

ESP BYPASS SYSTEM (Y-TOOL)



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Penguin Petroleum Services (P) Limited (PPSL) delivers end-to-end E&P solutions, from engineering through product realisation, with reliable delivery and real value for customers.

Its 90,000 sqft facility, off the Mumbai–Pune Expressway, India, houses design & development, manufacturing, and validation/functional testing under one roof.

YEARS OF EXPERIENCE

15+

COUNTRIES SERVED

35+

Equipment includes:

- Mechanical and metrology labs
- NDE equipment
- Sucker Rod Pump tooling
- CNC turning centres, VMCs, Turn-Mills
- Make-up/break-out machine (100,000 ft/lbs torque)
- Honing and deep-hole drilling machines

Testing capability:

- Downhole tools up to 1,200,000 lbf bi-directional load
- Liquid (ISO V3) and nitrogen gas (ISO V0) pressure testing, up to 20,000 psi
- Four separate/simultaneous test channels
- Ambient temperature range up to 500°F

Backed by this equipment and a skilled workforce, PPSL's India-based delivery centre offers bespoke engineering, precision machining, manufacturing, testing and assembly at a world-class standard.

ABOUT LEVIATHAN® ESP BYPASS SYSTEM

Penguin's Leviathan® ESP Bypass system provides full bypass intervention capability, increasing ESP run life and enabling logging operations below the pump. A range of tools are available for blanking, isolation, pressure testing, prevention of fluid recirculation and logging. Qualified to API 14L and API 19TT, the Leviathan® range is suitable for long term deployment in downhole conditions up to 5000 psi pressure at temperatures up to 350°F.

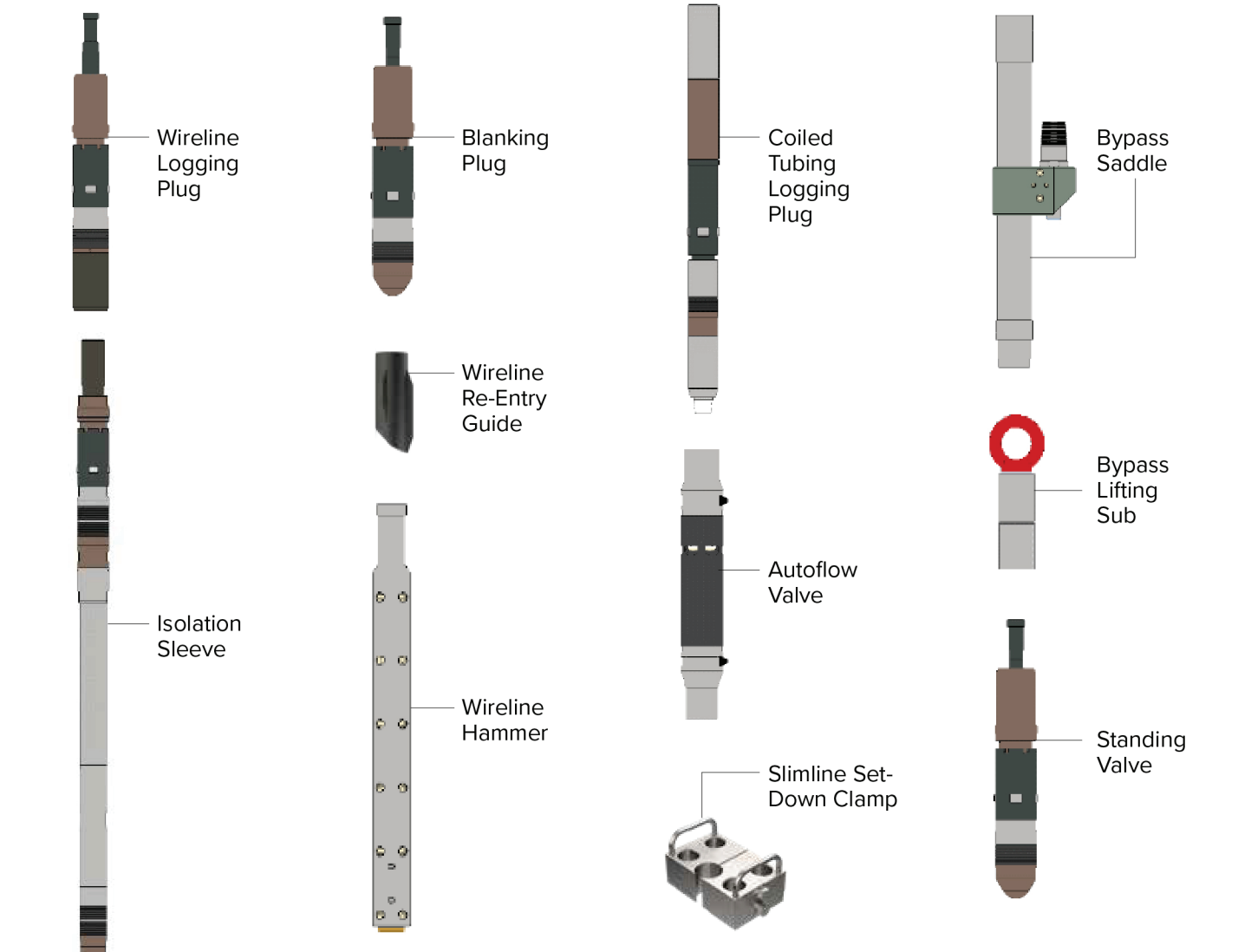
Leviathan® is highly configurable to accommodate a range of completion designs. Y-tool and Bypass Saddles are available for single bypass applications in 7" & 9-5/8" wells and, when equipped with the Pump Support Block, can be deployed in dual bypass configurations. Auto Y-tools are also available to provide additional pump protection. A range of Bypass Tubing sizes can be supplied with either VAM FJL or Penguin UFJ thread connection. The system can also be equipped with a Wireline Re-Entry Guide to facilitate logging operations below the Bypass System. All equipment is available in AISI 4140 or 13Cr Alloy and is fully compliant with NACE MR0175.

