

WELL SERVICE PRODUCTS MANUFACTURED AT ACT GERMANY



Hot Oil Pumping Unit



Cementing Unit



Blender



Data Acquisition Unit



Frac Pumping Unit



De Hydration Unit



Manifold Unit



Acid Pumper

American Completion Tools



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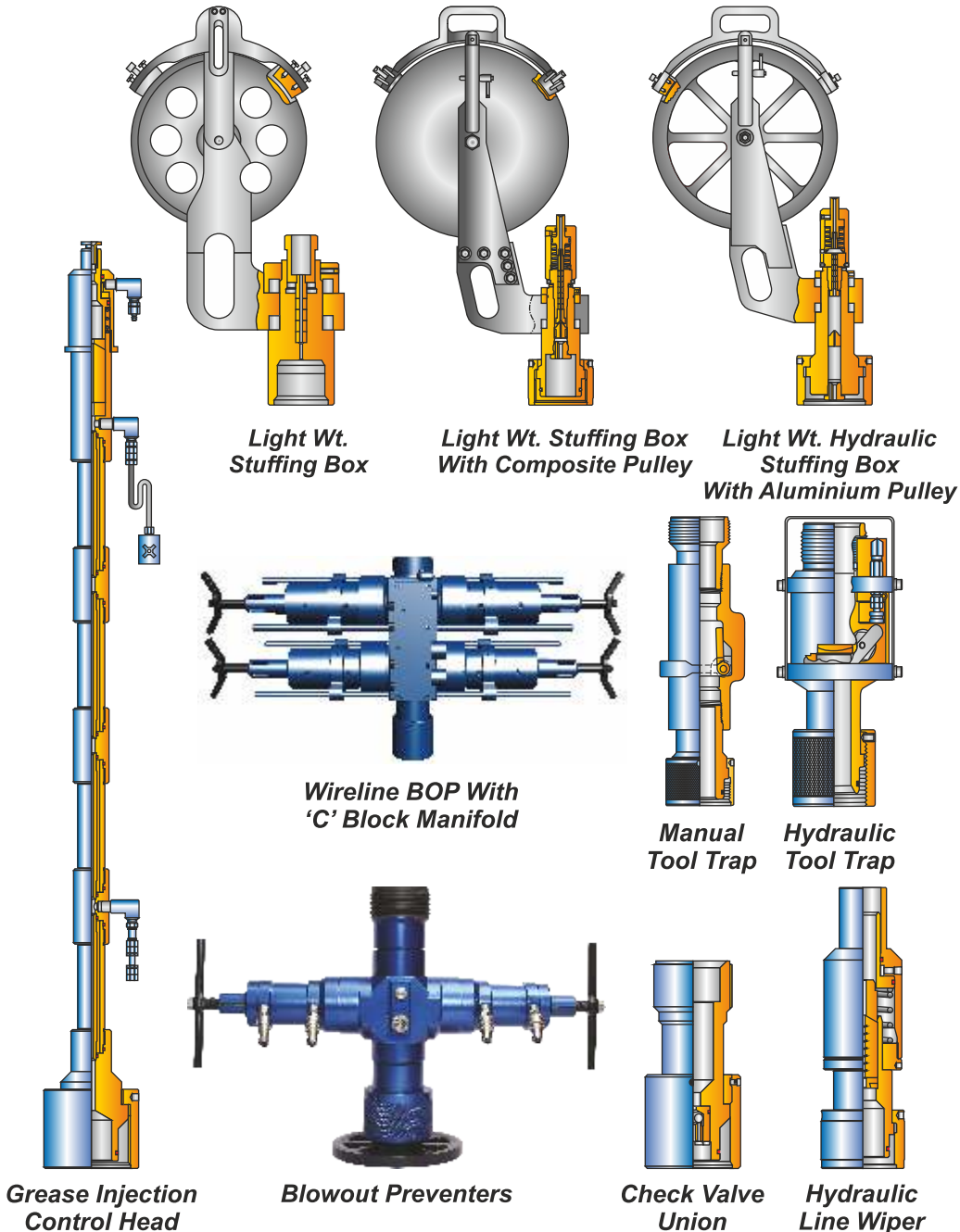
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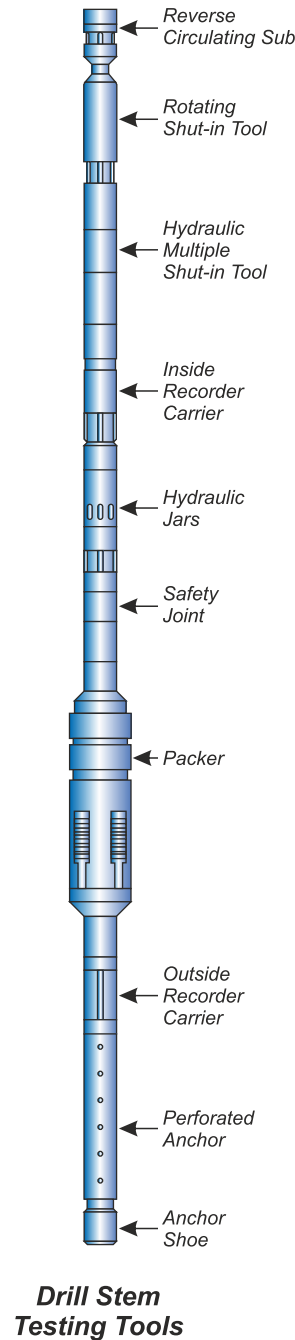
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## WIRELINE SURFACE PRESSURE CONTROL

Complete range of Pressure Control Equipment upto 15,000 psi and size 7" with Wireline Tool Strings and Service Tools.



## DRILL STEM TESTING TOOLS



**Reverse circulating sub:** It is used to circulate fluid from the drill string after DST has been completed and drill string is ready to be removed. There are two types of these subs – Pump out sub and knock out (Bar drop) sub. In pump out sub, the port is opened by applying pressure to the inside of the drill string and shearing out the rupture disc. In knock out sub, a heavy bar is dropped to break the pin in the sub to open the port.

**Rotating shut-in tool:** A rotating shut-in tool is used to obtain flow periods and shut in periods. Available in two flows and two shut-in periods or three flows and three shut in periods, it is run immediately above the hydraulic multiple shut-in tool and operated by right hand rotation of the pipe. The tool is run in open position, but the hydraulic multiple shut-in tool prevents any fluid from entering the test string. Once the testing depth is reached, the multiple shut-in tool is opened and the first flow period begins. Rotating right hand, the tool will shut off the flow for the first shut-in period and rotating again will start second flow period.

**Hydraulic multiple shut-in tool:** It is a downhole valve that allows multiple opening and closing. This tool allows running into the hole with an empty test string. This eliminates the hydrostatic pressure on the formation at setting depth. Multiple shut-in tool is opened by slacking weight on it, and it is a time delayed tool (E.g: 10,000 lbs for 5 minutes). This delayed tool opening avoids accidental opening while running through tight spots in the hole. Picking up the tool string to the neutral weight will close the valve immediately.

**Gauge (Recorder) carrier:** It carries and protects downhole memory gauges. Gauge carriers can be run at multiple locations on the DST string. It contains two internal and two external recorder slots. The gauges are attached to the housing with metal seal connectors and are retained below the O.D. of the carrier to protect the gauges from damage while running the string. The carrier can be configured to provide outside and inside position electronic recorders

**Hydraulic jar:** Hydraulic jar is used to free the stuck section of drill string in cased and open hole testing operations. The jar provides a temporary resistance that allows the drill pipe to be stretched. When the resistance is released, the jar will fire rapidly upward to free the stuck string below. The impact force is dependent on the amount of over pull on the jar as it opens. It is easily reset for repeated use by putting setting down weight on the string.

