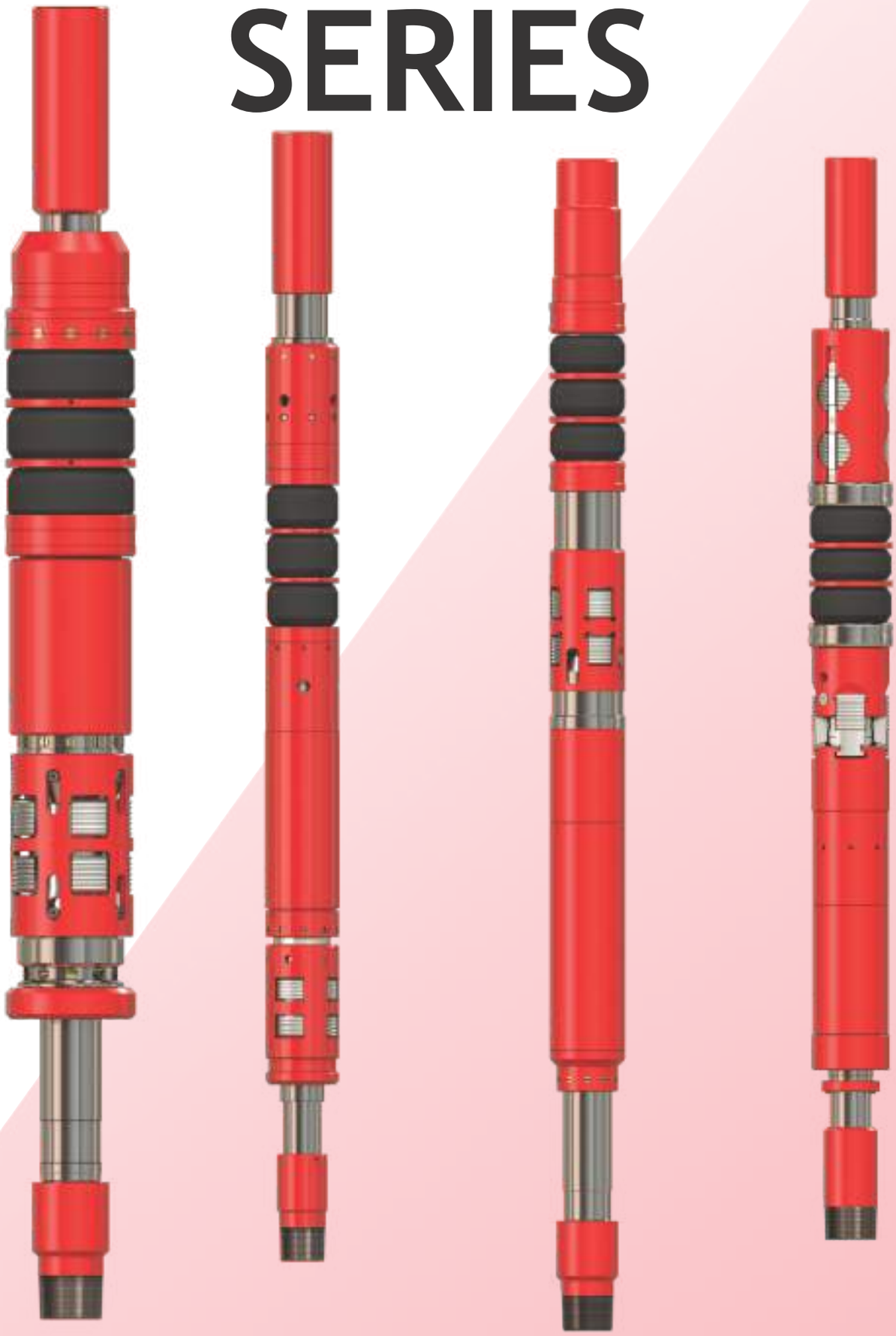
HYDRO SET SERIES



COT® HYDRO-SET I HYDRAULIC PACKER

❒ CT-HYDRO-1 I CT95201

DESCRIPTION:

COT® HYDRO SET I is a fully hydrostatic, hydraulic set and straight pull shear release single string retrievable production packer. The packer is hydraulically activated by applying tubing pressure against a underneath plugging device. The packer requires only straight pull to release.

FEATURES & BENEFITS:

The **COT® HYDRO SET I** hydraulic production packer design is a field proven design. Hydraulic hold down buttons are used to hold the differential pressure from below. Low Pressure required to set, because hydrostatic pressure will help to set the packer after packer trigger.

- ✓ **Protected Slip-** While running in, the packer slips are mechanically contained under tool OD and protected in the Cone.
- ✓ **Field supportive-** Hydraulically activated, hydrostatic set-low pressure, rig pump capable activation. Field adjustable straight pull shear release mechanism or optional rotational release mechanism.
- ✓ **By pass-** Built-in un-loader and bypass to aid in releasing and retrieving.
- ✓ **Mechanically lock-** Pack-off is mechanically locked constantly reinforced by hydrostatic pressure.
- ✓ **Multiple Duro packing element-** Triple seal multiple durometer elements ensure pressure integrity over a wide range of temperatures and conform easily to casing irregularities.
- ✓ **Static Mandrel-** No mandrel movement during setting allows stacked packer application.
- ✓ **Hold Down-** Hydraulic hold-down buttons actuated by differential pressure from below & provide Double-Grip mechanism.

TECHNICAL SPECIFICATIONS (CT-HYDRO-1):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	11.5-15	4.408	4.56	4.25	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	15-18	4.276	4.408	4.125				
5 1/2	13-15.5	4.95	5.038	4.781	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	14-20	4.778	5.012	4.641				
	20-23	4.67	4.778	4.5				
7	20-26	6.276	6.456	6.078	2.441	2 7/8, 6.5 PPF EU	10,000	V3/ V3-R
	26-29	6.184	6.276	5.968				
	32-35	6.004	6.094	5.812				
	20-26	6.276	6.456	6.078	2.992	3 1/2, 9.3 PPF EU	10,000	V3/ V3-R
	26-32	6.094	6.276	5.968				
	32-35	6.004	6.094	5.812				
9 5/8	29.3-36	8.921	9.063	8.593	2.992	3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.281				
	29.3-36	8.921	9.063	8.593	3.958	4 1/2, 12.75 PPF EU	7,500	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.218				

TECHNICAL SPECIFICATIONS IN LARGE BORE ID OPTION (CT-HYDRO-1):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
7	20-26	6.276	6.456	6.078	2.992	3 1/2, 9.3 PPF EU	10,000	V3/ V3-R
	26-32	6.094	6.276	5.968				
	32-35	6.004	6.094	5.812				
9 5/8	29.3-36	8.921	9.063	8.593	3.958	4 1/2, 12.75 PPF EU	7,500	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.218				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET II HYDRAULIC PACKER

❒ CT-HYDRO-2 | CT95202

DESCRIPTION:

COT® HYDRO SET II Isolation Packer is a hydraulic set, single string tandem packer used in multiple zone wells. It is used as the upper packer in multiple zone applications. Isolation Packer run above another hydraulic retrievable packer to isolate a zone between them for treatment, injection, or production. The field-proven isolation packer can also isolate casing holes or perforations. The simple design and straight tubing-pull release make the packer a cost-effective tool to isolate zones in low-pressure applications.

FEATURES & BENEFITS:

- ✓ Economical Design.
- ✓ The straight-pull, shear-release pins are unaffected by differential pressure, enabling easy changes to the release force before running.
- ✓ The compact design eases passage through doglegs and deviated wells to help prevent sticking and improve running.
- ✓ The hydraulic setting avoids the need to rotate the work string in running or retrieving the packer.

CT95202

TECHNICAL SPECIFICATIONS (CT-HYDRO-2):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-20	4.778	5.038	4.641	1.995 /	2 3/8, 4.7 PPF EU	3,000	V3/ V3-R
	20-23	4.67	4.778	4.5	2.441	2 7/8, 6.5 PPF EU		
7	17-26	6.276	6.53	6.11	2.441	2 7/8, 6.5 PPF EU	3,000	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET III HYDRAULIC PACKER

❑ CT-HYDRO-3 | CT95203

DESCRIPTION:

This Advanced Model **COT® HYDRO SET III** Hydraulic Set Single String Production Packer is tubing conveyed retrievable packer that provides isolation inside the casing or tubing. The **COT® HYDRO SET III** Packer is designed to be used in all applications. The packer is available with a large bore or standard bore.

FEATURES & BENEFITS:

There is a selective set version of Hydraulic Set Single String Packer. Setting and retrieval is essentially the same with the exception of an inner sleeve that must be shifted before the packer will set. The selective setting mechanism prevents the packer from premature setting when high tubing to annulus pressure differentials are encountered or when tubing pressure tests are performed.

- ✓ **Short & Compact Design-** Short, compact design-is ideal for negotiating tight spots and deviated wells and allows for convenient handling at surface.
- ✓ **Static Mandrel-** No mandrel movement-mandrel movement is not required during setting sequence -this feature becomes important in stacked applications.
- ✓ **Selective Completion-** Single string selective completions or dual string completions with multiple packers.
- ✓ **Advanced Packing Element-** Advanced Packing Element System incorporates a “no gap” back-up system which prevents elastomer extrusion at high temperatures and pressures.

TECHNICAL SPECIFICATIONS (CT-HYDRO-3):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	15.5-20	4.778	4.95	4.64	1.938/ 2.441	2 3/8, 4.7 PPF EU / 2 7/8, 6.5 PPF EU	6,000	V3/ V3-R
	20-23	4.67	4.778	4.5				
7	23-26	6.276	6.366	6.078	2.441/ 2.92	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU	7500/ 10,000	V3/ V3-R
	26-32	6.094	6.184	5.91				
9 5/8	40-47	8.681	8.835	8.5	2.992/ 3.958	3 1/2, 9.3 PPF EU / 4 1/2, 12.75 PPF EU	7,500	V3/ V3-R
	47-53.5	8.535	8.681	8.31				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET IV HYDRAULIC PACKER

❑ **CT-HYDRO-4 | CT95204**

DESCRIPTION:

The Hydraulic Set Production Packer is a hydraulic-set cut-to-release packer that is the preferred choice of operator for the hydraulic fracturing operation. This retrievable packer provides the benefits of permanent packer with the convenience of a retrievable packer. The **COT® HYDRO SET IV** retrievable packer is designed for high differential pressure applications. The barrel slip located below the elements provides 360 deg uniformly load distribution to casing . A unique packing element package reliably seals the high pressures and can be retrieved with the packer. Once this packer is run and set, it is released by cutting the mandrel. When the mandrel is properly and completely cut, the packer will release and all the packer components along with the tailpipe can be retrieved from the well.

FEATURES & BENEFITS:

No Milling is required to retrieve **COT® HYDRO SET IV** production packer. The packer has maximum sealing and retrieving reliability. This packer is specially designed to minimize rig time during completion & De-completion.

- ✓ **Anti-Preset -** Prevents packer from setting until a predetermined tubing pressure is applied.
- ✓ **Anti-Reset -** Once the packer is released a snap ring engages the mandrel, locking the lower cone in place, which helps to hold the barrel slip in the retracted position.
- ✓ **Barrel slip-** Barrel slip design for high load capability transfer load radially which minimize the casing damage.
- ✓ **Advanced sealing-** Advance sealing propped element for superior sealing, metal-to-metal backup shoes with 360° casing wall contact for element containment and reliability.
- ✓ **Static Mandrel-** No mandrel movement during operation.

TECHNICAL SPECIFICATIONS (CT-HYDRO-4):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
7	26-32	6.094	6.276	5.920	2.900	3 1/2, 9.3 PPF EU	10,000	V3/ V3-R
	35-38	5.92	6.004	5.730	2.610	3 1/2,12.7 PPF EU	15,000	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET V HYDRAULIC PACKER

- CT- HYDRO-5 | CT95205

DESCRIPTION:

COT® HYDRO SET V is a retrievable, hydraulic-set production special large bore packer that is set in casing to divert casing-to-tubing flow. It is set by pressuring up the tubing string against a plugging device below the packer.

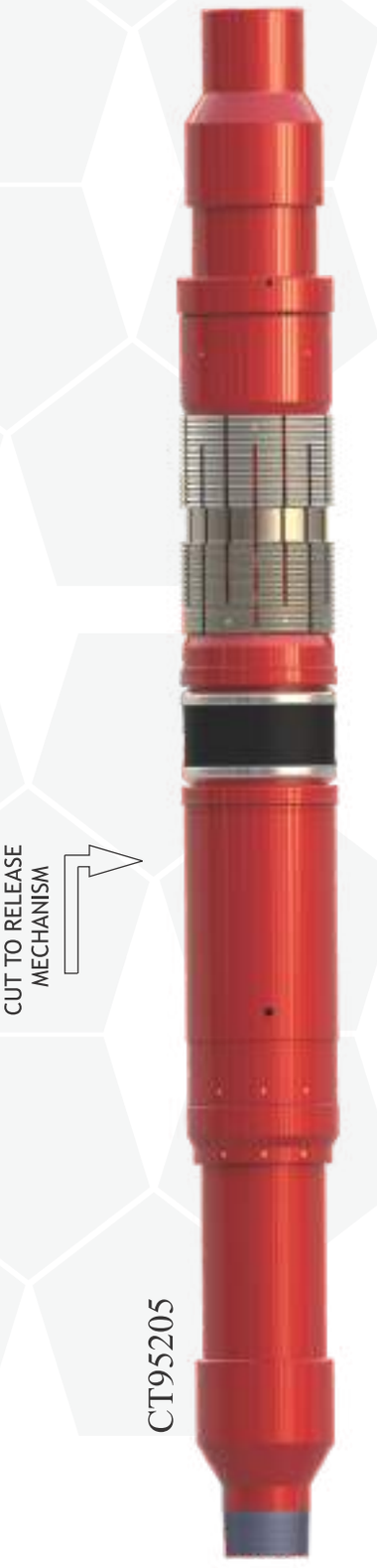
Bi-directional barrel slips hold the packer against well pressures from above and below.