The Leviathan[®] tool suite includes Blanking Plugs, Isolations Sleeves, Standing Valves, Wireline Logging Plugs, Wireline Tool Catchers, Wireline Plug Hammers and Coiled Tubing Logging Plugs. Each tool is designed to be self-cleaning and is equipped with an auto reset mechanism with positive lock, removing the need to redress tools between trips and eliminating the possibility of shear pin fragments causing damage to ESPs. An equalization feature is integrated into each tool to prevent swabbing while running and enable fluid drain off when pulling. Dual seals provide redundancy and bidirectional sealing up to 5000 psi working pressure.

The Leviathan® product range also includes an Auto-flow Valve which protects the ESP in all operating stages resulting in extended run life. Located immediately above the ESP, the valve directs naturally aspirating well fluids into the tubing, bypassing the ESP stages, and preventing choking. On ESP start-up, fluid flow activates the valve, sealing the annulus and allowing fluid to be pumped to surface. The valve shuttle is spring loaded so that the fluid column is directed into the annulus on ESP shut-down, preventing damage due to backflow. The Auto-flow Valve can be deployed in single ESP applications and can be encapsulated in POD/ CAN systems to provide further protection.



ESP BYPASS SYSTEM & MECHANICAL TOOL SUITE

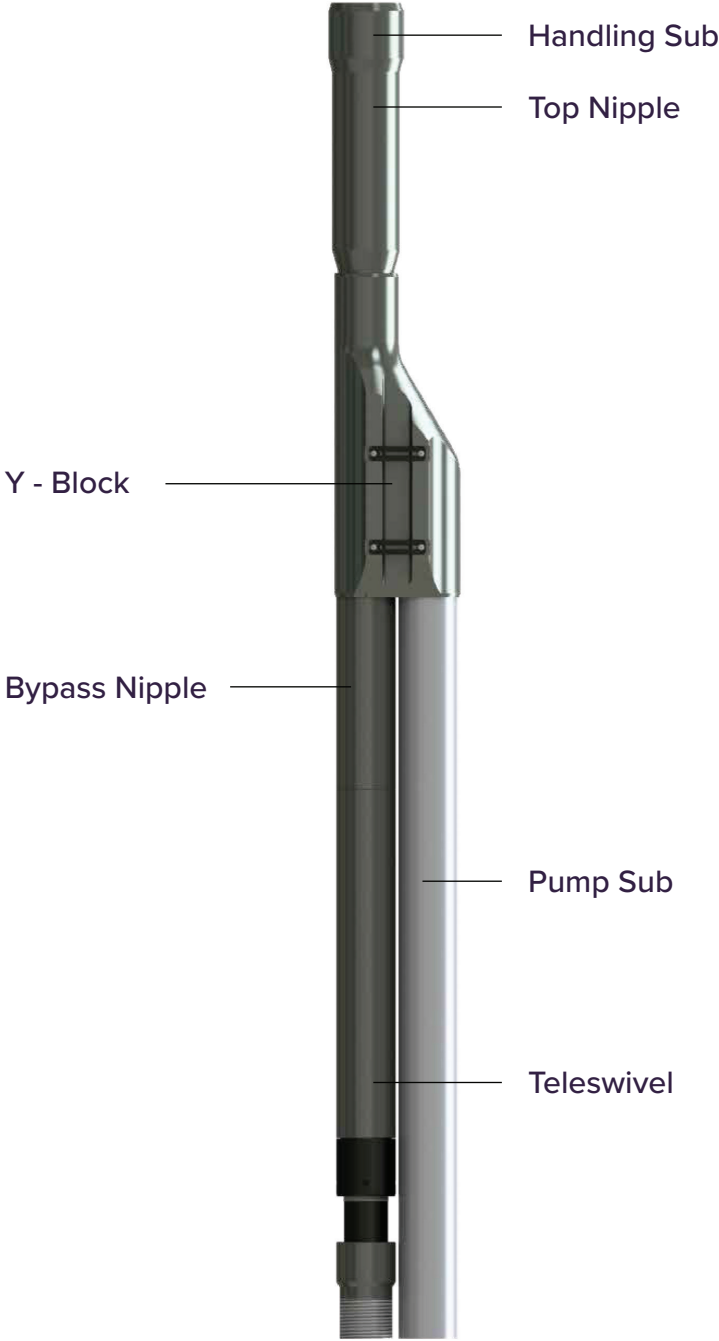


Y-TOOL SUB ASSEMBLY

The Leviathan Y-Tool is supplied as a subassembly for ease of assembly on the rig floor. It consists of Handling Sub, Top Nipple Y-Block, Bypass Nipple, Teleswivel and Pump Sub. It consists of Handling Sub, Top Nipple Y-Block, Bypass Nipple, Teleswivel and Pump Sub. The Leviathan can be configured with a variety of top nipples, bypass nipples and pump subs to suit a range of completion configurations.

Features

- ◆ Pretorqued EUE/Premium connections
- ◆ Dual sealing technology
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure tested to 5250psi during Factory Acceptance Tests (FAT)





HANDLING SUB

It consists of Handling Sub, Top Nipple Y-Block, Bypass Nipple, Teleswivel and Pump Sub. The Leviathan can be configured with a variety of top nipples, bypass nipples and pump subs to suit a range of completion configurations.

