

SAPEX OIL TOOLS LTD.

A blue swoosh graphic that starts under the 'S' and ends under the 'D', with a black teardrop shape at the tip.

***DOWNHOLE COMPLETIONS
PACKERS & COMPLETION EQUIPMENT
WORKOVER & COMPLETION SERVICE TOOLS***

PRODUCTS, APPLICATIONS & SPECIFICATIONS

TOMORROW'S TECHNOLOGY FOR TODAY'S ENERGY

WHO ARE WE ?

We are an independent International Oilfield Service Company, offering 24-Hour Drilling, Completion and Work-over Service Support to our customers, World - Wide. With fully trained and qualified personnel, we are fully equipped to provide complete backup technical, engineering and field support services to our customers in the installation, operation and maintenance of all equipment that we provide on both Sale and Rental basis.

The SAPEX brand of custom-made down-hole equipment is manufactured in the USA, specifically to meet our customer requirements and to our specifications. SAPEX offers a complete line of Completion Tools, Drilling and Fishing Equipment, Service Tools and related accessories, all designed to meet the needs and operating conditions of our customers. SAPEX brand Equipment includes (but is not limited to):

- **SINGLE / DUAL STRING RETRIEVABLE / PERMANENT COMPLETION PACKERS & ACCESSORIES**
- **THERMAL, STEAMFLOOD, WATERFLOOD AND GASLIFT COMPLETION EQUIPMENT**
- **FLOW CONTROL EQUIPMENT - SLIDING SLEEVES, SEATING NIPPLES, PLUGS, ETC.**
- **WIRELINE TOOLS, COILED TUBING TOOLS AND ACCESSORIES**
- **EXPANSION JOINTS, ON/OFF TOOLS, PBR ASSEMBLIES**
- **CONVENTIONAL GRAVEL PACK EQUIPMENT**
- **RETRIEVABLE SCAB LINER SYSTEMS, PERMANENT INTERNAL CASING PATCHES**
- **SERVICE TOOLS, SQUEEZE PACKERS, RBP'S, PERFORATION WASH TOOLS**
- **CEMENT RETAINERS AND PERMANENT BRIDGE PLUGS (MECHANICAL AND WIRELINE SET)**
- **TUBING SWIVELS**
- **ECP's, INFLATABLE PACKER SYSTEMS**
- **LINER HANGER SYSTEMS (MECHANICAL AND HYDRAULIC)**

Completions, Fishing Services, Testing Services, Straight Equipment Supply and New Product Development briefly summarize SAPEX Oilfield Services' broad ranging capabilities in the unique and exciting world of Oilfield Customer Services and Requirements. SAPEX Oilfield Services Ltd.'s Service Capabilities include:

- **ALL COMPLETION AND WIRELINE SERVICES**
- **LINER HANGER SERVICES**
- **EXTERNAL CASING PACKER AND INFLATABLE PACKER SERVICES**
- **DST / FORMATION EVALUATION - OPEN / CASED HOLE, CONVENTIONAL OR INFLATABLE**
- **FISHING TOOL SALES AND RENTALS COMPLETE WITH FISHING SERVICES**
- **DRILLING TOOL SALES AND RENTALS - HOLE OPENERS, UNDER-REAMERS & STABILIZERS**
- **COMPLETION AND DRILLING EQUIPMENT REPAIR AND REDRESSING SERVICES**

SAPEX Oilfield Services Ltd. serves as a trusted Ally and Business Partner to International Oilfield Companies operating in and around the South East Asian Region. Specifically, SAPEX Oilfield Services Ltd. has qualified itself as an unparalleled Completion Solutions / Services and Oil Tool Equipment Provider, and, as such, strives to further its Service and Supply capabilities in order to better support, build and maintain Customer Loyalty.

SAPEX Oilfield Services Ltd. provides full backup technical and engineering support for the installation, repair and maintenance of all equipment and services we provide. Please contact us through your local SAPEX representative, at any time.

- TOMORROW'S TECHNOLOGY FOR TODAY'S ENERGY -

SAPEX-DL PACKERS & COMPLETIONS EQUIPMENT

PACKERS & COMPLETIONS EQUIPMENT MANUFACTURING

Company Profile

The Manufacturing Arm of SAPEX-DL has quickly become a source of oil technology and owns patents for various down hole completion and cementing tools. SAPEX-DL has built a sound reputation for quality and service over the years. Our products and services have been used extensively throughout our domestic oil fields as well as exported to other producing nations. We design, manufacture, and sell a complete product line of down hole tools for the oil industry. Our facility, equipment and personal talents provide for a wide range of manufacturing capabilities. We also work per customer design, sample, or specification, and offer custom machining, welding, and fabrication or emergency repairs at a moments notice.

It was during one of the most recent boom/bust cycles typical of the oil industry, that we decided to put effort into reaching out to other industries to offer our comprehensive machine shop services. This effort has opened up many exciting opportunities for us to demonstrate our manufacturing talents to the customer.

Quality Assurance Quality Control

SAPEX-DL maintains a fully comprehensive QA/QC program that is patterned after ISO 9001. The program features full traceability.

Engineering Design

SAPEX-DL has in house design engineering staff for product research and development as well as to assist the customer with product design, and product management experience. AutoCAD 2000, the industry standard, is used to receive and generate manufacturing and customer drawings. The drawings are either turned into design job orders for manual machine or fabrication work or sent to the CNC shop for production programming and work scheduling.

CNC Machine Services

CNC is the answer for all large volume, high quality production. SAPEX-DL has a complete line of modern CNC machines with skilled programmers and operators that pay careful attention to every detail insuring the highest possible quality.

Manual Machine and Welding Services

When production runs are smaller, or when developing a prototype product, it is necessary to utilize the manual machines. Finding and retaining a good experienced machinist is more difficult today than ever. SAPEX-DL prides itself in having the best machinists and welders in the industry. We have five machinists/millwrights with an average of 24 years experience each.

SAPEX-DL COMPLETION EQUIPMENT MODEL "SLT" SHEAR TENSION SET PACKER

The SAPEX / DL Model "SLT" Shear Tension Packer is a dependable, cost competitive, single-grip retrievable tension set packer. It is designed for low to medium pressure, shallow to medium depth; injection, flood or production well applications.

The SAPEX / DL Model "SLT" Shear Tension Packer has a large bore, full opening design to maximize flow area and to allow easy passage of wireline tools. It has large case carburized wide-gap slips to give maximum gripping efficiency in casing with scale or other heavy deposits on the I.D.

The SAPEX / DL Model "SLT" Shear Tension Packer has an automatic, open style J-Slot. Its design reduces danger of setting and releasing problems due to solids or scale buildup, as packer movement in the wellbore and/or circulation will tend to clean such deposits off of the J-Slot area.

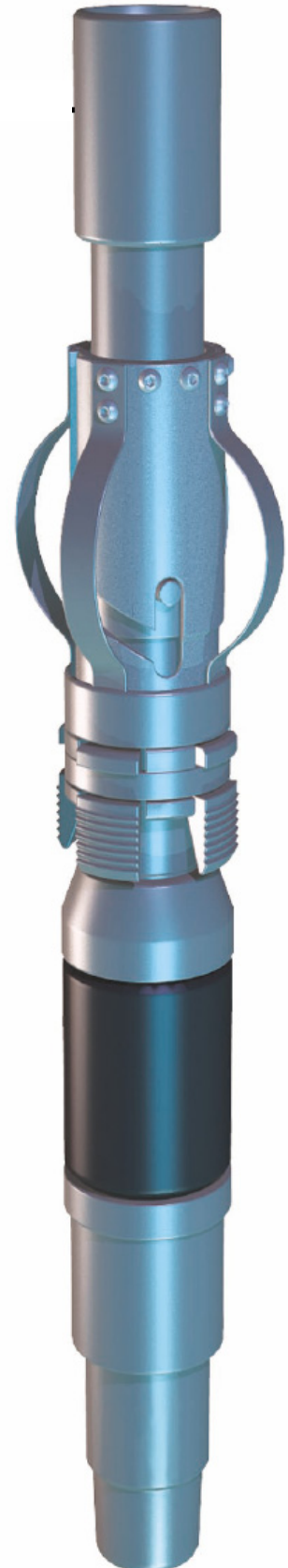
This packer is easily set with only 1/4 right hand torque at the tool, followed by the application of tension. The SAPEX / DL Model "SLT" Shear Tension Packer offers 2 backup release options (shear and rotational) in the event it can not be released normally.

KEY PERFORMANCE FEATURES :

- Economical for low formation pressure wells
- Full bore for unrestricted flow and passage of wireline tools
- Setting J-Slot located on outside of body
- Heavy-Duty end subs for repeated make-up and break-out
- Deep cut wicker type slips
- Long packing element
- Stainless steel drag springs for longer life
- Sets easily in tension, with 1/4 right hand rotation
- Releases with straight set down on tubing
- Two emergency backup release systems
- Automatic or Manual J-Slots available
- Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number	
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				DL	DLShear
2-7/8	6.4-6.5	2.375	2.441	2.250	.75	1.315 NU	40125	41225
3-1/2	7.7-10.2	2.922	3.068	2.781	1.50	1.900 EUE	40135	41235
3-1/2	12.8	2.764	2.764	2.437	1.25	1.900 EUE	40136	41236
4	9.5-11	3.476	3.548	3.250	1.50	2-3/8 EUE	40140	41240
4	9.5-11	3.476	3.548	3.250	1.88	2-3/8 EUE	40141	41241
4-1/2	15.1	3.826	3.826	3.625	1.94	2-3/8 EUE	40143	41243
4-1/2	15.1-16.6	3.754	3.826	3.500	1.94	2-3/8 EUE	40144	41244
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	40145	41245



5	11.5-18	4.276	4.560	4.125	1.94	2-3/8 EUE	40150	41250
5-1/2	13-20	4.778	5.044	4.625	1.94	2-3/8 EUE	40155	41255
5-1/2	13-20	4.778	5.044	4.625	2.44	2.875 EUE	40156	41256
5-1/2	20-23	4.670	4.778	4.500	1.94	2-3/8 EUE	40157	41257
5-1/2	20-23	4.670	4.778	4.500	2.44	2-7/8 EUE	40158	41258
5-1/2	26	4.548	4.548	4.375	1.94	2-3/8 EUE	40159	41259
6	20-23	5.240	5.352	5.000	2.44	2-7/8 EUE	40160	41260
6	15-20	5.352	5.542	5.125	2.44	2-7/8 EUE	40161	41261
6-5/8	24-32	5.675	5.921	5.500	2.44	2-7/8 EUE	40165	41265
6-5/8	20-24	5.921	6.049	5.750	2.44	2-7/8 EUE	40168	41268
7	17-29	6.184	6.538	6.000	2.44	2-7/8 EUE	40170	41270
7	17-29	6.184	6.538	6.000	3.00	3-1/2 EUE	40173	41273
7-5/8	20-33.7	6.765	7.125	6.625	2.44	2-7/8 EUE	40175	41275
7-5/8	20-33.7	6.765	7.125	6.625	3.00	3-1/2 EUE	40177	41277
8-5/8	24.4-40	7.725	8.097	7.500	2.44	2-7/8 EUE	40185	41285
8-5/8	20-28	8.017	8.191	7.750	2.44	2-7/8 EUE	40186	41286
8-5/8	24.4-40	7.725	8.097	7.500	3.00	3-1/2 EUE	40187	41287
9-5/8	43.5-53.5	8.535	8.755	8.250	2.50	2-7/8 EUE	40194	41294
9-5/8	29.3-43.5	8.755	9.063	8.500	2.50	2-7/8 EUE	40195	41295
9-5/8	43.5-53.5	8.535	8.755	8.250	3.00	3-1/2 EUE	40196	41296
9-5/8	29.3-43.5	8.755	9.063	8.500	3.00	3-1/2 EUE	40197	41297
9-5/8	43.5-53.5	8.535	8.755	8.250	4.00	4-1/2 LTC	40198	41298
9-5/8	32.3-43.5	8.755	9.001	8.500	4.00	4-1/2 LTC	40199	41299
10-3/4	32.7-55.5	9.760	10.192	9.500	3.00	3-1/2 EUE	40110	41210
13-3/8	48-72	12.347	12.715	12.000	4.00	4-1/2 EUE	40115	41215

* Other sizes and connections available on request







SAPEX-DL COMPLETION EQUIPMENT MODEL "DH" TENSION PACKER

The SAPEX / DL Model "DH" Tension Packer is for use in waterflood, injection or producing wells. This tensionpacker has a built in safety system to eliminate problems should conventional retrieval methods fail.

Right hand rotation releases the Model "DH" Tension Packer's first safety joint, allowing the slips to pull off the cone and release the packer. Should the packer fail to release, a second safety joint can be broken to release the packer. This safety feature allows for circulation down the tubing to remove debris.

In addition the SAPEX / DL Model "DH" Tension Packer is available for open hole applications and incorporates dual elongated packing elements and deep wickered slips for better bite into the formation.

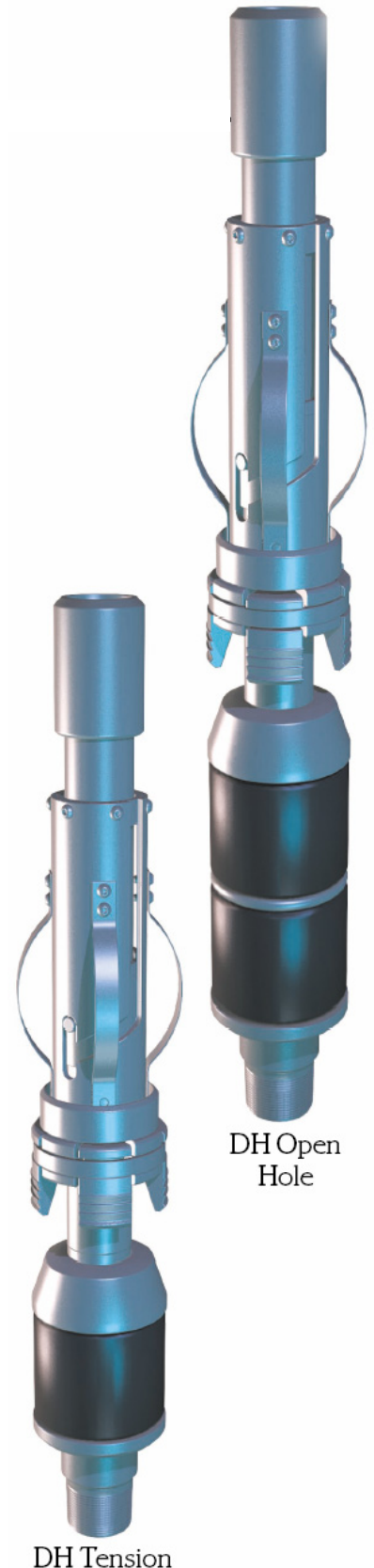
KEY PERFORMANCE FEATURES :

-  Proven design
-  Full opening
-  Built in safety joints
-  Stainless steel drag springs
-  Available in Open-Hole configuration
-  Long packing element to give maximum sealing area

TOOL SPECIFICATIONS :

Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
2-7/8	6.4-6.5	2.375	2.441	2.250	.75	1.315 EUE	40525
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	40545
5	11.5-15	4.408	4.560	4.125	1.94	2-3/8 EUE	40550
5	15.0-20.8	4.156	4.408	4.000	1.94	2-3/8 EUE	40551
5-1/2	13-20	4.778	5.044	4.625	1.94	2-3/8 EUE	40555
5-1/2	13-20	4.778	5.044	4.625	2.44	2-7/8 EUE	40556
5-1/2	20-23	4.670	4.778	4.500	1.94	2-3/8 EUE	40557
5-1/2	20-23	4.670	4.778	4.500	2.44	2-7/8 EUE	40558
6	15-20	5.352	5.524	5.188	2.44	2-7/8 EUE	40560
6-5/8	24-32	5.625	5.921	5.500	2.44	2-7/8 EUE	40565
6-5/8	20-24	5.921	6.049	5.750	2.44	2-7/8 EUE	40568
7	17-29	6.184	6.538	6.00	2.44	2-7/8 EUE	40570
7	17-29	6.184	6.538	6.00	3.00	3-1/2 EUE	40573
7-5/8	20-33.7	6.765	7.125	6.625	2.44	2-7/8 EUE	40575
7-5/8	20-33.7	6.765	7.125	6.625	3.00	3-1/2 EUE	40576
8-5/8	24-40	7.725	8.097	7.500	2.50	2-7/8 EUE	40585
8-5/8	24-40	7.725	8.097	7.500	3.00	3-1/2 EUE	40587
9-5/8	29.3-43.5	8.755	9.063	8.500	2.50	2-7/8 EUE	40595
9-5/8	29.3-43.5	8.755	9.063	8.500	3.00	3-1/2 EUE	40597
10-3/4	40-55.5	9.760	10.050	9.500	3.00	3-1/2 EUE	40510
10-3/4	40-55.5	9.760	10.050	9.500	2.50	2-7/8 EUE	40511
13-3/8	48-72	12.347	12.715	12.000	3.00	3-1/2 EUE	40513

· Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "SG" COMPRESSION PACKER

The SAPEX / DL Model "SG" Compression Packer is a rugged, inexpensive, single grip retrievable compression set packer. It is designed for low to medium pressure, shallow to medium depth; injection, flood or production well applications.

The packer has a large bore, full opening design to maximize flow area and allow easy passage of wireline tools. It has heavy duty rocker type slips to give maximum gripping efficiency in all casing ID environments.

The SAPEX / DL Model "SG" Compression Packer has an automatic J-Slot. Its one piece packing element is extra long to offer maximum sealing capability inside the casing in which it is run.

This packer is easily set with only 1/4 turn of right hand rotation at the tool, followed by compression being applied. The "SG" Compression Packer offers a backup rotational release feature for use in case it can not be released normally.

