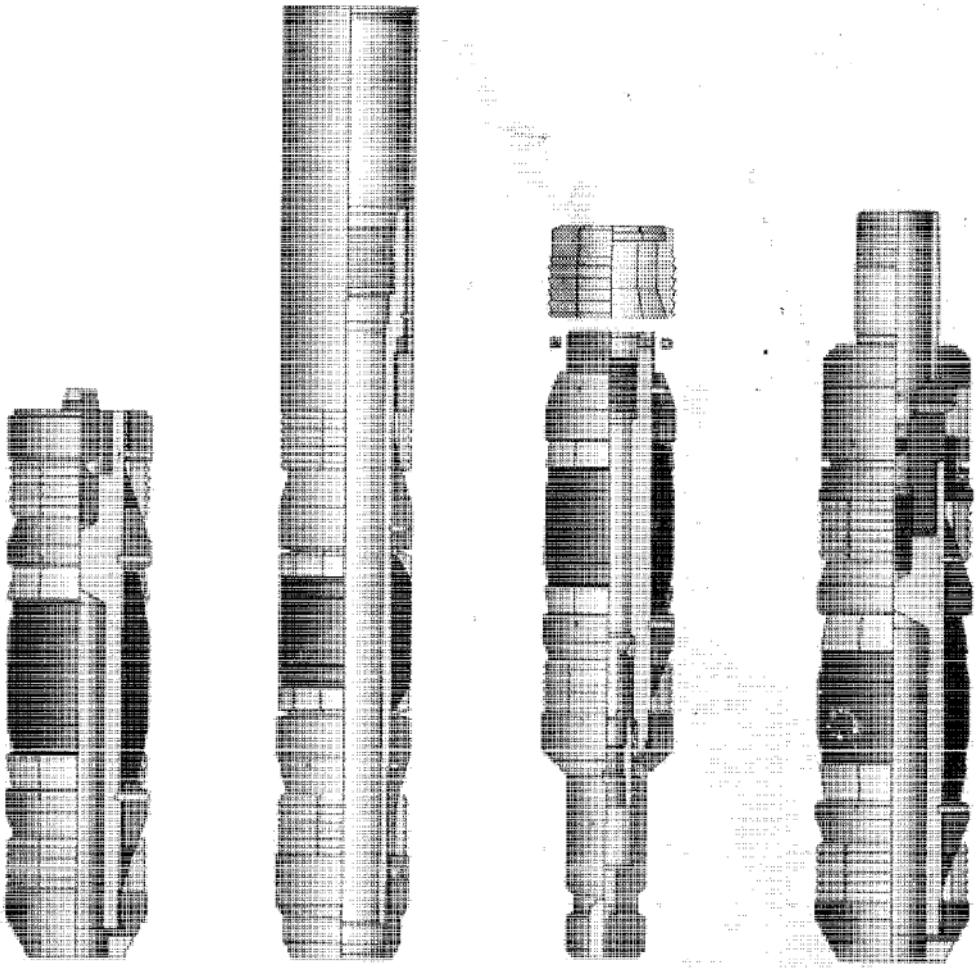
ALPHA OIL TOOLS
CATALOG



MEGCO Ex. 1007

10/97

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Alpha plugs will not be guaranteed against failure from damage resulting from perforating above a plug which has not had cement dumped on it. This includes any other means of shock that will directly transfer to the plug.

All recommendations are made by Alpha Oil Tools for the benefit of all parties knowledge and understanding of the proper way to use this product and achieve the best performance.

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ALPHA OIL TOOLS

Big Boy Bridge Plug

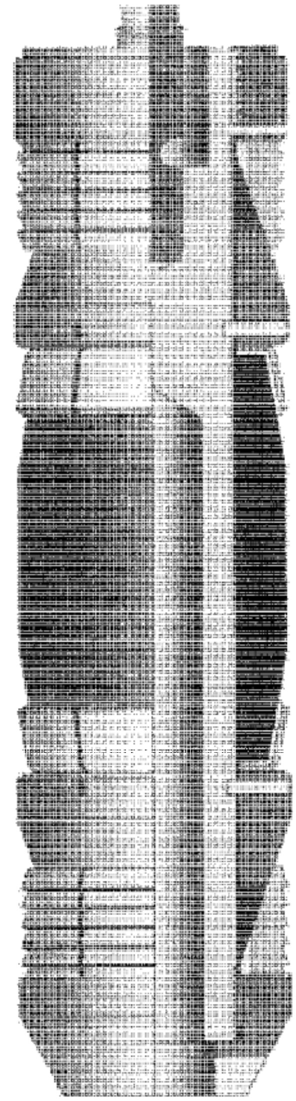
Wireline Set

The Big Boy Bridge Plug has proven to be a product that can be depended on. It has excellent running characteristics and secure sets. The plug can be set on different types of wireline pressure setting tools.