Features

- ◆ Top connection to suit production tubing
- ◆ AISI 4140 and 13 Cr options
- ◆ Pressure Rating: 5000 psi

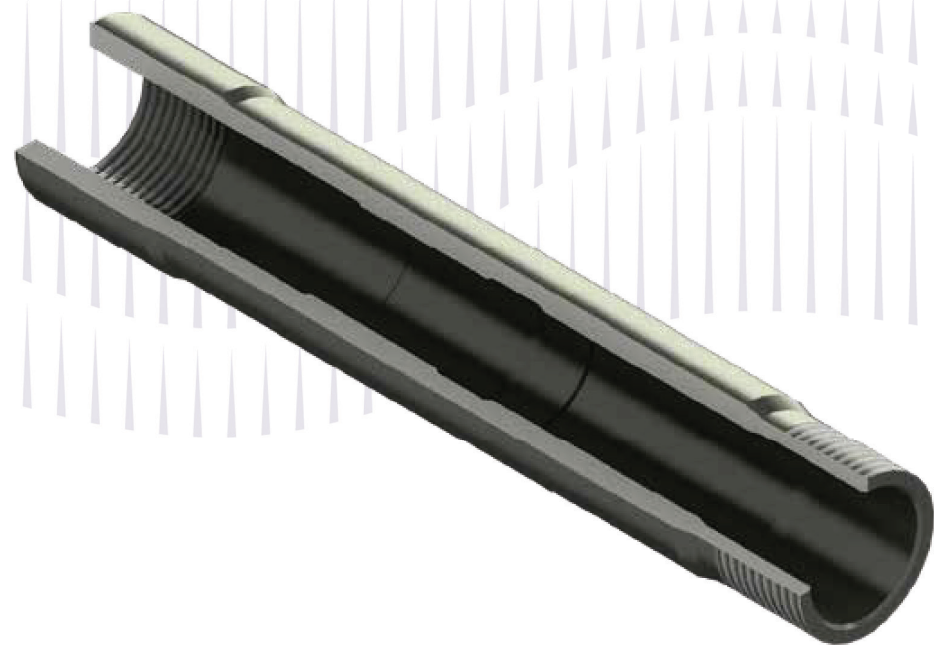
TUBING SIZE (IN)	TOP THREAD (BOX)	BOTTOM THREAD (PIN)	INNER DIAMETER (IN)
2.875	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	2.441
3.5	EUE 3.5in 9.3lb/ft VAM TOP 3.5in 9.2lb/ft	EUE 3.5in 9.3lb/ft VAM TOP 3.5in 9.2lb/ft	2.992



TORUS CLAMP

The Leviathan® Torus Clamp provides a means of supporting the weight of the bypass tubing or the string weight during assembly of the system. Robust enough to support large assembly.

PRODUCT NO.	TUBING SIZE (IN)
PPS-WT-12-007	2 1/8
PPS-WT-12-008	2 3/8
PPS-WT-12-009	2 7/8
PPS-WT-12-010	3 1/2



TOP NIPPLE

The Leviathan Top Nipple provides a sealing profile immediately above the Y-tool for pressure testing of the completion string, setting packers and pump isolation. Due to standardisation of the Leviathan product range, the Top Nipple is compatible with the Standing Valve, Isolation Sleeve and Blanking Plug.

Features

- ◆ Top NO-GO landing profile
- ◆ Positive lock profile with sealing bore
- ◆ Premium thread connection for upper tubing string
- ◆ Dual Seal Y-tool connection
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	SEAL SIZE (IN)	TOP THREAD (BOX)	BOTTOM THREAD (PIN)	OUTER DIAMETER (IN)	INNER DIAMETER (IN)
PPS-TN-12-001	7.000	2.312	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	3.460	2.312
PPS-TN-12-002	9-5/8	2.562	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	4.180	2.562
PPS-TN-12-003	9-5/8	2.750	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	4.180	2.750
PPS-TN-12-004	9-5/8	2.812	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	4.180	2.812
PPS-TN-12-005	9-5/8	3.125	EUE 4.000in 11 lb/ft VAM TOP 4.000in 10.9 lb/ft	EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	5.000	3.125



Y-BLOCK

The Leviathan Y-Block offsets the ESP enabling full bypass intervention capability. Integrated cable guides and clips protect the MLE cable and control lines during run-in and operations. Equipped with premium connections, the Y-Block can be configured with a variety of top nipples, bypass nipples and pump subs to suit a range of completion configurations.

Features

- ◆ Two integrated cable guides & clips for single and dual ESP applications
- ◆ Slimline design to prevent hang up
- ◆ Premium thread connections to suit a range of pump and bypass nipple sizes
- ◆ Dual sealing technology
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	Y-TOOL SIZE	TOP THREAD (BOX)	BOTTOM THREAD (BYPASS LEG)	BOTTOM THREAD (ESP LEG)	OUTER DIAMETER (IN)
PPS-TN-12-001	7.000	7.000	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	2.375in 12 TPI STUB ACME	EUE 2.375in 4.7 lb/ft	5.862
PPS-TN-12-002	9-5/8	9.625	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4 lb/ft EUE 3.500in 9.3 lb/ft VAM TOP 3.500in 9.2 lb/ft	2.375in 12 TPI STUB ACME 2.83in 12 TPI STUB ACME 3.500in 12 TPI STUB ACME	EUE 2.375 in 4.7 lb/ft VAM TOP 2.375 in 4.6 lb/ft EUE 2.875 in 6.5 lb/ft VAM TOP 2.875 in 6.4 lb/ft EUE 3.500 in 9.3 lb/ft VAM TOP 3.500 in 9.2 lb/ft	8.363

H-TOOL (AUTO Y-TOOL)

The Leviathan® H Tool enables access below an Electric Submersible Pump (ESP), facilitating well logging and traditional well intervention without removing the completion. The tool ensures automatic switch-over, eliminating the need for slickline or coil tubing intervention for blanking plug removal. The H-Tool is installed below a conventional Y-tool, providing the advantage of converting any conventional Y-tool into an auto Y-tool system.