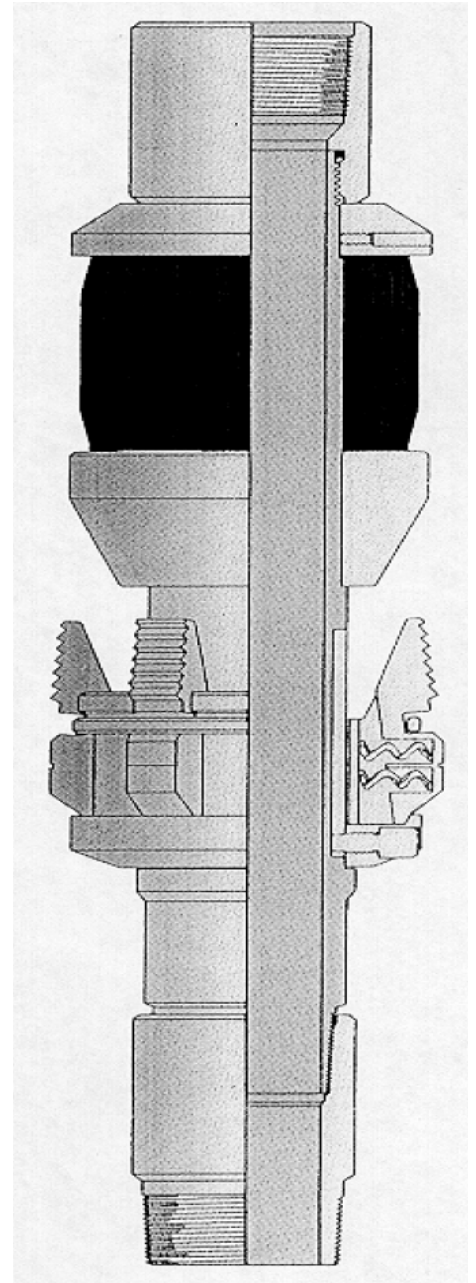
KEY PERFORMANCE FEATURES :

- Economical for low formation pressure wells
- Full bore for unrestricted flow and passage of wireline tools
- Heavy duty end subs for repeated make-up and break-out
- Heavy duty rocker type slips and long packing element
- Heavy duty drag blocks for maximum operating life
- Sets easily in compression, with 1/4 right hand rotation
- Releases with straight pickup
- Emergency backup rotational release
- Simple and easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)	MIN	MAX			
261-45-000	4-1/2	9.5-13.5	3.910	4.160	3.771	1.938	2-3/8" EUE 8 RD.
261-55-000	5-1/2	15-20	4.778	4.950	4.641	2.375	2-7/8" EUE 8 RD.
261-56-000	5-1/2	20-23	4.625	4.778	4.500	2.375	2-7/8" EUE 8 RD.
261-65-000	6-5/8	17-20	5.922	6.135	5.812	2.438	2-7/8" EUE 8 RD.
261-66-000	6-5/8	20-24	5.830	5.921	5.656	2.438	2-7/8" EUE 8 RD.
261-70-000	7	17-20	6.456	6.538	6.266	2.438	2-7/8" EUE 8 RD.
261-71-000	7	20-26	6.276	6.456	6.078	2.438	2-7/8" EUE 8 RD.
261-72-000	7	26-29	6.136	6.276	5.968	2.438	2-7/8" EUE 8 RD.
261-73-000	7	32-35	5.922	6.135	5.812	2.438	2-7/8" EUE 8 RD.
261-95-000	9-5/8	29.3-36.0	8.836	9.063	8.593	4.000	4-1/2" EUE 8 RD.
261-96-000	9-5/8	40.0-47.0	8.681	8.835	8.437	4.000	4-1/2" EUE 8 RD.
261-97-000	9-5/8	47-53.5	8.300	8.681	8.218	4.000	4-1/2" EUE 8 RD.
261-10-000	10-3/4	32.7-55.5	9.625	10.192	9.500	4.000	4-1/2" EUE 8 RD.
261-13-000	13-3/8	48-72	12.300	12.715	12.000	4.000	4-1/2" EUE 8 RD.

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT



SAPEX-DL COMPLETION EQUIPMENT MODEL "SLC" COMPRESSION PACKER

The SAPEX / DL Model "SLC" Compression Packer is a dependable, cost competitive, single-grip retrievable compression set packer. It is designed for low to medium pressure, shallow to medium depth; injection, flood or production well applications.

The Model "SLC" Compression Packer has a large bore, full opening design to maximize flow area and to allow easy passage of wireline tools. It has large case carburized wide-gap slips to give maximum gripping efficiency in casing with scale or other heavy deposits on the I.D.

The Model "SLC" Compression Packer has an automatic, open style J-Slot. Its design reduces danger of setting and releasing problems due to solids or scale buildup, as packer movement in the wellbore and/or circulation will tend to clean such deposits off of the J-Slot area.

This packer is easily set with only 1/4 torque at the tool (both left and right hand set available), followed by weight being set down. The Model "SLC" Compression Packer is released with a straight pull on the tubing and the tool offers an emergency right hand rotational backup release option, in case it can not be released normally.

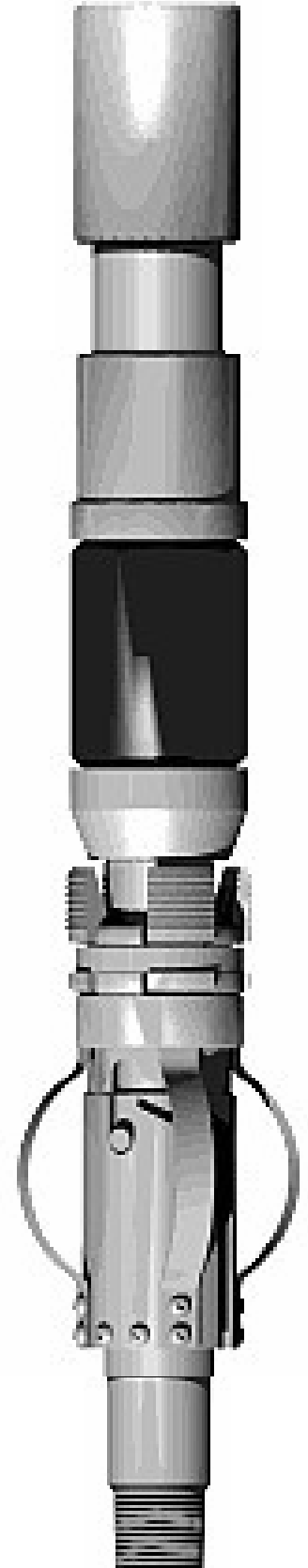
While the SAPEX / DL Model "SLC" Compression Packer is mainly intended to be used as a compression set tool, it may also be run upside down as a tension set packer. It must be remembered, however, that this packer does not have an emergency shear release feature.

KEY PERFORMANCE FEATURES :

- Economical for low formation pressure wells
- Unrestricted full flow bore and J-Slot located on outside of body
- Heavy-Duty end subs for repeated make-up and break-out
- Deep cut wicker type slips
- Long packing element and stainless steel drag springs for longer life
- Sets easily in compression, with 1/4 turn of torque (left and right hand options available)
- Straight pickup normal release / Emergency rotational release
- Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box Up/Pin Down
O.D. (IN.)	Weight (LBS./FT.)	MIN	MAX			
2-7/8	6.4-6.5	2.375	2.441	2.250	.75	1.315 EUE
3-1/2	7.7-10.2	2.922	3.068	2.781	1.50	1.900 EUE
4	9.5-11	3.476	3.548	3.250	1.50	2.375 EUE
4	9.5-11	3.476	3.548	3.250	1.88	2.375 EUE
4-1/2	15.1-16.6	3.754	3.826	3.500	1.94	2.375 EUE
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2.375 EUE
5	11.5-18	4.276	4.560	4.125	1.94	2.375 EUE
5-1/2	13-20	4.778	5.004	4.625	1.94	2.375 EUE
5-1/2	20-23	4.670	4.778	4.500	1.94	2.375 EUE
5-1/2	13-20	4.778	5.004	4.625	2.44	2.875 EUE



5-1/2	20-23	4.670	4.778	4.500	2.44	2.875 EUE
6	20-23	5.240	5.352	5.000	2.44	2.875 EUE
6-5/8	24-32	5.675	5.921	5.500	2.44	2.875 EUE
6-5/8	20-24	5.921	6.049	5.750	2.44	2.875 EUE
7	17-29	6.184	6.538	6.000	2.44	2.875 EUE
7	17-29	6.184	6.538	6.000	3.00	3.500 EUE
7-5/8	20-33.7	6.765	7.125	6.625	2.44	2.875 EUE
7-5/8	20-33.7	6.765	7.125	6.625	3.00	3.500 EUE
8-5/8	24.4-40	7.725	8.097	7.500	2.44	2.875 EUE
8-5/8	20-28	8.017	8.191	7.750	2.44	2.875 EUE
8-5/8	24.4-40	7.725	8.097	7.500	3.00	3.500 EUE
9-5/8	43.5-53.5	8.535	8.755	8.250	2.50	2.875 EUE
9-5/8	29.3-43.5	8.755	9.063	8.500	2.50	2.875 EUE
9-5/8	43.5-53.5	8.535	8.755	8.250	3.00	3.500 EUE
9-5/8	29.3-43.5	8.755	9.063	8.500	3.00	3.500 EUE
9-5/8	43.5-53.5	8.535	8.755	8.281	4.00	4.500 LTC
9-5/8	32.3-53.5	8.755	9.001	8.500	4.00	4.500 LTC
10-3/4	32.7-55.5	9.760	10.192	9.500	3.00	3.500 EUE
13-3/8	48-72	12.347	12.715	12.000	4.00	4.500 EUE

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG SPRINGS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT

SAPEX-DL COMPLETION EQUIPMENT MODEL "SAD-1" TENSION PACKER

The SAPEX / DL Model "SAD-1" Tension Packer is a rugged, inexpensive, single grip retrievable tension packer. It is designed for low to medium pressure, shallow to medium depth; injection flood or production well applications.

The packer has a large bore, full opening design to maximize flow area and allow easy passage of wireline tools. It has heavy duty rocker type slips to give maximum gripping efficiency in all casing ID environments.

The SAPEX / DL Model "SAD-1" Tension Packer has an automatic J-Slot. Its one piece packing element is extra long to offer maximum sealing capability inside the casing in which it is run.

This packer is easily set with only 1/4 turn of right hand rotation at the tool, followed by tension being applied. The "SAD-1" Tension Packer offers 2 backup release options (shear and rotational), in case it can not be released normally.

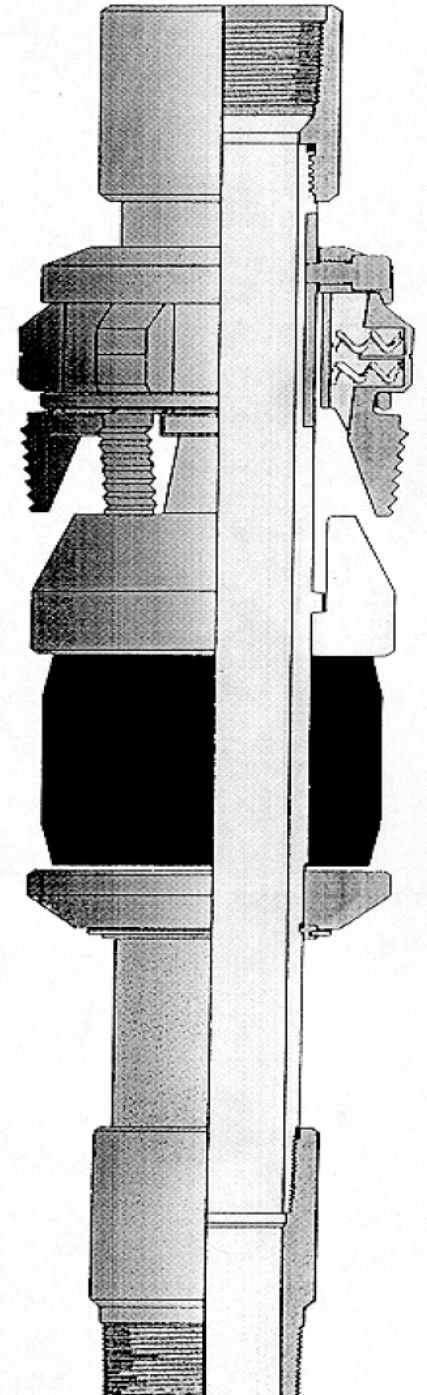
KEY PERFORMANCE FEATURES :

- Economical for low formation pressure wells
- Full bore for unrestricted flow and passage of wireline tools
- Heavy duty end subs for repeated make-up and break-out
- Heavy duty rocker type slips and long packing element
- Heavy duty drag blocks for maximum operating life
- Sets easily in tension, with 1/4 right hand rotation
- Releases with straight set down on tubing
- Two emergency backup release systems
- Simple and easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)	MIN	MAX			
211-45-000	4-1/2	9.5-13.5	3.910	4.160	3.771	1.938	2-3/8" EUE 8 RD.
211-55-000	5-1/2	15-20	4.778	4.950	4.641	2.375	2-7/8" EUE 8 RD.
211-56-000	5-1/2	20-23	4.625	4.778	4.500	2.375	2-7/8" EUE 8 RD.
211-65-000	6-5/8	17-20	5.922	6.135	5.812	2.438	2-7/8" EUE 8 RD.
211-66-000	6-5/8	20-24	5.830	5.921	5.656	2.438	2-7/8" EUE 8 RD.
211-70-000	7	17-20	6.456	6.538	6.266	2.438	2-7/8" EUE 8 RD.
211-71-000	7	20-26	6.276	6.456	6.078	2.438	2-7/8" EUE 8 RD.
211-72-000	7	26-29	6.136	6.276	5.968	2.438	2-7/8" EUE 8 RD.
211-73-000	7	32-35	5.922	6.135	5.812	2.438	2-7/8" EUE 8 RD.
211-95-000	9-5/8	29.3-36.0	8.836	9.063	8.593	4.000	4-1/2" EUE 8 RD.
211-96-000	9-5/8	40.0-47.0	8.681	8.835	8.437	4.000	4-1/2" EUE 8 RD.
211-97-000	9-5/8	47-53.5	8.300	8.681	8.218	4.000	4-1/2" EUE 8 RD.
211-10-000	10-3/4	32.7-55.5	9.625	10.192	9.500	4.000	4-1/2" EUE 8 RD.
211-13-000	13-3/8	48-72	12.300	12.715	12.000	4.000	4-1/2" EUE 8 RD.

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT



SAPEX-DL COMPLETION EQUIPMENT TANDEM COMPRESSION PACKER




The SAPEX / DL TANDEM COMPRESSION PACKER is a compression set tool requiring only straight set down weight to pack off.

The SAPEX / DL TANDEM COMPRESSION PACKER is run above other packers such as the SAPEX / DL Model "DG-I", "DG-II" or "SG-III" for selective production to isolate casing holes and perforations.

The SAPEX / DL TANDEM COMPRESSION PACKER has no upper or lower slips and should be used only where intermediate differential pressures from below are expected.

The SAPEX / DL TANDEM COMPRESSION PACKER has an internal latch to prevent the packer from presetting when running in the hole. When releasing, the latch re-engages to allow movement down the hole.

KEY PERFORMANCE FEATURES :

-  Large internal bypass
-  Set down to pack off, pick up to release
-  Compact design

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
3-1/2	7.7-10.2	2.922	3.068	2.781	1.25	1900 NU	63535
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	63545
5-1/2	14-20	4.778	5.012	4.625	2.00	2-3/8 EUE	63555
5-1/2	14-20	4.778	5.012	4.625	2.38	2-7/8 EUE	63556
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	63557
5-1/2	20-23	4.670	4.778	4.500	2.37	2-7/8 EUE	63558
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	63570
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	63572
7-5/8	24-29.7	6.875	7.025	6.672	2.50	2-7/8 EUE	63575

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT SET DOWN ISOLATION PACKER

The SAPEX / DL SET DOWN ISOLATION PACKER is an economical, compact compression set tool used to isolate casing or perforations. It can also be used in multi-zone injection applications.

The SAPEX / DL SET DOWN ISOLATION PACKER runs above a compression set packer such as the SAPEX / DL Model "DG-II" or "SG-III". Applied compression will shear the shear screws and allow pack-off. Straight pick up releases the packer.

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
2-7/8	6.5	2.441	2.441	2.250	1.500	1900 NU	64127
4-1/2	9.5-13.5	3.920	4.090	3.750	1.938	2-3/8 EUE	64145
5	11.5-18	4.276	4.560	4.000	1.938	2-3/8 EUE	64150
5-1/2	13-20	4.778	5.044	4.625	2.430	2-7/8 EUE	64156
5-1/2	13-20	4.778	5.044	4.625	1.938	2-3/8 EUE	64155
5-1/2	13-20	4.778	5.044	4.625	3.000	3-1/2 EUE	64158
7	17-26	6.276	6.538	6.000	2.430	2-7/8 EUE	64170
7	17-26	6.276	6.538	6.000	2.000	2-3/8 EUE	64171
7	32-35	6.004	6.094	5.750	4.000	4-1/2 8RD	64172
7	26-32	6.094	6.276	5.875	3.000	3-1/2 EUE	64173
7	17-26	6.276	6.538	6.000	3.000	3-1/2 EUE	64174
7-5/8	24-29.7	6.875	7.025	6.625	2.430	2-7/8 EUE	64175
9-5/8	40-47	8.681	8.835	8.438	4.000	4-1/2 EUE	64195
9-5/8	40-47	8.681	8.835	8.438	3.000	3-1/2 EUE	64196

* Other sizes and connections available on request







SAPEX-DL COMPLETION EQUIPMENT MODEL "S" TANDEM TENSION PACKER

The SAPEX / DL Model "S" Tandem Tension Packer is a compact and economical, low pressure tension packer that is designed to be run above another tension or neutral-set packer (such as the SAPEX / DL Model "DG-1" Double Grip, or the SAPEX / DL Model "SLT" and "SAD-1" Tension Packers).

The SAPEX / DL Model "S" Tandem Tension Packer offers a reliable method of isolating zones or straddling selected perforations. The packer can be run in either the "jayed" or "unjayed" position. Running in the "unjayed" position allows the packer to be set when tension is applied to the tool. Running it in the "jayed" position requires applying weight to the tool, followed by application of 1/4 turn of left hand torque, after which tension is applied to effect the packoff.

KEY PERFORMANCE FEATURES :

-  Economical and cost-competitive
-  Easy to install and run
-  Built in bypass unloader
-  Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
3-1/2	7.7-10.3	2.922	3.068	2.781	1.53	1.900 EUE	43735
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	43745
4-1/2	9.5-11.6	4.000	4.090	3.844	2.38	2-7/8 EUE	43746
5	15-18	4.276	4.408	4.125	2.00	2-3/8 EUE	43750
5-1/2	13-20	4.778	5.044	4.625	2.00	2-3/8 EUE	43756
7	17-29	6.184	6.538	6.000	2.50	2-7/8 EUE	43770
7	17-29	6.184	6.538	6.000	3.00	3-1/2 EUE	43773
7-5/8	29.7-33.7	6.765	6.875	6.500	2.50	2-7/8 EUE	43775
9-5/8	40-47	8.681	8.835	8.250	2.50	2-7/8 EUE	43795
9-5/8	40-43.5	8.755	8.835	8.500	3.00	3-1/2 EUE	43796

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "SGV" CASING CUP PACKER







The SAPEX / DL Model "SGV" Casing Cup Packer is a simple and inexpensive tool, designed to provide an economical method of isolating zones or selected perforations for any number of reasons. It can be used for all types of low pressure applications

SAPEX / DL Model "SGV" Casing Cup Packers can be used to locate casing leaks, as well as for zone isolation for swab testing or production separation in wells with several producing depths.