**Safety joint:** The safety joint provides a means for releasing the tool string from above the packer in the event that packer cannot be released after jarring. This ensures recovery of DST tool and memory gauge data recorded during the well test. The safety joint is released with left hand rotation. The lower portion of the DST string can then be recovered with larger jars or fishing tools.

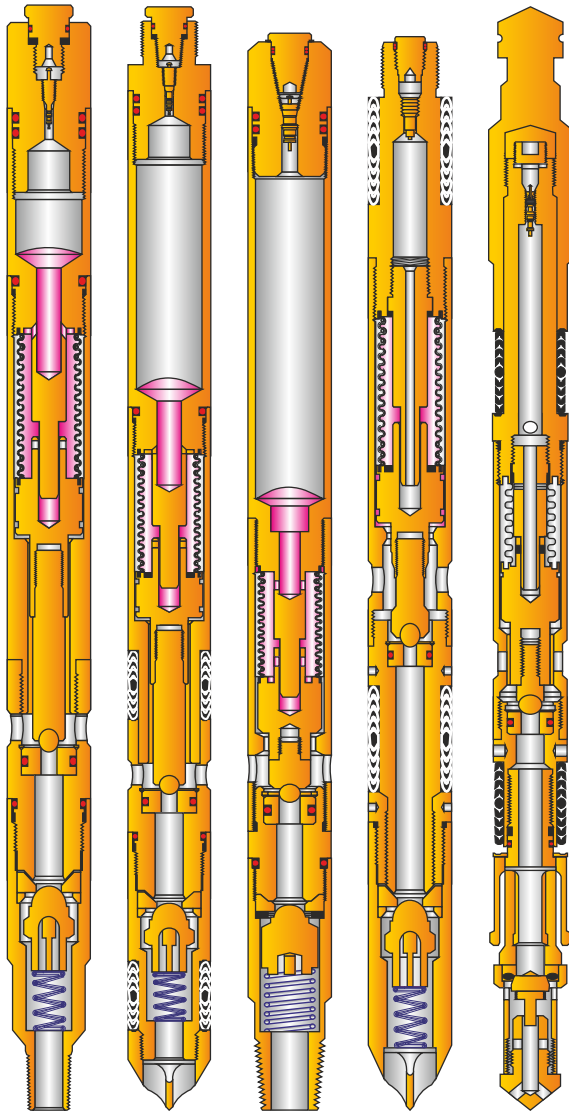
**Packer:** A packer is used to isolate the formation from the rest of the bore hole, thereby forcing the fluid to enter the pipe. In Cased hole DST, a retrievable production packer is used and in open hole, an inflatable or compression set packer is used.

**Perforated anchor:** A perforated anchor is attached at the bottom of the tool string which allows the formation fluid or gas to enter the tool string pipes.

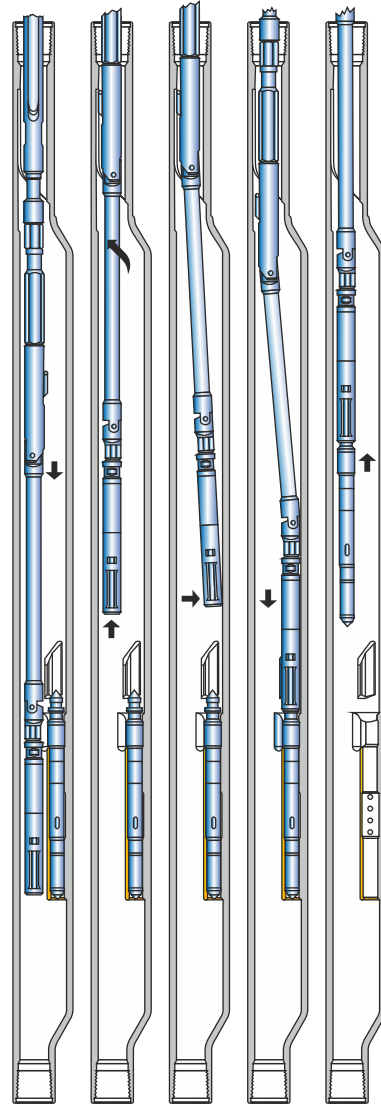
DST tools are available in sizes 3.125", 4.250" and 5.00" and suitable for 10,000 psi WP and H2S service per NACE MR-01-75.