Features

- ◆ No need for slickline intervention for blanking plug removal.
- ◆ Enables conventional access for bypass/intervention tools.
- ◆ Operates efficiently at low flow rates.
- ◆ Eliminates blanking plug requirements.
- ◆ Reduces rig time and lost production time.
- ◆ Saves wireline/coiled tubing time.
- ◆ Available in AISI 4140 and 13Cr materials.
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	BYPASS NIPPLE SIZE (IN)	OUTSIDE DIAMETER (IN)
PPS-AY-12-001	9-5/8	2.562, 2.312, 2.75, 2.812	8.362
PPS-AY-12-002	75	1.875	.862



BYPASS NIPPLE

The Leviathan® Bypass Nipple provides a sealing profile immediately below the Y-tool and above the Bypass Tubing and Teleswivel. It allows setting of tools to prevent recirculation of well fluids when the ESP is running during production and logging operations. Additional tools allow isolation of pumps for bullheading, dual ESP and self-aspirating well applications. Due to the standardized Leviathan® product range, the Bypass Nipple is compatible with the Blanking Plug, Isolation Sleeve, Wireline Logging Plug and CT Logging Plug.

Features

- ◆ Top NO-GO landing profile
- ◆ Positive lock profile with sealing bore
- ◆ Dual Seal Y-tool and Teleswivel connections
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	SEAL SIZE (IN)	TOP THREAD (BOX)	BOTTOM THREAD (PIN)	OUTER DIAMETER (IN)	INNER DIAMETER (IN)
PPS-BN-12-001	7.000	1.875	2.375in-12 TPI - 3G STUB ACME	2.375in-12 TPI - 3G STUB ACME	2.677	1.875
PPS-BN-12-002	9-5/8	2.312	2.830in-12 TPI - 3G STUB ACME	2.830in-12 TPI - 3G STUB ACME	3.228	2.312
PPS-BN-12-003	9-5/8	2.562	3.500-12 TPI - 3G STUB ACME	3.500-12 TPI - 3G STUB ACME	3.937	2.562
PPS-BN-12-004	9-5/8	2.750	3.500-12 TPI - 3G STUB ACME	3.500-12 TPI - 3G STUB ACME	3.937	2.750
PPS-BN-12-005	9-5/8	2.812	3.500-12 TPI - 3G STUB ACME	3.500-12 TPI - 3G STUB ACME	3.937	2.812



TELESWIVEL

The Leviathan® Teleswivel provides a field adjustable union below the Y-tool for making up the Bypass Tubing. It allows orientation of the Y-tool and length adjustment of the Bypass Tubing to suit a range of ESP sizes.

Features

- ◆ 500mm lockable length adjustment
- ◆ Dual sealing philosophy throughout
- ◆ 60 degree increment rotational adjustment with internal locking feature
- ◆ Replaceable Bypass Tubing connection to suit a range of tube and thread sizes
- ◆ Adjustment features are encapsulated to prevent risk of losing parts downhole
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	TOP THREAD (PIN)	BOTTOM THREAD (PIN)	OUTER DIAMETER (IN)	INNER DIAMETER (IN)	MINIMUM LENGTH
PPS-BN-12-001	7.000	2.375in-12 TPI - 3G STUB ACME	2-3/8" 4.6UFJ	2.677	1.772	943.0 + (500mm Stroke)
PPS-BN-12-002	9-5/8	2.830in-12 TPI - 3G STUB ACME	2-7/8" 6.4UFJ	3.228	1.969	943.0 + (500mm Stroke)
PPS-BN-12-003	9-5/8	3.500-12 TPI - 3G STUB ACME	3½" 9.2UFJ	3.937	2.421	966.0 + (500mm Stroke)



PUMPSUB

The Leviathan® Pump Sub serves as the link between the electrical submersible pump discharge head and the Y-Block. It is a key component of the fully torqued and pressure-tested assembly, guaranteeing a completely leak-free connection from the pump discharge to the wellhead. The pump sub typically measures 10 ft in length, allowing for system flexibility to accommodate any centerline offset between the Y-Tool, ESP, and bypass tubing.

Features

- ◆ Bottom connection to suit ESP discharge head
- ◆ AISI 4140 and 13Chrome options
- ◆ Max working pressure equals to tubing grade

TUBING SIZE (IN)	TOP THREAD (BOX)	BOTTOM THREAD (PIN)	INNER DIAMETER (IN)
2.375	EUE 2.375in 4.7lb/ft VAM TOP 2.375in 4.6lb/ft	EUE 2.375in 4.7lb/ft VAM TOP 2.375in 4.6lb/ft	1.995
2.875	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	EUE 2.875in 6.5lb/ft VAM TOP 2.875in 6.4lb/ft	2.441
3.5	EUE 3.5in 9.3lb/ft VAM TOP 3.5in 9.2lb/ft	EUE 3.5in 9.3lb/ft VAM TOP 3.5in 9.2lb/ft	2.992



BYPASS TUBING

The Leviathan® Bypass Tubing is installed alongside the electrical submersible pump assembly, ensuring a clear and fully protected pathway for coil tubing or wireline toolstrings. Its smooth internal bore eliminates the risk of coiled tubing or wire line strings getting stuck. The tubing comes with a Penguin Proprietary UFJ thread featuring a metal seal, though alternative thread types can be supplied upon request.

Features

- ◆ UFJ connections
- ◆ Integrated clamp recess
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

TUBING SIZE (IN)	TUBING WEIGHT	TOP THREAD (BOX)	BOTTOM THREAD (PIN)
2.125	2.4 lb/ft	2.125in UFJ	2.125in UFJ
2.375	4.6 lb/ft	2.375in UFJ	2.375in UFJ
2.875	6.4 lb/ft	2.875in UFJ	2.875in UFJ
3.500	9.2 lb/ft	3.500in UFJ	3.500in UFJ



PUMP SUPPORT BLOCK

The Pump Support Block serves as an optional assembly within the bypass system typically employed in configurations utilizing dual ESP's or when tail pipe is extended below the ESP and landed in PBR. Its primary function is to effectively transmit compressive forces to the ESP assembly while Transferring tensile loads to the Bypass tubing, during retrieval operation. Thereby maintaining Mechanical integrity throughout the deployment and recovery process.