Model "SGV" Casing Cup Packers can be run with single or double cups, as per well condition requirements. Additionally, the packer may be run with cups facing either up or down, and either opposing each other, or facing in the same direction.

The rubber cups feature internal wire reinforcements for extra durability and cup life.

KEY PERFORMANCE FEATURES :

-  Economical and cost-competitive
-  Easy to install and run
-  Reinforced cups
-  Can be run in tandem
-  Full bore for unrestricted flow
-  Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing Size (IN)	Packer I.D. (IN)	Thread Connection	Part Number
3-1/2	1.50	1900 NU	43935
4-1/2	2.00	2-3/8 EUE	43945
4-1/2	2.50	2-7/8 EUE	43946
5-1/2	3.00	3-1/2 EUE	43953
5-1/2	2.00	2-3/8 EUE	43955
5-1/2	2.50	2-7/8 EUE	43956
6-5/8	3.00	3-1/2 EUE	43965
6-5/8	4.00	4-1/2 LTC	43966
7	2.50	2-7/8 EUE	43970
7	4.00	4-1/2 LTC	43971
7	3.00	3-1/2 EUE	43973
7	4.00	4-1/2 LTC	43974
8-5/8	2.50	2-7/8 EUE	43985
9-5/8	3.00	3-1/2 EUE	43976
9-5/8	4.00	4-1/2 LTC	4391075

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "DG-I" DOUBLE GRIP RETRIEVABLE PACKER

The SAPEX / DL Model "DG-I" Double Grip Packer is a single string, double grip retrievable lock-set style packer. It utilizes the SAPEX "SYNCREL 2000" double grip mechanical hold-down system, which holds pressure differentials securely both from above and below the packer once the packer has been set. Movement of the packing element is prevented and pack-off is maintained by this feature.

The Model "DG-I" Double Grip Packer may be set using either tension or compression force and, once set, may be left in either mode (or in neutral) without any danger of the packer releasing accidentally.

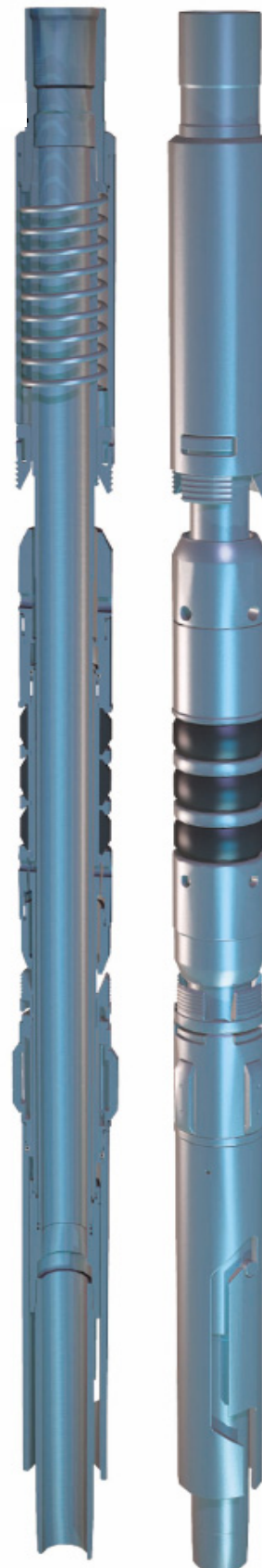
A large internal bypass allows the packer to be run and retrieved with minimal pressure surge forces being exerted on the packer and the well bore. Upon releasing the packer, the bypass opens before the upper slips release, thereby allowing the tubing and casing pressures to equalize safely.

The Model "DG-I" Double Grip Packer has an open style J-Slot, located on the outside of the packer body. This feature helps to prevent setting and releasing problems which may be encountered due to solids settling out in the well bore or annular fluids.

The SAPEX / DL Model "DG-I" Double Grip Packer is ideal for all completion and workover operations requiring an extremely reliable and dependable lockset style packer.

KEY PERFORMANCE FEATURES :

- Holds differential pressures securely from above or below
- SAPEX "SYNCREL 2000" upper slip releasing system
- Full bore for unrestricted flow and passage of wireline tools
- Large bypass for pressure equalization and debris cleaning
- Setting J-Slot located on outside of body
- Heavy-Duty end subs for repeated make-up and break-out
- Sets easily in tension or compression, with 1/4 right hand rotation
- Releases with 1/4 right hand turn and straight pickup
- Field adjustable emergency tension shear release
- Simple and Easy to Redress



TOOL SPECIFICATIONS :

Casing O.D. (IN.)	Casing Weight (LBS./FT.)	Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
		Min.	Max.				
2-7/8	6.4-6.5	2.441	2.441	2.25	0.63	1.050 EUE	60325
3-1/2	7.7-10.2	2.922	3.068	2.781	1.25	1.900 NU	60335
3-1/2	12.95	2.750	2.75	2.562	1.00	1.660 EUE	60336
4	9.5-11	3.476	3.548	3.250	1.50	1.900 EUE	60340
4	12.95	3.340	3.340	3.187	1.50	1.900 EUE	60341
4-1/2	18.8	3.640	3.640	3.437	1.50	1.900 EUE	60342
4-1/2	15.1-16.9	3.740	3.826	3.594	1.50	1.900 EUE	60343
4-1/2	15.1	3.826	3.826	3.656	1.94	2-3/8 EUE	60344
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	60345
4-1/2	15.1	3.826	3.826	3.641	1.94	2-3/8 EUE	60346
5	11.5-15	4.408	4.560	4.125	1.94	2-3/8 EUE	60350
5	18-20.8	4.156	4.276	4.000	1.94	2-3/8 EUE	60352
5-1/2	14-20	4.778	5.044	4.625	2.00	2-3/8 EUE	60355
5-1/2	15.5-17	4.892	4.95	4.625	2.38	2-7/8 EUE	60356
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	60357
5-1/2	13-14	5.012	5.044	4.813	2.38	2-7/8 EUE	60358
5-1/2	20-23	4.670	4.778	4.500	2.38	2-7/8 EUE	60359
6	17-20	5.352	5.450	5.188	2.38	2-7/8 EUE	60360
6	14-16	5.500	5.552	5.188	2.38	2-7/8 EUE	60361
6-5/8	24-32	5.675	5.920	5.500	2.50	2-7/8 EUE	60365
6-5/8	32-34.5	5.575	5.675	5.312	2.50	2-7/8 EUE	60366
6-5/8	17-24	5.921	6.135	5.750	2.50	2-7/8 EUE	60367
6-5/8	20-24	5.921	6.049	5.750	3.00	3-1/2 EUE	60368
6-5/8	20	6.049	6.049	5.812	3.00	3-1/2 EUE	60369
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	60370
7	29-35	6.004	6.184	5.812	2.50	2-7/8 EUE	60371
7	17-26	6.276	6.538	6.062*	2.50	2-7/8 EUE	60372
7	26-32	6.094	6.276	5.875	3.00	3-1/2 EUE	60373
7	17-26	6.276	6.538	6.125*	3.00	3-1/2 EUE	60374
7-5/8	24-29.7	6.875	7.025	6.672	2.50	2-7/8 EUE	60375
7-5/8	33.7-39	6.625	6.765	6.453	2.50	2-7/8 EUE	60376
7-5/8	33.7-39	6.625	6.765	6.453	3.00	3-1/2 EUE	60377
7-5/8	24-29.7	6.875	7.025	6.672	3.00	3-1/2 EUE	60378
8-5/8	28-40	7.725	8.017	7.500	4.00	4-1/2 EUE	60382
8-5/8	24-40	7.725	8.097	7.500	2.50	2-7/8 EUE	60385
8-5/8	44-49	7.511	7.625	7.312	2.50	2-7/8 EUE	60386
8-5/8	28-40	7.725	8.017	7.500	3.00	3-1/2 EUE	60387
9-5/8	43.5-53.5	8.535	8.755	8.250	4.00	4-1/2 EUE	60395
9-5/8	32.3-43.5	8.755	9.001	8.500	4.00	4-1/2 EUE	60396
10-3/4	32.75-45.5	9.560	10.192	9.700	4.00	4-1/2 EUE	60301
10-3/4	45.5-51	9.85	9.95	9.625	4.00	4-1/2 EUE	60302
10-3/4	51-65.7	9.560	9.850	9.312	4.00	4-1/2 EUE	60310
11-3/4	42-65.0	10.682	11.084	10.438	4.00	4-1/2 EUE	60311
13-3/8	54.5-77	12.275	12.615	12.00	4.00	4-1/2 EUE	60313

* Maximum O.D. is across retracted drag blocks. ** Other sizes and connections available on request

SAPEX-DL COMPLETION EQUIPMENT MODEL "DG-T" DOUBLE GRIP THERMAL PACKER









The SAPEX / DL Model "DG-T" Thermal Packer is a single-string, double-grip retrievable lock-set style packer designed especially for geothermal, steamflood or other severe temperature wells. It utilizes the SAPEX "SYNCREL 2000" Double Grip Mechanical Hold-Down System which holds pressure differentials securely from both above and below the packer. Movement of the packing element is prevented and pack-off is maintained by this double-grip feature. The packer may be set using either tension or compression force and, once set, may be left in either mode, or in neutral, without any danger of the packer releasing accidentally.

The SAPEX / DL Model "DG-T" Thermal Packer is also available with an integral thermal expansion joint which is activated after setting the packer. The integral expansion joint allows the tubing above the packer to expand and contract with temperature changes in the well.

The SAPEX / DL Model "DG-T" Thermal Packer has an open style J-Slot, located on the exterior of the packer body. This feature helps to prevent the setting and releasing problems which are normally associated with the severe operating conditions encountered in steamflood and geothermal production wells. Both versions of this packer offer tension shear release as well as mechanical release, as standard operating features.

The SAPEX / DL Model "DG-T" Thermal Packer is ideal for all steamflood, injection, Huff'n'Puff or full geothermal production applications.

KEY PERFORMANCE FEATURES :

-  Holds differential pressures securely from above or below
-  SAPEX "SYNCREL 2000" upper slip releasing system
-  Setting J-Slot located on outside of body
-  Available with optional integral expansion joint
-  Heavy Duty end subs for repeated make-up and break-out operations
-  Sets in tension or compression, with 1/4 right hand torque
-  Field adjustable tension shear release; can also release with 1/4 right hand torque followed by straight pick-up
-  Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
5-1/2	13-17	4.892	5.012	4.750	2.00	2-3/8 EUE	74055
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	74056
6-5/8	24-32	5.675	5.921	5.500	2.50	2-7/8 EUE	74065
6-5/8	17-24	5.921	6.135	5.750	2.50	2-7/8 EUE	74066
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	74070

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "DG-1C" DOUBLE GRIP RETRIEVABLE PACKER

The SAPEX / DL Model "DG-1C" Double Grip Packer is a single string, double grip retrievable lock-set style packer designed for low to medium pressure service in shallow to medium depth wells where an economical, double grip design, packer is required, yet where pressures to be encountered do not warrant an internal bypass system on the tool.

The Model "DG-1C" Double Grip Packer utilizes the SAPEX "SYNCREL 2000" double grip mechanical hold-down system, which securely prevents any upward or downward movement of the tool, once the packer is set.

The Model "DG-1C" Double Grip Packer may be set using either tension or compression force and, once set, may be left in either mode (or in neutral) without any danger of the packer releasing accidentally.

Although originally designed especially for waterflood and other low pressure EOR applications, the SAPEX / DL Model "DG-1C" Double Grip Packer design has proven itself to be an excellent choice for many different applications. It is an easy tool to run, operate and redress, and offers excellent Value for the Investment. The packer also features an open style J-Slot, located on the outside of the packer body. This feature helps to prevent setting and releasing problems which may be encountered due to solids settling out in the well bore or annular fluids.

The SAPEX / DL Model "DG-1C" Double Grip Packer is the ideal tool to consider for all completion and workover operations requiring an extremely reliable and dependable, yet cost competitive, lockset style packer.

KEY PERFORMANCE FEATURES :

- Especially designed for waterflood and other EOR applications
- Ideal for low/medium pressures in shallow/medium depth wells
- SAPEX "SYNCREL 2000" upper slip releasing system
- Unrestricted full flow bore and setting J-Slot on outside of body
- Sets easily in tension or compression, with 1/4 right hand rotation
- Release with 1/4 right hand rotation and straight pick-up
- Field adjustable emergency tension shear release
- Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box Up/Pin Down
O.D. (IN.)	Weight (LBS./FT.)	MIN	MAX			
4-1/2	9.5-13.5	3.920	4.090	3.750	1.937	2.375 EUE
5	11.5-18	4.276	4.560	4.125	1.937	2.375 EUE
5-1/2	13-17	4.892	5.012	4.625	2.375	2.375 EUE
5-1/2	20-23	4.670	4.778	4.500	2.375	2.375 EUE
5-1/2	13-17	4.892	5.012	4.625	2.375	2.875 EUE



5-1/2	20-23	4.670	4.778	4.500	2.375	2.875 EUE
6-5/8	24-32	5.675	5.921	5.500	2.500	2.875 EUE
6-5/8	17-24	5.921	6.135	5.750	2.500	2.875 EUE
7	17-26	6.276	6.538	6.000	2.500	2.875 EUE

- *MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS*
- *OTHER SIZES AVAILABLE ON REQUEST*
- *MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT*

SAPEX-DL COMPLETION EQUIPMENT MODEL "DG-II" DOUBLE GRIP PACKER

The SAPEX / DL Model "DG-II" Double Grip Packer is a single string, double grip retrievable compression set packer. It utilizes the SAPEX "SYNCREL 2000" double grip mechanical hold-down system which holds pressure differentials securely both from above and below the packer. Movement of the packing element is prevented and pack-off is maintained by this double grip feature.

A large internal bypass allows the packer to be run and retrieved with minimal pressure surge forces being exerted on the packer and the well bore. When set, the bypass system uses pressure differential force from below to give extra pack-off force on both the bypass seal and packing elements. Upon releasing the packer, the bypass opens before the upper slips release, thereby allowing the tubing and casing pressures to equalize safely. The Model "DG-II" Double Grip Packer has an automatic J-Slot, located on the outside of the packer body. Manual J-Slots are also available.

The SAPEX / DL Model "DG-II" Double Grip Packer is ideal for all completion and workover operations requiring a dependable weight set packer. It is especially suited for applications where forces resulting from differential pressures from below the packer may exceed the available tubing weight required to maintain a reliable set.

KEY PERFORMANCE FEATURES :

- Holds pressure differentials securely from above or below
- SAPEX "SYNCREL 2000" upper slip releasing system
- Full bore for unrestricted flow and passage of wireline tools
- Large pressure balanced bypass for pressure equalization and debris cleaning around upper slips when releasing
- Setting J-Slot located on outside of body
- Heavy-Duty end subs for repeated make-up and break-out
- Sets easily in compression with 1/4 right hand rotation
- Releases with straight pickup on tubing
- Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
2-7/8	6.4-6.5	2.441	2.441	2.250	0.63	1.050 EUE	61025
3-1/2	7.7-10.2	2.922	3.068	2.781	1.25	1.900 NU	61135
4	9.5-11.6	3.428	3.548	3.250	1.50	1.900 EUE	61140
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	61145
5	11.5-18	4.276	4.560	4.125	1.94	2-3/8 EUE	61150
5	18-21.4	4.126	4.276	4.000	1.94	2-3/8 EUE	61152
5-1/2	14-17	4.892	5.012	4.625	2.00	2-3/8 EUE	61155
5-1/2	15.5-17	4.892	4.95	4.625	2.37	2-7/8 EUE	61156
5-1/2	20-23	4.670	4.778	4.500	2.00	2-7/8 EUE	61157
5-1/2	20-23	4.670	4.778	4.500	2.37	2-7/8 EUE	61159
6-5/8	24-32	5.675	5.920	5.500	2.50	2-7/8 EUE	61165
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	61170
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	61172
7-5/8	33.7-39	6.625	6.765	6.453	3.00	3-1/2 EUE	61077

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "DGR-III" TENSION PACKER










The SAPEX / DL Model "DGR-III" Packer is a single string, double grip retrievable compression packer. It features a hydraulic hold down system which utilizes differential pressure activated hold down buttons. When activated, upward movement of the packing elements due to pressure differential pressure from below is prevented.

A large internal bypass allows the packer to be ran and retrieved with minimal pressure surge forces being exerted on the packer and well bore. When set, the packer features a differential lock in the bypass system that works to keep the bypass tightly closed in cases where there is differential pressure below the tool.

The SAPEX / DL Model "DGR-III" Packer has an automatic J-Slot which allows the packer to be set with only 1/4 right hand torque at the tool. Manual J-Slots are available.

The SAPEX / DL Model "DGR-III" Packer is ideal for all completion and workover operations where a dependable weight set packer is required. It is especially suited for applications where forces resulting from differential pressures from below the packer, may exceed the available tubing weight required to maintain a reliable packer set.