**GAS LIFT EQUIPMENT**

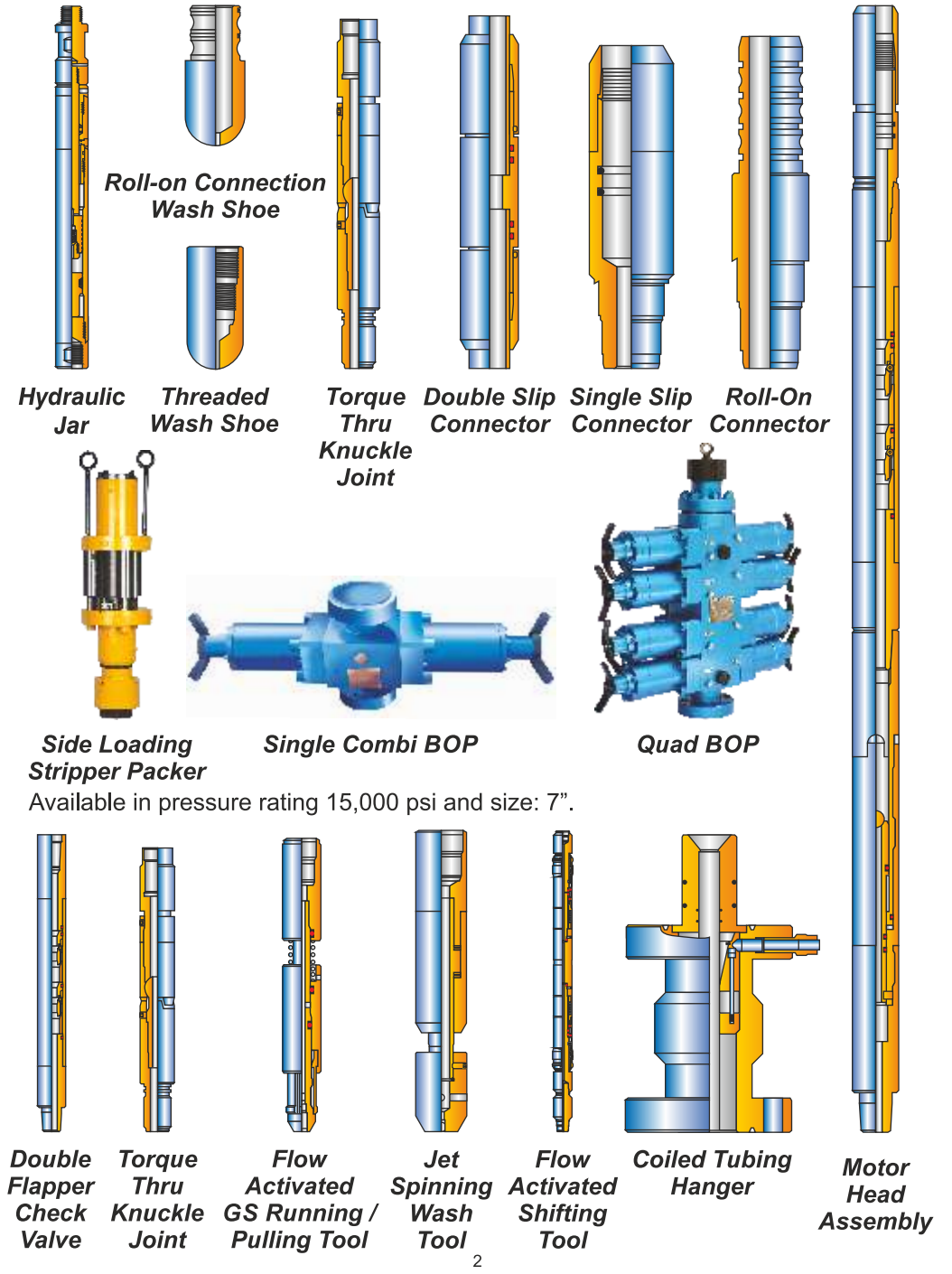
**COIL TUBING EQUIPMENT**



**N-90 N-90R NM-90 NM-90R PBK-1**  
**Injection Pressure Operated Gas Lift Valve**



**Schematic 1 Schematic 2 Schematic 3 Schematic 4 Schematic 5**  
**HD TP Positioning Tools**



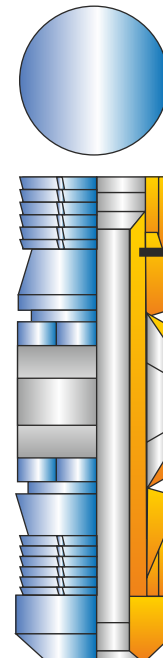
**Roll-on Connection Wash Shoe**  
**Hydraulic Jar Threaded Wash Shoe Torque Thru Knuckle Joint Double Slip Connector Single Slip Connector Roll-On Connector**  
**Side Loading Stripper Packer Single Combi BOP Quad BOP**  
 Available in pressure rating 15,000 psi and size: 7".  
**Double Flapper Check Valve Torque Thru Knuckle Joint Flow Activated GS Running / Pulling Tool Jet Spinning Wash Tool Flow Activated Shifting Tool Coiled Tubing Hanger Motor Head Assembly**

## HAMMER UNIONS

Fig No.	Assly. Colour Key Std. Service	Pressure Rating (PSI)				Normal Pipe size (inch)											
		Standard Service		Sour Service													
		CWP	TP	CWP	TP	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12
50		500	750	NA	NA							✓	✓				
100		1000	1500	1000	1500	✓			✓	✓	✓	✓	✓	✓	✓		
200		2000	3000	2000	3000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
206		2000	3000	2000	3000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
207		2000	3000	2000	3000						✓	✓		✓	✓	✓	
211		2000	3000	2000	3000				✓								
400		4000	6000	4000	6000	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
600		6000	9000	NA	NA			✓	✓		✓						
602		6000	9000	6000	9000	✓	✓	✓	✓	✓	✓	✓					
1002		10000	15000	7500	11250	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1003		10000	15000	7500	11250	✓			✓		✓	✓					
1004		10000	15000	7500	11250							✓	✓				
1502		15000	22500	10000	15000	✓		✓	✓	✓	✓	✓	✓	✓			
2002		20000	30000	NA	NA				✓	✓	✓	✓	✓				
2202		NA	NA	15000	22500				✓	✓	✓	✓	✓				

All above unions are available with threaded (LP, EUE), welded or blind connection. Fig.2202 only available in welded conn. Deviations where pressure is derated as per current manufacturing standards are marked with asterix(\*) and mentioned as \*fig.400 : sizes 5" and above are rated at CWP 2500 psi with TP 3750 psi for standard service. For sour service the pressure ratings are same as standard service \*fig.1002 : sizes 5" and 6" are rated at CWP 7500 psi with TP 11250 psi for standard service. For sour service CWP is 5000 psi with TP 7500 psi \*fig.1003 : sizes 4" and 5" are rated at CWP 7500 psi with TP 11250 psi for standard service. For sour service CWP is 5000 psi with TP 7500 psi. For sour service unions colour code is always olive green. Color can also be provided as per customer requirement.

## FRAC PLUGS WIRELINE SET - BIG BORE FRAC PLUGS



Frac Plug

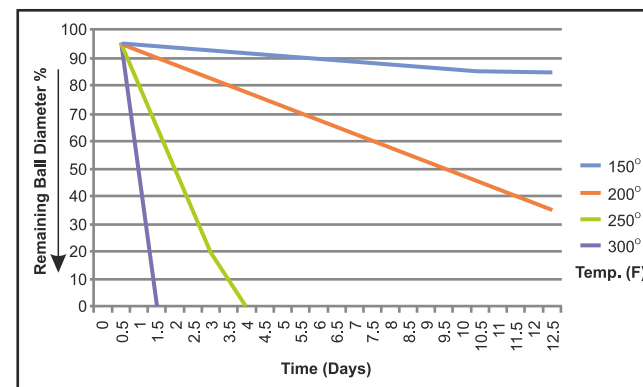
The Big Bore Frac Plug is designed for frac jobs in which a large hole through the plug is required. The plug is supplied with a shear ring to give an accurate and secure set. Also supplied is a ball that will seat on the top of Frac Plug during a fracturing operation. This plug sustains moderate pressures and temperatures.

**Features:**

- Electric wireline set
- Drillable
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Top set with shear ring
- For temporary or permanent service
- Ratcheting lock ring holds setting force

Casing		Plug		Setting Range		Setting Tool	
OD	Wt. (Lbs/Ft)	Part No.	O.D.	Min.	Max.	Baker	Go
4.1/2	9.5 - 13.5	020-3718-000	3.718	3.920	4.090	10	3.1/2
5.1/2	13 - 17	020-4500-000	4.500	4.812	5.044	20	3.1/2
6.5/8	17 - 20	020-5687-000	5.687	6.004	6.366	20	3.1/2
7	23 - 35	020-5687-000	5.687	6.004	6.366	20	3.1/2

## DISSOLVABLE FRAC BALLS



Effect of temperature and time for dissolution of the ball

ACT Dissolvable frac balls eliminates the need for intervention to remove it after the fracturing operation, and thereby saving time and operational costs. The ball dissolves in a few days in the presence of elevated temperature in any fluid environment. Dissolvable frac balls allow to hold pressure during fracing operations. After exposing to the well bore conditions, the balls completely dissolve, preventing production blockage and eliminating debris.

## COMPOSITE BRIDGE PLUGS & CEMENT RETAINERS

COMPOSITE BRIDGE PLUGS & CEMENT RETAINERS FOR 300°F & 10,000 psi.

The ACT Composite bridge plug use composite components to provide a dependable, durable and cost-effective design for temporary zone isolation during stage fracs in both vertical and horizontal wells.

Composite plugs are constructed primarily from molded or machined composites, with cast iron slips, ensuring fast drill time while remaining highly reliable. The composite plug is a multi-configuration plug that allows a user to convert the tool from a Ball Drop to a Caged Ball or Bridge plug in minutes.

This conversion is easily accomplished using hand tools and simple kits (Bridging Pin or Caged Ball Assembly). The setting sleeve and shear adapter are designed to be run on any wire line setting tool or tubing-run hydraulic setting tool, with Baker #10, Baker #20, or 3.500" G.O. connections. The two piece setting sleeve utilizes an adjuster nut that mates directly to the setting tool. The shear sleeve adapter is also designed to allow the drop ball to be placed inside the adapter. This gives the user the choice to utilize the plug in the flow back configuration without having to drop and pump the ball down from the surface.

### FEATURES AND BENEFITS

- Available in 4-1/2", 5-1/2", 7" & 9-5/8"
- Standard plug & retainer are available in 6K, 8K & 10K
- Sets securely in casing up to P-110 grade
- Consistent drill times of 13-20 minutes or less
- Can be drilled out using conventional rigid tubing or coiled tubing
- Materials used in construction are conducive to a wide range of environments
- Slips are hardened to wicker depth only for ease of drill out.