Features

- ◆ ESP prong for centralisation of motor
- ◆ Integrated MLE and control line clamps
- ◆ Multiple thread and tubing sizes available to suit a range of completion designs
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	T	CASING SIZE (IN)	TOP THREAD (TBD SIZE)	PUMP THREAD (EUE SIZE)	OUTSIDE DIAMETER (IN)
PPS-PS-12-001		7.000	2.375in UFJ	2-7/8in	5.862
	T1	9-5/8	2.375in UFJ	2-7/8in	8.362
PPS-PS-12-002	T2	9-5/8	2.875in UFJ	3-1/2in	8.362
	T3	9-5/8	3.500in UFJ	-	8.362

BYPASS SADDLE

The Leviathan® Bypass Saddle is used in single bypass applications in place of the Pump Support Block. The two-part design enables ease of assembly at the rig floor and can be configured to suit a range of tubing sizes.

Features

- ◆ ESP prong for centralisation of motor
- ◆ Multiple thread and tubing sizes available to suit a range of completion designs
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	TOP THREAD (BOX)	BOTTOM THREAD (PIN)
PPS-BS-12-001	7.000	2.375in UFJ	2.375in UFJ
PPS-BS-12-002	9-5/8	2.875in UFJ	2.875in UFJ
PPS-BS-12-003	9-5/8	3.500in UFJ	3.500in UFJ

WIRELINE RE-ENTRY GUIDE



The Leviathan® Wireline Re-Entry Guide is located at the bottom of the Bypass System to aid re-entry of slickline, wireline and coiled tubing tools when pulling out of hole. Available with UFJ thread. However other threads can be provided upon request.

Features

- ◆ UFJ connections
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi
- ◆ Finned feature for centralization
- ◆ Compact Design

TUBING SIZE (IN)	TUBING WEIGHT	TOP THREAD (BOX)
2.125	2.4 lb/ft	2.125in UFJ
2.375	4.6 lb/ft	2.375in UFJ
2.875	6.4 lb/ft	2.875in UFJ
3.500	9.2 lb/ft	3.500in UFJ



BLANKING PLUG

The Leviathan® Blanking Plug can be set in the Bypass Nipple or Top Nipple to prevent recirculation of fluids or pressure test the well. Preventing recirculation increases pump efficiency and extends pump life. The Blanking Plug can be set and removed using wireline or coiled tubing.

Features

- ◆ Top NO-GO landing profile for setting and locking in the Bypass Nipple
- ◆ Auto-reset mechanism with positive lock
- ◆ Jar down to set and Jar up to release
- ◆ No requirement for return to surface between runs
- ◆ Shear Pin free design. No strip down required between runs
- ◆ Self-cleaning design with minimal redress required between deployments
- ◆ Equalising feature to prevent swabbing (running) and enable fluid drain off (pulling)
- ◆ Dual Sealing philosophy throughout
- ◆ AISI 4140 and 13Cr options
- ◆ Bidirectional sealing with 5000psi of Pressure Rating
- ◆ Chevron Seal stack below locking profile to prevent damage to sealing profiles

PRODUCT NO.	SEAL SIZE (IN)	FISH NECK DIAMETER (IN)	RUNNING / PULLING TOOL	NOGO DIAMETER (IN)	CASING SIZE (IN)
PPS-BP-12-001	1.875	1.000	1.250 JDC	1.957	7.000
PPS-BP-12-002	2.312	1.188	1.500 JDS	2.413	9-5/8
PPS-BP-12-003	2.562	1.188	1.500 JDS	2.677	9-5/8
PPS-BP-12-004	2.750	1.188	1.500 JDS	2.874	9-5/8
PPS-BP-12-005	2.812	1.188	1.500 JDS	2.937	9-5/8

ISOLATION SLEEVE

The Leviathan® Isolation Sleeve can be set across the Y-tool to isolate the ESP leg for bullheading, dual ESP and self-aspirating well applications. Isolation of redundant pumps prevents recirculation and extends ESP life. The Isolation Sleeve can be set and removed using wireline or coiled tubing.

Features

- ◆ Top NO-GO landing profile for setting and locking in the Top Nipple
- ◆ Auto-reset mechanism with positive lock
- ◆ Jar down to set and Jar up to release
- ◆ No requirement for return to surface between runs
- ◆ Shear Pin free design. No strip down required between runs
- ◆ Self-cleaning design with minimal redress required between deployments
- ◆ Dual Sealing philosophy throughout.
- ◆ AISI 4140 and 17-4PH SS options
- ◆ Bidirectional sealing with 5000psi of Pressure Rating
- ◆ Chevron Seal stack below locking profile to prevent damage to sealing profiles

PRODUCT NO.	UPPER SEAL SIZE (IN)	LOWER SEAL SIZE (IN)	INTERNAL FISH NECK DIAMETER (IN)	RUNNING / PULLING TOOL OTIS (GS)	NOGO DIAMETER (IN)	CASING SIZE (IN)
PPS-IS-12-001	2-9/16	2-5/16	2.000	2.000	2.677	9-5/8
PPS-IS-12-002	2-3/4	2-5/16	2.500	2.500	2.874	9-5/8
PPS-IS-12-003	2-3/4	2-9/16	2.500	2.500	2.874	9-5/8
PPS-IS-12-004	2-3/16	2-3/4	2.500	2.500	2.937	9-5/8
PPS-IS-12-005	3-1/8	2-13/16	2.500	2.500	3.303	9-5/8

STANDING VALVE

The Leviathan® Standing Valve can be set in the Top Nipple to allow pressure testing of the upper completion and setting of packers. An integrated ball check valve relieves pressure below the Standing Valve when running the completion tools with full column of fluid below. The Standing Valve can be set and removed using wireline or coiled tubing.