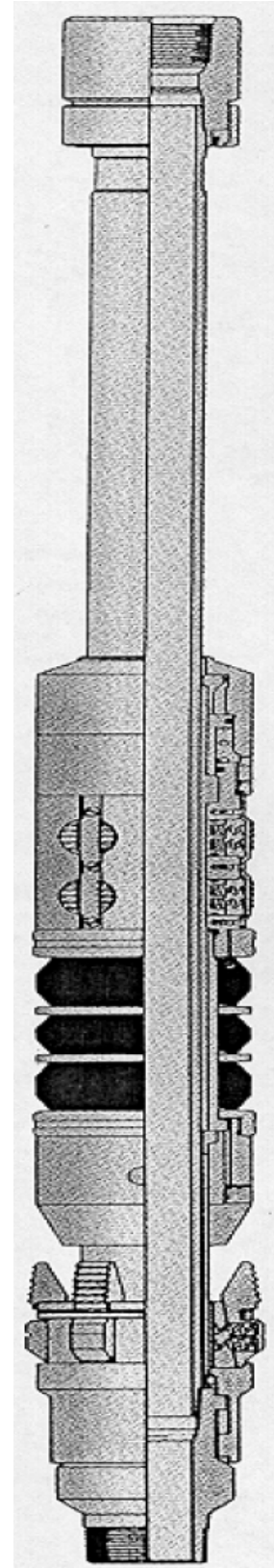
KEY PERFORMANCE FEATURES :

-  Holds differential pressures securely from above or below
-  Hydraulic hold down button system, activated by differential pressure
-  Full bore for unrestricted flow and passage of wireline tools
-  Large area bypass for pressure equalization and debris cleaning from above packer, when releasing
-  Heavy duty end subs for repeated make-up and break-out
-  Sets easily in compression, with 1/4 right hand rotation
-  Releases with straight tubing pickup
-  Long stroke mandrel allows fluids to be spotted at depth, without un-setting the packer slips
-  Easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)	MIN	MAX			
321-55-000	5-1/2	13-15.5	4.893	5.044	4.781	2.375	2-7/8" EUE 8 RD.
321-56-000	5-1/2	17-20	4.778	4.892	4.641	2.375	2-7/8" EUE 8 RD.
321-57-000	5-1/2	20-23	4.625	4.778	4.500	2.375	2-7/8" EUE 8 RD.
321-65-000	6-5/8	17-20	5.938	6.135	5.812	2.410	2-7/8" EUE 8 RD.
321-70-000	7	17-20	6.276	6.538	6.266	2.410	2-7/8" EUE 8 RD.
321-71-000	7	20-26	6.276	6.456	6.078	2.410	2-7/8" EUE 8 RD.
321-72-000	7	26-29	6.136	6.276	5.968	2.410	2-7/8" EUE 8 RD.
321-73-000	7	32-35	5.989	6.094	5.812	2.410	2-7/8" EUE 8 RD.
321-95-000	9-5/8	29.3-36.0	8.836	9.063	8.593	4.000	3-1/2" EUE 8 RD.
321-96-000	9-5/8	40.0-47.0	8.681	8.835	8.437	4.000	3-1/2" EUE 8 RD.
321-97-000	9-5/8	47-53.5	8.343	8.681	8.218	4.000	3-1/2" EUE 8 RD.

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(S) / ELASTOMER(S) DEPENDENT ON CUSTOMER REQUIREMENT



SAPEX-DL COMPLETION EQUIPMENT MODEL "SG-III" SINGLE GRIP RETRIEVABLE PACKER








The SAPEX / DL Model "SG-III" Single Grip Retrievable Packer is an extremely reliable single-string, single grip retrievable compression set packer. It depends on compression forces from above (tubing weight and annular pressures) to remain set. A large internal bypass allows the packer to be run and retrieved with minimal pressure surge forces being exerted on the packer and well-bore.

The Model "SG-III" Packer has an automatic, open style J-Slot, located on the outside of the packer body. Manual J-Slots are also available.

The Model "SG-III" Packer sets easily with 1/4 turn of right hand torque, followed with set down being applied to the tubing string. It releases with straight pull being applied on the tubing. As the tubing is raised, the bypass system opens, in order to equalize tubing and casing pressures, after which; the slips release and the packer can be pulled from the well.

The Model "SG-III" Packer is ideal for all completion and workover operations where a dependable and cost-competitive weight set packer is required, and where constant tubing weight is available to be left on the packer, and where a hold-down system is not required.

KEY PERFORMANCE FEATURES :

-  Economical for low to medium formation pressure wells where hold-down systems are not required
-  Full bore for unrestricted flow and passage of wireline tools
-  Setting J-Slot located on outside of body
-  Heavy-Duty end subs for repeated make-up and break-out
-  Sets easily in compression, with 1/4 right hand rotation
-  Releases with straight pick-up on tubing
-  Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
3-1/2	7.7-10.2	2.922	3.068	2.781	1.25	1900 NU	63135
4-1/2	9.5-13.5	3.920	4.090	3.750	1.87	2-3/8 EUE	63145
5-1/2	14-20	4.778	5.012	4.625	1.94	2-3/8 EUE	63155
5-1/2	15.5-17	4.892	4.950	4.625	2.38	2-7/8 EUE	63156
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	63157
5-1/2	14-20	4.778	5.012	4.625	2.38	2-7/8 EUE	63158
6-5/8	17-24	5.920	6.135	5.750	2.50	2-7/8 EUE	63165
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	63170
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	63172
7	26-32	6.094	6.276	5.875	3.00	3-1/2 EUE	63173
7-5/8	24-29.7	6.875	7.025	6.672	2.50	2-7/8 EUE	63175
9-5/8	43.5-53.5	8.535	8.755	8.250	2.50	2-7/8 EUE	63198

* Other sizes and connections available on request






SAPEX-DL COMPLETION EQUIPMENT MODEL "AS-5" ANCHOR PACKER

The SAPEX / DL Model "AS-5" Packer is a compression set tool with an external J-Slot to control pack-off. It is run above other packers, such as the SAPEX / DL Model "SG-III" to selectively treat, produce or inject in multiple zone completions. The Model "AS-5" Packer is also used to isolate casing hole perforations.

The SAPEX / DL Model "AS-5" Packer features a large bypass area to prevent swabbing when running and retrieving. Releasing the valve allows debris to be washed from the upper slips.

KEY PERFORMANCE FEATURES :

-  Large internal bypass
-  Mechanical slips superior to hydraulic buttons
-  Additional J-Slot arrangements available

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
4-1/2	9.5-13.5	3.920	4.090	3.750	1.937	2-3/8 EUE	60845
5-1/2	14-20	4.778	5.012	4.625	2.375	2-7/8 EUE	60856
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	60857
7	26-32	6.094	6.276	5.875	2.500	2-7/8 EUE	60870
7	17-26	6.276	6.538	6.000	2.500	2-7/8 EUE	60872
7	17-26	6.276	6.538	6.000	3.000	3-1/2 EUE	60874

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "SNC" SNAPSET COMPRESSION ANCHOR PACKER








The SAPEX / DL Model "SNC" Snap-set Compression Anchor Packer is an extremely reliable single string, single grip retrievable compression set anchor style packer. The packer must be run above another packer, or landed on bottom, in order to set. It depends on compression forces from above (tubing weight and annular pressures) to remain set. After setting, the upper slips of the Model "SNC" Snap-set Compression Anchor Packer operate as an upper hold-down for the completion installation.

A large flow area pressure balanced internal bypass allows the packer to be run and retrieved with minimal pressure surge forces being exerted on the packer and wellbore. When set, the system works to increase the packoff forces across the tool.

The Model "SNC" Snap-set Compression Anchor Packer sets easily with straight set-down being applied, once the string below the tool is landed on the lower packer, or on bottom, as may be the case. An internal collet prevents the tool from setting prematurely when running in the hole. The Model "SNC" Snap-set Compression Anchor Packer releases with straight pickup.

The SAPEX / DL Model "SNC" Snap-set Compression Anchor Packer is ideal for all completion and workover operations where a dependable, cost-competitive weight set packer is required which can operate to anchor the string below from upward movement due to pressure differentials in the well.

KEY PERFORMANCE FEATURES :

-  Heavy duty for high pressure differentials
-  Full bore for unrestricted flow and passage of wireline tools
-  Heavy-Duty end subs for repeated make-up and break-out
-  Sets easily in compression with straight set down action
-  Releases with straight pickup on tubing
-  large pressure balanced bypass
-  Simple and Easy to Redress

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
3-1/2	7.7-10.2	2.922	3.068	2.781	1.25	1900 NU	63635
4-1/2	15.1	3.826	3.826	3.656	1.94	2-3/8 EUE	63644
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	63645
5	18-21	4.154	4.276	4.000	1.94	2-3/8 EUE	63652
5-1/2	14-20	4.778	5.012	4.625	2.00	2-3/8 EUE	63655
5-1/2	14-20	4.670	4.778	4.625	2.38	2-7/8 EUE	63656
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	63657
5-1/2	20-23	4.670	4.778	4.500	2.38	2-7/8 EUE	63658
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	63670
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	63672
7	17-26	6.276	6.538	6.000	3.00	3-1/2 EUE	63674
7-5/8	24-29.7	6.875	7.025	6.672	2.50	2-7/8 EUE	63675
7-5/8	33.7-39	6.625	6.765	6.453	2.50	2-7/8 EUE	63676

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "SGR-III" SINGLE GRIP PACKER

The SAPEX / DL Model "SGR-III" Single Grip Packer is an extremely reliable single string, single grip retrievable compression packer. It depends on compression forces from above (tubing weight and annular pressures) to remain set.

A large internal bypass allows the packer to be ran and retrieved with minimal pressure surge forces being exerted on the packer and well bore.

The SAPEX / DL Model "SGR-III" Single Grip Packer sets easily and requires only 1/4 right hand torque at the tool. The tool releases with straight pickup. An Automatic J-Slot is standard and Manual J-Slots are available.

The SAPEX / DL Model "SGR-III" Single Grip Packer is ideal for all completion and workover operations where a dependable, inexpensive, weight set packer is required, and where constant tubing weight is available to be left on the packer, and where a hold-down system is not required.

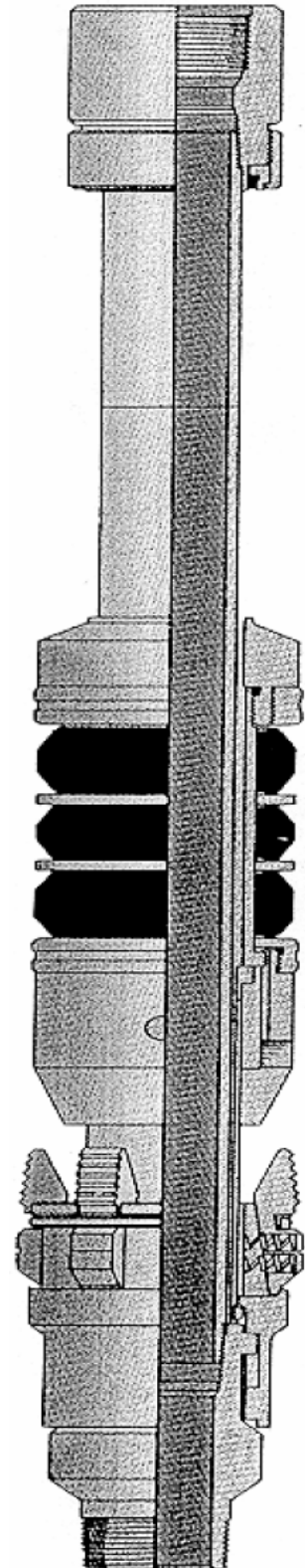
KEY PERFORMANCE FEATURES :

- Economical for low formation pressure wells.
- Heavy duty end subs for repeated make-up and break-out
- Sets easily in compression, with 1/4 right hand rotation
- Releases with straight tubing pickup
- Long stroke mandrel allows fluids to be spotted at depth, without un-setting the packer slips
- Easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)	MIN	MAX			
271-55-000	5-1/2	13-15.5	4.893	5.044	4.781	2.375	2-7/8" EUE 8 RD.
271-56-000	5-1/2	17-20	4.778	4.892	4.641	2.375	2-7/8" EUE 8 RD.
271-57-000	5-1/2	20-23	4.625	4.778	4.500	2.375	2-7/8" EUE 8 RD.
271-65-000	6-5/8	17-20	5.938	6.135	5.812	2.410	2-7/8" EUE 8 RD.
271-70-000	7	17-20	6.276	6.538	6.266	2.410	2-7/8" EUE 8 RD.
271-71-000	7	20-26	6.276	6.456	6.078	2.410	2-7/8" EUE 8 RD.
271-72-000	7	26-29	6.136	6.276	5.968	2.410	2-7/8" EUE 8 RD.
271-73-000	7	32-35	5.989	6.094	5.812	2.410	2-7/8" EUE 8 RD.
271-95-000	9-5/8	29.3-36.0	8.836	9.063	8.593	4.000	3-1/2" EUE 8 RD.
271-96-000	9-5/8	40.0-47.0	8.681	8.835	8.437	4.000	3-1/2" EUE 8 RD.
271-97-000	9-5/8	47-53.5	8.343	8.681	8.218	4.000	3-1/2" EUE 8 RD.

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(S) / ELASTOMER(S) DEPENDENT ON CUSTOMER REQUIREMENT










SAPEX-DL COMPLETION EQUIPMENT MODEL "DH-I" DOUBLE GRIP HYDRAULIC PRODUCTION PACKER

The SAPEX / DL Model "DH-I" Double Grip Hydraulic Production Packer is a high pressure, hydraulic set production packer. It is ideally suited for well completions where it is desired to set the packer after the well has been flanged up, as well as for deviated holes, gas lift installations and other completions where a mechanical set packer is not suitable.

The Model "DH-I" Double Grip Hydraulic Production Packer is ideal for setting in stacked installations because the built in zone activated pressure balanced system offsets pressure differentials across the packer. By adjusting the setting shear values, the "DH-I" can be used on multi-packer single string completions where it is desirable to selectively set and test each packer individually.

All parts are positively locked to prevent pre-setting of the packer due to pressure build-up or debris while going in the hole. The SAPEX / DL Model "DH-I" Double Grip Hydraulic Production Packer is released by straight pick-up of the tubing string.

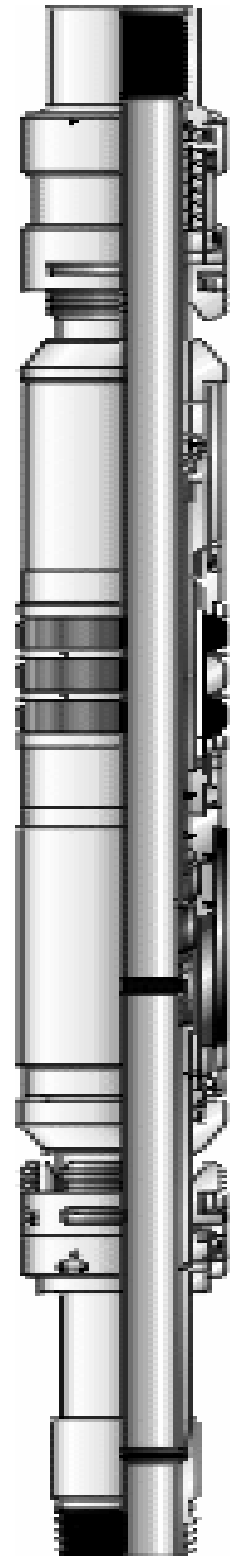
KEY PERFORMANCE FEATURES :

-  Holds differential pressures securely from above or below
-  SAPEX "SYNCREL 2000" upper slip releasing system
-  Full bore for unrestricted flow and passage of wireline tools
-  Large bypass for pressure equalization and debris cleaning
-  Heavy-Duty end subs for repeated make-up and break-out
-  Field adjustable emergency tension shear release
-  Simple and Easy to Redress

TOOL SPECIFICATIONS :

TOOL ASSEMBLY	PACKER TO RUN IN CASING SIZE & WEIGHT		PACKER TO RUN IN CASING I.D. RANGE [IN.]		TOOL DIMENSIONS [IN.]		TOOL CONNECTION SIZE AND THREAD
	IN.	PPF	MIN. I.D.	MAX. I.D.	MAX O.D.	MIN I.D.	
350-55-000	5-1/2	13.0-20.0	4.778	5.044	4.625	2.000	2-3/8" EUE 8 RD
350-56-000	5-1/2	20.0-23.0	4.670	4.778	4.500	2.000	2-3/8" EUE 8 RD
350-65-000	6-5/8	20.0-24.0	5.921	6.094	5.750	2.500	2-7/8" EUE 8 RD
350-71-000	7	26.0-35.0	6.004	6.276	5.875	3.000	3-1/2" EUE 8 RD
350-75-000	7-5/8	29.7-39.0	6.625	6.875	6.250	3.000	3-1/2" EUE 8 RD

- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT
- MAXIMUM O.D IS MEASURED ACROSS COMPRESSED DRAG BLOCKS



SAPEX-DL COMPLETION EQUIPMENT MODEL "DH-II" DOUBLE GRIP DUAL HYDRAULIC PACKER

The SAPEX / DL Model "DH-II" Double Grip Dual Hydraulic Production Packer is a hydraulic set, mechanically held, dual string production packer run above a single string hydraulic set or wireline set seal bore packer.

The short length design of the SAPEX / DL Model "DH-II" Double Grip Dual Hydraulic Production Packer makes it ideal for deviated wells or doglegs. Because no tubing manipulation is required to set the Model "DH-II", the wellhead can be installed and flanged up before setting.

The Model "DH-II" Double Grip Dual Hydraulic Production Packer is available with short or long string setting capabilities and a variety of tubing connections. It is also adaptable for submersible pump applications.

The SAPEX / DL Model "DH-II" Double Grip Dual Hydraulic Production Packer features a sequential upper slip release system designed to release each slip individually, reducing the pull required to release the packer. Due to the angles on the upper slips and upper slip cage, slips release smoothly from the casing.



KEY PERFORMANCE FEATURES :

- Holds differential pressures securely from above or below
- SAPEX "SYNCREL 2000" upper slip releasing system
- Setting cylinder below the packing elements
- Full bore for unrestricted flow and passage of wireline tools
- Setting shear pin values easily field adjusted
- Releasing shear pin values easily field adjusted
- Releasing shear pins not affected by pressure differentials
- Short, economical design. Easy to redress.

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Max. O.D. of Tool (IN.)	Long String		Short String		Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.		Connection. Box up/Pin down	Mandrel I.D. (IN.)	Connection. Box up/Pin down	Seal Bore I.D. (IN.)	
5-1/2	14-20	4.778	5.012	4.625	1.900 NU 10 RD	1.500	1.660 NU 10 RD	1.375	90555
7	26-32	6.094	6.276	5.938	2-3/8 EUE 8 RD	1.938	2-3/8 NU 10 RD	1.938	90570
7	17-26	6.276	6.538	6.000	2-3/8 NU 10 RD	1.938	2-3/8 NU 10 RD	1.938	90572

* Other sizes and connections available on request

SAPEX-DL COMPLETION EQUIPMENT MODEL "DG-IXW" WIRELINE SET PRODUCTION PACKER

The SAPEX / DL Model "DG-IXW" Single String Double Grip Production Packer is one of the most versatile packers on the market. It is a modification of the SAPEX / DL Model "DG-I" packer with the advantage of being able to set on electric line or hydraulically.

An On-Off Tool Stinger with Wireline Plug accessory installed can be attached to the top of the Model "DG-IXW" packer which can then be lubricated in the hole and set under pressure. Once set, casing pressure can be bled off and the tubing, with an On-Off Tool Overshot, can be run and latched onto the packer. The Wireline Plug can then be removed.