## BRIDGE PLUG & CEMENT RETAINERS 10,000 & 15,000 PSI

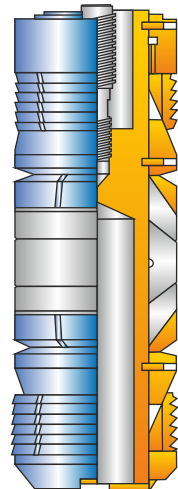
### CAST IRON BRIDGE PLUG FEATURES AND BENEFITS

- Sets securely in most casing, including many premium grades
- Ratchet lock rings secure dynamic setting force
- One piece packing element and rocker action metal back up rings combined for a superior seal
- Compact, easy running
- Can be set directly with Baker wireline setting tools
- Compatible with existing Baker Style Setting Sleeves and Adjuster Subs
- 10,000 & 15,000 psi pressure rating
- Top equalizing

### APPLICATIONS

- Squeeze cementing
- Fracturing
- Temporary or permanent plug and abandonment

All size from 1.900 tubing to 20" tubing, ACT sale E-line Setting Tools with all the Setting Adapter Kit.



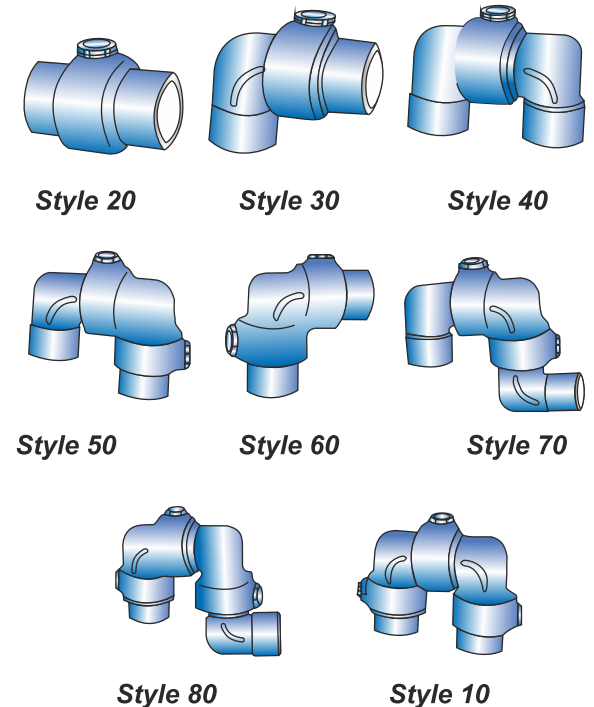
## SWIVEL JOINTS



### Style of Swivel Joints

ACT manufactures all styles of Swivel Joints to suit various service conditions and installations. These are style 10, 20, 30, 40, 50, 60, 70 and 80, as described below:

1. STYLE 10  
Three Swivels with two elbows
2. STYLE 20  
Single Swivel coupling
3. STYLE 30  
Single Swivel with one elbow
4. STYLE 40  
Single Swivel with two elbows
5. STYLE 50  
Two Swivels with two elbows
6. STYLE 60  
Two Swivels with one elbow
7. STYLE 70  
Two Swivels with three elbows
8. STYLE 80  
Three Swivels with three elbows



**GATE VALVES**

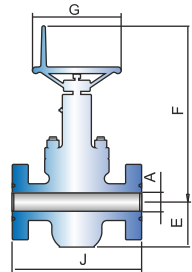
**TOOLS FOR PULLING OR SETTING PACKER ARE CLEANING THE TUBING WITH PROFILE NIPPLE / PLUGS**



**Expanding Style Gate Valve**

**FLANGED GATE VALVES OVERALL DIMENSIONS (As per API-6A Standard)**

Size	Working Pressure (PSI)	A	E	F	G	J	N	Wt (lbsf)
2 1/16	2000	2 1/16	4 13/16	19 1/4	11	11 5/8	13	91
	3000/5000		5 1/16	19 7/16	13	14 5/8	150	
2 9/16	2000	2 9/16	5 5/8	20 3/16	13	13 1/8	15 1/2	125
	3000/5000		5 15/16	20 7/16	16	16 5/8	205	
3 1/8	2000	3 1/8	6 15/16	22 1/2	13	14 1/8	20	181
	3000		7 5/16	22 3/4	16	17 1/8	265	
	5000		7 5/16	22 3/4	16	18 5/8	296	
4 1/16	2000	4 1/16	8 5/8	25 15/16	16	17 1/8	24 1/2	345
	3000		9 1/16	26 3/8	20	20 1/8	515	
	5000		9 1/16	26 3/8	20	21 5/8	530	
5 1/8"	2000	5 1/8	11 1/4	28	19 1/2	22 1/8	30 1/4	965
	3000		11 1/2	28	24	24 1/8	990	
	5000		11 3/4	28	24	28 5/8	1056	
7 1/16"	5000	7 1/16	14	29	24	32	-	1342