Features

- ◆ Top NO-GO landing profile for setting and locking in the Top Nipple
- ◆ Auto-reset mechanism with positive lock
- ◆ Jar down to set and Jar up to release
- ◆ No requirement for return to surface between runs
- ◆ Shear Pin free design. No strip down required between runs
- ◆ Self-cleaning design with minimal redress required between deployments
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi
- ◆ Spring loaded ball check valve for reliable sealing
- ◆ 10psi valve relief pressure
- ◆ Chevron Seal stack below locking profile to prevent damage to sealing profiles

PRODUCT NO.	SEAL SIZE (IN)	FISH NECK DIAMETER (IN)	RUNNING / PULLING TOOL	NOGO DIAMETER (IN)	CASING SIZE (IN)
PPS-SV-12-001	2.312	1.888	1.500 JDS	2.413	7.000
PPS-SV-12-002	2.562	1.188	1.500 JDS	2.677	9-5/8
PPS-SV-12-003	2.750	1.188	1.500 JDS	2.874	9-5/8
PPS-SV-12-004	2.812	1.188	1.500 JDS	2.937	9-5/8
PPS-SV-12-005	3.125	1.188	1.500 JDS	3.267	9-5/8

WIRELINE LOGGING PLUG

The Leviathan® Wireline Logging Plug can be set in the Bypass Nipple to allow wireline logging below the ESP Bypass System. Prevents recirculation of fluids to enable continuous pump operation during logging runs. Interchangeable flow tubes enable a range of wireline sizes to pass through the tool. The Wireline Logging Plug is seated with the Wireline Hammer and automatically unseated by the tool string when pulling out of the hole.

Features

- ◆ Top NO-GO landing profile for setting and locking in the Bypass Nipple
- ◆ Auto-reset mechanism with positive lock
- ◆ Jar down to set and Jar up to release
- ◆ No requirement for return to surface between runs
- ◆ Redundant fish neck for emergency retrieval purposes
- ◆ Shear Pin free design. No strip down required between runs
- ◆ Self-cleaning design with minimal redress required between deployments
- ◆ Dual Sealing philosophy throughout
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi
- ◆ Chevron Seal stack below locking profile to prevent damage to sealing profiles
- ◆ Optional Tool Catcher available to suit a range of fish neck sizes

PRODUCT NO.	SEAL SIZE (IN)	FISH NECK DIAMETER (IN)	RUNNING / PULLING TOOL	NOGO DIAMETER (IN)	CASING SIZE (IN)								
PPS-WL-12-001	1.875	1.000	1.250 JDC	1.957	7.000								
PPS-WL-12-003	2.312	1.188	1.500 JDS	2.413	9-5/8								
PPS-WL-12-005	2.562	1.188	1.500 JDS	2.677	9-5/8								
PPS-WL-12-007	2.750	1.188	1.500 JDS	2.874	9-5/8								
PPS-WL-12-009	2.812	1.188	1.500 JDS	2.937	9-5/8								
WIRELINE/ SLICKLINE DIAMETER (IN)													
0.082	0.092	0.108	0.125	0.1875	0.218	0.226	0.235	0.250	0.29	0.312	0.32	0.46	0.469

WIRELINE LOGGING PLUG WITH TOOL CATCHER

The Leviathan® Wireline Tool Catcher is used in conjunction with the Wireline Logging Plug to prevent loss of the tool string in the event of wireline failure. The integrated locking mechanism suits a range of fish neck sizes in the same tool. The Wireline Tool Catcher is field attachable and interchangeable with the Bull Nose on the Wireline Logging Plug.

Features

- ◆ Unique multi-profile locking mechanism to suit a range of fishneck sizes with the same tool
- ◆ Tool string engages with the mechanism when pulling out of the hole
- ◆ Easy tool release at surface
- ◆ AISI 4140 and 13Cr options

PRODUCT NO.			SEAL SIZE (IN)		FISH NECK DIAMETER (IN)			RUNNING / PULLING TOOL			NOGO DIAMETER (IN)			CASING SIZE (IN)	
PPS-WL-12-002			1.875		1.000			1.250 JDC			1.957			7.000	
PPS-WL-12-004			2.312		1.188			1.500 JDC			2.413			9-5/8	
PPS-WL-12-006			2.562		1.188			1.500 JDC			2.677			9-5/8	
PPS-WL-12-008			2.750		1.188			1.500 JDC			2.874			9-5/8	
PPS-WL-12-0010			2.812		1.188			1.500 JDC			2.937			9-5/8	
WIRELINE/ SLICKLINE DIAMETER (IN)															
0.082	0.092	0.108	0.125	0.1875	0.218	0.226	0.235	0.250	0.29	0.312	0.32	0.46	0.469		



WIRELINE PLUG HAMMER

The Leviathan® Wireline Plug Hammer fixes to the wireline and is used to seat the Wireline Logging Plug into the Bypass Nipple. Interchangeable ferrules allow the Wireline Hammer to clamp onto a range of wireline sizes.

Features

- ◆ Compact design with 1.75” Max OD
- ◆ Mass: 11 lbs
- ◆ Self-retaining brass clamp inserts
- ◆ AISI 4140 Hammer Body

PRODUCT NO.	FISH NECK DIAMETER
PPS-WH-12-001	1.375in



DUMMY NECK

The Leviathan® dummy neck features a 2-3/8” EUE pin up for connection to the motor base or ESP gauge base. This dummy neck serves as an attachment point for the first bypass clamp at the bottom of the ESP, securing the bypass tubing. Additionally, it protects the lowermost ESP component during downhole operations. Its hollow design makes the dummy neck lightweight and prevents trapped pressure at the EUE connection.