The SAPEX / DL Model "DG-IXW" Single String Double Grip Production Packer converts to a mechanically set "DG-I" by removing the shear screws and installing drag blocks. The Model "DG-IXW" sets with 1/4 right hand rotation; releases with 1/4 right hand rotations and can be left in tension, compression or neutral.

KEY PERFORMANCE FEATURES :

- Wireline or Tubing set
- SAPEX "SYNCREL 2000" sequential releaser upper slip system
- Bypass valve opens before upper slips are released
- 1/4 turn to set, 1/4 turn to release ("DG-I" Model)
- Available in shear release



TOOL SPECIFICATIONS :

Casing		Casing I.D. Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
2-7/8	6.4-6.5	2.441	2.441	2.25	0.63	1.050 EUE	60325
3-1/2	7.7-10.2	2.922	3.068	2.781	1.25	1.900 NU	60335
3-1/2	12.95	2.750	2.75	2.562	1.00	1.660 EUE	60336
4	9.5-11	3.476	3.548	3.250	1.50	1.900 EUE	60340
4	12.95	3.340	3.340	3.187	1.50	1.900 EUE	60341
4-1/2	18.8	3.640	3.640	3.437	1.50	1.900 EUE	60342
4-1/2	15.1-16.9	3.740	3.826	3.594	1.50	1.900 EUE	60343
4-1/2	15.1	3.826	3.826	3.656	1.94	2-3/8 EUE	60344
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	60345
4-1/2	15.1	3.826	3.826	3.641	1.94	2-3/8 EUE	60346
5	11.5-15	4.408	4.560	4.125	1.94	2-3/8 EUE	60350
5	18-20.8	4.156	4.276	4.000	1.94	2-3/8 EUE	60352
5-1/2	14-20	4.778	5.044	4.625	2.00	2-3/8 EUE	60355
5-1/2	15.5-17	4.892	4.95	4.625	2.38	2-7/8 EUE	60356
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	60357
5-1/2	13-14	5.012	5.044	4.813	2.38	2-7/8 EUE	60358
5-1/2	20-23	4.670	4.778	4.500	2.38	2-7/8 EUE	60359
6	17-20	5.352	5.450	5.188	2.38	2-7/8 EUE	60360
6	14-16	5.500	5.552	5.188	2.38	2-7/8 EUE	60361
6-5/8	24-32	5.675	5.920	5.500	2.50	2-7/8 EUE	60365
6-5/8	32-34.5	5.575	5.675	5.312	2.50	2-7/8 EUE	60366
6-5/8	17-24	5.921	6.135	5.750	2.50	2-7/8 EUE	60367
6-5/8	20-24	5.921	6.049	5.750	3.00	3-1/2 EUE	60368
6-5/8	20	6.049	6.049	5.812	3.00	3-1/2 EUE	60369
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	60370
7	29-35	6.004	6.184	5.812	2.50	2-7/8 EUE	60371
7	26-32	6.094	6.276	5.875	3.00	3-1/2 EUE	60373
7-5/8	24-29.7	6.875	7.025	6.672	2.50	2-7/8 EUE	60375
7-5/8	33.7-39	6.625	6.765	6.453	2.50	2-7/8 EUE	60376
7-5/8	33.7-39	6.625	6.765	6.453	3.00	3-1/2 EUE	60377
7-5/8	24-29.7	6.875	7.025	6.672	3.00	3-1/2 EUE	60378
8-5/8	28-40	7.725	8.017	7.500	4.00	4-1/2 EUE	60382
8-5/8	24-40	7.725	8.097	7.500	2.50	2-7/8 EUE	60385
8-5/8	44-49	7.511	7.625	7.312	2.50	2-7/8 EUE	60386
8-5/8	28-40	7.725	8.017	7.500	3.00	3-1/2 EUE	60387
9-5/8	43.5-53.5	8.535	8.755	8.250	4.00	4-1/2 EUE	60395
9-5/8	32.3-43.5	8.755	9.001	8.500	4.00	4-1/2 EUE	60396
10-3/4	32.75-45.5	9.560	10.192	9.700	4.00	4-1/2 EUE	60301
10-3/4	45.5-51	9.85	9.95	9.625	4.00	4-1/2 EUE	60302
10-3/4	51-65.7	9.560	9.850	9.312	4.00	4-1/2 EUE	60310
11-3/4	42-65.0	10.682	11.084	10.438	4.00	4-1/2 EUE	60311
13-3/8	54.5-77	12.275	12.615	12.00	4.00	4-1/2 EUE	60313

* Other sizes and connections available on request

SAPEX-DL COMPLETION EQUIPMENT MODEL "B" PERMANENT SEAL BORE PRODUCTION PACKER

The SAPEX / DL Model "B" Permanent Seal Bore Production Packer is a high pressure rated permanent seal bore packer which is adaptable to a variety of completion designs.

The Model "B" Permanent Seal Bore Production Packer utilizes a state-of-the-art 3 piece multi-hardness packing element stack, with metal back-up support rings which provide a solid metal-to-metal contact with the casing ID when the tool is set; in order to prevent elastomeric extrusion under high temperature and pressures. It also features an internal ratchet lock which solidly locks the dynamic setting forces that are transferred into the packing element during the setting process.

The design of the wireline slip on the Model "B" Permanent Seal Bore Production Packer eliminates the danger of a premature set while running the tool into the well. The case carburized slip ring securely anchors the packer in all casing grades.

On electric line, the Model "B" Permanent Seal Bore Production Packer is set using a standard size 20, Model E-4 (or equivalent) pressure setting gun, utilizing a SAPEX wireline adapter kit. It may also be run and set on tubing using a SAPEX mechanical or hydraulic setting tool.

The standard Model "B" Permanent Seal Bore Production Packer features a top sub that accepts both a plain locator or a J-Latch locator sub. It is also equipped with a wireline entry guide bottom.

The SAPEX / DL Model "B" Permanent Seal Bore Production Packer allows the operator complete flexibility in designing the completion, with a full range of packer bottoms and tubing seal assembly options that are designed to suit all operational parameters and installation requirements.

KEY PERFORMANCE FEATURES :

- Holds differential pressures securely from above or below
- Compact and easy to run and set on electric line or tubing
- Sets securely in all casing grades, including P-110 and above
- Rated for 10,000 psi and 500 Deg.F service
- Case carburized solid ring slips for maximum running safety
- Offers a variety of packer bottoms and tubing accessories
- 3 piece packing element system for maximum reliability
- Cast iron slips for faster mill-out times



TOOL SPECIFICATIONS :

Casing Size (IN.)	Casing Weight (LBS./FT.)	Max O.D. of Tool (IN.)	Packer Bore (IN.)	Min. Bore Thru Seals (IN.)	Part Number
3-1/2	7.7-10.2	2.750	1.750	1.187	67235
4-1/2	9.5-13.5	3.750	2.688	1.938	67245
4-1/2	15.1	3.600	2.500	1.910	67246
4-1/2	13.5-15.1	3.650	2.688	1.938	67247
5	15-20	3.968	2.688	1.938	67250
5-1/2	13-17	4.563	3.000	2.375	67255
5-1/2	13-17	4.563	2.688	1.938	67055
5-1/2	17-23	4.422	3.000	2.375	67256
5-1/2	17-23	4.437	2.688	1.938	67056
5-1/2	23-26	4.250	2.688	1.938	67057
6-5/8	17-32	5.468	3.250	2.375	67065
7	17-23	6.000	3.250	2.375	67070
7	23-32	5.813	3.250	2.375	67071
7	32-38	5.594	3.250	2.375	67072
7	17-23	5.969	4.000	3.000	67270
7	23-32	5.813	4.000	3.000	67271
7	32-38	5.594	4.000	3.000	67272
7-5/8	24-39	6.250	3.250	2.375	67075
7-5/8	24-39	6.250	4.000	3.000	67275
9-5/8	36-53.5	8.094	3.250	2.375	67093
9-5/8	36-53.5	8.125	4.750	3.500	67095
9-5/8	36-53.5	8.125	6.000	4.750	67295
10-3/4	40.5-51	9.469	4.000	3.000	67010
10-3/4	40.5-51	9.300	4.000	3.000	67010-9.3

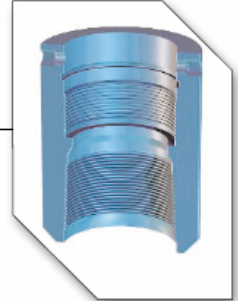
* Other sizes and connections available on request

SAPEX-DL COMPLETION EQUIPMENT MODEL "B" PERMANENT SEAL BORE PRODUCTION PACKER ACCESSORIES



Concentric Bottom

Used to connect a Seal Bore Extension to a packer



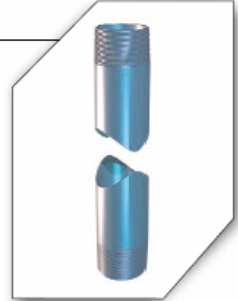
Mill Out Bottom

Used to connect a Mill-Out Extension to packer



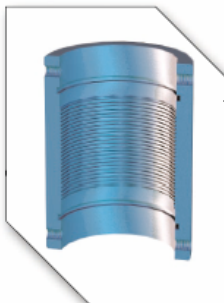
Seal Bore Extension

Used in installations where floating seals are required due to tubing contractions. This packer accessory allows for a continuous seal bore and is available in five to ten foot lengths.



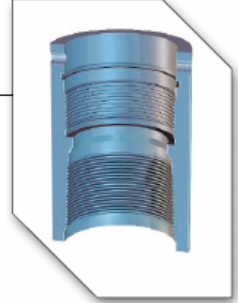
Mill-Out Extension

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 to allow for a packer plucker in cases where the packer is milled out.



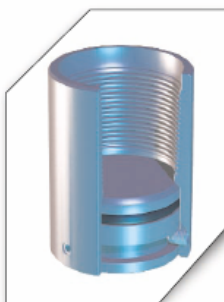
Concentric Coupling

Used to connect a Seal Bore Extension to increase length



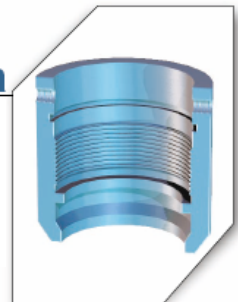
Seal Bore to Mill-Out Coupling

Used to connect Mill-Out Extensions to Seal Bore Extensions



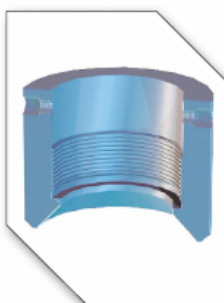
Pump Out Plug

Available with a choice of threads to allow the Pump Out Plug to be attached to a packer, Seal Bore Extension, Mill-Out Extension or tailpipe and hold pressure from below once the packer is set. Once the production string is landed, pressure is applied to the tubing and the Pump Out Plug is removed to allow full opening.



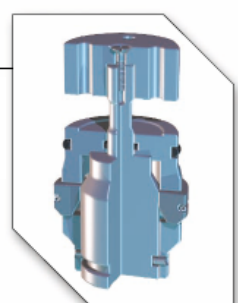
Knockout Plug Bottom

When run below the packer, the Knockout Plug allows a packer to serve as a bridge plug, holding pressure from above.



Wireline Re-Entry Bottom

Used as the packer bottom when extensions below a packer are not required.

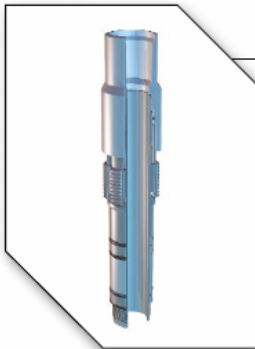
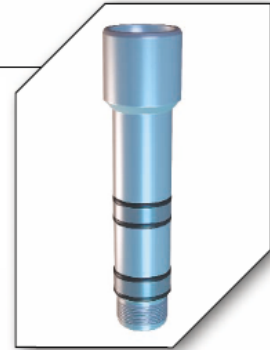


Knock Out Plug

The plug is knocked out when the production string is landed.

Locator Seal Assembly

The SAPEX / DL Locator Seal Assembly is used in installations where floating seals are required. Once landed, the Seal Locator prevents downward movement of the tubing while allowing the seal to move with tubing contraction.

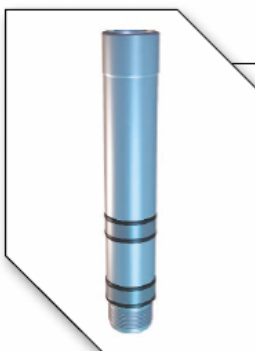
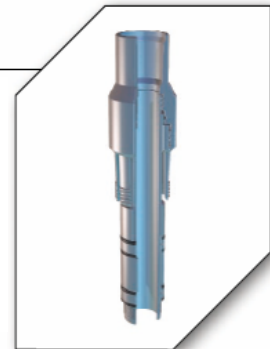


Anchor Latch Assembly

The SAPEX / DL Anchor Latch Seal Assembly is used where floating seals are not required. This assembly allows the tubing string to be in tension or compression. Upon set down, the anchor latches into the packer and can be removed with eight to ten Right Hand turns.

Snap Latch Assembly

Similar to the SAPEX / DL Anchor Latch Seal Assembly, the Snap Latch Seal Assembly latches into the packer upon set down. It can be removed with a straight pull of 10,000 to 12,000 lbs above string weight. The Snap Latch Seal Assembly is used where a mechanical indication is required to verify the seal assembly is properly positioned in the packer bore.

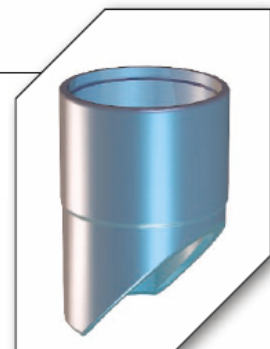


Seal Unit

SAPEX / DL standard seal units are furnished with bonded nitrile rings and a 12 inch make-up length. These units may be ordered in various lengths and with severe service seal rings for high temperature and corrosive environmental conditions.

Half Mule Shoe Guide

The SAPEX / DL Half Mule Shoe Guide is standard with the SAPEX / DL Seal Assembly to allow for easy entry into the packer bore.



SAPEX-DL COMPLETION EQUIPMENT CASING PACKER

The SAPEX / DL CASING PACKER is a large bore single grip tool used to isolate damaged casing and for production or injection. It can be run in tension or compression and can be used as a liner hanger when equipped with a right hand release sub. Coarse, deep wickered slips allow the packer to set in open hole or scaly casing.

For open hole set, the SAPEX / DL CASING PACKER can be equipped with two elongated packing elements to ensure a positive seal.

KEY PERFORMANCE FEATURES :

- Set / Run in tension or compression
- Applicable for set in open hole
- Can be used as a liner hanger
- Full opening
- Coarse, deep wickered slip teeth
- Available with RH or LH set – manual or automatic release

TOOL SPECIFICATIONS :

Casing		Tubing/ Casing (IN)	Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)		Min.	Max.				
4-1/2	9.5-13.5	2-7/8	3.920	4.090	3.750	2.50	2-7/8 EUE	44045
5	11.5-20.3	2-7/8	4.184	4.560	4.000	2.50	2-7/8 EUE	44050
5-1/2	13-20	3-1/2	4.778	5.044	4.625	3.00	3-1/2 EUE	44055
5-1/2	13-17	4	4.892	5.044	4.650	3.50	4 NU	44056
5-3/4	14-17	4	5.190	5.290	4.875	3.50	4-1/2 EUE	44057
6	18-20	4	5.352	5.424	5.188	3.50	4 EUE	44060
6-5/8	20-28	4-1/2	5.791	6.049	5.625	4.00	4-1/2 LTC	44065
7	17-38	4-1/2	5.920	6.538	5.750	4.00	4-1/2 LTC	44070
7	20-29	5	6.184	6.456	5.969	4.50	5 LTC	44071
7-5/8	20-33.7	4-1/2	6.765	7.125	6.500	4.00	4-1/2 LTC	44075
7-5/8	20-33.7	5-1/2	6.765	7.125	6.500	5.00	5-1/2 LTC	44076
8-5/8	24-40	4-1/2	7.725	8.097	7.500	4.00	4-1/2 LTC	44084
8-5/8	24-40	5-1/2	7.725	8.097	7.500	5.00	5-1/2 LTC	44085
8-5/8	24-36	6-5/8	7.825	8.097	7.656	6.00	6-5/8 LTC	44086
8-5/8	24-36	7	7.825	8.097	7.656	6.50	7 LTC	44087
9-5/8	32.3-43.5	7	8.755	9.001	8.500	6.50	7 LTC	44095
10-5/4	32.7-55.5	7	9.760	10.192	9.500	6.50	7 LTC	44010
11-3/4	42-65	8-5/8	10.682	11.084	10.500	8.00	8-5/8 LTC	44011
13-3/8	48-77	9-5/8	12.275	12.75	12.000	8.75	9-5/8 LTC	44013
18-5/8	87.5-117.5	13-3/8	17.439	17.755	17.000	12.50	13-3/8 LTC	44018

* Other sizes and connections available on request






SAPEX-DL COMPLETION EQUIPMENT GAS VENT PUMPING PACKER

The SAPEX / DL GAS VENT PUMPING PACKER offers an inexpensive option for isolating casing leaks or depleted perforations in pumping wells.

The SAPEX / DL GAS VENT PUMPING PACKER prevents gas lock by allowing gas to vent to the surface past damaged zones. The interval between top and bottom cups can be any length. Available with single or multiple cups.

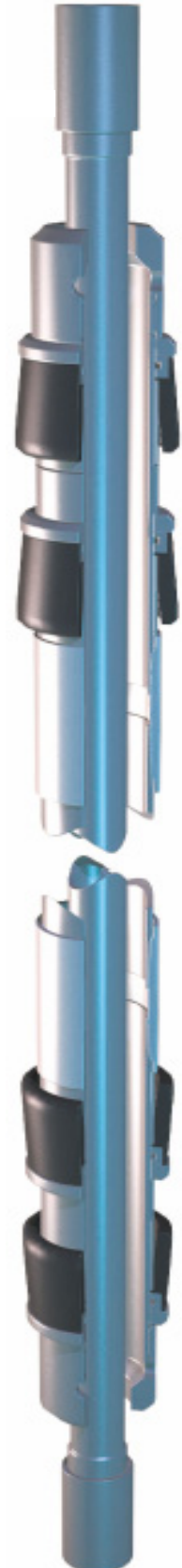
KEY PERFORMANCE FEATURES :

-  Inexpensive alternative to squeeze job
-  Variable intervals easily adjusted
-  Optional single to multiple cups

TOOL SPECIFICATIONS :

Casing Size (IN.)	Tubing Size (IN.)	Liner Size (IN.)	O.D. of Tool (IN.)	I.D. of Tool (IN.)	Part Number
4-1/2	2-3/8	3	3.813	2.69	42045
5-1/2	2-3/8	3	4.625	2.75	42055
5-1/2	2-7/8	3-1/2	4.625	3.19	42056
7	2-7/8	4-1/2	6.000	4.00	42070

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "TM" TUBING ANCHOR CATCHER

The SAPEX / DL Model "TM" Mechanical Tubing Anchor Catcher is a retrievable positive action anchor tool to hold tubing strings in tension or compression during pump strokes to prevent tubing buckling. This increases pumping efficiency while reducing rod and tubing wear.