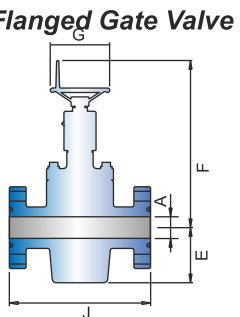
**Flanged Gate Valves (Model - M)**



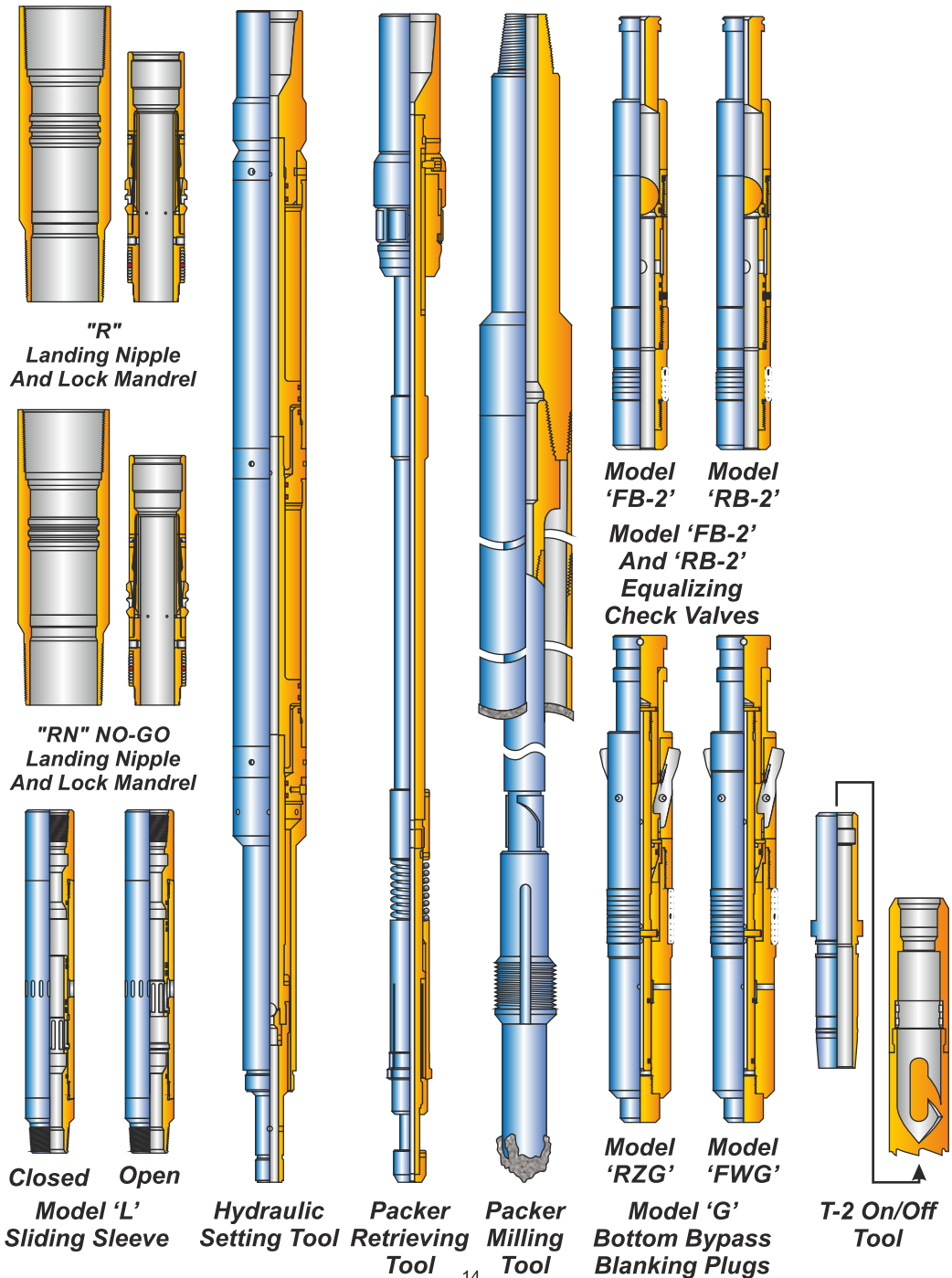
**Slab Style Gate Valve**

**FLANGED GATE VALVE OVERALL DIMENSIONS (As per API. 6A Standard)**

Size	Working Pressure (PSI)	A	E	F	G	J	N	Wt (lbsf)
2 1/16	2000	2 1/16	5 5/8	21 1/8	14	11 5/8	12 1/2	110
	3000/5000		6 1/4	21 7/8	14	14 5/8	182	
2 9/16	2000	2 9/16	6 1/2	21 7/8	14	13 1/8	15 1/4	137
	3000/5000		6 1/2	21 7/8	14	16 5/8	255	
3 1/8	2000	3 1/8	7 3/8	22 13/16	14	14 1/8	18 1/4	193
	3000		7 3/8	22 13/16	14	17 1/8	282	
	5000		7 3/8	22 13/16	14	18 1/2	360	
4 1/16	2000	4 1/16	9 1/8	24 7/16	16	17 1/8	23 1/2	395
	3000		9 1/8	24 7/16	18 1/2	20 1/8	450	
	5000		9 1/8	24 7/16	18 1/2	21 5/8	545	
1 13/16	10,000	1 13/16	5 3/4	21 1/8	14	18 1/4	12 1/2	270
2 1/16	10,000	2 1/16	5 7/8	21 1/8	18 1/2	20 1/2	12 1/2	275
2 9/16	10,000	2 9/16	6 13/16	21 7/8	18 1/2	22 1/4	15 1/4	485
3 1/16	10,000	3 1/16	8 1/16	21 13/16	24	24 3/8	18 1/4	680
4 1/16	10,000	4 1/16	10 1/16	24 11/16	24	26 3/8	23 1/2	1050
5 1/8"	5000	5 1/8	11 3/8	33.9	24	28 5/8	-	1350
7 1/16"	5000	7 1/16	15.00	37 5/8	24	32.00	-	-



**Slab Flanged Gate Valve (Model - S)**



**"R" Landing Nipple And Lock Mandrel**

**"RN" NO-GO Landing Nipple And Lock Mandrel**

**Closed Open Model 'L' Sliding Sleeve**

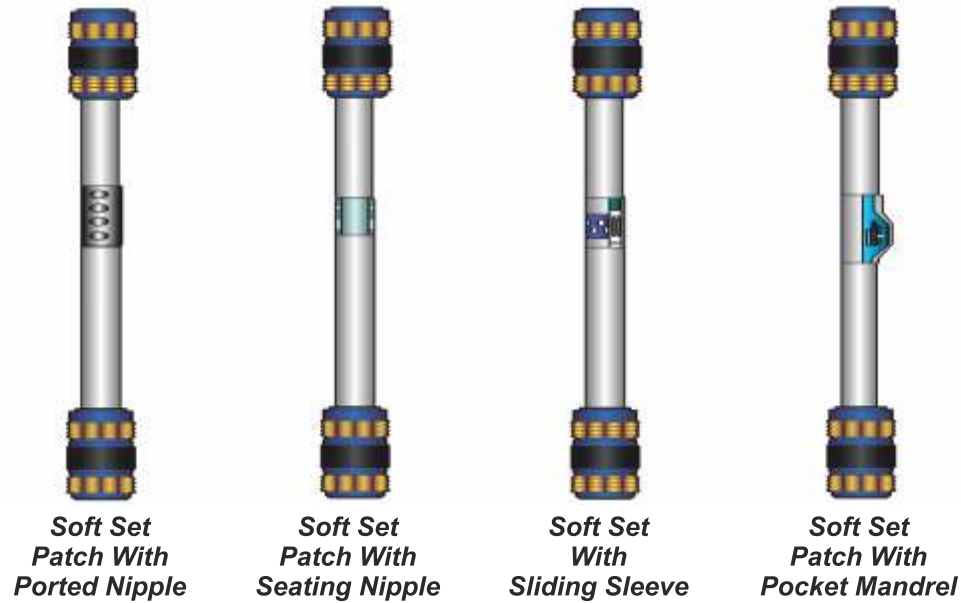
**Hydraulic Setting Tool Packer Retrieving Tool Packer Milling Tool**

**Model 'FB-2' Model 'RB-2' Model 'FB-2' And 'RB-2' Equalizing Check Valves**

**Model 'RZG' Model 'FWG' Model 'G' Bottom Bypass Blanking Plugs**

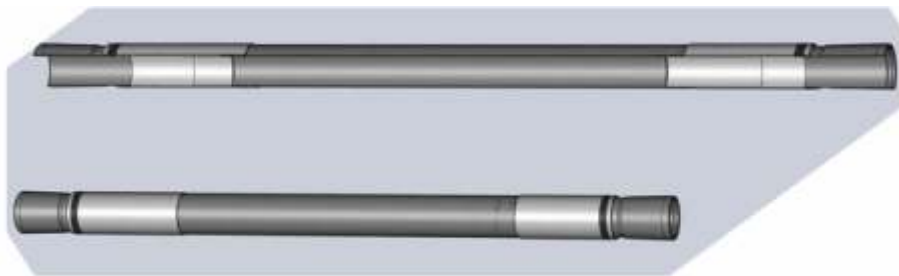
**T-2 On/Off Tool**

ONE TRIP STRADDLE PACKERS



*Soft Set Patch With Ported Nipple*    *Soft Set Patch With Seating Nipple*    *Soft Set With Sliding Sleeve*    *Soft Set Patch With Pocket Mandrel*