The **COT® HYDRO SET V** packer is a straight shear release packer. The shear release value is adjustable. This packer could be set either putting pump-out plug or hydro trip pressure sub at the bottom of the packer.

FEATURES & BENEFITS :

This packer features for large bore production. It is also convertible to straight pull Release or cut to release. **COT® HYDRO SET V** is also available in V0 Validation grade.

- ✓ **Large Bore-** Special Large Bore packer ID.
- ✓ **Multiple Packer-** Multiple packers can be set close together.
- ✓ **Single Trip-** Single-trip capability.
- ✓ **Single Piece-** Single-piece mandrel construction.



TECHNICAL SPECIFICATIONS (CT-HYDRO-5):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	2.375	3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	20-23	4.67	4.778	4.5	2.992			
7	20-26	6.276	6.456	6.1	2.992 / 3.875	3 1/2, 9.3 PPF EU / 4 1/2, 12.75 PPF EU	10,000 / 7,500	V3/ V3-R
	26-32	6.094	6.276	5.938				
9 5/8	40-47	8.681	8.835	8.5	3.958/ 4.75	4 1/2, 12.75 PPF EU/ 7 BTC	7,500 / 5,000	V3/ V3-R
	47-53.5	8.535	8.681	8.335				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET VI HYDRAULIC PACKER

❒ CT-HYDRO-6 | CT95208

DESCRIPTION:

COT® HYDRO SET VI Hydraulic Set high Angle Straight pull or Rotational Release Production Packer is compact, economical, packer designed for low to medium-pressure applications. The short Body length makes it ideal for tight radius deviations and Horizontal applications. The packer requires no movement for setting, allowing stacked applications. Straight Pull OR Rotation releases the packer and built-in by pass ports equalize pressure across the packer for ease in retrieval. The shear Release mechanism is isolated from the packer hydraulics to allow Low release force even at full pressure differential.

CT95208

FEATURES & BENEFITS :

- ✓ No mandrel movement for setting.
- ✓ **Static Mandrel-** No downward mandrel movement makes this tool ideal for stacked packer completions.
- ✓ **Straight pull and rotational release mechanism.**
- ✓ **Low setting pressure**
- ✓ **Easy to release-** Shear screws, isolated from the hydraulic pressure, require low shear-out force, making the tool easy to release, even at full pressure differential.
- ✓ **By-pass-** Built-in bypass ports equalize pressure across the packer for easy retrieval.
- ✓ **Short in length-** Short overall length allows packer to negotiate highly deviated wells and severe doglegs for shorter run-in times.

TECHNICAL SPECIFICATIONS (CT-HYDRO-6):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
4 1/2	9.5-13.5	3.92	4.09	3.771	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
5	11.5-15	4.408	4.56	4.25	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	15-18	4.276	4.408	4.125				
5 1/2	13-15.5	4.95	5.038	4.781	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	14-20	4.778	5.012	4.625				
	20-23	4.67	4.778	4.54				
6 5/8	20-24	5.921	6.049	5.791	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	24-28	5.921	5.791	5.625				
	28-32	5.675	5.791	5.500				
7	20-26	6.276	6.456	6.000	2.441/ 2.992	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	26-32	6.094	6.276	5.891				
	32-35	6.004	6.094	5.812	2.441	3 1/2, 9.3 PPF EU		
7 5/8	33.7-39	6.625	6.765	6.453	2.441/ 2.992	2 7/8, 6.5 PPF EU/ 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	24-29.7	6.875	7.025	6.672				
	20-24	7.025	7.125	6.812				
9 5/8	36-43.5	8.755	8.921	8.531	2.992/ 3.958	3 1/2, 9.3 PPF EU/ 4 1/2, 12.75 PPF EU	7,500/ 5,000	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.281				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET VII HYDRAULIC PACKER

❒ CT-HYDRO-7 | CT95212

DESCRIPTION:

COT® HYDRO SET VII Hydraulic Set High Angle Production Packer is a compact economical packer, designed for typical completion applications. The short body length makes it ideal for high angle deviations and horizontal applications. This compact, economical packer requires no mandrel movement. Straight pull release, pressure equalization, and shear out features provide quick release and easy retrieval.

FEATURES & BENEFITS :

- ✓ No mandrel movement for setting.
- ✓ **Static Mandrel-** No downward mandrel movement makes this tool ideal for stacked packer completions.
- ✓ **Straight pull release mechanism**-** Straight-pull release, field adjustable.
- ✓ **Low setting pressure**
- ✓ **Easy to release-** Shear screws, isolated from the hydraulic pressure, require low shear-out force, making the tool easy to release, even at full pressure differential.
- ✓ **By-pass-** Built-in bypass ports equalize pressure across the packer for easy retrieval.
- ✓ **Short in length-** Short overall length allows packer to negotiate highly deviated wells and severe doglegs for shorter run-in times.

CT95212

TECHNICAL SPECIFICATIONS (CT-HYDRO-7):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
4 1/2	9.5-13.5	3.92	4.09	3.771	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
5	11.5-15	4.408	4.56	4.25	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	15-18	4.276	4.408	4.125				
5 1/2	13-15.5	4.95	5.038	4.781	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	14-20	4.778	5.012	4.625				
	20-23	4.67	4.778	4.54				
6 5/8	20-24	5.921	6.049	5.791	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	24-28	5.921	5.791	5.625				
	28-32	5.675	5.791	5.500				
7	20-26	6.276	6.456	6.000	2.441/ 2.992	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	26-32	6.094	6.276	5.891				
	32-35	6.004	6.094	5.812	2.441	3 1/2, 9.3 PPF EU		
7 5/8	33.7-39	6.625	6.765	6.453	2.441/ 2.992	2 7/8, 6.5 PPF EU/ 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	24-29.7	6.875	7.025	6.672				
	20-24	7.025	7.125	6.812				
9 5/8	36-43.5	8.755	8.921	8.531	2.992/ 3.958	3 1/2, 9.3 PPF EU/ 4 1/2, 12.75 PPF EU	7,500/ 5,000	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.281				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET VIII HYDRAULIC PACKER

❒ CT-HYDRO-8 | CT95213

DESCRIPTION:

COT® HYDRO SET VIII Retrievable Production Packer is hydraulic set, large bore double grip Packer, used for Production, zone isolation, multiple string completions and for stimulation.

The setting starts on application of pump pressure to the tubing. The design of the setting mechanism ensures sustained pack-off force throughout the life of the Packer. Opposed Double Grip slips prevent movement of the Packer in either direction due to pressure differentials, while allowing landing of the tubing in tension, compression, or neutral.

Packer is equipped with Shear Screws for a straight pickup release. The Packer is suitable for maximum 5,000 psi differential pressure.

FEATURES & BENEFITS:

- ✓ Large Flow Path ID: 2.441" ID for 5 1/2" Size.
- ✓ No Tubing movement for packer setting allows well to be kept positively controlled at all the times.
- ✓ Two or more packers to be set together in any desired sequence.
- ✓ Bi-Directional slips to arrest upward & downward movement.
- ✓ No Premature Setting of packer, blocked by an integral lock nut.

TECHNICAL SPECIFICATIONS (CT-HYDRO-8):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	2.441	2 7/8, 6.5 PPF EU	5,000	V3/ V3-R
	15.5-20	4.778	4.95	4.656				
	20-23	4.67	4.778	4.54				

CT95213

NOTES:

- ❒ Additional size/weight, end connection, pressure rating, etc. are also available on request.
- ❒ Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET IX & X HYDRAULIC PACKER

- CT-HYDRO-9 | CT95215
- CT-HYDRO-10 | CT95216

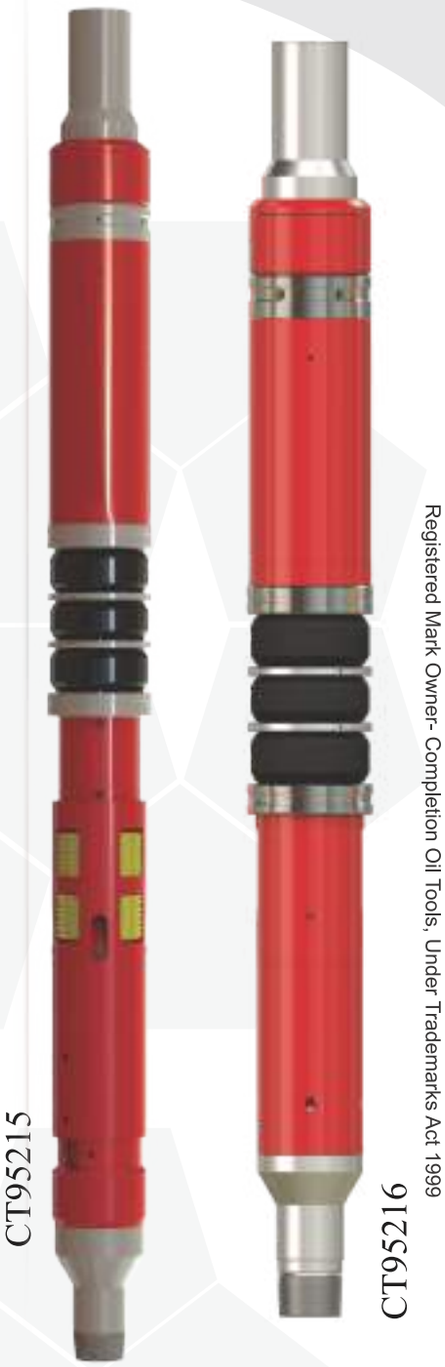
DESCRIPTION:

COT® Hydro 9 is hydraulic set and rotational release production packer is compact and economical packer designed for low to medium pressure application. It is primarily used in water injection operations, producing wells, gas lift applications.

COT® Hydro 10 isolation packer is a hydraulic set, single string tandem packer used in multiple zone wells.

Its design allows the integration of multiple packers in a single installation for selective injection wells, with the advantage of setting all the packers together at required depths and recovering them sequentially.

Packer required no mandrel movement during setting, allowing stacked application. It has a very simple release mechanism by rotation of 1/4 turn to the right. At the moment of the release, pressure equalization feature activated through the orifice that act as an up-jet towards the annulus, this effect helps clear impurities deposited on the tool. It is equipped with a locking system that keeps the tool extended after the release, which allows to transmit tension, weight and torque to carry out the sequential release of subsequent lower packers in the string.The design of the Packer and the high resistance materials provide high performance and long working life.



FEATURES & BENEFITS:

- ✓ No mandrel movement for setting
- ✓ Simple ¼ turn rotational release mechanism
- ✓ Self-equalizing feature during packer release
- ✓ Locking system that keeps the tool extended after the release, which allows to transmit tension, weight and torque to carry out the sequential release of subsequent lower packers in the string.
- ✓ No premature setting of packer, blocked by an integral lock nut. Inbuilt workshop surface hydraulic body testing mechanism during preparing the hook up
- ✓ Available in API 11D1-V-3/V3-R validation grade.

TECHNICAL SPECIFICATIONS (CT-Hydro 9 & 10):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	Max. OD (in.)	Min. ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	11.5-18	4.276	4.560	4.250	1.995	2 3/8" #4.7 EUE Box X Pin	7500	V3/ V3-R
5.5	13-15.5	4.950	6.050	4.744	1.995	2 3/8" #4.7 EUE Box X Pin	7500	V3/ V3-R
5.5	17	4.890	4.890	4.620	1.995	2 3/8" #4.7 EUE Box X Pin	7500	V3/ V3-R
5.5	20-23	4.670	4.780	4.500	1.995	2 3/8" #4.7 EUE Box X Pin	7500	V3/ V3-R
7	23-26	6.280	6.370	6.080	2.441	2 7/8" #6.5 EUE Box X Pin	7500	V3/ V3-R
7	29	6.180	6.180	5.970	2.441	2 7/8" #6.5 EUE Box X Pin	7500	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® HYDRO-SET XI HYDRAULIC PACKER

❒ CT-HYDRO-11 | CT95218

DESCRIPTION:

Our HYDRO -11 Production Packer is a hydraulically set, mechanically held pressure-balanced packer ideal for deep, high-pressure oil and gas production. The hydraulic setting feature combined with the pressure balance system make this tool a proven performer in multiple zone and deviated hole applications. The packer components are locked into a single rigid unit while running in by the body lock feature. The body lock is a simple mechanical lock designed to prevent preset going in the hole. Stacked packer installations for alternate zone completions are more practical due to the HYDRO-11 pressure balance system. The HYDRO-11 is hydraulically actuated and pressure balanced to offset pressure fluctuations and reversals when in the set position. The HYDRO-11 releases quickly and easily by pulling tension into the tubing. Releasing shear value is field adjustable without disassembly.

CT95218

FEATURES & BENEFITS:

- ✓ Holds forces and pressure differentials from both directions.
- ✓ Short, compact design.
- ✓ Compatible with packer accessories.
- ✓ Innovative packing element system for positive pressure enhanced pack off.
- ✓ Solid pre-set prevention system.
- ✓ All components locked to prevent pre-set.
- ✓ Release shear pins not affected by differential pressures.
- ✓ Tension force to release the packer is easily adjusted in the field.