The Big Boy is designed for rapid drill-out while maintaining sufficient strength during the set. This plug sustains high pressures and temperatures.

FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force



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SPECIFICATIONS

CASING		PLUG		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
2 3/8	3.3 - 5.9	000-1710-002	1.71	1.867	2.107	05	
2 3/8	3.3 - 5.9	000-1710-000	1.71	1.867	2.107		1 11/16
2 7/8	6.4 - 6.5	000-2100-002	2.10	2.280	2.563	05	
2 7/8	6.4 - 6.5	000-2100-000	2.10	2.280	2.563		1 11/16
2 7/8	6.4 - 6.5	000-2100-000	2.10	2.280	2.563		2 1/8
3 1/2	5.7 - 10.2	000-2750-002	2.75	2.867	3.258	05	
3 1/2	5.7 - 10.2	000-2750-000	2.75	2.867	3.258	10	
3 1/2	5.7 - 10.2	000-2750-000	2.75	2.867	3.258		1 11/16
3 1/2	5.7 - 10.2	000-2750-000	2.75	2.867	3.258		2 1/8
4	5.6 - 14	000-3120-002	3.12	3.340	3.732	10	2 1/8
4 1/2	9.5 - 16.6	000-3500-002	3.50	3.826	4.090	10	3 1/2
4 1/2	9.5 - 13.5	000-3710-002	3.71	3.920	4.560	10	3 1/2
5	11.5 - 21	000-3710-002	3.71	3.920	4.560	10	3 1/2
5 1/2	13 - 23	000-4240-002	4.24	4.580	5.047	20	3 1/2
5 3/4	22.5 - 25.2	000-4240-002	4.24	4.580	5.047	20	3 1/2
6	14 - 26	000-4750-002	4.75	5.140	5.595	20	3 1/2
6 5/8	34	000-4750-002	4.75	5.140	5.595	20	3 1/2
6	10.5 - 12	000-5340-002	5.34	5.595	6.366	20	3 1/2
6 5/8	17 - 34	000-5340-002	5.34	5.595	6.366	20	3 1/2
7	23 - 40	000-5340-002	5.34	5.595	6.366	20	3 1/2
6 5/8	17 - 22	000-5610-002	5.61	5.989	6.655	20	3 1/2
7	17 - 35	000-5610-002	5.61	5.989	6.655	20	3 1/2
7 5/8	20 - 39	000-6090-002	6.09	6.625	7.263	20	3 1/2
8 5/8	24 - 49	000-6960-002	6.96	7.511	8.248	20	3 1/2
9 5/8	29.3 - 53.5	000-7710-002	7.71	8.435	9.063	20	3 1/2
10 3/4	54 - 81	000-8710-002	8.71	9.250	9.784	20	3 1/2
10 3/4	32.7 - 51	000-9500-002	9.50	9.850	11.150	20	3 1/2
11 3/4	38 - 60	000-9500-002	9.50	9.850	11.150	20	3 1/2
13 3/8	77 - 102	000-1156-002	11.56	11.633	12.464	20	3 1/2
13 3/8	48 - 72	000-1200-002	12.00	12.347	12.715	20	3 1/2
16	65 - 109	000-1425-002	14.25	14.688	15.250	20	3 1/2
18 5/8	76 - 96.5	000-1725-002	17.25	17.655	18.730	20	3 1/2
20	133 - 169	000-1725-002	17.25	17.655	18.730	20	3 1/2

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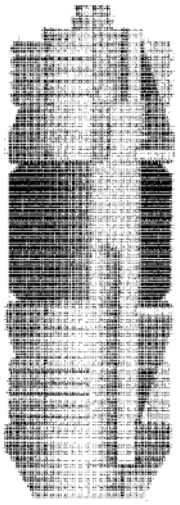
AWM 000528

MEGCO Ex. 1007

Midget Bridge Plug

Wireline Set

The Midget Bridge Plug Series provides an economical means of zone isolation for fracturing or other treatments. The plugs are compact and require less drilling time when being removed. The plug can be set on different types of wireline pressure setting tools. This plug sustains moderate pressures and temperatures.