ONE TRIP STRADDLE SWAGE PACK PATCH

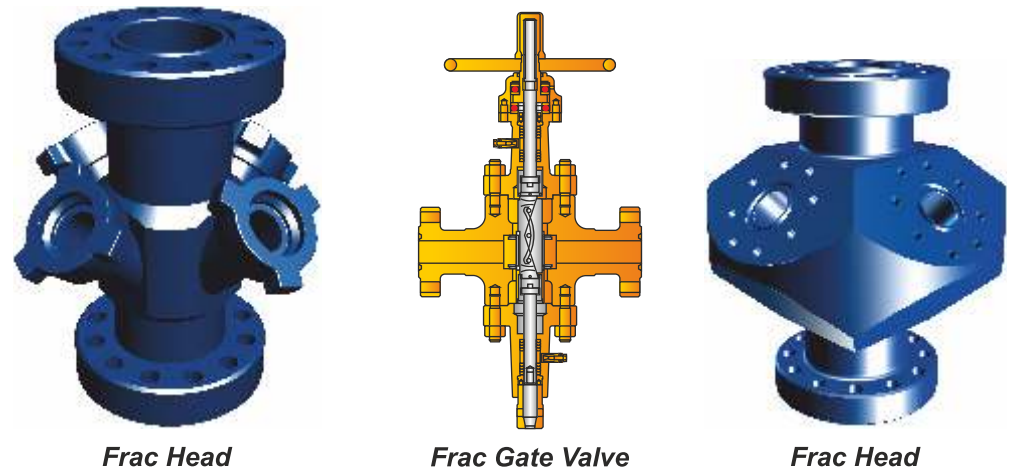


**FEATURES**

- Runs and sets on electric wire line or tubing
- Pressure setting tools with positive release assures quick, dependable patch setting
- Sets permanently in a variety of tubing or casing sizes
- Patches up to 150 feet long available in some sizes
- Oil and gas-resistant rubber seals on metal elements withstand high temperatures
- Can be retrieved in most cases using common fishing tools

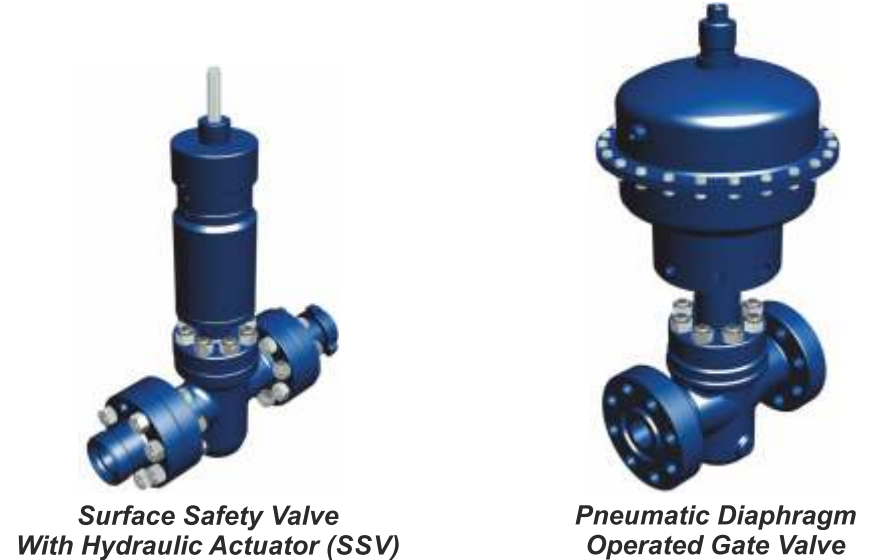
Size: 2-3/8", 2-7/8", 3-1/2", 4 -1/2", 5-1/2" 7", 7-5/8" and 9-5/8" and bigger

FRAC EQUIPMENT



*Frac Head*    *Frac Gate Valve*    *Frac Head*

FRAC GATE VALVE	
SIZE	WORKING PRESSURE (PSI)
4.1/16"	10,000
4.1/16"	15,000
5.1/8"	10,000
5.1/8"	15,000
7.1/16"	10,000
7.1/16"	15,000



*Surface Safety Valve With Hydraulic Actuator (SSV)*    *Pneumatic Diaphragm Operated Gate Valve*

**CHOKE VALVES**

**RETRIEVABLE PACKER AND STOW VALVE & TUBING ANCHOR**



**H2 Type Choke Valve**



**External Sleeve Choke Valve With Tungsten Carbide Cage**



**Positive Choke Valve**



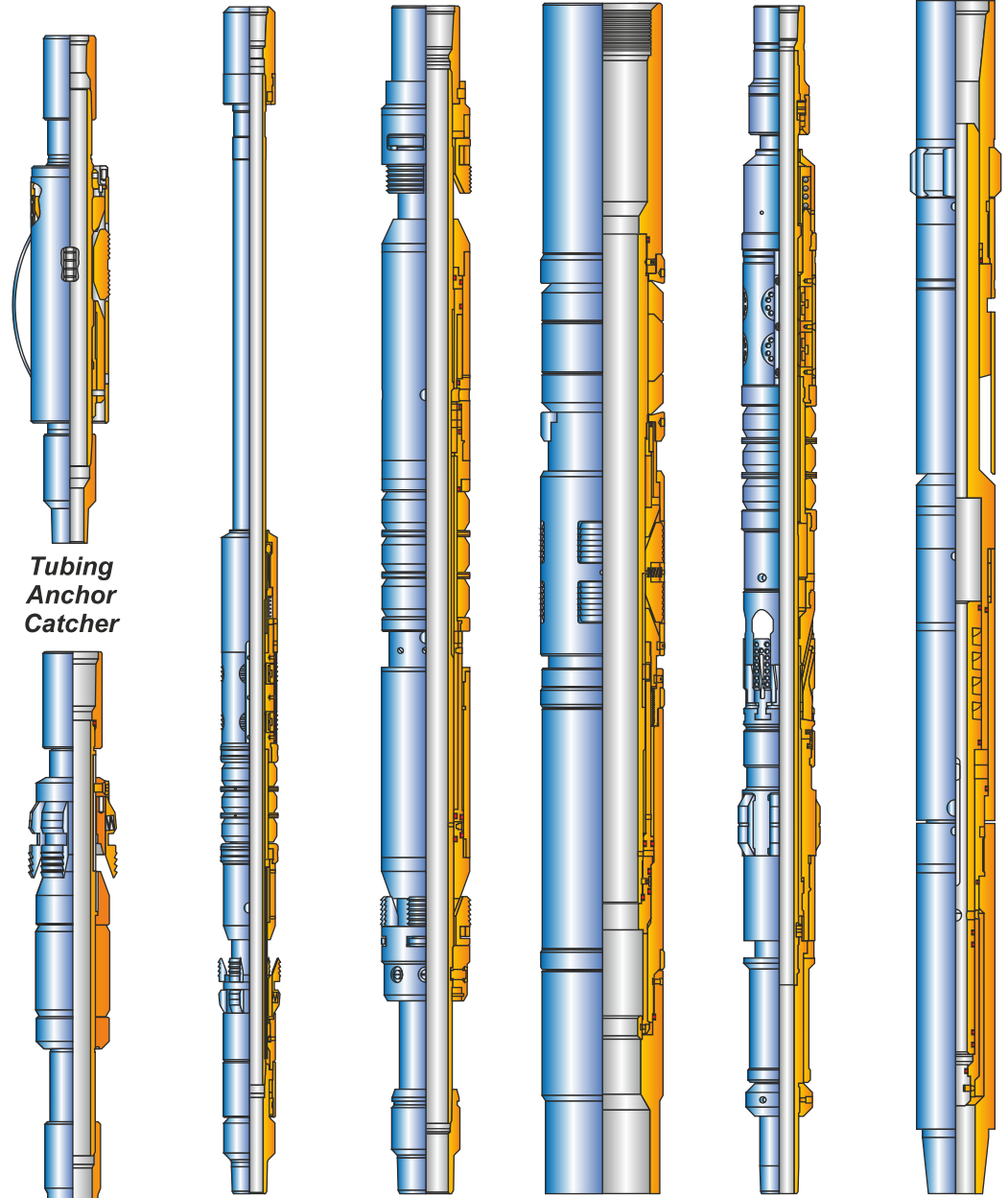
**Type Target Choke Valve**

**H2 TYPE CHOKE VALVE:** ACT manufactures both Positive and Adjustable Chokes in pressure rating up to 15,000 PSI WP., with different styles of end connection. Adjustable Chokes are meant for variable flow. They have externally controlled indicator showing orifice size in the increment of 1/64<sup>th</sup> inch. The variation in choke size is achieved by rotating hand wheel to obtain desired flow rate at down stream side

**ACT External Sleeve Control Choke, (Model-ES):** ACT External Sleeve Control Chokes minimize erosion and improve flow characteristics suitably for erosive service and under high pressure drop, with sand concentration. It applies the principle of "Flow Impingement" to dissipate and contain the destructive forces of cavitation, within the heavy duty thick walled cage of Tungsten Carbide.