TECHNICAL SPECIFICATIONS (CT-HYDRO-11):

Casing Specification				Packer Specification				
Size (In.)	PPF Range	Min. ID (in.)	Max. ID (in.)	Max. OD (in.)	Min. ID (in.)	End Connection Box X Pin	Differential Pressure Ratings (psi)	API Validation Grade
5 1/2	9-13	5.24	5.044	4.875	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	14-20	4.778	5.012	4.625				
	20-23	4.67	4.778	4.54				
5 3/4	17-19.5	5.19	5.09	4.875	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
6 5/8	17-24	5.921	6.135	5.75	2.375	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
	24-32	5.675	5.921	5.5				
7	17-26	6.276	6.538	6	2.441/ 2.992	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	26-29	6.184	6.276	5.968				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

FEED-PAC® PRODUCTION PACKER

- CT-ESP | CT95206
- CT-FTP-1 | CT95209

DESCRIPTION:

FEED-PAC® packer is a dual-bore hydraulic-set production packer. The packer has provision for additional feed through ports for chemical injection line , vent valve and ESP pump. The packer is set by pressuring up the tubing string against a plugging device below the packer and is locked in the set position mechanically by a lock ring. Bi-directional barrel slips hold the packer against well pressures from above and below. Release and retrieval is accomplished straight upward pull on the tubing string.

CT-ESP Electric Submersible Pump Packer is used with a completion that requires an electric submersible pump below the packer to assist in pumping the formation fluids to the surface. The packer incorporates a by pass or pass - through section to provide means for an electric cable (Model CT-ESP) to be run through the packer to supply power to the electric submersible pump below the packer.

CT-FTP-1 is the packer of the same product family. It is used in the wells where only feed through application without ESP pump is desirable.

FEATURES & BENEFITS : FEED-PAC® Packer is constructed with single-piece mandrel having single-trip capability.

- ✓ **Barrel Slip**: Barrel slip design for high load capability, minimize the casing stress.
- ✓ **Single-piece mandrel**: Single piece mandrel construction.
- ✓ **Electric Submersible**: Feed thru electric submersible pump completion packer.
- ✓ **Control line**: Control line ports for injection and venting is available.
- ✓ **Straight Pull:** Field adjustable straight pull release.

TECHNICAL SPECIFICATIONS (CT-ESP):

Casing Specification				Packer Specification							
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Primary String ID (in.)	Secondary String ID (in.)	Injection Line Connection	Penetrator Connection Box Up X Box Down	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
7	20-26	6.276	6.456	6.100	2.375	1.5	1/4 NPT / 3/8 NPT	1.900 NU	2 7/8, 6.5 PPF EU	5,000	V3/ V3-R
	26-32	6.094	6.276	5.938							

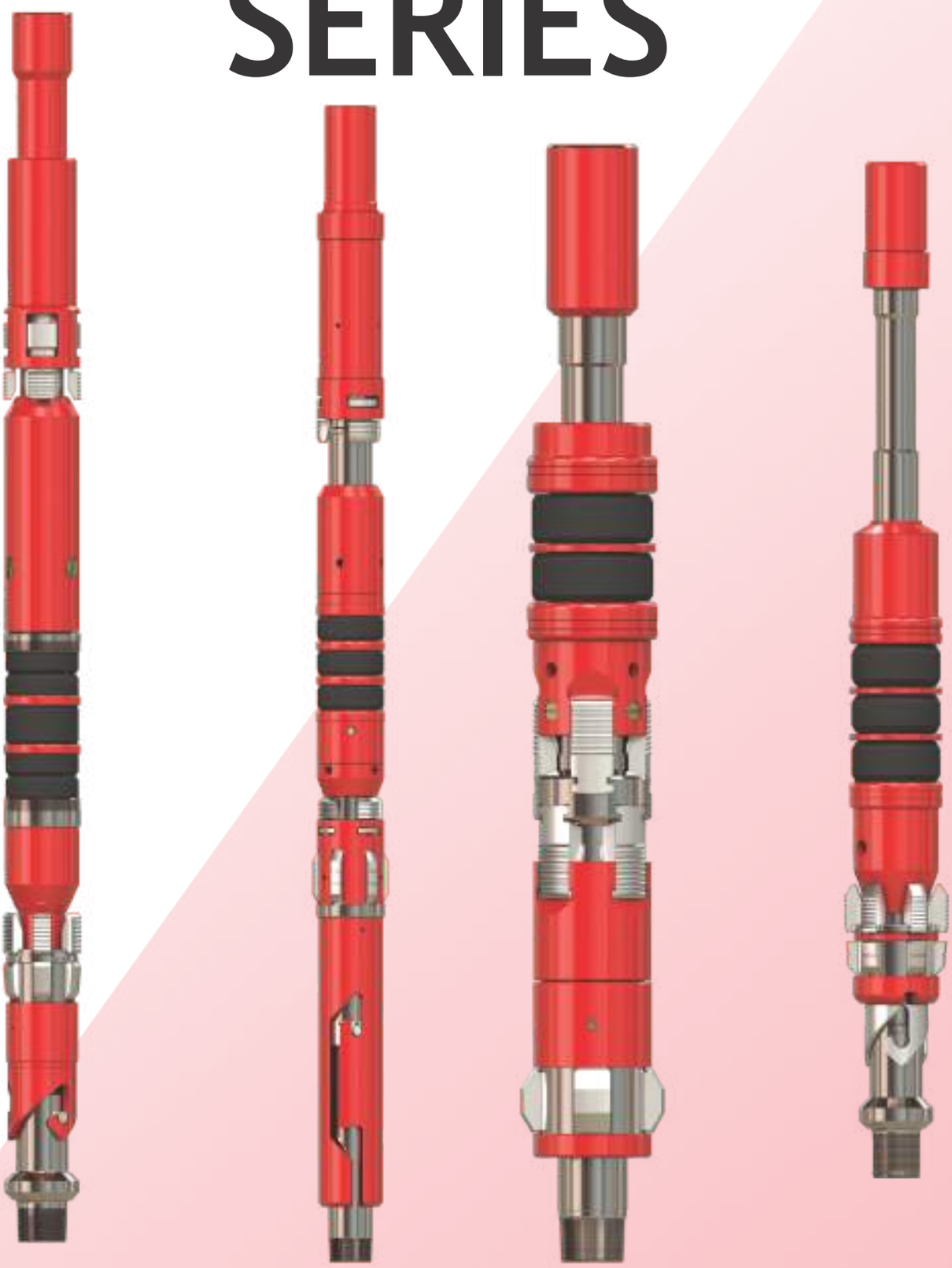
TECHNICAL SPECIFICATIONS (CT-FTP-1):

Casing Specification				Packer Specification					
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Primary String ID (in.)	Injection Line Connecti on	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	1.9	1/4 NPT/ 3/8 NPT	2 3/8, 4.7 PPF EU	5,000	V3/ V3-R
	15.5-20	4.778	4.95	4.625					
	20-23	4.67	4.778	4.5					
7	20-26	6.276	6.456	6.1	2.375	1/4 NPT/ 3/8 NPT	2 7/8, 6.5 PPF EU	5,000	V3/ V3-R
	26-32	6.094	6.276	5.938					

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH PAC SERIES



MECH-PAC® I SINGLE GRIP MECHANICAL RETRIEVABLE PACKER

❒ CT-MH- 1 I CT95301

DESCRIPTION:

This packer is a retrievable set-down packer that features a large bypass area. The bypass area is controlled by a face-seal type bypass valve which is actuated by a 30" inch stroke mandrel. The Packer is available in a single-grip version for use as a conventional long-stroke production packer for combination production and well stimulation operations.

The packer also incorporates a unique built-in "differential lock" that utilizes a balance sleeve actuated by pressure from below the packer. This pressure creates an additional downward force which, combined with set-down weight helps to maintain the force necessary to keep the bypass valve closed.

FEATURES & BENEFITS:

- ✓ Differential lock helps keep the by-pass closed and locked to the mandrel during high pressure operations.
- ✓ Automatically returns to run-in position when moved up the hole.
- ✓ Hydraulic hold-down buttons for differential pressure from below.
- ✓ Long stroke mandrel simplifies circulation of fluids without releasing the packer.
- ✓ Large by-pass allows speedy equalization of fluids.
- ✓ Rocker type slips.
- ✓ Standard right-hand set, optional left-hand set.

CT95301

TECHNICAL SPECIFICATIONS FOR SINGLE GRIP (CT-MH-1):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	11.5-15	4.408	4.56	4.25	1.995	2 3/8, 4.7 PPF EU	5,000	V3/ V3-R
	15-18	4.276	4.408	4.125				
5 1/2	13-15.5	4.95	5.038	4.781	1.995 /2.375	2 3/8, 4.7 PPF EU / 2 7/8, 6.5 PPF EU	5,000	V3/ V3-R
	15.5-20	4.778	4.95	4.641				
	20-23	4.67	4.778	4.5				
6 5/8	24	5.83	5.921	5.656	2.441	2 7/8, 6.5 PPF EU	5,000	V3/ V3-R
7	17-20	6.456	6.578	6.266	2.441 / 2.992	2 7/8, 6.5 PPF EU /3 1/2, 9.3 PPF EU	5,000	V3/ V3-R
	20-26	6.276	6.456	6.078				
	26-29	6.184	6.276	5.968				
	32-35	6.004	6.094	5.812				
	38	5.791	5.92	5.656	2.441	2 7/8, 6.5 PPF EU		
9 5/8	29.3-36	8.921	9.063	8.593	3.960	4 1/2, 12.75 PPF EU	3,000	V3/ V3-R
	36-43.5	8.755	8.921	8.531				
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.218				
10 3/4	32.75-40.5	10.05	10.19	9.875	3.960	4 1/2, 12.75 PPF EU	3,000	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® II DOUBLE GRIP MECHANICAL RETRIEVABLE PACKER

❒ CT-MH- 2 | CT95302

DESCRIPTION:

This packer is a retrievable set-down packer that features a large bypass area. The bypass area is controlled by a face-seal type bypass valve which is actuated by a 30" inch stroke mandrel. The Packer is available in a single-grip version for use as a conventional long-stroke production packer and in a double-grip version (with hold-down buttons) for combination production and well stimulation operations.

The double-grip packer are used where pressure differential from below the packer is anticipated, features an integral hydraulic hold-down buttons that is located below the bypass valve.

The double-grip packer also incorporates a unique built-in "differential lock" that utilizes a balance sleeve actuated by pressure from below the packer. This pressure creates an additional downward force which, combined with set-down weight helps to maintain the force necessary to keep the bypass valve closed.

FEATURES & BENEFITS:

- ✓ Differential lock helps keep the by-pass closed and locked to the mandrel during high pressure operations.
- ✓ Automatically returns to run-in position when moved up the hole.
- ✓ Hydraulic hold-down buttons for differential pressure from below.
- ✓ Long stroke mandrel simplifies circulation of fluids without releasing the packer.
- ✓ Large by-pass allows speedy equalization of fluids.
- ✓ Rocker type slips.
- ✓ Standard right-hand set, optional left-hand set.

CT95302

TECHNICAL SPECIFICATIONS FOR DOUBLE GRIP (CT-MH-2):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	11.5-15	4.408	4.56	4.25	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	15-18	4.276	4.408	4.125				
5 1/2	13-15.5	4.95	5.038	4.781	1.995 / 2.375	2 3/8, 4.7 PPF EU / 2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
	15.5-20	4.778	4.95	4.641				
	20-23	4.67	4.778	4.5				
6 5/8	24	5.83	5.921	5.656	2.441	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
7	17-20	6.456	6.578	6.266	2.441 / 2.992	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	20-26	6.276	6.456	6.078				
	26-29	6.184	6.276	5.968				
	32-35	6.004	6.094	5.812				
	38	5.791	5.92	5.656	2.441	2 7/8, 6.5 PPF EU		
9 5/8	29.3-36	8.921	9.063	8.593	3.96	4 1/2, 12.75 PPF EU	7,500	V3/ V3-R
	36-43.5	8.755	8.921	8.531				
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.218				
10 3/4	32.75-40.5	10.05	10.19	9.875	3.96	4 1/2, 12.75 PPF EU	5,000	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® III LOK SET MECHANICAL DOUBLE GRIP PACKER

❒ CT-MH- 3 | CT95303

DESCRIPTION:

It is a general-purpose packer for production, injection, zone isolation or remedial operations. It holds pressure from above or below while allowing the tubing to be placed in tension, compression or in a neutral condition. This is a Full-Bore Double-Grip Retrievable Packer with an integral un-loader. Opposed non-transferring dovetail Slips prevent movement of the Packer in either direction due to pressure differential, while allowing landing of the tubing in tension, compression or neutral. The Lock segments serve as a releas-able Lock Ring to maintain pack-off once the packer is set, and locks the un-loader in the closed position until the tool is released. The split Lock and Control Segments allow the tool to be set and released with right-hand rotation.

FEATURES & BENEFITS:

- ✓ Internal by-pass.
- ✓ Opposed dovetail slips positive set.
- ✓ Holds pressure from above or below.
- ✓ Can leave tubing in a tension, compression or neutral condition.
- ✓ Right hand rotation sets and releases the packer.
- ✓ Retracted dovetail slips.
- ✓ Converts to mechanical bridge plug with the addition of a valve.
- ✓ Optional packing element systems.

CT95303

TECHNICAL SPECIFICATIONS (CT-MH-3):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	15.5-20	4.778	4.95	4.641				
	20-23	4.67	4.778	4.500				
6 5/8	17-24	5.921	6.126	5.781	1.995	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
7	20-26	6.276	6.456	6.078	2.441	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
	26-29	6.184	6.276	5.968				
	32-35	6.004	6.094	5.812				
7 5/8	33.7-39	6.579	6.797	6.453	2.441	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
9 5/8	47-53.5	8.343	8.681	8.218	3.548	4, 9.5 PPF NU	5,000	V3/ V3-R

TECHNICAL SPECIFICATIONS IN LARGE BORE ID OPTION (CT-MH-3):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13	6.047	5.038	4.796	2.375	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
	15.5-17	4.892	4.95	4.656				
	20	4.625	4.778	4.562				
6 5/8	17-24	5.921	6.126	5.781	2.441	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
7	23-26	6.276	6.366	6.093	2.992	3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	26-29	6.136	6.276	5.983				
	32-35	6.004	6.094	5.812				
7 5/8	33.7-39	6.579	6.797	6.453	2.992	3 1/2, 9.3 PPF EU	7,500	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® IV MECHANICAL SET PRODUCTION PACKER

❒ CT-MH- 4 | CT95304

DESCRIPTION:

This is a mechanical set double grip retrievable production packer for medium to high Pressure applications. The Packer allows unrestricted flow and passage of full gauge wire line tools and accessories with an unrestricted ID, making it ideal for zone isolation injection and production applications. It can be set with production tubing in tension, compression or neutral maximizing effectiveness in shallow wells or fiberglass tubing operation. The packer's mechanical lock-set action closes an internal bypass and allows application of pressure above or below the packer. The packer is released by a ¼ right-hand turn at the tool, followed by straight pickup of the production tubing. Optional emergency release feature is also available on request.