The SAPEX / DL Model "TM" Mechanical Tubing Anchor Catcher also catches the tubing should it part.

The SAPEX / DL Model "TM" Mechanical Tubing Anchor Catcher features stainless steel drag springs with low stress values to minimize failure under corrosive conditions/

If the SAPEX / DL Model "TM" Mechanical Tubing Anchor Catcher can not be released with right hand rotation, it is equipped with a shear release activated by an upward pull.

KEY PERFORMANCE FEATURES :

- Proven design
- Stainless steel drag springs
- Enclosed slips
- Rotation or shear release
- Safety release valve easily adjusted

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Anchor O.D. (IN.)	Anchor I.D. (IN.)	Thread Connection	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
4-1/2	9.5-13.5	3.920	4.090	3.750	2.00	2.375 EUE	32045
5-1/2	13-23	4.670	5.044	4.500	2.00	2.375 EUE	32055
5-1/2	13-23	4.670	5.044	4.500	2.38	2.875 EUE	32056
6-5/8	20-47.1	5.125	6.049	4.800	2.50	2.875 EUE	32065
7	17-32	6.094	6.538	5.875	3.00	2.875 EUE	32070
7	17-32	6.094	6.538	5.875	2.00	2.375 EUE	32071
7	17-32	6.094	6.538	5.875	3.00	3.500 EUE	32073
9-5/8	32.3-53.5	8.535	9.001	8.250	3.00	3.500 EUE	32095










SAPEX-DL COMPLETION EQUIPMENT MODEL "D" DYNAMIC TORQUE ANCHOR

The SAPEX / DL Model "D" Dynamic Torque Anchor is a heavy duty new tool that is designed to offer a reliable method of preventing tubing back-off due to over-torque buildup in completions using progressive cavity pumps. The unique and simple design of the tool allows for easy running and retrieval in all applications, including deephole, horizontal or heavy oil / paraffin problem installations.

The SAPEX / DL Model "D" Dynamic Torque Anchor is designed to securely and safely anchor the tubing when right hand torque is generated by the pump assembly. The tool features spring loaded anchoring slips which securely grip the casing string ID and prevent the tubing from rotating. The anchoring action is applied immediately when right hand torque is generated. Due to the design of the anchoring slips, the tubing may turn to the left freely.

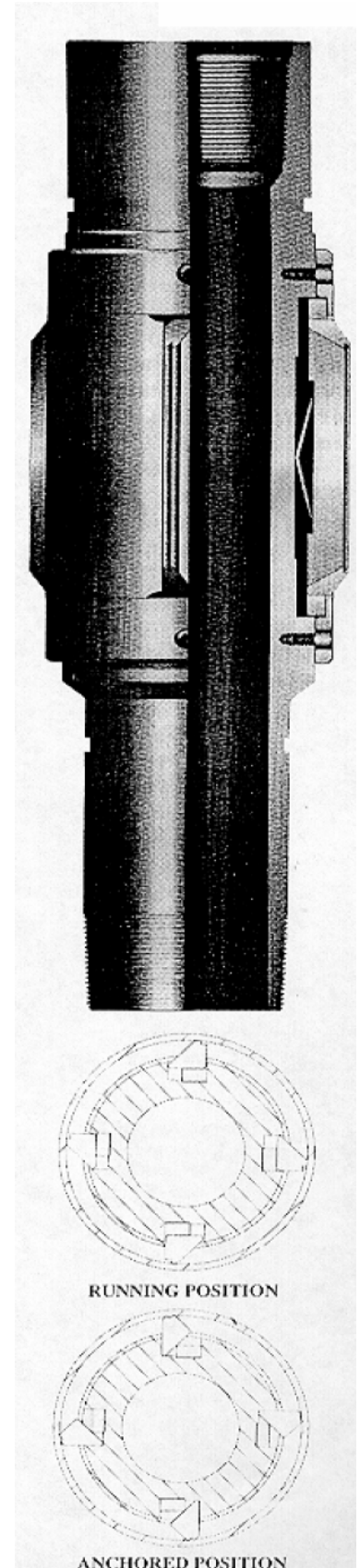
KEY PERFORMANCE FEATURES :

-  Economical, easy to operate
-  Full bore for unrestricted flow
-  Moveable and resettable on the same trip in the hole
-  Activates instantly with Right Hand torque
-  Releases instantly when torque is discontinued
-  Large annular clearance
-  Simple and easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		TOOL O.D. (IN.)	TOOL I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)			
205-45-000	4-1/2	ALL	3.630	2.000	2-3/8" EUE 8 RD.
205-50-000	5	ALL	4.000	2.000	2-3/8" EUE 8 RD.
205-55-000	5-1/2	ALL	4.250	2.500	2-7/8" EUE 8 RD.
205-57-000	5-3/4	ALL	4.500	2.500	2-7/8" EUE 8 RD.
205-60-000	6	ALL	4.750	2.500	2-7/8" EUE 8 RD.
205-65-000	6-5/8	ALL	5.250	3.000	3-1/2" EUE 8 RD.
205-70-000	7	ALL	5.630	3.000	3-1/2" EUE 8 RD.
205-75-000	7-5/8	ALL	6.250	3.000	3-1/2" EUE 8 RD.
205-85-000	8-5/8	ALL	7.250	3.000	3-1/2" EUE 8 RD.
205-95-000	9-5/8	ALL	8.250	4.000	4-1/2" EUE 8 RD.
205-10-000	10-3/4	ALL	9.250	4.000	4-1/2" EUE 8 RD.

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT



SAPEX-DL COMPLETION EQUIPMENT MODEL "RTA" ROTATING TUBING ANCHOR

The SAPEX / DL Model "RTA" Rotating Tubing Anchor Catcher is ran in completions where the tubing may be rotated such as in installations utilizing a rotating tubing hanger. The tool anchors the tubing in tension while allowing the full tubing string, including gas/mud anchors, tailpipe and seating nipples to rotate at the same time.

The SAPEX / DL Model "RTA" Rotating Tubing Anchor Catcher is also ideal for applications where long lengths of tailpipe may be ran below an anchor point, such as in horizontal wells or wells with scab liners, wells with subsidence or casing problems, or other instances where the tubing is anchored safely above the end of the tailpipe.

Setting is easy with 1/4 left hand torque applied at the tool, followed by tension being pulled on the tubing. It is released with 1/4 right hand torque being applied, followed by a slackoff on the tubing. For emergency situations, the SAPEX / DL Model "RTA" Rotating Tubing Anchor Catcher has a built in shear release feature.

When the SAPEX / DL Model "RTA" Rotating Tubing Anchor Catcher is properly set, there is no tool or slip movement during the pump strokes.

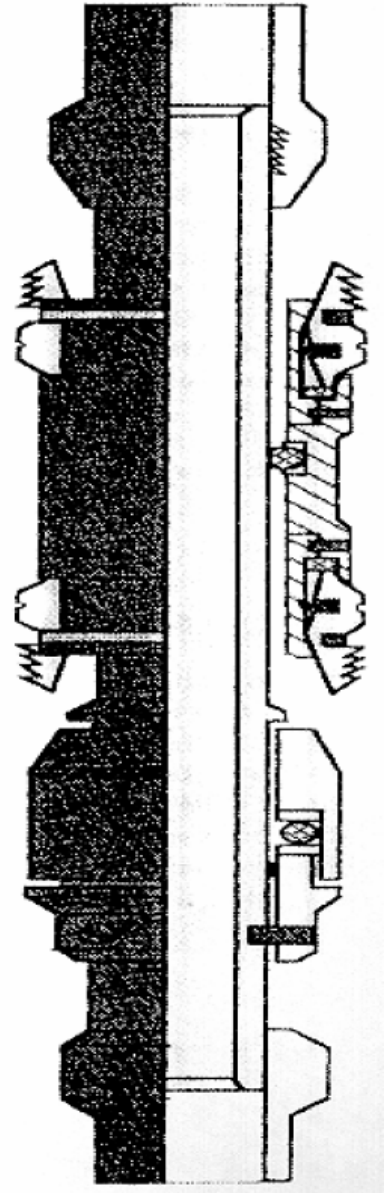
KEY PERFORMANCE FEATURES :

- Economical, easy to operate
- Set and releases easily
- Emergency shear release
- Full bore for unrestricted flow
- Resettable on the same trip in the hole
- Large annular clearance for gas migration around the tool
- Simple and easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		TOOL O.D. (IN.)	TOOL I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)			
455-45-000	4-1/2	9.5-13.5	3.750	1.938	2-3/8" EUE 8 RD.
455-50-000	5	11.5-15.0	4.200	1.938	2-3/8" EUE 8 RD.
455-51-000	5	15.0-18.0	4.000	1.938	2-3/8" EUE 8 RD.
455-55-000	5-1/2	13.0-15.5	4.750	2.375	2-7/8" EUE 8 RD.
455-56-000	5-1/2	17.0-23.0	4.500	2.375	2-7/8" EUE 8 RD.
455-65-000	6-5/8	20.0-28.0	5.500	2.812	2-7/8" EUE 8 RD.
455-66-000	6-5/8	17-20	5.750	2.812	2-7/8" EUE 8 RD.
455-70-000	7	17-29	5.970	2.812	3-1/2" EUE 8 RD.
455-71-000	7	23-35	5.700	2.812	3-1/2" EUE 8 RD.
455-72-000	7	32-38	5.750	2.812	3-1/2" EUE 8 RD.
455-75-000	7-5/8	24-29.7	6.670	2.812	3-1/2" EUE 8 RD.
455-76-000	7-5/8	29.7-45.3	6.400	2.812	3-1/2" EUE 8 RD.
455-85-000	8-5/8	24-40	7.600	3.983	3-1/2" EUE 8 RD.
455-86-000	8-5/8	36-49	7.310	3.983	3-1/2" EUE 8 RD.
455-95-000	9-5/8	32.3-47	8.500	3.983	3-1/2" EUE 8 RD.
455-96-000	9-5/8	40-53.4	8.150	3.983	3-1/2" EUE 8 RD.

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(s) / ELASTOMER(s) DEPENDENT ON CUSTOMER REQUIREMENT



SAPEX-DL COMPLETION EQUIPMENT MODEL "RPSP" RETRIEVABLE PACKER STYLE CASING PATCH

The SAPEX / DL Model "RPSP" Retrievable Packer Style Casing Patch offers a reliable and inexpensive way to isolate bad sections of casing. The ease of setting and releasing the assembly, coupled with the large ID of the tool, make it a very versatile piece of equipment in remedial and other workover operations.

The SAPEX / DL Model "RPSP" Retrievable Packer Style Casing Patch can be run and set on Tubing, Coiled Tubing or Electric Line.

After setting, the SAPEX / DL Model "RPSP" Retrievable Packer Style Casing Patch is locked set, totally independent of the tubing string, which can then be released from the patch and POOH. When setting on Coiled tubing or Electric Line, the assembly can be run through a surface lubricator under "Hot" conditions, eliminating the need for expensive snubbing equipment.

The SAPEX / DL Model "RPSP" Retrievable Packer Style Casing Patch is ideal for water zone shutoff applications, isolating unwanted perforations, casing leaks or damaged casing; and even locating and isolating tubing leaks. The assembly can be run as a scab liner in wells where selected intervals across the production zone need to be isolated and shut off.

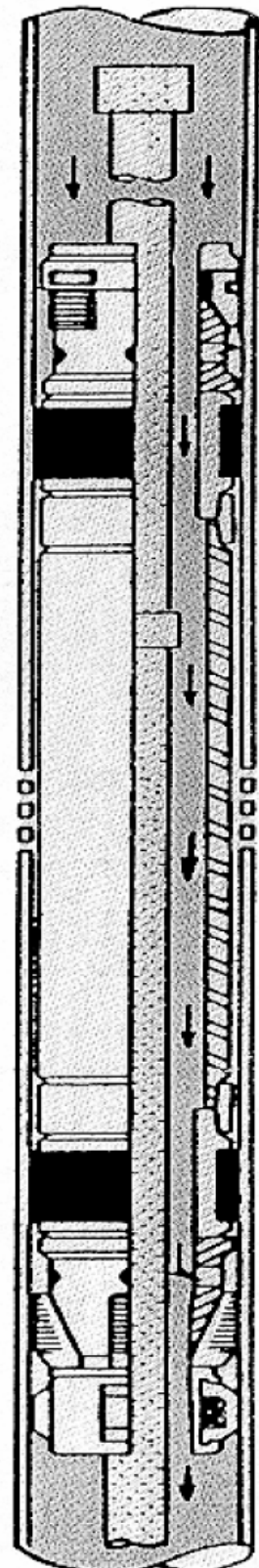
KEY PERFORMANCE FEATURES :

- Economic and reliable
- Set and releases easily
- Full bore for unrestricted flow
- Redressable and reusable
- Simple and easy to redress

TOOL SPECIFICATIONS :

Part Number	Casing		TOOL O.D. (IN.)	TOOL I.D. (IN.)	Thread Connection Box Up/Pin Down
	O.D. (IN.)	Weight (LBS./FT.)			
450-45-000	4-1/2	9.5-13.5	3.771	2.380	2-7/8" EUE 8 RD.
450-55-000	5-1/2	13.0-17.0	4.500	3.000	4" STUB ACME
450-56-000	5-1/2	20.0-23.0	4.500	3.000	4" STUB ACME
450-70-000	7	17-20	6.266	5.000	5-1/2" LTC
450-71-000	7	20-26	6.078	4.500	4-1/2" LTC
450-72-000	7	26-29	5.968	4.500	4-1/2" LTC
450-73-000	7	32-35	5.812	4.500	4-1/2" LTC
450-75-000	7-5/8	20-24	6.812	5.000	5-1/2" LTC
450-76-000	7-5/8	24-29.7	6.672	5.000	5-1/2" LTC
450-77-000	7-5/8	33.7-39	6.453	5.000	5-1/2" LTC
450-85-000	8-5/8	24-28	7.781	5.000	5-1/2" LTC
450-86-000	8-5/8	32-40	7.531	5.000	5-1/2" LTC
450-87-000	8-5/8	44-49	7.312	5.000	5-1/2" LTC
450-95-000	9-5/8	29.3-36	8.593	5.000	5-1/2" LTC
450-96-000	9-5/8	40-47	8.437	5.000	5-1/2" LTC
450-97-000	9-5/8	47-53.5	8.218	5.000	5-1/2" LTC

- MAXIMUM O.D. MEASURED ACROSS COMPRESSED DRAG BLOCKS
- OTHER SIZES AVAILABLE ON REQUEST
- MATERIAL AND SEAL(S) / ELASTOMER(S) DEPENDENT ON CUSTOMER REQUIREMENT



SAPEX-DL COMPLETION EQUIPMENT MODEL "K" TUBING EXPANSION JOINT

The SAPEX / DL Model "K" Expansion Joint is used to allow expansion and contraction during injection or production operations. It is also used between packers to allow stroke for setting and releasing packers and provides for rotation through the tool.

The SAPEX / DL Model "K" Expansion Joint is available with optional seals for low to high temperatures and in lengths up to 20 feet.

KEY PERFORMANCE FEATURES :

- Premium failsafe seals
- Keyed for rotation
- Full tubing ID

TOOL SPECIFICATIONS :

Tubing Size (IN.)	Tool O.D. (IN.)	Tool I.D. (IN.)	Tubing Connection	Part Number
2-3/8	3.25	2.00	2-3/8 EUE	53820
2-7/8	3.75	2.50	2-7/8 EUE	53825
3-1/2	4.50	3.00	3-1/2 EUE	53835

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "KT" THERMAL EXPANSION JOINT

The SAPEX / DL Model "KT" Thermal Expansion Joint has been developed based on a well proven design. Utilizing the SAPEX "THERMOLD SEAL" which effectively and efficiently seals on the seal stinger, the assembly is ideal for use in the severe downhole conditions of steamflood applications. The tool's rugged design holds pressure differentials both from above and below. Movement of the seals within the body section allows for full stroke travel during downhole operations.

The SAPEX / DL Model "KT" Thermal Expansion Joint is used to allow expansion and contraction during injection or production operations. It is also used between packers to allow stroke for setting and releasing packers and provides for rotation through the tool.

The SAPEX / DL Model "KT" Thermal Expansion Joint is available in lengths up to 20 feet.

KEY PERFORMANCE FEATURES :

- Utilizes the "SAPEX THERMOLD" Seal
- Heavy duty end connections for repeated make-up and break-out
- Transmits torque through the tool, via integral spline system
- Eliminates tubing buckling and/or excess tension forces caused by expansion / contraction
- Easy to install, simple and easy to redress

TOOL SPECIFICATIONS :

Tubing Size (IN.)	Tool O.D. (IN.)	Tool I.D. (IN.)	Tubing Connection	Part Number
2-3/8	3.25	2.00	2-3/8 EUE	53820-T
2-7/8	3.75	2.50	2-7/8 EUE	53825-T
3-1/2	4.50	3.00	3-1/2 EUE	53835-T

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT PUMP OUT CEMENTING SLEEVE

The SAPEX / DL PUMP OUT CEMENTING SLEEVE is used for cementing tubing strings in both cased and open holes. It allows for internal parts to be pumped out after the cementing process, leaving a full open bore with no loss of tubing strength.

The SAPEX / DL PUMP OUT CEMENTING SLEEVE is available in any material necessary to meet customers' needs. A basket or packer placed below the sleeve provides a seal-point for pumping cement up outside of the tubing string.

OPERATIONS :

Simplicity is the key to the SAPEX / DL PUMP OUT CEMENTING SLEEVE. Pressure applied to the trip ball moves the lower piston past the cementing ports, allowing cement to be pumped outside the tubing string. After the desired amount of cement has been placed, the wiper plug is pumped down to the sleeve and moves the upper piston and outer sleeve over the cementing ports. Pins are then sheared and the upper and lower pistons are pumped out of the bottom of the tool, leaving a full and unrestricted opening through the sleeve. The outer sleeve is locked in the closed position.