**Positive Chokes:** Positive Chokes accommodate fixed orifice dimensions. All ACT Adjustable Chokes can be converted into Positive Chokes by replacing the bonnet assembly with an appropriate blanking plug assembly and choke bean. These are manufactured up to 7", 15,000 PSI with all types of end connections.

**Type Target Choke Valve:** ACT Chokes are available in 3/4", 1", and 2" maximum orifice sizes with Fig. 602-1502 hammer union connection. The components that comprise the choke are made from various materials. The bonnet, tee, and nipple are made from forged alloy steel. The stem is manufactured from stainless steel and utilizes a solid carbide tip. The choke seat is also made from stainless steel that has been fitted with a carbide liner.



**Tubing Anchor Catcher**

**Tension Packer**

**Double Grip Retrieval Packer Model 'R'**

**RHP-SPR Hydraulic Set Retrieval Packer**

**RHP-DB Dual Bore Hydraulic Set Retrieval Packer**

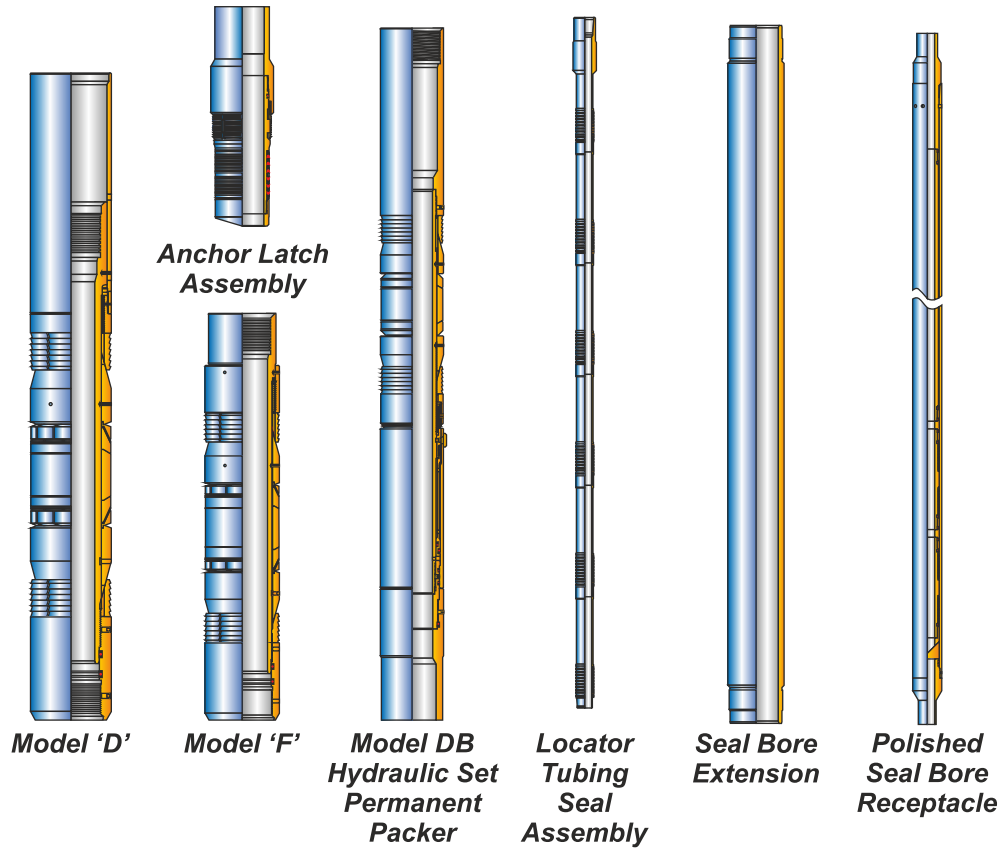
**"TST-1" Mechanical Set Packer**

**Storm Valve**

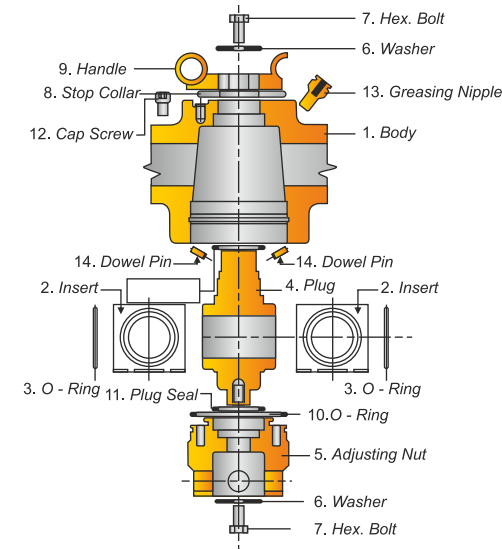


**MODEL 'D' & 'F' PACKERS**

**PLUG VALVES, CHOKE AND KILL MANIFOLDS**

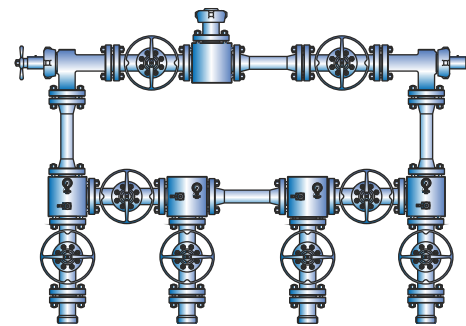


MODEL 'D' SPECIFICATION GUIDE Rated 10,000 psi @ 300 Degrees F										
CASING		SETTING RANGE		PACKER DATA					SEAL ASSY.	
OD	Wt./ft.	Min.	Max.	Max. OD	Thd. Dia.	Seal Bore	Part No.	Size	Size	ID Thru
4.1/2	9.5-13.5	3.920	4.090	3.750	3.250	2.687	070-3750-100*	37-26	40-26	1.937
5	15-21	4.125	4.436	3.968	3.250	2.687	070-3968-100*	39-26	40-26	1.937
5.1/2	20-23	4.625	4.811	4.328	3.250	2.687	070-4328-000	43-26	40-26	1.937
5.1/2	13-17	4.812	5.044	4.500	3.250	2.687	070-4500-000	45-26	40-26	1.937
6	14-26	5.140	5.552	4.937	3.500	3.000	070-4937-100**	49-30	42/62-30	2.375
6.5/8	17-20	6.049	6.366	5.687	4.000	3.250	070-5687-000	56-32	80-32	2.375
7	23-32	6.049	6.366	5.687	4.000	3.250	070-5687-000	56-32	80-32	2.375
7	17-20	6.456	6.765	6.187	4.000	3.250	070-6187-000	61-32	80-32	2.375
7.5/8	33.7-39	6.456	6.765	6.187	4.000	3.250	070-6187-000	61-32	80-32	2.375
8.5/8	36-49	7.500	7.825	7.125	4.500	4.000	070-7125-000**	71-40	80-40	3.000
9.5/8	29.3-53.5	8.438	9.063	8.125	4.000	3.250	070-8125-000	81-32	190-32	2.375
9.5/8	29.3-53.5	8.438	9.063	8.125	4.500	4.000	070-8125-060	81-40	80-40	3.000