FEATURES & BENEFITS:

- ✓ Pressure differential rating up to 7500 psi.
- ✓ 10,000 psi Differential rating packer is also available.
- ✓ Allows tubing to be left in tension, compression or neutral.
- ✓ Internal By-Pass allows packer to equalize prior to releasing.
- ✓ An ideal production packer.
- ✓ Withstands pressure differentials from above and below.
- ✓ Ideal packer for Production, Stimulation & Injection purposes.
- ✓ Tubing can be recovered leaving packer down hole by using an On-Off tool.

CT95304

TECHNICAL SPECIFICATIONS (CT-MH-4):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
4 1/2	9.5-13.5	3.92	4.090	3.750	1.938	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	13.5-15.1	3.826	3.920	3.680	1.500	1.900, 2.75 PPF EU		
	15.1-16.6	3.747	3.826	3.594				
5	11.5-15	4.408	4.560	4.125	1.938	2 3/8, 4.7 PPF EU	7,500	V3/ V3-R
	18-20.8	4.15	4.276	4.000				
5 1/2	14-20	4.778	5.012	4.625	1.938/ 2.375	2 3/8, 4.7 PPF EU / 2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
	20-23	4.670	4.778	4.500				
	13-14	5.012	5.038	4.818	2.375	2 7/8, 6.5 PPF EU		
6 5/8	24-32	5.675	5.921	5.500	2.441	2 7/8, 6.5 PPF EU	7500	V3/ V3-R
	20-24	5.921	6.049	5.75	2.441/ 2.992	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU		
	17-24	5.921	6.135	5.766	2.441	2 7/8, 6.5 PPF EU		
7	26-35	6.004	6.276	5.813	2.441	2 7/8, 6.5 PPF EU	7,500	V3/ V3-R
	17-26	6.276	6.538	6.000				
	26-35	6.004	6.276	5.875	2.992	3 1/2, 9.3 PPF EU		
	17-26	6.276	6.538	6.000				
7 5/8	33.7-39	6.625	6.766	6.458	2.441/ 2.992	2 7/8, 6.5 PPF EU / 3 1/2, 9.3 PPF EU	7,500	V3/ V3-R
	24-29.7	6.875	7.025	6.677				
9 5/8	32.3-43.5	8.755	8.975	8.5	3.958	4 1/2, 12.75 PPF EU	7,500	V3/ V3-R
	43.5-53.5	8.535	8.755	8.25				
10 3/4	32.75-51	9.85	10.19	9.625			3,000	V3/ V3-R
13 3/8	48-72	12.347	12.715	12				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® V RETRIEVABLE MECHANICAL SET SQUEEZE PACKER

❑ CT-MH-5 | CT95305

DESCRIPTION:

MECH-PAC® V Packer is a full-opening, hook wall packer used for testing, treating, and squeeze cementing operations. In most cases, the tool runs with a circulating valve assembly.

Packer body includes a J-slot mechanism, mechanical slips, packer elements and hydraulic slips. Large, heavy-duty slips in the hydraulic hold down mechanism help prevent the tool from being pumped up the hole. Drag blocks operate the J-slot mechanism on packer bodies. Automatic J-slot sleeves are standard equipment on all packer bodies. Circulating valve, if used, is a locked-open/locked-closed type that serves as both a circulating valve and bypass. Valve automatically locks in the closed position when the packer sets. During testing or squeezing operations, the lock prevents the valve from being pumped open. A straight J-slot in the locked-open position matches with a straight J-slot (optional) in the packer body. This combination eliminates the need to turn the tubing to close the circulating valve or reset the packer after the tubing has been displaced with cement.

FEATURES & BENEFITS:

- ✓ The full-opening design of the packer mandrel bore allows large volumes of fluid to pump through the tool. Tubing-type guns and other wire-line tools can be run through the packer.
- ✓ The packer can be set and relocated as many times as necessary with simple tubing manipulation.
- ✓ Bi-directional carburized slips provide greater holding ability and improved wear resistance in high-strength casing.
- ✓ Pressure through the tubing activates the slips in the hydraulic hold down mechanism.

CT95305

TECHNICAL SPECIFICATIONS (CT-MH-5):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
4 1/2	9.5	4.090	4.09	3.890	1.800	2 3/8, 4.7 PPF EU	10,000	V3/ V3-R
	11.6–13.5	3.920	4.000	3.780				
	15.1-18.1	3.671	3.826	3.550	1.510	2 3/8, 4.7 PPF EU		
5	23	4.067	4.049	3.780	1.800	2 3/8, 4.7 PPF EU	10,000	V3/ V3-R
	15-18	4.276	4.408	4.060		2 7/8, 6.5 PPF EU		
	11.5-13	4.494	4.67	4.250				
5 1/2	23-26						10,000	V3/ V3-R
	13-20	4.778	5.038	4.550	1.900	2 7/8, 6.5 PPF EU		
	20-23	4.670	4.778	4.400	1.800			
7	17-26	6.276	6.538	6.000	2.441	2 7/8, 6.5 PPF EU	10,000	V3/ V3-R
	23-29	6.184	6.366	5.750				
	32-38	5.920	6.094	5.650				
9 5/8	29.3-53.5	8.535	9.038	8.250	3.750	4 1/2 IF	7,500	V3/ V3-R
	40-71.8	8.110	8.835	7.800	3.000			
13 3/8	48-72	12.347	12.715	11.940	3.750	4 1/2 IF	5,000	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® VI COMPRESSION SET MECHANICAL PACKER

❑ **CT-MH-6 | CT95306**

DESCRIPTION:

MECH-PAC® VI Compression Set Mechanical Retrievable Casing Packer is a compact, economical set-down packer that can be used by itself for production applications or, with a companion un loader and hold-down, it can be used for well stimulation, testing and other pressuring operations and then left in the well as a production packer.

FEATURES & BENEFITS:

- ✓ **Low Cost-** Due to its Short & Compact Design it is economical to buy & maintain the packer. **MECH-PAC® VI** Packer offers long & dependable service with minimum Care.
- ✓ **Simple Construction-** Compression Set Packer is constructed with minimum number of parts thus it is easy to redress. The dependable rocker-type slips and synthetic rubber packing element are the same types used on other highly successful Baker equipment.
- ✓ **Ease of Operation-** The Simple & Reliable J to J Mechanism makes its Setting & Un-Setting very easy.
- ✓ **Packing Element System-** Rigid Packing Element system is used which is capable to work in temperatures up to 250° F with 80 DURO Hardness. if Above temp. is required then packer is furnished with 90 DURO Hardness.

CT95306

TECHNICAL SPECIFICATIONS (CT-MH-6):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-15.5	4.950	5.038	4.781	1.995	2 3/8, 4.7 PPF EU	3,000	V3/ V3-R
	14-20	4.778	5.012	4.641				
	20-23	4.670	4.778	4.500				
7	20-26	6.276	6.456	6.078	2.441	2 7/8, 6.5 PPF EU	3,000	V3/ V3-R
	26-32	6.094	6.276	5.968				
	32-35	6.004	6.094	5.812				
	38	5.830	5.920	5.656				
9 5/8	29.3-36	8.921	9.063	8.593	2.992	3 1/2, 9.3 PPF EU	3,000	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.218				
10 3/4	32.7-55.5	9.625	10.192	9.500	3.958	4 1/2, 12.75 PPF EU	1,500	V3/ V3-R
13 3/8	48-72	12.300	12.715	12.000	3.958	4 1/2, 12.75 PPF EU	1,500	V3/ V3-R

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® VII TENSION SET MECHANICAL PACKER

❑ **CT-MH-7 | CT95307**

DESCRIPTION:

MECH-PAC® VII Tension Set Mechanical Packer provides a compact, economical retrievable packer for use where a set-down type packer is impractical because of pressure requirements. Primarily Used in water flood applications, this packer can also be used for production and/or Treating operations. Since this packer Is tension set, it is ideally suited for shallow wells where set-down weight is not Available.

A simple and reliable J- Slot mechanism, actuated from the surface by tubing rotation, makes the packer easy to set and release.

FEATURES & BENEFITS:

- ✓ **Short and Compact Design-** Increases the efficiency of handling, shipping, and storing, as well as operations on the rig.
- ✓ **Rocker Type Slip Design-** Eliminates the need for extra drag blocks, slip tie links, and guide grooves, thus making possible not only shorter packers but ones permanently free from stuck or cocked slips.
- ✓ **Packing Element System-** Proven one-peice Packing Element for temperatures up to 250°F, the standard 80 hard element can be used and for applications above 250°F, a 90 shore element is available.
- ✓ **Full-Bore-** Larger than tubing drift diameter. Any Instruments capable of passing thru the tubing can be run thru the packer. Full ID also assists in preventing screen-out and subsequent plugging of the tubing during fracturing.

TECHNICAL SPECIFICATIONS (CT-MH-7):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	1.995/ 2.441	2 3/8, 4.7 PPF EU/ 2 7/8, 6.5 PPF EU	3,000	V3/ V3-R
	15.5-20	4.778	4.95	4.641				
	20-23	4.67	4.778	4.5				
7	20-26	6.276	6.456	6.078	2.441	2 7/8, 6.5 PPF EU	3,000	V3/ V3-R
	26-32	6.094	6.276	5.968				
	32-35	6.004	6.094	5.812				
	38	5.83	5.92	5.656				
9 5/8	29.3-36	8.921	9.063	8.593	2.992	3 1/2, 9.3 PPF EU	3,000	V3/ V3-R
	40-47	8.681	8.835	8.437				
	47-53.5	8.535	8.681	8.218				
10 3/4	32.7-55.5	9.625	10.192	9.5	3.958	4 1/2, 12.75 PPF EU	1,500	V3/ V3-R
13 3/8	48-72	12.3	12.715	12	3.958	4 1/2, 12.75 PPF EU	1,500	V3/ V3-R

TECHNICAL SPECIFICATION IN LARGE BORE ID OPTION (CT-MH-7):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
7	23-29	6.184	6.366	5.968	2.992	3 1/2, 9.3 PPF EU	3,000	V3/ V3-R
9 5/8	47-53.5	8.535	8.681	8.218	3.958	4 1/2, 12.75 PPF EU	3,000	V3/ V3-R
	40-47	8.681	8.835	8.437				
	29.3-36	8.921	9.063	8.593				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® VIII SNAP SET COMPRESSION PACKER

❑ CT-MH-8 | CT95311

DESCRIPTION:

MECH-PAC® VIII Snap Set Compression Packer without hold down are retrievable set down packers featuring a bypass area through the packer and an integral unloaded. They are used as an upper packer in a single string two packer installation, for zone isolation, injection or production.

Packers are used above either retainer production packers or retrievable packers.

FEATURES & BENEFITS:

- ✓ Proven multiple packing element system.
- ✓ Operation of the packer is simple. No tubing rotation is required.
- ✓ A collate-type snap-latch prevents the packer f rom setting before landing the seal assembly or before setting a lower retrievable packer. Lower portion of the tool is rotationally locked to deliver torque in either direction through the packer.

CT95311

TECHNICAL SPECIFICATIONS (CT-MH-8):

Casing Specification				Packer Specification				
Size (In.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	ID (in.)	End Connection	Differential Pressure Ratings (psi)	API Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	1.969/ 2.375	2 3/8" #4.7 PPF EU/ 2 7/8" #6.5 PPF EU	5,000	V3-R
	15.5-20	4.778	4.95	4.641				
	20-23	4.67	4.778	4.5				
7	17-20	6.456	6.578	6.266	2.441	2 7/8" #6.5 PPF EU	5,000	V3-R
	20-26	6.276	6.456	6.0278				
	26-29	6.184	6.276	5.968				
	32-35	6.004	6.094	5.812				
9 5/8	40-47	8.681	8.835	8.437	2.992	3 1/2" #9.3 PPF EU	5,000	V3-R
	47-53.5	8.535	8.681	8.25				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® IX SNAP SET COMPRESSION PACKER WITH HOLD DOWN BUTTON

❑ CT-MH-9 | CT95312

DESCRIPTION:

MECH-PAC® IX Snap Set Compression Packer with hold down are retrievable set down packers featuring a bypass area through the packer and an integral unloaded. They are used as an upper packer in a single string two packer installation, for zone isolation, injection or production.

Packers are used above either retainer production packers or retrievable packers.

FEATURES & BENEFITS:

- ✓ Proven multiple packing element system.
- ✓ Operation of the packer is simple. No tubing rotation is required.
- ✓ A collate-type snap-latch prevents the packer from setting before landing the seal assembly or before setting a lower retrievable packer. Lower portion of the tool is rotationally locked to deliver torque in either direction through the packer.

