-01	3.125"	2.875"	2-1/2"	2-1/2" OTIS GS	Type A
IT-3812X3812-01*	3.812"	3.812"	3"	3" OTIS GS	Type D
IT-3812X3812-02**	3.812"	3.812"	3-1/2"	3-1/2" OTIS GS	Type D

Isolation Tool Type “A”

The UMS Flowell Isolation Tool Type “A” is designed to seal in both the Top Nipple and the Bypass Nipple seal bores above and below the Y-Tool to allow bull heading of fluids through the Bypass whilst the ESP assembly is fully isolated. By straddling the Y-Tool, the Isolation Tool ensures that the ESP leg is remote from all fluids.

The Isolation tool is also used in dual y-tool ESP applications to isolate the upper ESP when running the lower ESP system.

A lock on the Top Nipple prevents the isolation tool from being pumped out of the seated position.

The Isolation Tool is deployed and retrieved using standard Otis GS type running tools.

FEATURES & BENEFITS

- Compact design
- Jar down to set
- Jar up to release
- Combination of seal sizes from 2.812” to 1.875”
- Internal fish neck for running / pulling
- Locking dogs for “A” type Top Nipple

SPECIFICATIONS

- 5000psi MWP
- Up to 350°F with elastomers
- 17-4 PH Stainless Steel with Tuftride QPQ finish
- Viton or Aflas seals as standard

Technical Specifications - Isolation Tool Type”A”

Isolation Tool Type “A” Superior				
Part Number	**Upper Seal Diameter**	**Lower Seal Diameter**	**Nominal Internal Fish Neck Diameter**	**Running / Pulling Tool**
SIT-225X187-01	2.250"	1.875"	1-1/2"	1-1/2" OTIS GS
SIT-225X212-01	2.250"	2.125"	1-1/2"	1-1/2" OTIS GS
SIT-231X187-01	2.312"	1.875"	1-1/2"	1-1/2" OTIS GS
SIT-256X231-01	2.562"	2.312"	2"	2" OTIS GS
SIT-275X231-01	2.750"	2.312"	2-1/2"	2-1/2" OTIS GS
SIT-275X262-01	2.750"	2.625"	3"	3" OTIS GS
SIT-275X2562-01	2.750"	2.562"	2-1/2"	2-1/2" OTIS GS
SIT-281X275-01	2.812"	1.750"	2-1/2"	2-1/2" OTIS GS

“We are a specialized supplier for ESP components, Drilling and Workover Rigs”

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