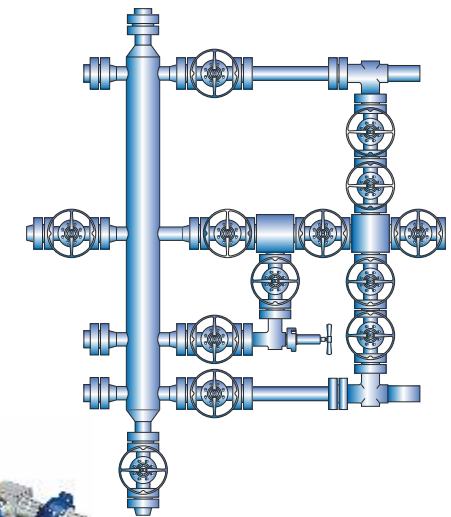


Plug Valves available up to 15,000 psi and size: 4"

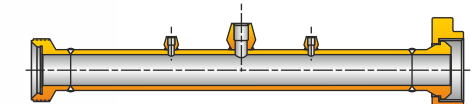
**Plug Valves**



**Eruption Manifold**



**Choke & Kill Manifold**

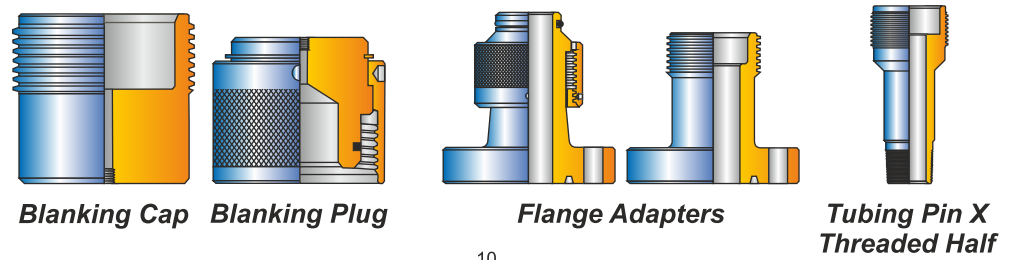
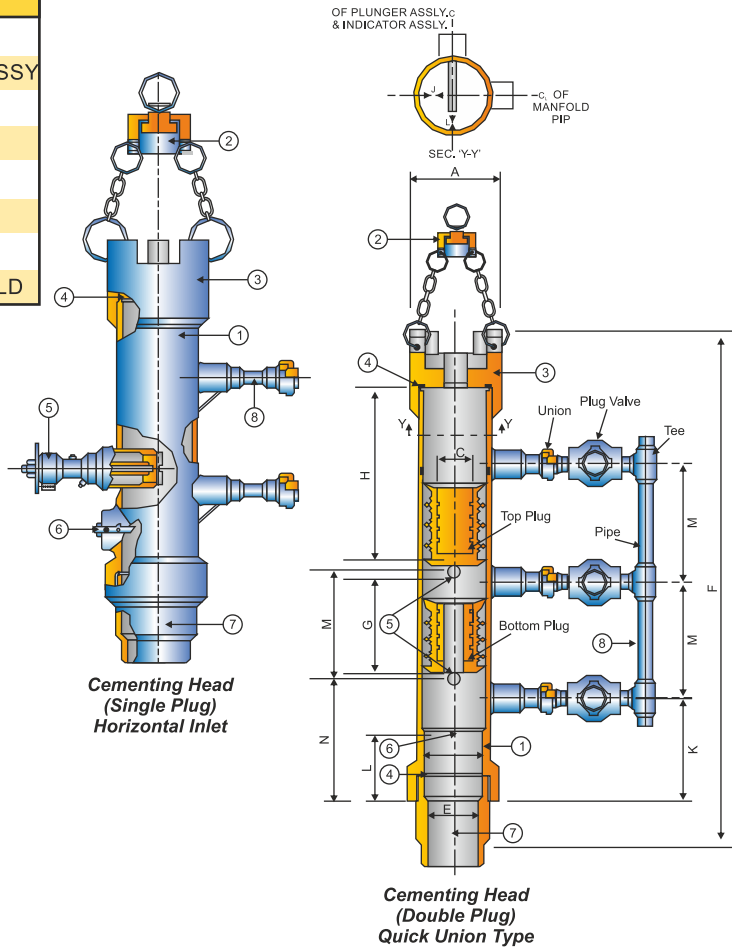


**Data Header**

**CEMENTING HEADS**

**FLANGES & FITTINGS**

NO.	DESCRIPTION
1	BODY
2	CHAIN WITH SWIVEL ASSY
3	CAP
4	SEAL METAL SEAL
5	PLUNGER ASSY
6	INDICATOR ASSY
7	ADAPTOR
8	CEMENTING MANIFOLD



DIMENSIONAL DATA FOR DOUBLE PLUG CEMENTING HEAD															
PART NO.	Casing SIZE O. D.	A ± 1/2 CAP O. D.	B ± 1/8 PLUG CENTER I. D.	C ± 3/8 PLUG INSERT O. D.	D ± 1/8 THROAT I. D.	E ± 1/8 NIPPLE I. D.	F ± 6.0 MADE UP LENGTH	G ± 1.5 DISTANCE BETWEEN PLUNGER	H ± 4.0 CLEARANCE ABOVE TOP PLUNGER	I ± 1/2 PLUNGER CLEARANCE	J ± 1/2 PLUNGER CLEARANCE	± 1.5 K	± 1.5 L	± 1.5 M	± 1.5 N
50511900	4.1/2	8.0	4.81	2.50	4.92	3.92	59.00	10.62	19.53	1.56	1.47	11.50	9.0	12.5	14.00
50509700	5.1/2	8.66	5.75	3.25	5.25	4.67	60.12	11.12	20.19	2.50	1.94	11.81	9.29	13.0	14.33
50509900	7	11.0	7.20	4.25	6.70	5.92	60.12	11.12	20.19	2.07	2.66	11.81	9.29	13.0	14.33
50511600	7.5/8	11.5	7.81	4.75	7.25	6.37	60.12	11.62	20.19	2.73	2.97	11.81	9.00	12.5	14.33
50511400	8.5/8	12.5	8.81	5.50	8.25	7.51	60.12	11.62	20.19	3.73	3.47	11.5	9.50	13.50	14.50
50510100	9.5/8	13.80	9.76	6.75	9.20	8.53	63.74	12.60	20.43	4.65	3.94	12.00	10.00	14.48	15.00
50511200	10.3/4	14.5	10.87	8.00	10.31	9.56	63.74	13.62	20.50	5.83	4.50	12.50	10.5	15.5	16.00
50511000	11.3/4	15.5	11.87	7.75	11.31	10.77	64.00	13.62	21.00	6.89	5.00	12.50	10.5	15.5	16.00
50510300	13.3/8	16.92	13.41	10.00	12.88	12.35	69.80	14.25	22.95	8.31	5.77	14.17	10.50	16.14	16.65
50510700	16	19.68	15.90	12.50	15.34	15.00	83.97	20.40	29.40	9.56	7.01	14.97	12.29	22.28	17.97
50510500	18.5/8	23.0	18.62	15.0	18.0	17.25	93.0	21.50	30.20	9.76	8.31	16.50	14.0	23.50	19.50
50510900	20	24.0	20.0	16.5	19.44	18.73	93.0	21.50	30.20	9.76	9.00	16.50	14.0	23.50	19.50