CT95312

TECHNICAL SPECIFICATIONS (CT-MH-9):

Casing Specification				Packer Specification				
Size (In.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	ID (in.)	End Connection	Differential Pressure Ratings (psi)	API Validation Grade
5 1/2	13-15.5	4.95	5.038	4.781	1.969/ 2.375	2 3/8" #4.7 PPF EU/ 2 7/8" #6.5 PPF EU	7,500	V3-R
	15.5-20	4.778	4.95	4.641				
	20-23	4.67	4.778	4.5				
7	17-20	6.456	6.578	6.266	2.441	2 7/8" #6.5 PPF EU	7,500	V3-R
	20-26	6.276	6.456	6.0278				
	26-29	6.184	6.276	5.968				
	32-35	6.004	6.094	5.812				
9 5/8	40-47	8.681	8.835	8.437	2.992	3 1/2" #9.3 PPF EU	7,500	V3-R
	47-53.5	8.535	8.681	8.25				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MECH-PAC® X MECHANICAL SET PRODUCTION PACKER

❑ CT-MH-10 | CT-95317

DESCRIPTION:

MECH-PAC® X Mechanical Set Production Packer is a high performance Full Bore Single String Retrievable Packer. It is specifically designed to perform reliably in high pressure fracturing and production applications. It is compression set and can be landed in compression, tension or neutral condition.

Enhancements of field proven design features combining rugged simplicity, economy and ease of operation, result in a new and test proven standard of performance. This packer is now available with a pressure rating upto 10,000 PSI at 350° F.

FEATURES & BENEFITS :

Mechanical Set Production Packer is a type of retrievable packer in which tubing can be loaded in tension, compression or in neutral conditions and provides full opening ID for stimulation and thru-tubing perforating. Staged loading of upper sleeves make it ease of release.

- ✓ **Double-Jay Mechanism-** Independent lower and upper Jay Assemblies contributing to short, compact design.
- ✓ **Easy to Operate- Ease of operation -** 1/4 turn to right to set, 1/4 turn to right to release.
- ✓ **Advanced sealing-**High performance three-piece element system for high pressure sealing and pressure reversal loads.
- ✓ Tubing can be landed in tension, compression or neutral.
- ✓ Full opening ID for stimulation and thru-tubing perforating.
- ✓ Built in un-loader with bonded seal for bypass.
- ✓ Bypass opens before release of upper slips for safety and ease of release, Staged loading of upper slips for ease of release.
- ✓ Solid upper slip cone for added strength and elimination of release sleeve, reliable and rugged rocker type lower slip assembly.

CT95317

TECHNICAL SPECIFICATIONS (CT-MH-10):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	MAX OD (in.)	MIN ID (in.)	End Connection Box Up X Pin Down	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	15.5-17	4.892	4.95	4.720	2.375	2 7/8, 6.5 PPF EU	10,000	V3/ V3-R
	20-23	4.67	4.778	4.500				
7	20-23	6.366	6.456	6.180	2.441	2 7/8, 6.5 PPF EU	10,000	V3/ V3-R
	23-26	6.276	6.366	6.078				
	26-29	6.184	6.276	6.000				
	32-35	6.004	6.094	5.875	2.375			

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

SEAL BORE SERIES

EXTENDED REACH RETRIEVABLE SEAL BORE PACKER

- CT-ERD | CT95401
- CT-ERD-1 | CT95418

DESCRIPTION:

The **CT-ERD/ ERD-1** packer is particularly suitable for Extended Reach Drilling (ERD) Wells. It is run with Model CT-HSHK/CT-HTSHT Running Tool and the retrieving of this packer is done independently from the tubing/drillpipe by means of Retrieving Tool, manipulated on a work string.

Packer can be run on Wireline using suitable wireline adapter kit.

FEATURES & BENEFITS:

- ✓
- ✓ Barrel-Slip Design distributes loadings, minimizing case stress.
- ✓ Torque-through feature eases installation of long assemblies in tortuous well path.
- ✓ Design has minimal sealing points, eliminating potential leak paths.
- ✓ Bi-directional case-carburized slips hold the packer securely against well pressures in all casing grades (including P110 and harder) from above and below.
- ✓ Threaded bottom subs are provided as a separate item for running gravel pack flow subs, seal bore extensions, or tubing tail pipe of varying types and sizes.
- ✓ One piece slip simplifies design, improve reliability.
- ✓ Improve performance parameters increase reliability and reduce risk.
- ✓ During running in can rotate the tool on high torque.

CT95401 CT95418

TECHNICAL SPECIFICATIONS (CT-ERD & CT-ERD-1):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
7	26-29	6.184	6.276	5.955	3.25	2.406	10,000	V3/ V3-R
	32-35	6.004	6.094	5.812				
	26-29	6.184	6.276	5.955	3.875	3.000	10,000	
	26-29	6.184	6.276	5.955	4.000	3.000	7,500	
	32-35	6.004	6.094	5.812				
7 5/8	26.4-29.7	6.875	6.969	6.688	4.0000	3.000	10,000	V3/ V3-R
	33.7-39	6.625	6.765	6.438				
9 5/8	43.5-47	8.681	8.755	8.45	4.000 / 4.750 /6.000	3.000 / 3.875/ 4.875	5000	V3/ V3-R
	47-53.5	8.535	8.681	8.335				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® PERMA-SET I & II HYDRAULIC SET SINGLE / DOUBLE BORE DRILLABLE PACKER

- CT-HDP | CT95402
- CT-HDDP | CT95403

DESCRIPTION:

These are hydraulic set permanent drillable packers. These packers have an enlarged seal bore to accept seal assemblies. In double bore the packer has an upper larger seal bore for anchor tools or seal accessories to be latched and sealed.

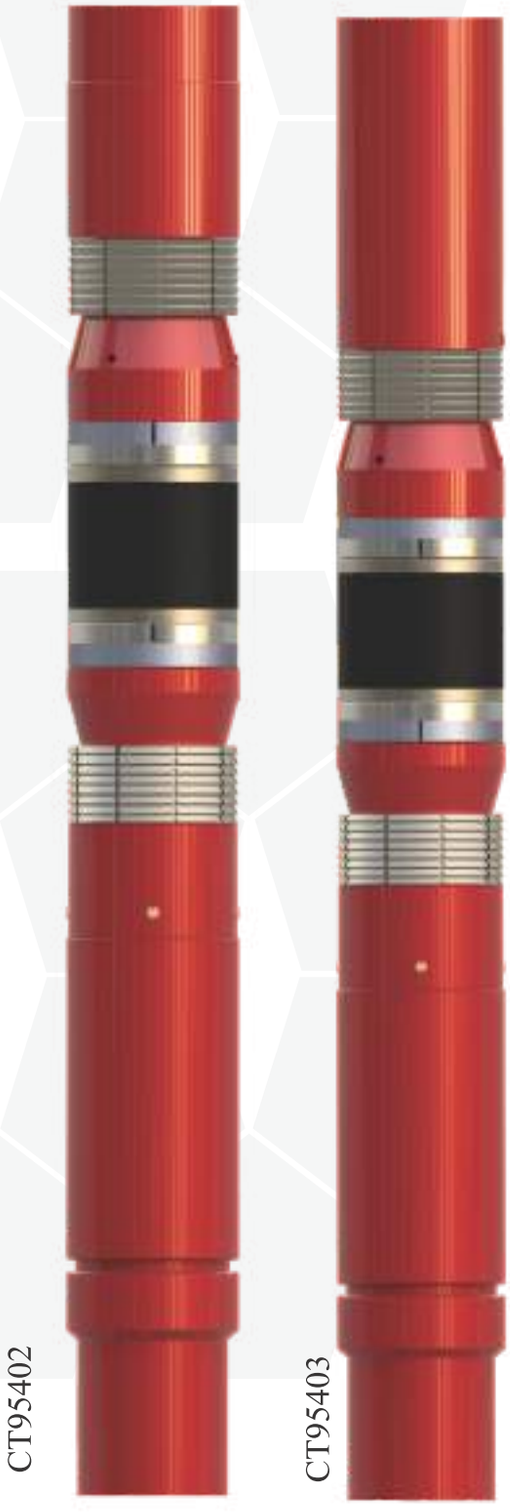
The range and combination of bore sizes are designed such that all the accessories are commonly used for both the series of packers.

A large bore version of single bore packer are made in sizes so as to use the same range of accessories of above packers. The hydraulic setting mechanism makes the packers suitable for use in highly deviated or horizontal wells.

Manufactured from special alloy grade material components, enables the packers to be used in a wide range of operating conditions.

FEATURES & BENEFITS:

- ✓ During running in can rotate the tool on high torque.
- ✓ Solid, slim lined construction and a packing element system which resists swab-off. This permits a fast run-in (when compared with earlier models of permanent packers) without fear of impact damage or premature setting, yet packs off securely and permanently when the packer is set.
- ✓ Two opposed sets of full circle; full strength slips ensure that the packer will stay where it is set.
- ✓ Interlocked expandable metal back-up rings contact the casing and create a positive barrier to packing element extrusion.
- ✓ Setting requires no rotation or reciprocation, thereby eliminating the problems of spacing out, landing etc.
- ✓ Packers run with Anchor Seal Nipples or setting tool nipple.
- ✓ O-Rings are supported by back-up rings to better life seal integrity.
- ✓ Guides are furnished as per standard, to attach mill-out extensions; seal bore extensions or other equipment below the packer.



TECHNICAL SPECIFICATIONS (CT-HDP):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	15-21	4.125	4.408	3.968	1.968	0.984	10000	V3/ V3-R
						1.312		
5 1/2	13-17	4.892	5.044	4.500	2.5	1.865	10,000	V3/ V3-R
6 5/8	17-32	5.675	6.094	5.468	3.25	2.406	10,000	V3/ V3-R
7	32-44							
	20-35	6.004	6.456	5.688				
6 5/8	17-20							
7	17-20	6.456	6.765	6.187				
7 5/8	33.7-39							
	24-33.7	6.765	7.011	6.375				
9 5/8	32.3-58.4	8.435	9.001	8.125	3.250	2.406	10,000	V3/ V3-R
						1.99		
					4.750	3.000		
						2.500		
						3.875		
	47-58.4		8.681	8.25	6.000	4.875		

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

TECHNICAL SPECIFICATIONS (CT-HDDP):

Casing Specification				Packer Specification						
					Upper		Lower			
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	15-21	4.125	4.408	3.968	3.000	2.39	1.968	0.984	10,000	V3/ V3-R
								1.312		
5 1/2	20-23	4.892	5.044	4.5	3.25	2.5	2.5	1.865	10,000	V3/ V3-R
6 5/8	17-32	5.675	6.094	5.468	4.000	3.25	3.25	2.406	10,000	V3/ V3-R
7	32-44									
	20-35	6.004	6.456	5.688						
6 5/8	17-20									
7	17-20	6.456	6.765	6.187						
7 5/8	33.7-39									
	24-33.7	6.765	7.011	6.375						
9 5/8	32.3-58.4	8.435	9.001	8.125	4.75	3.875	3.875	2.500	10,000	V3/ V3-R
						4.000	4.000	3.000		
					6.000	4.875	4.875 Non Sealing Bore			
							4.75	3.000		
								3.875		

TECHNICAL SPECIFICATIONS IN LARGE BORE ID OPTION :

Casing Specification				Packer Specification						
					Upper		Lower			
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	20-23	4.67	4.778	4.45	3.625	2.78	2.780 Non-Sealing Bore		10,000	V3/ V3-R
6 5/8	17	6.095	6.276	5.875	4.75	3.875	3.875	2.5	10,000	V3/ V3-R
7	20-26	6.276	6.456	6	4.75	3.875	3.875	2.5	10,000	V3/ V3-R
	23-32	6.094	6.366	5.875			3.958 Non Sealing Bore			
6 5/8	17									
7	32-38	5.92	6.094	5.687						
7 5/8	24-33.7	6.765	7.011	6.5			3.875	2.5	10,000	V3/ V3-R
9 5/8	36-47	8.681	8.921	8.438	7.375	6.031	6	4.875	10,000	V3/ V3-R
	40-53.5	8.535	8.835	8.218						
10 3/4	32.75-60.7	9.66	10.19	9.438	7.375	6.031	6	4.875	10,000	V3/ V3-R
	79.2-85.3	9.156	9.282	8.938						

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® PERMA-SET III & IV WIRELINE SET SINGLE / DOUBLE BORE DRILLABLE PACKER

- CT-WDP | CT95404
- CT-WDDP | CT95405

DESCRIPTION:

The Wire Line Set Drillable Packer is a high performance permanent production packer. It is frequently used as a high-performance squeeze or as a permanent or temporary bridge plug.

FEATURES & BENEFITS:

- ✓ Proven reliability.
- ✓ Slim-linedsolid construction that makes possible a significant savings in rig time by providing a faster run-in without fear of impact damage or premature setting.
- ✓ Two opposed sets of full-circle, full-strength slips.
- ✓ A packing element that resists swab off but packs off securely when the packer is set.
- ✓ A smooth, continuous ID sealing bore.
- ✓ Unique Interlocked expandable metal back-up rings that contact the casing creating a positive packing element extrusion barrier.
- ✓ All alloy materials within the packer are suitable for H_2S service.
- ✓ Body & Guide (components in flow paths) can be furnished in customer's choice of material.
- ✓ Fluid displacement is possible after well is flanged up and prior to setting the packer.
- ✓ Setting sequence of packer may be controlled to start at 1,500 psi.