Features

- ◆ Hollow, lightweight design that avoids trapped pressure in the threads
- ◆ Compact structure
- ◆ Precision investment casting
- ◆ Available in low alloy steel or 13cr material options
- ◆ Outer diameter compatible with ESP

PRODUCT NO.	CASING SIZE (IN)	OUTSIDE DIAMETER (IN)	NECK DIAMETER (IN)	PIN THREAD
PPS-PS-03-010	7	3.189	1.949	2-3/8in EUE
PPS-PS-03-005	9-5/8	5.374	3.531	2-3/8in EUE



COILED TUBING LOGGING PLUG

The Leviathan® CT Logging Plug can be set in the Bypass Nipple to allow CT intervention and logging below the ESP Bypass System. Prevents recirculation of fluids to enable continuous pump operation during intervention and logging runs. Interchangeable connectors enable a range of coiled tubing sizes to pass through the tool. The CT Logging Plug is self-seating and is automatically unseated by the CT connector when pulling out of the hole.

Features

- ◆ Top NO-GO landing profile for setting and locking in the Bypass Nipple
- ◆ Auto-reset mechanism with positive lock
- ◆ Push down to set and Pull up to release
- ◆ No requirement for return to surface between runs
- ◆ Redundant internal fish neck for emergency retrieval purposes
- ◆ Shear Pin free design. No strip down required.
- ◆ Self-cleaning design with minimal redress required between deployments
- ◆ Dual Sealing philosophy throughout.
- ◆ AISI 4140 and 17-4PH SS options
- ◆ Bidirectional sealing with 5000psi of Pressure Rating
- ◆ Chevron Seal stack below locking profile to prevent damage to sealing profiles

PRODUCT NO.	SEAL SIZE (IN)	NOGO DIAMETER (IN)	CASING SIZE (IN)	COILED TUBING OD	SEALING DIAMETER				
					PPS-CT-12-001 1.875in	PPS-CT-12-002 2.312in	PPS-CT-12-003 2.562in	PPS-CT-12-004 2.750in	PPS-CT-12-005 2.812in
PPS-CT-12-001	1.875	1.957	7.000	1.00in	✓	✓	✓	✓	✓
PPS-CT-12-002	2.312	2.413	9-5/8	1.25in	⊗	✓	✓	✓	⊗
PPS-CT-12-003	2.562	2.677	9-5/8	1.50in	⊗	⊗	✓	✓	⊗
PPS-CT-12-004	2.750	2.874	9-5/8	1.75in	⊗	⊗	⊗	✓	⊗
PPS-CT-12-005	2.812	2.937	9-5/8	2.00in	⊗	⊗	⊗	✓	⊗



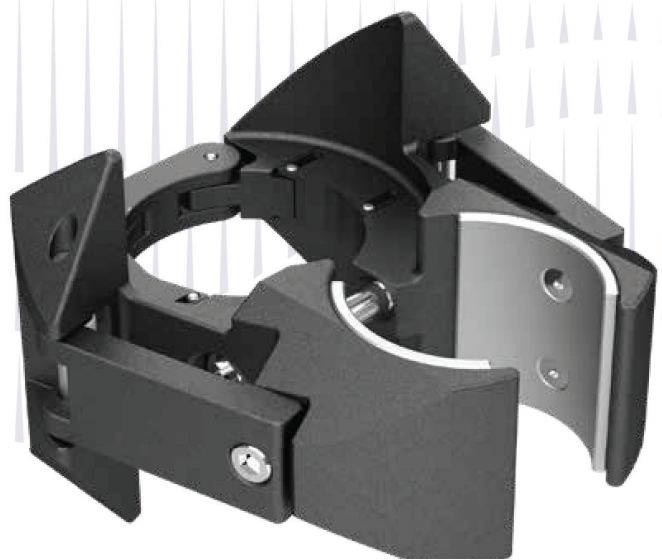
AUTOFLOW VALVE

The Leviathan® Autoflow Valve (AFV) is situated immediately above the ESP to direct free flowing well fluids into the tubing, bypassing the ESP stages and preventing choking. On ESP start-up, fluid flow activates the valve, sealing the annulus and allowing fluid to be pumped to surface. On ESP shut-down, the valve resets, diverting the fluid column to the annulus and preventing backflow through. This protects the ESP in all operating stages resulting in extended run life.

Features

- ◆ Metal-to-metal sealing shuttle
- ◆ Dual adjustable cable guides
- ◆ Integrated dampening mechanism to protect sealing surfaces during sudden ESP start-up
- ◆ Maximised flow to prevent restriction of production fluids
- ◆ Multiple bore and connection sizes to suit a range of completion designs
- ◆ AISI 4140 and 13Cr options
- ◆ Pressure Rating: 5000 psi

PRODUCT NO.	CASING SIZE (IN)	UPPER PIN THREAD	LOWER PIN THREAD
PPS-AV-12-001	7.000	EUE 2.875in 6.5 lb/ft VAM TOP 2.875in 6.4 lb/ft	EUE 2.875in 6.5 lb/ft VAM TOP 2.875in 6.4 lb/ft
PPS-AV-12-002	9-5/8	EUE 3.500in 9.3 lb/ft VAM TOP 3..500in 9.2 lb/ft	EUE 3.500in 9.3 lb/ft VAM TOP 3..500in 9.2 lb/ft
PPS-AV-12-003	9-5/8	EUE 4.500in 12.6 lb/ft VAM TOP 4..500in 12.6 lb/ft	EUE 4.500in 12.6 lb/ft VAM TOP 4..500in 12.6 lb/ft



ADJUSTABLE CLAMP

The Leviathan® Adjustable clamp is engineered to provide full protection for the ESP MLE cable and auxiliary control/injection lines, while ensuring adequate flow area around the completion and maintaining maximum stand-off between the ESP assembly and the casing for effective cooling of the electric motors.

The 9-5/8” bypass clamp features adjustable jaws to fit 400 to 562 series ESP necks and has gripping features to secure it to the bypass tubing. The standard clamp fits 2-7/8” bypass tubing, with fitting inserts available to change the clamp to 3-1/2” and 2-3/8” bypass tubing. Universal cable clips on either side 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, also equipped with a universal cable clip to grip ¼” discharge pressure lines and the ESP MLE cable.