TOOL SPECIFICATIONS :

Size (IN.)	Min. I.D. (IN.)	Max. O.D. (IN.)	Thread Connection	I.D After Pump-out	Part Number
2-3/8	1.00	3.250	2-3/8 EUE	1.92	22020
2-7/8	1.25	3.750	2-7/8 EUE	2.40	22027
3-1/2	1.25	4.410	3-1/2 EUE	2.90	22035
4	1.25	4.625	4 NU	3.45	22040
4-1/2	1.25	5.500	4-1/2 8RD	3.97	22045
5-1/2	1.25	6.130	5-1/2 8RD	4.62	22055

* Other sizes and connections available on request



**SAPEX-DL COMPLETION EQUIPMENT
PUMP-OUT PLUG**

The SAPEX / DL PUMP-OUT PLUG is available with a choice of threads allowing installation to the bottom of the tubing string to isolate the tubing from the annulus.

To remove the plug, pressure is applied to the tubing and the SAPEX / DL PUMP-OUT PLUG is removed to allow full opening. The pump out pressure value is easily adjusted in the field.



TOOL SPECIFICATIONS :

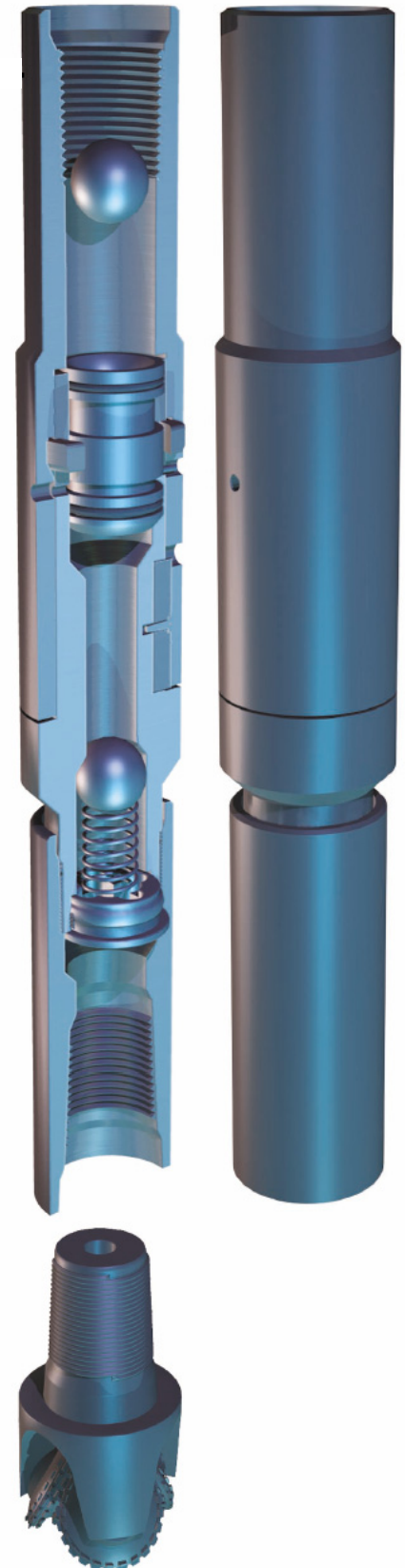
Plug O.D. (IN)	Thread Connection	Part Number
2.200	1.660 EUE	59716E
2.062	1.660 NU	59716N
2.500	1.900 EUE	59719E
2.200	1.900 NU	59719N
3.063	2-3/8 EUE	59720
3.670	2-7/8 EUE	59727
4.500	3-1/2 EUE	59735

* Other sizes and connections available on request

SAPEX-DL COMPLETION EQUIPMENT MODEL "SBR" BIT RELEASE ASSEMBLY

The SAPEX / DL Model "SBR" Bit Release Assembly is used in operations for drilling out cement, cast iron bridge plugs and other drillable tools and thereby leaving the drill string intact as the production string.

The SAPEX / DL Model "SBR" Bit Release Assembly's spring loaded check valve prevents tubing back flow during drill-out. After drill-out, a ball is dropped through the drill string and seats in the piston. Pressure applied to the drill string forces the drill bit to release and fall to the bottom of the hole.



TOOL SPECIFICATIONS :



Top Connection	Bottom Connection	Tool O.D.	Part Number
2-3/8 8RD EUE	2-3/8 REG. DRILL PIPE	3.67	80020020
2-3/8 8RD EUE	2-7/8 REG. DRILL PIPE	3.75	80020025
2-7/8 8RD EUE	2-3/8 REG. DRILL PIPE	3.67	80025020
2-7/8 8RD EUE	2-7/8 REG. DRILL PIPE	3.75	80025025
2-7/8 8RD EUE	3-1/2 REG. DRILL PIPE	4.25	80025030

* Other sizes and connections available on request

SAPEX-DL COMPLETION EQUIPMENT DOWNHOLE TUBING / CASING SWIVEL

The SAPEX / DL DOWNHOLE TUBING & CASING SWIVELS isolate tools, casing or tubing from rotation above. Bronze bearing rings insure smooth rotation under load.

KEY PERFORMANCE FEATURES :

-  Simple design for easy redress
-  Full casing / tubing ID

TUBING SWIVEL SPECIFICATIONS :

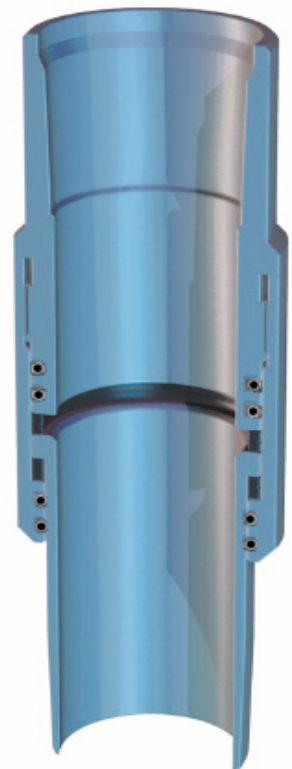
Tubing O.D. (IN.)	Swivel O.D. (IN.)	Swivel I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
1.900	2.750	1.43	1.900 EUE	83019
2-3/8	3.750	2.00	2-3/8 EUE	83020
2-7/8	4.400	2.50	2-7/8 EUE	83025
3-1/2	5.000	3.00	3-1/2 EUE	83035
4-1/2	5.750	4.00	4-1/2 LTC	83045

CASING SWIVEL SPECIFICATIONS :

Casing O.D. (IN.)	Swivel O.D. (IN.)	Swivel I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
7	8.500	6.50	*	48070
9-5/8	12.00	9.00	*	48095

* Casing threads available on request

** Other sizes available on request







SAPEX-DL COMPLETION EQUIPMENT MODEL "ST-2" ON-OFF TOOL

The SAPEX / DL Model "ST-2" On-Off Tool is a tubing seal receptacle allowing isolation of a lower zone using a wireline blanking plug. The tubing string can then be removed from the well. When re-run, the tubing string automatically re-engages to the stinger, and the blanking plug can be retrieved by wireline.

The SAPEX / DL Model "ST-2" On-Off Tool runs above a Model "DG-I", "DG-IXW" or Permanent Packer with Latch Stinger.

KEY PERFORMANCE FEATURES :

-  Blanking Plug seats in top of stinger to prevent debris build-up
-  Bonded seal allows disconnects and reconnects
-  Right or left hand release
-  Milling shoe allows rotation through debris

TOOL SPECIFICATIONS :

Casing/Tubing Size (IN)	Tool O.D. (IN)	Thread Connection Box up/Pin down
2-7/8	2.250	1.900 NU
3-1/2	2.750	1.900 EUE
4	3.250	1.900 EUE
4	3.250	2-3/8 EUE
4-1/2	3.750	2-3/8 EUE
5-1/2	4.500	2-3/8 EUE
5-1/2	4.500	2-7/8 EUE
6-5/8	5.500	2-3/8 EUE
6-5/8	5.500	2-7/8 EUE
6-5/8	6-5/8	3-1/2 EUE
7	5.875	2-3/8 EUE
7	5.875	2-7/8 EUE
7	5.875	3-1/2 EUE
7-5/8	6.375	2-3/8 EUE
7-5/8	6.375	2-7/8 EUE
7-5/8	6.375	3-1/2 EUE
7-5/8	6.375	4-1/2 EUE
8-5/8	7.500	2-3/8 EUE
8-5/8	7.500	2-7/8 EUE
8-5/8	7.500	3-1/2 EUE
8-5/8	7.500	4-1/2 EUE
9-5/8	8.250	2-3/8 EUE
9-5/8	8.250	2-7/8 EUE
9-5/8	8.250	3-1/2 EUE
9-5/8	8.250	4-1/2 EUE
10-3/4	9.000	2-3/8 EUE
10-3/4	9.000	2-7/8 EUE
10-3/4	9.000	3-1/2 EUE
10-3/4	9.000	4-1/2 EUE
11-3/4	10.000	2-3/8 EUE
11-3/4	10.000	2-7/8 EUE
11-3/4	10.000	3-1/2 EUE
11-3/4	10.000	4-1/2 EUE

* Other sizes and connections available on request







SAPEX-DL COMPLETION EQUIPMENT MODEL "E" VALVE

The SAPEX / DL Model "E" Valve converts double grip mechanical packers, like the Model "DG-I" and "DG-IC", into retrievable bridge plugs.

The SAPEX / DL Model "E" Valve is in the open position when running and closed by the rotation required to set the packer. When retrieving, the valve is opened by the rotation required to release the packer. Safety dogs lock the tool and valve together during running and retrieving.

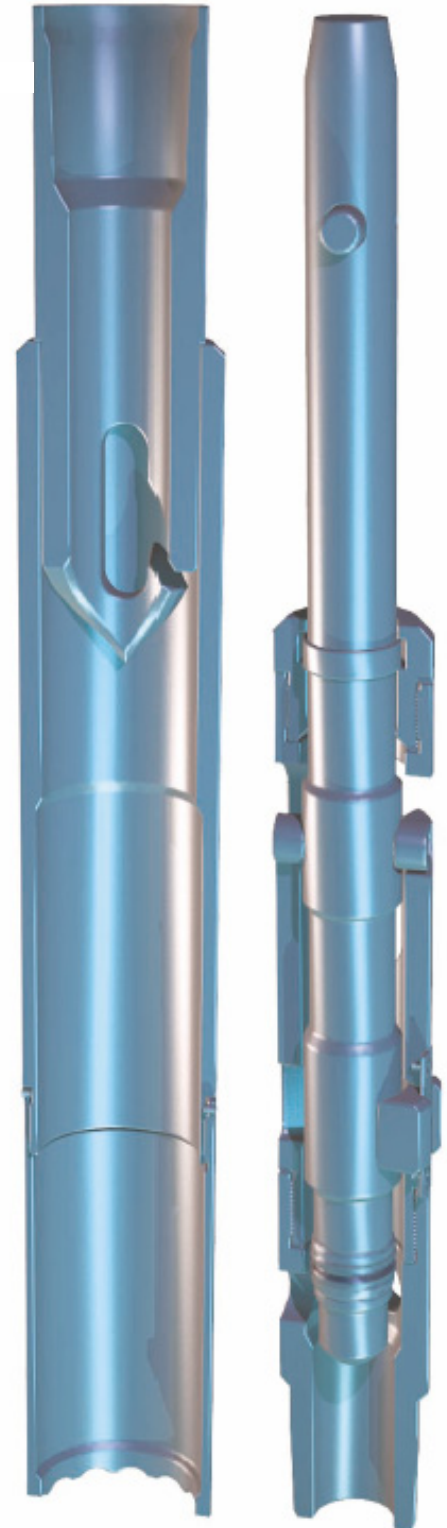
KEY PERFORMANCE FEATURES :

-  Valve locked closed
-  Bonded seals
-  Equalized before releasing packer
-  Safety interlock when running and retrieving

TOOL SPECIFICATIONS :

Casing O.D. (IN.)	Valve O.D. (IN.)	Valvex I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
4-1/2	3.094	1.62	2-3/8 EUE	12445
5-1/2	3.094	1.62	2-7/8 EUE	12455

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT CEMENT PORT COLLAR and SHIFTING TOOL

The SAPEX / DL CEMENT PORT COLLAR provides a full opening stage cementer that needs no plugs or balls to operate. An internal cementing sleeve is opened and closed with pipe manipulation using a shifting tool. Since no plugs are needed, multiple port collars can be run in a casing string. All can be operated with a single workstring trip. The port collar has a full opening to allow other tools to pass without restriction.

The SAPEX / DL CEMENT PORT COLLAR SHIFTING TOOL uses spring loaded blocks that locate in the cementing sleeve providing a tie to the workstring. Once the blocks locate in the sleeve, right hand rotation and manipulation are used to open and close the sleeve. Multiple openings and closings are possible with each port collar.

KEY PERFORMANCE FEATURES :

- Sleeves lock in the open and closed position
- No plug or ball drillout
- Multiple port collars in the same casing string
- Easy location of shifting tool in the port collar

PORT COLLAR SHIFTING TOOL SPECIFICATIONS :

Casing O.D. (IN.)	Tool O.D. (IN.)	Tool I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
4-1/2	3.750	1.250	2-3/8 EUE	21745
5-1/2	4.500	1.250	2-7/8 EUE	21755

* Other sizes and connections available on request

CEMENT PORT COLLAR SPECIFICATIONS :

Casing O.D. (IN.)	Tool O.D. (IN.)	Tool I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
4-1/2	5.750	4.000	4-1/2 8RD	23045
5-1/2	6.750	5.000	5-1/2 8RD	23055

* Other sizes and connections available on request



SAPEX-DL COMPLETION EQUIPMENT MODEL "R" & MODEL "S" TUBING SAFETY JOINTS

The SAPEX / DL Models "R" and "S" Tubing Safety Joints allow positive release of the tubing string in completions or service operations where retrieval problems may be anticipated.

The SAPEX / DL Model "R" Tubing Safety Joint is a Rotational Release model. The SAPEX / DL Model "S" Tubing Safety Joint is a Shear Out / Straight Pull Release model.

TOOL SPECIFICATIONS :

shear out specification Guide

Casing O.D. (IN.)	Packer O.D. (IN.)	Tool I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
1.315	1.750	0.75	1.315 NU	56910N
1.660	2.250	1.25	1.660 EUE	56916E
1.660	2.063	1.25	1.660 NU	56926N
1.900	2.688	1.61	1.900 NU	56919N
2-3/8	3.063	2.00	2-3/8 EUE	56920E
2-7/8	3.688	2.50	2-7/8 EUE	56927E
3-1/2	4.500	3.00	3-1/2 EUE	56935E

* Other sizes and connections available on request

Rotational specification Guide

Casing O.D. (IN.)	Packer O.D. (IN.)	Tool I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
1.66	2.250	1.25	1.660 NU	56816N
2-3/8	3.063	2.00	2-3/8 EUE	56820E
2-7/8	3.688	2.50	2-7/8 EUE	56825E
3-1/2	4.500	3.00	3-1/2 EUE	56835E

* Other sizes and connections available on request



Model "S"
Shear Out Release



Model "R"
Rotational Release









SAPEX-DL SERVICE PACKERS MODEL "HD" RETRIEVABLE TEST, TREAT & SQUEEZE SERVICE PACKER

The SAPEX / DL Model "HD" Retrievable Squeeze Packer is a heavy duty, high pressure, compression set, treating and squeeze packer that is recommended for all types of testing, cementing, squeezing or other workover and service operations.

The Model "HD" packer features an upper hydraulic hold-down system, and a full bore mandrel to allow easy passage of wireline tools, as well as allowing maximum treating pump rates to be obtained. The heavy duty pressure balanced internal bypass system allows the SAPEX "HD" packer to be run and retrieved with minimal pressure surge forces being exerted on the tool and well bore. Efficient cleaning action around the tool, and full wellbore circulation is easily accomplished to effectively displace and spot well treating fluids.

The Model "HD" standard version packer has a 1/4 turn right hand set, straight pickup release, automatic J-slot. The tool is also easily available and convertible to left hand set. As well, the HD packer may be supplied with a left or right hand set manual J-slot. The preferred option should be specified when ordering, if other than the standard version.

KEY PERFORMANCE FEATURES :

-  Holds differential pressures securely from both above and below
-  Heavy duty design
-  Impervious to pressure reversals
-  Sturdy heavy duty pressure actuated hydraulic piston hold down system
-  Available with tungsten carbide inserts on slips, pistons and drag blocks
-  Large bypass for pressure equalization and easy running & retrieving
-  Choice of Automatic or Manual J-Slot control bodies & Choice of RH or LH set
-  Releases with straight pickup [Automatic J-Slot], or with 1/4 turn [Manual J-Slot]

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
4-1/2	9.5-13.5	3.920	4.090	3.750	1.87	2-3/8 EUE	61345
5	11.5-15	4.408	4.560	4.125	1.87	2-3/8 EUE	61350
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	61356
5-1/2	14-20	4.778	5.012	4.625	2.00	2-3/8 EUE	61357
5-1/2	14-20	4.778	5.012	4.625	2.37	2-3/8 EUE	61358
5-1/2	9-13	5.044	5.192	4.812	2.50	2-3/8 EUE	61359
6-5/8	24-32	5.675	5.920	5.500	2.50	2-7/8 EUE	61365
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	61370
7	17-26	6.276	6.538	6.094	2.50	2-7/8 EUE	61372
9-5/8	43.5-53.5	8.535	8.755	8.250	4.00	4-1/2 EUE	61395
9-5/8	32.0-43.5	8.755	9.001	8.500	4.00	4-1/2 EUE	61396
10-3/4	51-65.7	9.560	9.850	9.312	4.00	4-1/2 EUE	61310
10-3/4	32.75-45.5	9.950	10.192	9.700	4.00	4-1/2 EUE	61301

* Other sizes and connections available on request



SAPEX-DL SERVICE PACKERS MODEL "AS-RBP" RETRIEVABLE BRIDGE PLUG

The SAPEX / DL Model "AS-RBP" Retrieval Bridge Plug is a high pressure plug for multiple zone and selective single zone operations such as acidizing, fracturing, cementing and testing. It features a large internal bypass to reduce swabbing when running and retrieving.

The bypass closes when the plug is set. When unsetting, the bypass valve opens before releasing the upper slips to allow pressure equalization. The bypass is located directly below the upper slips to help debris wash when the bypass is open.

The SAPEX / DL Model "AS-RBP" Retrieval Bridge Plug can be set shallow in unsupported casing to contain pressure while working on wellhead equipment.