TECHNICAL SPECIFICATIONS (CT-WDP):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5	15-21	4.125	4.408	3.968	2.500	1.875	10,000	V3/ V3-R
					1.968	1.000		
5 1/2	14-23	4.67	5.012	4.5	2.688	1.938	10,000	V3/ V3-R
7	32-38	5.92	6.094	5.468	3.25	2.406	10000	V3/ V3-R
6 5/8	17-32							
	17-20	6.004	6.366	5.687				
7	23-35							
	17-20	6.456	6.765	6.187				
7 5/8	33.7-39							
	24-33.7	6.765	7.011	6.375				
9 5/8	32.3-53.5	8.535	9.001	8.125	4.000	3.000	10,000	V3/ V3-R
					3.250	2.406		

TECHNICAL SPECIFICATIONS (CT-WDDP):

Casing Specification				Packer Specification						
					Upper		Lower			
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	14-23	4.67	5.012	4.5	3.25	2.5	2.688	1.968	10,000	V3/ V3-R
7	32-38	5.92	6.094	5.468	4	3.25	3.25	2.406	10000	V3/ V3-R
6 5/8	17-32									
	17-20	6.004	6.366	5.687						
7	23-35									
	17-20	6.456	6.765	6.187						
7 5/8	33.7-39									
	24-33.7	6.765	7.011	6.38						

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® PERMA-SET V & VI WIRELINE LARGE SINGLE / DOUBLE BORE DRILLABLE PACKER

- CT-WLDP | CT95409
- CT-WLDDP | CT95408

DESCRIPTION:

The wireline large single/ double bore drillable packers are offered to further improve the present line of drillable-type Production Packers. They combine the best features of both Model CT-WDP and CT-WDDP Retainer Production Packers to provide the following operational advantages:

- ✓ Largest possible opening through a Drillable Packer.
- ✓ May be set on wireline using the Wire Line Adapter kit or on tubing.
- ✓ Accepts standard accessories such as Seal Nipples etc.
- ✓ Permits extensions or tailpipe to be attached below the Packer when assembled with threaded guides.
- ✓ Tailpipe load transmitted directly into the Body.

FEATURES & BENEFITS:

- ✓ Solid, slim-line construction and a packing element system that resists swab-off. This provides a faster run-in time without fear of impact damage or premature setting, yet packs-off securely and permanently when the Packer is set.
- ✓ Two opposed sets pf full-circle; full strength slips assure that the packer will stay where it is set.
- ✓ Unique interlocked, expandable metal back-up rings contact the casing and create a positive barrier to Packing Element extrusion.
- ✓ The largest possible opening through a drillable packer.

TECHNICAL SPECIFICATIONS (CT-WLDP):

Casing Specification				Packer Specification				
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-14	5.012	5.044	4.75	3	1.968	10,000	V3/ V3-R
	14-17	4.812	5.012	4.562				
	20-23	4.67	4.778	4.438				
7	20-26	6.276	6.456	6	4	3	10,000	V3/ V3-R
	26-32	6.094	6.276	5.875				
6 5/8	17							
	20-24	5.92	6.094	5.687				
7	32-38							
	17	6.625	6.765	6.25	4.4	3.5		
7 5/8	33.7-39							
	24-33.7	6.765	7.011	6.5	4.400/ 4.000	3.500/ 3.000		
9 5/8	36-47	8.681	8.921	8.438	6	4.875	10,000	V3/ V3-R
	40-53.5	8.535	8.835	8.218				
10 3/4	32.15-60.7	9.66	10.19	9.438	6	4.875	10,000	V3/ V3-R
	79.2-85.3	9.156	9.282	8.938				

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

TECHNICAL SPECIFICATIONS (CT-WLDDP):

Casing Specification				Packer Specification						
					Upper		Lower			
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Seal Bore (in.)	ID Thru Seals (in.)	Differential Pressure Rating (psi)	API 11D1 Validation Grade
5 1/2	13-14	5.012	5.044	4.75	3.625	3	3.000	1.968	10,000	V3/ V3-R
	14-17	4.812	5.012	4.562						
	20-23	4.67	4.778	4.438						
7	20-26	6.276	6.456	6	4.75	4.031	4.000	3.000	10,000	V3/ V3-R
	23-32	6.094	6.366	5.875						
6 5/8	17									
	20-24	5.92	6.094	5.687						
7	32-38									
	17	6.625	6.765	6.25	5.25	4.421	4.4	3.5		
7 5/8	33.7-39									
	24-33.7	6.765	7.011	6.5			4.400/ 4.000	3.500/ 3.000		
9 5/8	36-47	8.681	8.921	8.438	7.375	6.031	6.000	4.875	10,000	V3/ V3-R
	40-53.5	8.535	8.835	8.218						
10 3/4	32.15-60.7	9.66	10.19	9.438	7.375	6.031	6.000	4.875	10,000	V3/ V3-R
	79.2-85.3	9.156	9.282	8.938						

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

COT® PERMA-SET VII RETAINER PRODUCTION PACKER

❒ CT-FAB | CT95410

DESCRIPTION:

The Perma-Set Retainer Production Packer have the body lock ring and setting sleeve on the lower end of the packer and incorporate an oversized seal bore in the upper end. Because size limitations prevented conversion into the top set design, all the small size Packers remain bottom-set. Those older versions bottom-set packers that remain in the product line are covered in this unit.

The Model CT-FAB Retainer Production Packer in small sizes is equipped with a threaded bottom guide to accommodate various extensions. Available extensions include the Mill- out Extension and Seal Bore Extension.

FEATURES & BENEFITS:

- ✓ The CT-FAB Retainer Production Packer, set with the Wireline Pressure Setting Assembly, provides a safe, fast and economical method of placing a permanent large-bore drillable Packer at any predetermined point in the casing.
- ✓ The smaller sizes of the Model CT-FAB Retainer Production Packers are designed for tubing less completion. They have a large upper sealing bore that allows the largest possible opening through the Packer.
- ✓ The Wireline Adapter Kit, Product must be ordered specifically for the Packer however, all other Wireline Setting Tools are the same as those used to set Models CT-WDP and CT-WDDP Packers.
- ✓ The Packer can also be set on tubing or drill pipe using the Hydraulic Setting Assembly, and being used in conjunction with a Wireline Adapter Kit.

CT95410

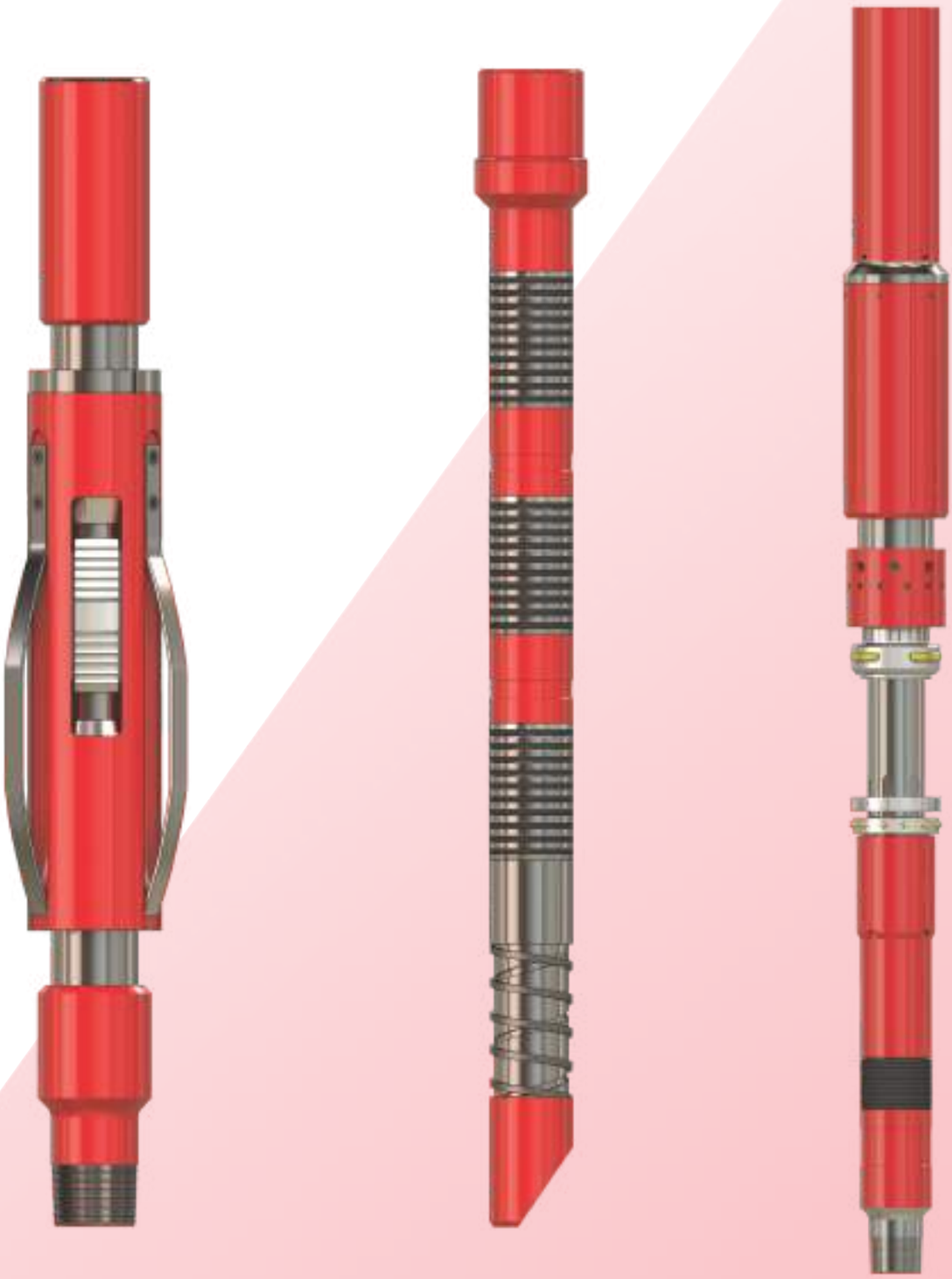
TECHNICAL SPECIFICATIONS (CT-FAB):

Casing Specification				Packer Specification						
Size (in.)	PPF Range	Min. ID (in.)	Max. ID (in.)	OD (in.)	Upper		Lower		Differential Pressure Rating (psi)	API 11D1 Validation Grade
					Seal Bore (in.)	ID Thru Seals (in.)	Seal Bore (in.)	ID Thru Seals (in.)		
3 1/2	7.7-9.3	2.992	3.075	2.765	2.188	1.531	1.531	1.000	10,000	V0/ V0-R
4 1/2	9.5-11.6	4.000	4.124	3.718	3.000	2.39	2.39	1.703	10,000	V0/ V0-R
	11.6-16.6	3.781	4.000	3.593						

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

Packer Accessories



PACKER ADAPTER KIT

❒ CT-PAK | CT95604

DESCRIPTION:

The **Wire line Adapter Kit** is used to set permanent/retrievable packers and bridge plugs with the aid of appropriate wire line string or pressure setting assembly else with hydraulic setting tool as per varying requirement/operations. In its most common use with a wire line setting tool, the system allows for a substantial reduction in rig time over setting on tubing with a hydraulic setting tool. This kit is provided with release/shear stud of different shear values e.g.: 35,000lbf 55,000 lbf, 83,000 lbf etc. as per the setting mechanism and requirement.

CT95604

FEATURES & BENEFITS :

- ✓ Substantial rig time saving over hydraulically setting packer.
- ✓ Mates to size 10 or 20 wireline pressure setting assembly.
- ✓ Mates to hydraulic-setting tool.
- ✓ Long field life & Rugged design.

TECHNICAL SPECIFICATIONS :

Size	OD (In.)	Connection	Size	OD (In.)	Connection
32-25	3.968	27/8" OD 4 TPI LH SQUARE THREAD	85-40/ 83-40	5.688	4 1/2" OD 4 TPI LH SQUARE THREAD
43-30	4.437	3 1/2" OD 4 TPI LH SQUARE THREAD	85-47/87-47	5.875	5 1/8" OD 4 TPI LH SQUARE THREAD
44-26	4.5	3 1/4" OD 4 TPI LH SQUARE THREAD	194-40	8.125	4 1/2" OD 4 TPI LH SQUARE THREAD
84-32	5.688	4" OD 4 TPI LH SQUARE THREAD	194-47	8.125	5 1/4" OD 4 TPI LH SQUARE THREAD
84-40	5.688	4 1/2" OD 4 TPI LH SQUARE THREAD	192-60	8.218	6 1/2" OD 4 TPI LH SQUARE THREAD

NOTES:

- ❒ Additional size/weight, end connection, pressure rating, etc. are also available on request.
- ❒ Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

ON OFF TOOL

❒ CT-ON-OFF | CT95603

DESCRIPTION:

The **On-Off Tool** is a tubing disconnect device that has an internal blanking plug locking profile with seal bore for utilizing flow control equipment. The Overshot has a box looking up which connects to tubing string and a pin looking down off the Stinger which connects to the packer. This tool has two basic components that comprise the Overshot. The Top Sub which contains two bonded rubber steel seals and the Jay Latch which has a J Slot configuration to locate and latch the On-Off Tool Stinger. The Jay Latch also has a wash over shoe configuration which allows cutting through debris. The Overshot automatically Jays up on Stinger when lowered into well.