Features

- ◆ Precision investment casting
- ◆ Robust design
- ◆ Universal clamp for 7” and 9-5/8” casing configurations
- ◆ Universal cable clip designs for flat MLE and ¼” discharge pressure line
- ◆ Low alloy steel or 13cr material options

PRODUCT NO.	CASING SIZE (IN)	BYPASS TUBING CONFIGURATION (IN)
PPS-AC-12-001	7	2 1/8, 2 3/8
PPS-AC-12-002	9-5/8	2 3/8, 2 7/8, 3 1/2

POSITIVE ROTATION LOCK SWIVEL

The Leviathan® Positive rotation lock swivel is an in-line tubing device designed to provide orientation between two sets of tubing assemblies. Once alignment is set, the swivel is locked in position by a series of teeth which provide a positive locking mechanism with high torque loading. Positive rotation lock swivel is required when installing dual ESP systems.



Features

- ◆ High torque capacity
- ◆ Full tubing bore
- ◆ Compact design

PRODUCT NO.	TUBING SIZE (IN)	MINIMUM BORE (IN)
PPS-PR-12-001	2-7/8	2.441
PPS-PR-12-002	3-1/2	2.992
PPS-PR-12-003	4-1/2	3.957
PPS-PR-12-004	5-1/2	4.948



BYPASS WORK TABLE

The Leviathan® Bypass Work Table (Stove Pipe) is an assembly aid used to support the Bypass Assembly components at various stages of the installation. The Work Table is robust enough to support a 20 tonne assembly and is equipped with a safety gate to ensure safety of personnel. A range of Work Table Clamp sizes enable the Work Table to support both 7” and 9-5/8” ESP Bypass Systems.

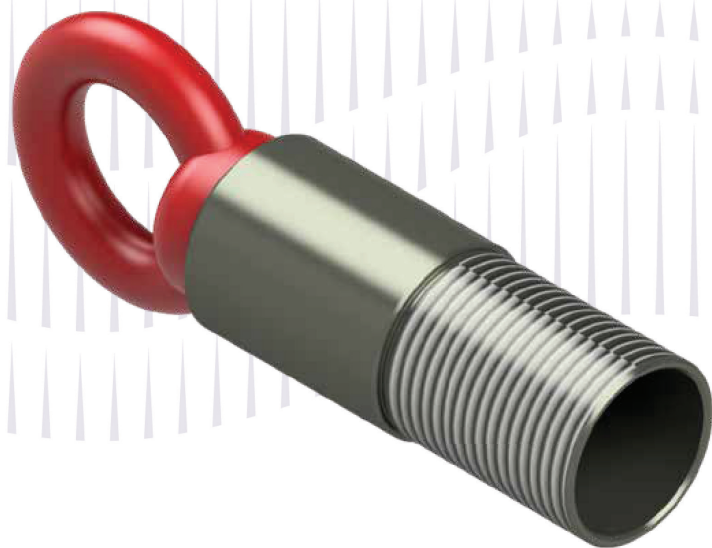
PRODUCT NO.	WLL	WEIGHT
PPS-WT-12-001	20 ton	90 kg



SLIMLINE SET-DOWN CLAMP

The Leviathan® Slimline set-down Clamp provides a means of supporting the weight of the bypass tubing or the string weight (including the ESP) during assembly of the system, when landed on the ESP worktable (stove pipe). Integrated lifting handles for easy operation.

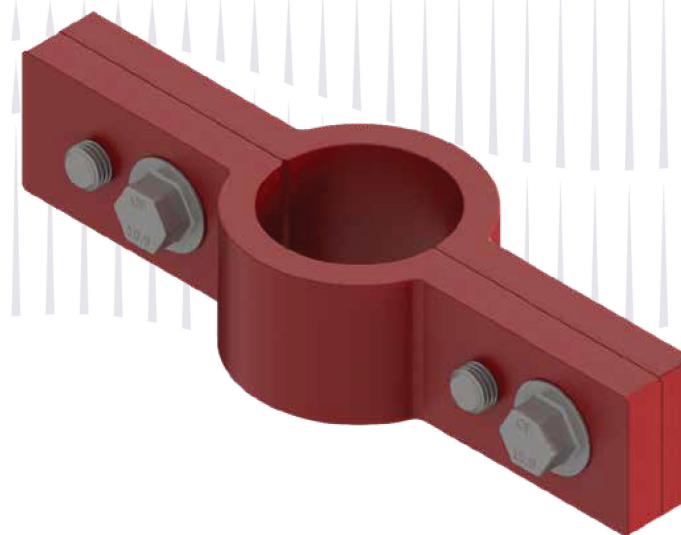
PRODUCT NO.	TUBING SIZE (IN)
PPS-WT-02-021	2 1/8
PPS-WT-02-028	2 3/8
PPS-WT-02-029	2 7/8
PPS-WT-02-030	3 1/2



BYPASS LIFTING SUB

The Leviathan® Bypass Lifting Sub is an assembly aid used to lift the Bypass Tubing at various stages of the installation. The Bypass Lifting Sub is threaded to suit the Bypass Tubing and is robust enough to support a 20 tonne assembly.

SIZE	WLL	THREAD (PIN)
2.125in	8 ton	2.125in UFJ
2.375in	8 ton	2.375in UFJ
2.875in	8 ton	2.875in UFJ
3.500in	8 ton	3.500in UFJ



BYPASS WORK TABLE CLAMP

The Leviathan® Bypass Work Table Clamp is an assembly aid used to support the Bypass Assembly components at various stages of the installation. The Work Table Clamp is sized to be compactable with Bypass Tubing and is robust enough to support a 20 ton assembly.

PRODUCT NO.	WLL	WEIGHT
PPS-WT-12-003	20 ton	2-3/8
PPS-WT-12-004	20 ton	2-3/8
PPS-WT-12-005	20 ton	2-7/8



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