KEY PERFORMANCE FEATURES :

- Proven design
- 1/4 Right Hand Set and Release (standard)
- Large Bypass
- Can be set shallow or deep
- Pressure equalization prior to release
- High pressure rating
- Additional J-Slot arrangements available on request

TOOL SPECIFICATIONS :

Casing		Casing I.D. Range (IN.)		Tool O.D. (IN.)	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.		
4-1/2	15.1-16.6	3.754	3.826	3.625	72541
4-1/2	9.5-13.5	3.920	4.090	3.750	72545
5-1/2	9-13	5.044	5.192	4.812	72554
5-1/2	13-20	4.778	5.004	4.625	72555
5-1/2	20-23	4.670	4.778	4.500	72557
6-5/8	24-32	5.675	5.920	5.500	72565
7	20-26	6.276	6.456	6.000	72570-G6
7	26-32	6.094	6.276	5.875	72471-G6
7-5/8	24-29.7	6.875	7.025	6.672	72475
8-5/8	24-40	7.725	8.097	7.500	72485
9-5/8	43.5-53.5	8.535	8.755	8.250	72596
9-5/8	32.3-43.5	8.755	9.001	8.500	72595

* Other sizes and connections available on request








SAPEX-DL SERVICE PACKERS MODEL "T" TENSION SQUEEZE SERVICE PACKER

The SAPEX / DL Model "T" Retrievable Tension Squeeze Packer is a tension set packer that holds pressure securely from above or below. The tool can be set at any depth and is used where insufficient weight is available to set a compression packer. This packer is ideal for squeeze cementing, testing, stimulation and straddle operations using a retrievable bridge plug.

The Model "KTC" Tension Unloader is generally run above the Model "T" Tension Squeeze Packer allowing pressure equalization before releasing the packer. It also provides a bypass when running and retrieving to minimize swabbing of the elements.

The Model "T" Tension Squeeze Packer emergency release system incorporates a Left Hand, high ratio thread. Applying Right Hand torque relaxes the packing element and moves the lower cone away from the slips, enabling them to retract.

KEY PERFORMANCE FEATURES :

-  Holds differential pressures securely from both above and below
-  Safety release allows circulation around the slips
-  Full opening
-  Optional setting configuration(s)
-  Bi-directional slips

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
2-7/8	6.16-6.48	2.323	2.441	2.250	0.75	3/4 EUE	62025
4	9.5-11	3.476	3.548	3.250	1.62	2-3/8 EUE	62040
4-1/2	15.1-16.6	3.754	3.826	3.562	1.62	2-3/8 EUE	62041
4-1/2	9.5-13.5	3.920	4.090	3.750	2.00	2-3/8 EUE	62145
5	13-18	4.276	4.494	4.125	2.00	2-3/8 EUE	62150
5	18-20.8	4.156	4.276	4.000	2.00	2-3/8 EUE	62152
5-1/2	14-20	4.778	5.012	4.625	2.00	2-3/8 EUE	62155
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	62157
6-5/8	24-28	5.791	5.921	5.625	2.50	2-7/8 EUE	62065
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	62170
7-5/8	26.4-33.7	6.765	6.969	6.500	2.50	2-7/8 EUE	62075
8-5/8	24-40	7.725	8.097	7.500	2.50	2-7/8 EUE	62085
9-5/8	43.5-53.5	8.535	8.755	8.250	2.50	2-7/8 EUE	62096
9-5/8	32.3-43.5	8.755	9.001	8.500	2.50	2-7/8 EUE	62095

* Other sizes and connections available on request



SAPEX-DL SERVICE PACKERS MODEL "KTC" TENSION UNLOADER






The SAPEX / DL Model "KTC" Tension Unloader provides a means of equalizing differential pressures between tubing and annulus after completing squeeze or other workover operations below the packer. It is designed to run above a SAPEX / DL Tension squeeze packer (such as the Model "TS"), although it is compatible with any tension set packer.

In operation the SAPEX / DL Model "KTC" Tension Unloader remains open while RIH or POOH. The tension applied to set the packer will also close the unloader, and allow the pressure work below the packer to take place.

Opening the SAPEX / DL Model "KTC" Tension Unloader requires a set down force of approximately 3,000 – 5,000 lbs applied on the tool.

The SAPEX / DL Model "KTC" Tension Unloader has a full bore mandrel to allow for maximum treating rates to be pumped. It is available in all common sizes.

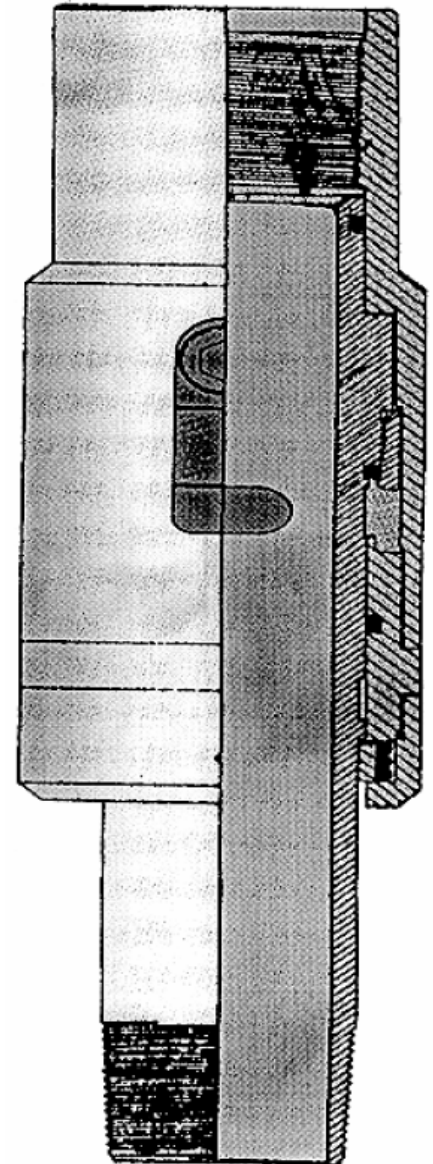
KEY PERFORMANCE FEATURES :

-  Built in friction ring feature to hold in open position for running / retrieving
-  Well proven design
-  Sturdy heavy duty construction
-  Easy to redress and inexpensive
-  Opens with compression, closes with tension

TOOL SPECIFICATIONS :

Part Number	TOOL O.D. (IN.)	TOOL I.D. (IN.)	To Run With Packer Size (IN.)	Thread Connection Box Up/Pin Down
631-40-000	3.250	1.600	4" – 4-1/2"	2-3/8" EUE 8 RD.
631-45-000	3.750	1.995	4-1/2" – 5-1/2"	2-3/8" EUE 8 RD.
631-50-000	4.500	2.000	5" – 7"	2-3/8" EUE 8 RD.
631-65-000	4.750	2.500	6-5/8" – 9-5/8"	2-7/8" EUE 8 RD.
631-70-000	5.500	3.000	7" – 9-5/8"	3-1/2" EUE 8 RD.

• OTHER SIZES AVAILABLE ON REQUEST






SAPEX-DL SERVICE PACKERS MODEL "STRADA-SET" STRADDLE PACKER ASSEMBLY

The SAPEX / DL Model "STRADA-SET" Straddle Packer Assembly is a tool used for selectively acidizing short intervals of casing perforations to evenly break down the formation. The span covered is determined by the spacing between the two sets of packing elements and is adjustable to any distance down to eighteen (18) inches.

The bottom of the Model "STRADA-SET" Straddle Packer Assembly is plugged by using an Equalizing Standing Valve. A Spot Control valve should be run above the assembly to control the tubing hydrostatic pressure across the perforations and contain the acid in the tubing when moving the packer to another perforation.

After locating the assembly across the lower most perforation, the packer is set and the perforation treated. Straight pick up of the tubing releases the packer to be moved up to the next perforation. When retrieving the packer, tubing fluid is dumped through the ports between the packing elements to prevent pulling a wet string.

KEY PERFORMANCE FEATURES :

-  Adjustable spacing between packing elements using Pup Joints
-  Easy to Set & Release
-  Pressure equalization and bypass

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	Packer I.D. (IN.)	Thread Connection Box up/Pin down	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.				
4-1/2	15.1	3.826	3.826	3.656	1.94	2-3/8 EUE	64044
4-1/2	9.5-13.5	3.920	4.090	3.750	1.94	2-3/8 EUE	64045
5-1/2	20-23	4.670	4.778	4.500	2.00	2-3/8 EUE	64055
5-1/2	14-20	4.778	5.012	4.625	2.37	2-7/8 EUE	64556
7	26-32	6.094	6.276	5.875	2.50	2-7/8 EUE	64070
7	17-26	6.276	6.538	6.000	2.50	2-7/8 EUE	64072
7-5/8	24-29.7	6.875	7.025	6.672	2.50	2-7/8 EUE	64075
7-5/8	33.7-39	6.625	6.765	6.453	2.50	2-7/8 EUE	64576

* Other sizes and connections available on request







SAPEX-DL SERVICE PACKERS MODEL "GV-6" ISOLATION PACKER

The SAPEX / DL Model "GV-6" Isolation Packer is an economical way of isolating intervals while maintaining a tubing / casing annulus for injection, production or pumping applications.

Once the SAPEX / DL Model "GV-6" Isolation Packer is set, the tubing string is free to rotate and reciprocate to set a lower packer or tubing anchor.

KEY PERFORMANCE FEATURES :

-  Eliminates costly squeeze cementing
-  One trip run-in
-  Isolation span easily adjustable
-  Retrievable – no permanent casing restriction

TOOL SPECIFICATIONS :

Casing		Casing Range (IN.)		Packer O.D. (IN.)	I.D. Thru Packer (IN.)	Liner Connection	Packer Connection	Part Number
O.D. (IN.)	Weight (LBS./FT.)	Min.	Max.					
4-1/2	9.5-13.5	3.920	4.090	3.750	2.00	3-1/2 NU	2-3/8 EUE	42545
5-1/2	13-20	4.778	5.044	4.625	2.00	3-1/2 EUE	2-3/8 EUE	42555
7	17-26	6.276	6.538	6.000	3.00	5 LTC	3-1/2 EUE	42570
7-5/8	24-29.7	6.875	7.025	6.672	3.00	5 LTC	3-1/2 EUE	42576

* Other sizes and connections available on request



SAPEX-DL SERVICE PACKERS MODEL "C" PERFORATION WASH TOOL








The SAPEX / DL Model "C" Perforation Wash Tool is a dependable cup type selective zone perforation washer that performs with solid efficiency. The rugged design of the tool ensures its performance when used with all types of downhole cleaning fluids and acids. The tool is capable of adequately withstanding the pressures and volumes normally employed to achieve efficient perforation washing results.

The wash spacing on the Model "C" Perforation Wash Tool may be set anywhere from one foot minimum to any desired distance. It is easily adjusted in the field and can be reset for a different spacing within a very short period of time.

The Model "C" Perforation Wash Tool design is a natural choice of many operators due to its track record and solid reputation with consistent performance.

Optional accessory tools to complement the SAPEX / DL Model "C" Perforation Wash Tool are the Model "C-1" Rotational Unloader and the Model "C-2" Spot Control Valve.

KEY PERFORMANCE FEATURES :

-  Proven design
-  Wire reinforced cups for superior performance
-  Straddle spaceout field adjustable on location
-  Allows reverse circulation without tubing manipulation
-  No slips to set – no tubing manipulation required to operate
-  Easy and economical to redress
-  Large flow area to allow for high volume pumping operations

TOOL SPECIFICATIONS :

Pipe Size (IN)	Maximum Metal O.D.	Thread Connection	Part Number
3-1/2	2.81	1.900 NU	46035
4	3.25	1.900 NU	46040
4-1/2	3.69	1.900 NU	46045
5-1/2	4.63	2-7/8 EUE	46055
7	6.00	3-1/2 EUE	46070
7-5/8	6.62	3-1/2 EUE	46075
9-5/8	8.45	3-1/2 EUE	46095
10-3/4	9.71	3-1/2 EUE	46010

* Other sizes and connections available on request



SAPEX-DL SERVICE PACKERS MODEL "R" WIRELINE / MECHANICAL SET PERMANENT BRIDGE PLUG

MODEL "R" WIRELINE / MECHANICAL SET PERMANENT BRIDGE PLUGS

The SAPEX model "R" series permanent bridge plugs are compact sturdy plugs designed for easy operation.

They are available in either of 2 setting style versions. The model "RT" is a top-set design, for top-set style running tools, while the "RB" is a bottom-set style, designed for bottom-set style running tools.

Additionally, both the "RT" and "RB" are available in either of 2 service versions :

The model "RTH" & "RBH" - rated for 10,000 psi at 400 deg F.

The model "RTL" & "RBL" - rated for 5,000 psi at 400 deg F service.

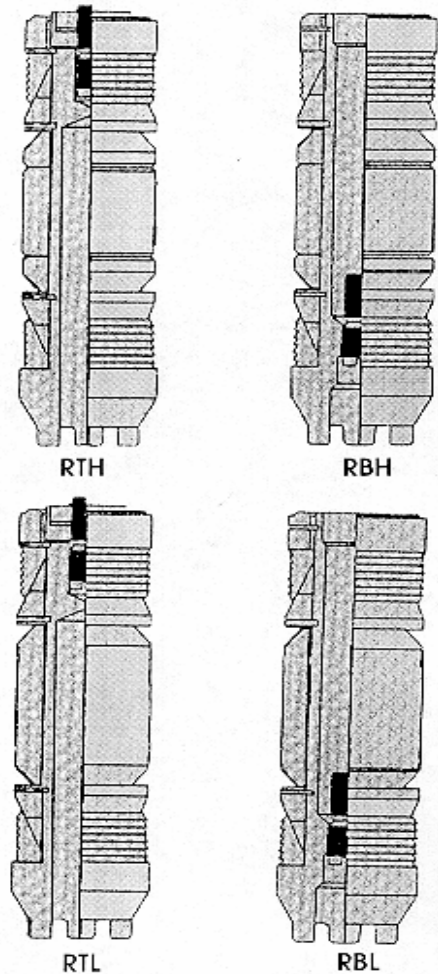
The models "RTH and RBH" feature a 3 piece packing element design with bonded metal backups on the end element sections to prevent elastomeric cold flow under high pressure or temperature.

The models " RTL and RBL" utilize a standard one piece element. The simple yet dependable design of this plug, is reflected in it's modest pricing.

All versions of the SAPEX "R" series permanent bridge plugs set easily on wireline using SAPEX adapter kits, to connect them to a standard pressure setting assembly. They may also be set on tubing using SAPEX mechanical setting tools. In some cases, they may also be ran on certain other selected brand running tools. (Check with your SAPEX distributor for details.)

FEATURES :

- Models "RTH / RBH" rated for 10,000 psi at 400 deg F, with 3 piece packing element system with metal backups
- Models "RTL / RBL" rated for 5,000 psi at 400 deg F, with single piece element design
- Slips set securely in all casing grades through P-110
- Compact, sturdy and economical design
- Cast iron body for fast drillout
- May be set on electric line or on tubing, without modification



TOOL SPECIFICATIONS :

FOR CASING		CASING I.D. RANGE (IN.)		PLUG ASSEMBLY NUMBERS				SETTING TOOLS - ALL SERIES PLUGS			SETTING TENSION REQUIRED		
SIZE (IN.)	WEIGHT (PPF)	MIN.	MAX.	"RTH" TOP-SET HIGH PRESS	"RBH" BTM-SET HIGH PRESS	"RTL" TOP-SET LOW PRESS	"RBL" BTM-SET LOW PRESS	W/L SET ADAPTER KIT FOR MODEL E4 ASSY No	MECHANICAL SET		W/L SET	MECHANICAL SET	
									MECH SETTING TOOL ASSY No	SETTING TOOL BOX UP THREAD	STUD SHEAR VALUE (LBS)	MIN. PULL REQ'D (LBS)	MAX. PULL REQ'D (LBS)
2-3/8	4.7-5.9	1.867	2.041	680-23-100	680-23-200	680-23-300	680-23-400	681-23-500	682-23-500	1.660 NU 10	13,000	8,000	13,000
2-7/8	6.5-8.7	2.259	2.441	680-27-100	680-27-200	680-27-300	680-27-400	681-27-500	682-27-500	1.660 NU 10	13,000	9,000	13,000
3-1/2	7.7-9.3	2.992	3.061	680-35-100	680-35-200	680-35-300	680-35-400	681-35-500	682-35-500	1.900 EUE #	13,000	10,000	13,000
4	5.6-14.0	3.340	3.732	680-40-100	680-40-200	680-40-300	680-40-400	681-40-500	682-40-500	2-3/4" EUE	25,000	15,000	25,000
4-1/2	9.5-11.6	4.000	4.090	680-45-100	680-45-200	680-45-300	680-45-400	681-45-500	682-45-500	2-3/4" EUE	32,000	15,000	32,000
4-7/8	9.5-15.1	3.826	4.090	680-46-100	680-46-200	680-46-300	680-46-400	681-46-500	682-46-500	2-3/4" EUE	32,000	15,000	32,000
5	11.5-24.1	4.000	4.560	680-50-100	680-50-200	680-50-300	680-50-400	681-50-500	682-50-500	2-3/4" EUE	32,000	20,000	32,000
5-1/2	13.0-23.0	4.670	5.047	680-55-100	680-55-200	680-55-300	680-55-400	681-55-500	682-55-500	2-3/4" EUE	32,000	25,000	32,000
6-3/4	20.0-24.0	5.921	6.094	680-65-100	680-65-200	680-65-300	680-65-400	681-65-500	682-65-500	2-7/8" EUE	45,000	25,000	45,000
7	17.0-35.0	6.004	6.538	680-70-100	680-70-200	680-70-300	680-70-400	681-70-500	682-70-500	2-7/8" EUE	45,000	25,000	45,000
7-3/4	20.0-39.0	7.263	6.623	680-75-100	680-75-200	680-75-300	680-75-400	681-75-500	682-75-500	2-7/8" EUE	45,000	30,000	45,000
8-3/4	24.0-49.0	7.511	8.097	680-85-100	680-85-200	680-85-300	680-85-400	681-85-500	682-85-500	2-7/8" EUE	55,000	30,000	55,000
9-3/4	36.0-53.5	8.535	8.921	680-95-100	680-95-200	680-95-300	680-95-400	681-95-500	682-95-500	3-1/2" EUE	55,000	35,000	55,000
10-3/4	32.7-51.0	9.850	10.190	680-10-100	680-10-200	680-10-300	680-10-400	681-10-500	682-10-500	3-1/2" EUE	55,000	40,000	55,000
13-3/4	48.0-72.0	12.340	12.710	680-13-100	680-13-200	680-13-300	680-13-400	681-13-500	682-13-500	3-1/2" EUE	55,000	45,000	50,000

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