FEATURES & BENEFITS :

- ✓ Standard Left-Hand Release (Right Hand Release also Available)
- ✓ Automatic Jay Up
- ✓ Bonded Seals
- ✓ All Nipple Profiles Available for Stinger
- ✓ Full Open or Solid Stinger Available
- ✓ 10K Rated
- ✓ Wash over shoe on all Models

CT95603

TECHNICAL SPECIFICATIONS (CT-ON-OFF):

Size	Minimum ID (In)	Washover Shoe O (In)	Casing OD (In)	PPF
2 3/8	1.875 w/Profile o 1.995 w/o Profile	3.75	4 1/2	9.5-13.5
			5	11.5-24.1
		4.5	5 1/2	20-23
				13-23
			6 5/8	20-32
			7	23-38
		5.5	6 5/8	20-32
			7	17-38
			7 5/8	24-47.1
			8 5/8	24-49
		6.25	7	17-29
			7 5/8	24-45.3
			8 5/8	24-49
		8.125	9 5/8	32.3-53.5
2 7/8	2.313 w/Profile o 2.441 w/o Profile	4.5	5 1/2	13-23
		5.5	6 5/8	20-32
			7	17-38
			7 5/8	24-17.1
			8 5/8	44-49
		5.875	6 5/8	20
			7	17-32
			7 5/8	24-47.1
			8 5/8	32-49
		6.25	7	17-20
			7 5/8	24-45.3
			8 5/8	24-49
		8.125	9 5/8	32.3-53.5
3 1/2	2.813 w/Profile o 2.992 w/o Profile	5.5	6 5/8	20-32
			7	17-38
			7 5/8	24-47.1
		5.875	6 5/8	20
			7	17-32
			7 5/8	24-17.1
			8 5/8	32-49
		7.25		24-49
		8.125	9 5/8	32.3-53.5
4 1/2	3.813 w/Profile o 3.958 w/o Profile	5.875	6 5/8	20
			7	17-32
			7 5/8	24-47.1
			8 5/8	32-49
		7.25		24-49
		8.125	9 5/8	32.3-53.5
		9.375	10 3/4	40.5-60.7
		11.75	13 3/8	54.5-86

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

UPPER POLISH BORE RECEPTACLE

❒ CT-PBR-U | CT95613

DESCRIPTION:

The Upper Retrievable Packer Bore Receptacle (CT-PBR-U) is designed for use where extreme tubing movement is anticipated because of temperature and pressure changes during treatment or production. The overall stroke of the PBR customized to best suit the requirement.

When run-in it is not intended for the shear ring or shear screws to be sheared. The PBR-U is designed to be run above and anchored into the Left Hand thread of a Retainer Production Packer or Liner Hanger.

The PBR-U is a polished honed bore, made specifically to receive the PBR-U seal assembly above the packer. The PBR-U seal assembly is held in place inside the honed bore during run in by a shear ring or shear screws. The seal assembly consists of three debris barriers and four seal stacks.

When combined with hydraulic set packers the entire completion can be run in and set on the production tubing string in one trip.

The entire assembly above the packer is retrievable in two trips. The seal assembly is retrieved when tubing string is recovered. The PBR-U housing is easily recovered in a second trip using the specifically designed retrieving tool.

CT95613

FEATURES & BENEFITS :

- ✓ A fully retained Z shaped shear ring /shear screws eliminates the opportunity for shear stubs to interfere with the stroking action of the inner mandrel.
- ✓ The PBR-U consists of two sets of working seal units and three debris barriers.
- ✓ Debris barrier stacks are positioned either side of the working seals to provide protection against intrusion of harmful material from the well.
- ✓ A debris barrier is positioned at the entrance to the polished bore receptacle preventing debris falling into the honed bore of the PBR-U.
- ✓ The PBR-U has a special retrieving profile to accommodate the Retrieving Tool that allows retrieval of the PBR-U.
- ✓ Retrieving profile allows high torque to be transmitted to break out a premium connection to the Packer below.
- ✓ The centralizer sub on the PBR-U having large re-entry angles easily accommodates the seal mandrel having a half Mule shoe on bottom as standard.

TECHNICAL SPECIFICATIONS (CT-PBR-U):

Size	OD (In)	ID (In)	Seal Bore ID (In)
30-21	2.875	1.531	2.188
11-25	3.187	1.875	2.5
80-32	5.810	2.406	3.25
80-40	5.810	3.25	4
80-47	5.810	3.875	4.75
80-47	5.810	4	4.75
81-47	5.938	4	4.75
81-47	5.938	3.875	4.75
190-60	8.250	4.875	6
190-71	8.250	6	7.125

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

ANCHOR LATCH SEAL ASSEMBLY

❒ **CT-ALSA | CT95608**

CT95608

DESCRIPTION:

Anchor Seal Nipple is an anchoring and sealing device that connects the retrievable tubing string to the upper bore of the Retainer Production Packers. The latch component of the seal nipple provides positive engagement with the packer. The seal unit maintains the pressure integrity of the connection. The additional no go shoulder is designed to provide a positive set down shoulder at the top of the packer and secondly to prevent excessive intrusion of debris into the latch to packer body inter-face.

FEATURES & BENEFITS:

- ✓ The anchor seal nipple is available with high quality Chevron seal unit as standard with 4140 Material.
- ✓ V-Ryte and A-Ryte seal units with 13% Cr material are optional.
- ✓ The anchor latch Seal assembly has a no-go OD which sets down on the top of the packer, rather than at the shoulder at the bottom of the upper seal bore.
- ✓ Adequate space is provided for handling purposes on the anchor body.
- ✓ Redress of the seal unit may be accomplished quickly and easily.

NOTES:

- ❒ Additional size/weight, end connection, pressure rating, etc. are also available on request.
- ❒ Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

LOCATOR TUBING SEAL ASSEMBLY

- CT-LTSA | CT95614
- CT-LTSA-SO | CT95624

DESCRIPTION:

Locator Tubing Seal Assembly is designed for limiting downward movement of the seals in the packer bore. Normally landed with the tubing in compression sufficient to prevent seal movement upward. Any number of seal units can be added for increased length. Standard assembly includes two seal units.Locator Seal Assembly ids designed for hostile environments, high temperatures and high pressures.It is made up of metal parts that meet the requirements of NACE standards MR-0175 for sulphide stress cracking resistant materials and is suitable for use in H_2S environments. This locator also be used in non-corrosive environments where pressure and temperature warrants.

FEATURES & BENEFITS:

The standard Seal system consists of three set of seals (bonded, chevron, A-ryte, V-ryte etc.) and debris barriers. The seals are arranged so that they are protected by the debris barriers in the event of tubing movement. The two lower debris barriers and two lower seal stacks are the main working seals and should never be allowed to leave the seal bore. The upper debris barrier and seal stack are a back-up and also prevent settings from entering the bore, which could lead to sticking or seal damage.

TECHNICAL SPECIFICATIONS (CT-LTSA/CT-LTSA-SO):

Size	Compatible Seal Bore ID (In)	ID (In)	Length (In)	Diff. Pressure Ratings (PSI)
40-26	2.688	1.968	10	10,000
40-30	3	1.968	10	10,000
80-32	3.25	2.406	10	10,000
80-38	3.875	2.992	10	10,000
80-40	4	2.992	10	10,000
190-47	4.75	2.992	10	10,000
190-60	6	4.875	10	10,000

SPLINE EXPANSION JOINT

❒ CT-EJT | CT95615

DESCRIPTION:

Splined Expansion Joint is designed to be used in single and dual string completions to accommodate changes in tubing length caused by variations in temperature. They are capable of maintaining the pressure integrity of the tubing while allowing the string to safely expand and contract, and can be run above rotational release or straight pickup release packers. It may be shear pinned at one-foot intervals along its entries stroke length, allowing the operator to select the proper expansion and/or contraction stroke that will be required after the splined expansion joint has been installed. The splines allow for torque through the joint.

FEATURES & BENEFITS:

- ✓ Rotationally locked at all times for transmitting torque when required.
- ✓ Multi-spline design for high torque load.
- ✓ Maximized tension carrying capability.
- ✓ ID compatible with tubing ID.
- ✓ Tool can be pinned at one foot spacing from closed to fully stroked position.
- ✓ Shear value can be adjusted by varying the number of shear screws.
- ✓ Torsional Rating 10,000 ft-lb Standard Service application at 110,000 psi material yield. 5,500 ft-lb for Sour Service application at 80,000 psi material yield.
- ✓ Pressure rating 10,000 psi for Standard Service application at 110,000 psi material yield.
- ✓ 7,500 psi for Sour Service application at 80,000 psi material.

TECHNICAL SPECIFICATIONS (CT-EJT):

Size	Max. OD (In)	Min. (In)	Stroke Length (In)
2 3/8	3.668	1.938	6 ft/ 10ft
2 7/8	4.36	2.441	6 ft/ 10ft
3 1/2	5.25	2.992	6 ft/ 10ft
4 1/2	6.391	3.875	6 ft/ 10ft
5	6.875	4.256	6 ft/ 10ft/ 20 ft

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

RIGHT HAND SET TUBING ANCHOR CATCHER

- CT-RTAC | CT96904
- CT-LTAC | CT96903

DESCRIPTION:

Tubing Anchor Catcher is run below a sucker rod pump to anchor the lower end of the tubing string. Then the string can be landed in tension, reducing the tubing tendency to corkscrew from cyclical loading during pump operation. By eliminating tubing movement, the catcher improves pump efficiency and reduces tubing and rod wear. The catcher can also be used in any single string application requiring a bottom hole non sealing anchor on the string.

FEATURES & BENEFITS:

- ✓ In left Hand Set Tubing Anchor catcher, left rotation is given to set the catcher and right rotation to release & In Right Hand Set Tubing Anchor catcher, right rotation is given to set the catcher and left rotation to release it provide simple operation on the rig.
- ✓ The double grip slip anchors the tuning to prevent upward and downward movements, increasing pump efficiency by lengthening the stroke and lowering operating costs by reducing maintenance and downtime from tubing and sucker rod wear.
- ✓ The double grip slip catches parted tubing , educing fishing costs.
- ✓ The full bore through catcher provides access for wireline tools and other equipment.
- ✓ The straight-pull emergency shear release provides release force adjustment with shear pins if the catcher can not be retrieved normally.

CT96904

TECHNICAL SPECIFICATIONS (CT-RTAC / CT-LTAC):

Casing Specification				Packer Specification		
Size (In)	PPF Range	Min. ID (In)	Max. ID (In)	OD (In)	ID (In)	End Connection (Box X Pin)
4 1/2	9.5-13.5	3.92	4.09	3.75	1.938	2 3/8" #4.7 PPF EU
5	11.5-18	4.276	4.56	4.000	1.938	2 3/8" #4.7 PPF EU
5 1/2	13-23	4.670	5.044	4.500	2.441	2 7/8" #6.5 PPF EU
7	20-38	5.920	6.456	5.500	2.441	2 7/8" #6.5 PPF EU
	17-20	6.456	6.538	6.250		
	17-38	5.920		5.500	2.992	3 1/2" #9.3 PPF EU
9 5/8	36-53.5	8.535	8.921	8.000	2.992	3 1/2" #9.3 PPF EU

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

RETRIEVING TOOL FOR ERD PACKER

❒ **CT-RT-1 | CT95717**

DESCRIPTION:

The CT-RT-1 retrieving Tool is used to retrieving Wire-line/Hydraulic Set Retrievable Seal Bore Packers.

The latch of the Retrieving Tool is engaged in the Top Box Thread of the Seal Bore Packer which is a left-hand square thread.

Put Set down weight 3000-5000 Lbs on the Packer, may be slickly rotate to the right to engage the collet of the Retrieving Tool under the supporting sleeve of the Packer.

PULL: In principle, the packer should release with a pull of 5-10 tons. In order to fully retrieve the Packer up-ward and down ward motion of retrieving string will help. Once the screws have sheared the support sleeve moves upwards freeing the support beneath the finger of the collet. The latter can then flex and detach itself from the thread linking it to the base of the Housing. On upward movement of the body of the packer the compression of the packing element is released and the slips retracted. The Setting Sleeve is supported by the Ring which rests on the top of the piston above the O- ring.

To disengage the retrieving tool from the packer at the bottom or on the surface, a safety release feature is also provided. A Shear Ring with 6 nos. of brass shear screws having shear value 3565 lbs. per screw provided for emergency release of tool should be accomplished by giving 10 ~ 15 right hand rotations followed by a straight pull of 22,000 lbs.

CT95717

FEATURES & BENEFITS:

- ✓ No rotation required for pulling operation.
- ✓ Straight through ID allows washing down to the packer.

HYDRAULIC SET TUBING ANCHOR CATCHER

❒ CT-HTAC | CT95905

CT95905

DESCRIPTION:

The Hydraulic Set Tubing Anchor Catcher is a pressure actuated , fully retrievable anchor catcher designed to hold the tubing string in tension or compression. No tubing manipulation is required in order to set the anchor. Once set, bi-directional slips anchor the tubing to prevent upward or downward movement during rod pumping and to prevent tubing from falling down. Applying tubing pressure against a temporary tubing plug run below the anchor catcher sets the anchor catcher. The anchor catcher is released by pulling sufficient force to shear the release screws. The number predetermines the shear value of the releasing mechanism. Increases pump efficiency, improves operating costs by reducing maintenance and downtime caused by tubing or sucker rod wear.

FEATURES & BENEFITS:

- ✓ Increases pump efficiency and helps prevent the tubing from backing off.
- ✓ No rotation required to set the anchor.
- ✓ Straight pull shear release.

TECHNICAL SPECIFICATIONS (CT-HTAC):

Casing Specification				Packer Specification		
Size (In)	PPF Range	Min. ID (In)	Max. ID (In)	OD (In)	ID (In)	End Connection (Box X Pin)
4 1/2	9.5-13.5	3.92	4.09	3.75	1.938	2 3/8" #4.7 PPF EU
5 1/2	13-23	4.67	5.044	4.5	1.950/2.441	2 3/8" #4.7 PPF EU/ 2 7/8" #6.5 PPF EU
7	29-38	5.92	6.184	5.375	2.441/2.992	2 7/8" #6.5 PPF EU/ 3 1/2" #9.3 PPF EU
	20-38	5.92	6.456	5.719		
9 5/8	32.3-47	8.681	9.001	8.438	5.75	6 5/8" LTC

NOTES:

- ❒ Additional size/weight, end connection, pressure rating, etc. are also available on request.
- ❒ Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

MILL OUT EXTENSION

❒ CT-MOE | CT95611

DESCRIPTION:

The Mill-Out Extension is used in installations where floating seals are required due to tubing contractions. In addition, this packer accessory provides a larger ID between a packer bore and a seal bore extension allowing a packer to be milled out.

CT95611

TECHNICAL SPECIFICATIONS (CT-MOE):

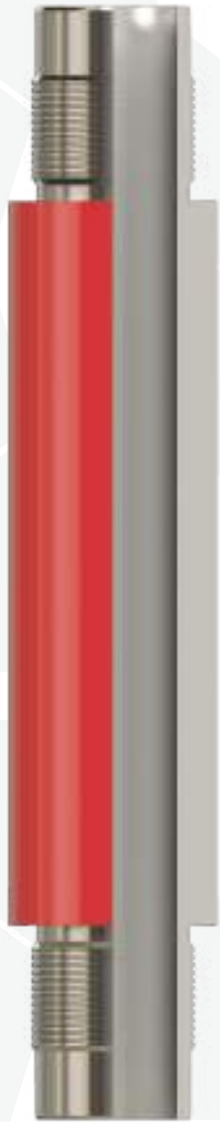
SIZE	OD (In)	ID (In)	Length (ft)
40-26	3.5	3	6/10
40-30	4	3.428	6/10
80-32	4.5	3.75	6/10
80-40	5.5	4.5	6/10
190-60	7.625	6.625	6/10

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

SEAL BORE EXTENSION

❒ CT-SBE | CT95612



DESCRIPTION:

The Seal Bore Extension run below a drillable or retrievable seal bore packers. Seal Bore Extension is run to provide additional seal bore when a long Seal Bore Assembly is run to accommodate considerable tubing movement. The Seal Bore Extension has the same ID as the corresponding Packer seal bore it is run with. Thus all seals of a long Seal Assembly seat off in the Seal Bore Extension. If the top set of seal normally sealing in the Packer bore should get damaged, the Seal Bore Extension still provide a sealing surface for the lower seat.

FEATURES & BENEFITS:

Seal Bore Extension is used in installation where floating seals are required due to tubing contractions. This packer accessory allows for a continuous seal bore and is available in length up to twenty feet.

TECHNICAL SPECIFICATIONS (CT-SBE):

Size	OD (In)	Seal Bore ID (In)	Length (ft)
40-26	3.625	2.688	10
40-30	3.781	3.000	6 /10
80-32	4.250	3.250	6 /10
80-38	5.000	3.875	6 /10
80-40	5.000	4.000	6 /10
190-47	6.250	4.750	6 /10
190-60	7.500	6.000	6 /10

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

TUBING SWIVEL SUB

❒ CT-TSS | CT93402

DESCRIPTION:

The Tubing Swivel Sub is designed for upper string to rotate freely and lower string remains static. Tubing swivel sub is normally used where mechancial set liner hanger run in a highly deviated or horizontal wellbore. This tool is designed with high load roller bearings which ensure the tool functions properly in tension or compression.

CASING SWIVEL SUB

❒ CT-CSS | CT93401

DESCRIPTION:

Casing Swivel Sub is designed for upper string rotate freely and lower string remains static. This tool is designed with high load roller bearings which ensures the tool functions properly in tension or compression.

NOTES:

- ❒ Additional size/weight, end connection, pressure rating, etc. are also available on request.
- ❒ Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

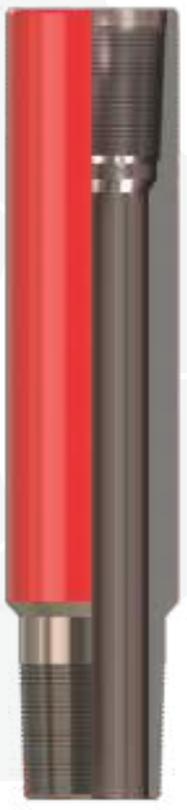
FLOW COUPLING

❒ CT-FC | CT94401

DESCRIPTION:

The CT- FC which is flow coupling ,is a thick walled section of tubing that minimizes the resultant effect of internal erosion that occurs in a tubing string from changes in the internal cross-section of a flowing well.

These are used to protect the tubing string from the abrasive action of flowing gas or oil when positioned opposite the perforations. It may also be used directly below the well head to protect from the abrasion of doing a hydraulic fracturing operation down the annulus.



CT94401

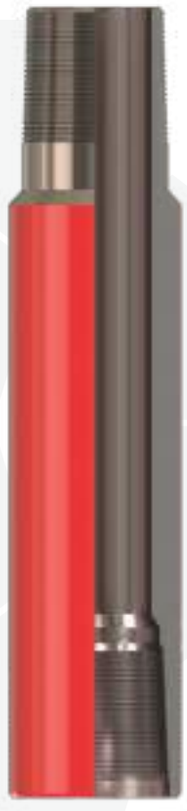
BLAST JOINT

❒ CT-BJ | CT94402

The CT- BJ which is Blast Joint coupling ,is a thick walled section of tubing that minimizes the resultant effect of internal erosion that occurs in a tubing string from changes in the internal cross-section of a flowing well.

These are used to protect the tubing string from the abrasive action of flowing gas or oil when positioned opposite the perforations. It may also be used directly below the well head to protect from the abrasion of doing a hydraulic fracturing operation down the annulus.

Full Tubing ID is maintained through the blast joint with the OD same as tubing couplings. As standard, it is available in API tubing connections.



CT94402

NOTES:

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HYDRAULIC SETTING TOOL C/W HYDRO ADAPTER KIT

❒ CT-HSHK | CT95710

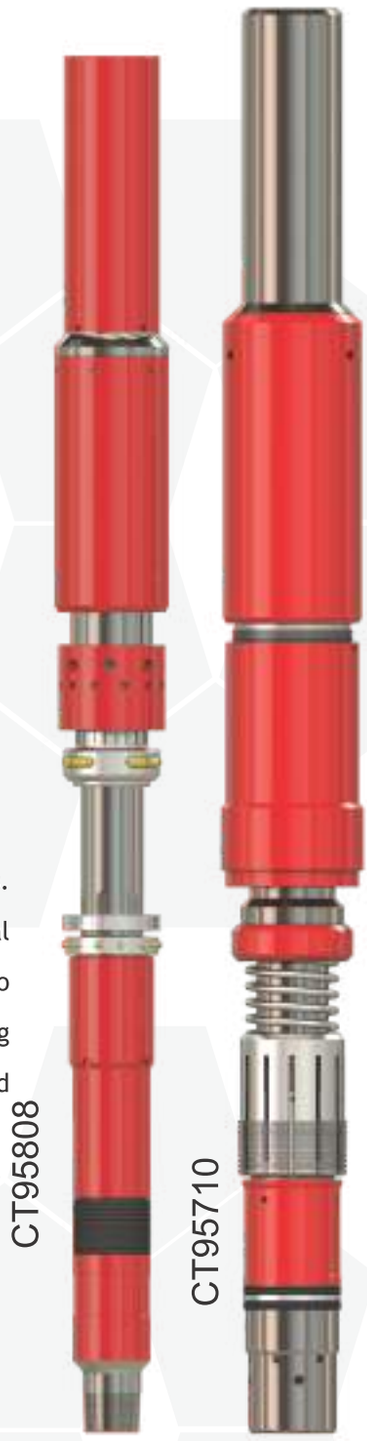
DESCRIPTION: The Model CT-HSHK Hydraulic Setting Tool is a single chamber, tubing pressure actuated setting tool used in gravel pack operations in conjunction with the Gravel Pack Crossover Tool or Hydro-Set Adapter Kit to run and set Models CT-ERD Packers and Drillable type Production Packers on tubing.

HIGH TORQUE HYDRAULIC SETTING TOOL

❒ CT-HTHST | CT95808

DESCRIPTION:

This COT CT-HTHST Hydraulic Setting Tool is used to hydraulically set ERD-1 packers. The mandrel is ported, allowing pressure to act against the piston. A ball is used to seal against the ball seat until sufficient pressure shears the pins causing the ball seat to release. This CT-HTHST setting tool is shear pinned to the packer. When the PO setting tool is shear pinned to the packer, it features a clutch which allows torque to be applied to the packer while running. The clutch is released during the setting process.



HTPS® HYDRO TRIP PRESSURE SUB

❒ CT-HTPS | CT93601

CT93601

DESCRIPTION:

The HTPS® model Hydro Trip Pressure Sub is a pressure actuated device installed in tubing string below a hydrostatically actuated tool such as a packer. It provides a method of applying pressure to activate and set the packer and then continued pressure , activate the Hydro Trip Pressure Sub.

Packer is set by circulating a ball through packer down to ball seat in the Hydro Trip Pressure Sub. After packer is set, a continued increase in pressure is applied to shear the shear screws in the shear ring, allowing the ball seat collet to move down into the collet relief area and allowing the ball to pass down the Hydro Trip Pressure Sub through the tubing, leaving a “full open” sub with no restrictions for production.

TECHNICAL SPECIFICATIONS (CT-HTPS):

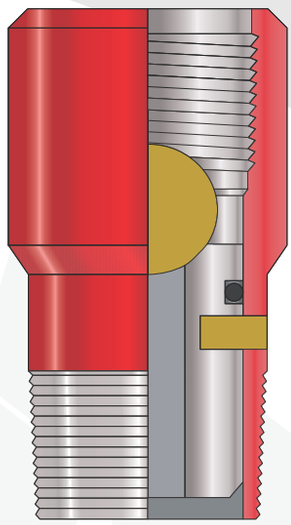
Size (In.)	Ball Size (In.)	Ball Seat ID	
		Before Shifting (In.)	After Shifting (In.)
2.375	1.500	1.375	1.860
	1.750	1.625	1.995
2.875	2.125	1.875	2.375
3.5	2.450	2.165	2.780
	2.500	2.165	2.780
	2.500	2.229	2.862
4.500	3.375	3.075	3.865

NOTES:

- Additional size/weight, end connection, pressure rating, etc. are also available on request.
- Technical data presented above are based upon experimental data & theortical engineering calculations. These values will change within accepted engineering tolerances due to variations in material properties, dimensional tolerances and actual operating conditions.

PUMP OUT PLUG

- CT-POP | CT95607
- CT-POP-A | CT 95707
- CT-POP-H | Ct95708



CT95607

DESCRIPTION:

The **CT-POP** is used as tubing plugging device simultaneously allows hanging more tubing string down the line as per requirement.

CT95707

The **CT-POP-A** is used as a tubing plugging device against which pressure is being applied in order to set Hydraulic Set Packers.This is made up with the tail pipe below the Packer to be set. With the ball seating down, it acts as a reverse check valve preventing flow down the string, while allowing the string to fill from below. Without dropping a ball to seat, the tubing can be pressured up. Once the Packer is set, tubing pressure is increased to values shown in the chart below to shear the screws holding the ball seat. The ball seat and the ball with spring etc. are blown out of the sub to the bottom of the well. Tubing below the plug should have sufficient ID clearance to permit passage of the ball, ball seat, spring etc.

To set a packer number of screws installed in the pump out plug must be compatible with the concerned/rated precise requirement.

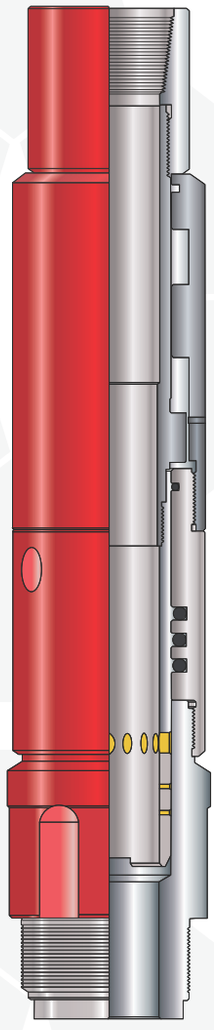
CT95708

The **CT-POP-H** is used as a tubing plugging device against which pressure is being applied in order to set Hydraulic Set Packers. This is made up with the tail pipe below the Packer to be set. A ball is dropped to run through the tubing and packer up to the ball seat, subsequently the tubing is pressured up. Once the Packer is set, tubing pressure is increased to values shown in the chart below to shear the screws holding the ball seat. The ball and ball seat are blown out of the sub to the bottom of the well.

Tubing below the plug should have sufficient ID clearance to permit passage of the ball, ball seat, spring etc. To set a packer number of screws installed in the pump out plug must be compatible with the concerned/rated precise requirement.

CIRCULATING VALVE

❒ CT-MH-CV | CT95308



DESCRIPTION:

The Circulating Valve of Mech-Pac® V Retrievable Mechanical Set Squeeze Packer is a locked-open/ locked-closed valve that serves as both a circulating valve and bypass. The clearance between the packer and the casing ID is relatively small. To reduce the effect of fluid-swabbing action when the tool is run in or pulled out of the hole, a packer bypass is generally used.

FEATURES & BENEFITS :

- ✓ The valve can be locked closed when the packer is unset to reverse fluid around the bottom of the packer.
- ✓ The tools full opening allows tubing-type guns and other wire line equipment to pass.

TECHNICAL SPECIFICATIONS (CT-HTAC):

Size in.	OD (In.)	ID (In.)	End Connection	Length (In)	Tensile Rating* (LBs)	Burst Rating* (PSI)	Collapse Rating* PSI
2 3/8	1.680	0.680	1.05 10 Rd	18.42	31,900	11,600	9,900
2 7/8	2.150	1.000	1.315 10 Rd/ 1.875 12 Rd	19.15	37,500	8,100	7,800
3 1/2	2.370	1.000	1.315 10 Rd/1.875 12 Rd	20.08	52,500	10,000	12,400
4	3.060	1.500	2 3/8 EUE /2.688 10 UN	39.76	92,200	8,100	13,700
4 1/2 - 5	3.600	1.800	2 3/8 EUE/3.094 10 UN	32.2	85,000	10,100	10,700
5 1/2 – 6 5/8	4.180	1.990	2 3/8 EUE/ 31/28UN	31.9	150,700	10,000	14,200
7 – 7 5/8	4.870	2.440	2 7/8 EUE / 4.156 8UN	32.9	148,800	10,000	10,200
8 5/8 - 20	6.120	3.000	4 1/2 IFTJ	38.4	311,400	10,500	12,400

NOTES:

- ❒ Additional size/weight, end connection, pressure rating, etc. are also available on request.
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