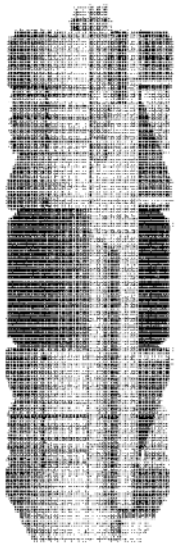
Midget 1

FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running

SPECIFICATIONS for MIDGET 1

CASING		PLUG		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
2 7/8	6.4 - 6.5	000-2100-004	2.10	2.280	2.563	05	
2 7/8	6.4 - 6.5	000-2100-001	2.10	2.280	2.563		1 11/16
2 7/8	6.4 - 6.5	000-3100-001	2.10	2.280	2.563		2 1/8
4 1/2	9.5 - 16.6	000-3500-001	3.50	3.826	4.090	10	3 1/2
4 1/2	9.5 - 13.5	000-3710-001	3.71	3.920	4.560	10	3 1/2
5	11.5 - 21	000-3710-001	3.71	3.920	4.560	10	3 1/2
5 1/2	13 - 25	000-4240-001	4.24	4.580	5.047	20	3 1/2
5 3/4	22.5 - 25.2	000-4240-001	4.24	4.580	5.047	20	3 1/2
6 5/8	17 - 22	000-5610-001	5.61	5.989	6.655	20	3 1/2
7	17 - 35	000-5610-001	5.61	5.989	6.655	20	3 1/2



Midget 2

SPECIFICATIONS for MIDGET 2

CASING		PLUG		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
4 1/2	9.5 - 16.6	000-3500-004	3.50	3.826	4.090	10	3 1/2
4 1/2	9.5 - 13.5	000-3710-004	3.71	3.920	4.560	10	3 1/2
5	11.5 - 21	000-3710-004	3.71	3.920	4.560	10	3 1/2
5 1/2	13 - 25	000-4240-004	4.24	4.580	5.047	20	3 1/2
5 3/4	22.5 - 25.2	000-4240-004	4.24	4.580	5.047	20	3 1/2
6 5/8	17 - 22	000-5610-004	5.61	5.989	6.655	20	3 1/2
7	17 - 35	000-5610-004	5.61	5.989	6.655	20	3 1/2

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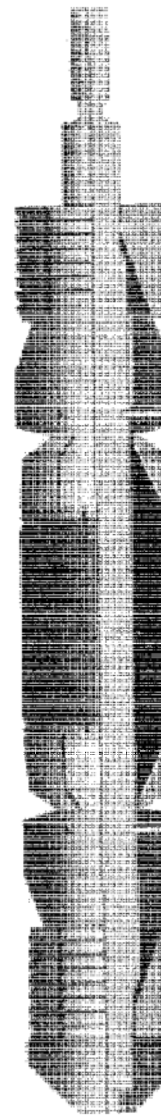
ALPHA OIL TOOLS

Extra Range Bridge Plug

Wireline Set



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The Extra Range Bridge Plug is a specialty plug for running through restrictions and then setting securely in larger diameters below. These restrictions such as seating nipples often force tubing to be pulled before well service can take place. The Extra Range Bridge Plug eliminates this in many cases.

Should the plug need to be removed, it is recommended to use a mill. A plug of such a broad setting range requires it to be made of mild steels and a milling process would be more acceptable.

FEATURES:

- Electric wireline set
- Millable
- Sets in any grade casing including P-110
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Runs through restrictions to set in larger diameters

SPECIFICATIONS

PLUG		SETTING RANGE		SETTING TOOL
PART NO.	O.D.	MIN.	MAX.	GO
001-1406-000	1.406	1.610	1.993	1 1/2 Shorty
001-1750-000	1.750	1.905	2.441	1 11/16 Multi-Stage
001-1906-000	1.906	2.156	2.765	1 11/16 Multi-Stage
001-2187-000	2.187	2.375	3.000	2 1/8 Multi-Stage
001-2281-000	2.281	2.441	3.343	2 1/8 Multi-Stage
001-2500-000	2.500	2.875	3.500	2 1/8 Multi-Stage
001-2750-000	2.750	3.187	3.920	2 1/8 Multi-Stage

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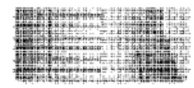
Model "A-1" Bridge Plug

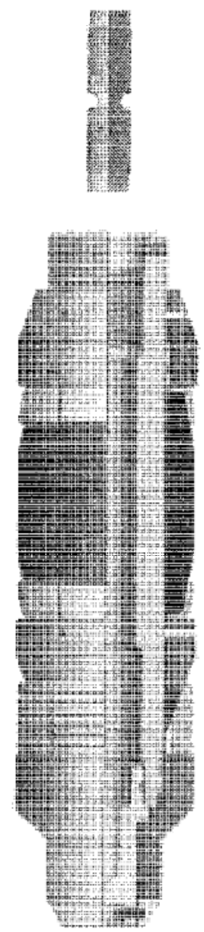
Wireline Set

The A-1 Bridge Plug is a premium plug providing a means of temporary zone isolation for treatments. Conversion to tubing set is possible and requires a minimal parts change. This plug sustains high pressures and temperatures.



FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running



This illustration does not reflect all sizes

SPECIFICATIONS

CASING		PLUG		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
4 1/2	9.5 - 16.6	003-3593-003	3.593	3.826	4.090	10	3 1/2
5	11.5 - 18	003-3937-003	3.937	4.154	4.559	10	3 1/2
5 1/2	13 - 25	003-4240-003	4.24	4.580	5.047	20	3 1/2
5 3/4	22.5 - 25.2	003-4240-003	4.24	4.580	5.047	20	3 1/2
6	14 - 26	003-4750-003	4.75	5.140	5.595	20	3 1/2
6 5/8	34	003-4750-003	4.75	5.140	5.595	20	3 1/2
6	10.5 - 12	003-5340-003	5.34	5.595	6.366	20	3 1/2
6 5/8	17 - 34	003-5340-003	5.34	5.595	6.366	20	3 1/2
7	23 - 40	003-5340-003	5.34	5.595	6.366	20	3 1/2
6 5/8	17 - 22	003-5610-003	5.61	5.989	6.655	20	3 1/2
7	17 - 35	003-5610-003	5.61	5.989	6.655	20	3 1/2
7 5/8	20 - 39	003-6090-003	6.09	6.625	7.263	20	3 1/2
8 5/8	24 - 49	003-6960-003	6.96	7.511	8.248	20	3 1/2
9 5/8	29.3 - 53.5	003-7710-003	7.71	8.435	9.063	20	3 1/2
10 3/4	54 - 81	003-8710-003	8.71	9.250	9.784	20	3 1/2
10 3/4	32.7 - 51	003-9500-003	9.50	9.850	11.150	20	3 1/2
11 3/4	38 - 60	003-9500-003	9.50	9.850	11.150	20	3 1/2
13 3/8	77 - 102	003-1156-003	11.56	11.633	12.464	20	3 1/2
13 3/8	48 - 72	003-1200-003	12.00	12.347	12.715	20	3 1/2
16	65 - 109	003-1425-003	14.25	14.688	15.250	20	3 1/2
18 5/8	76 - 96.5	003-1725-003	17.25	17.655	18.730	20	3 1/2
20	133 - 169	003-1725-003	17.25	17.655	18.730	20	3 1/2

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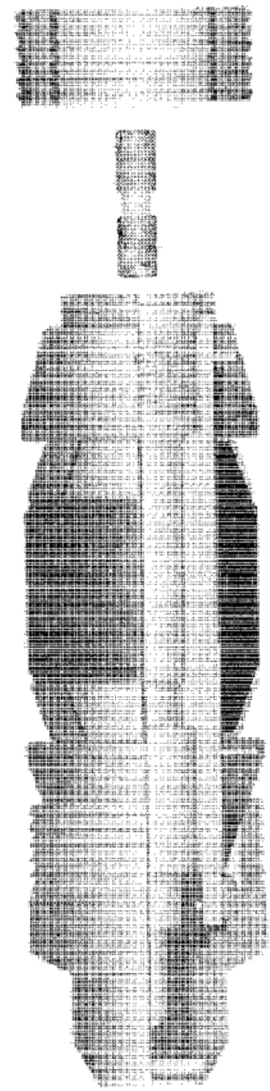
ALPHA OIL TOOLS

Model "B-1" Bridge Plug

Wireline Set

The B-1 Bridge Plug is a premium plug providing an economical means of a temporary zone isolation for treatments. This plug may be set on wireline pressure setting tools. Conversion to tubing set is possible with minimal parts change. It will sustain high pressures and temperatures.



This illustration does not reflect all sizes

FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running

SPECIFICATIONS

CASING		PLUG		SETTING RANGE		SETTING TOOL
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER
4 1/2	9.5 - 16.6	005-3593-003	3.593	3.826	4.090	10
5	11.5 - 18	005-3937-003	3.937	4.154	4.560	20
5 1/2	13 - 23	005-4312-003	4.312	4.580	5.044	20
6	10.5 - 12	005-5375-003	5.375	5.595	6.135	20
6 5/8	17 - 34	005-5375-003	5.375	5.595	6.135	20
7	32 - 38	005-5375-003	5.375	5.595	6.135	20
7	17 - 35	005-5687-003	5.687	6.004	6.538	20
7 5/8	20 - 39	005-6312-003	6.312	6.625	7.263	20
8 5/8	24 - 49	005-7125-003	7.125	7.511	8.248	20
9 5/8	29.3 - 53.5	005-8125-003	8.125	8.435	9.063	20
10 3/4	54 - 81	005-9000-003	9.000	9.250	9.660	20
10 3/4	32.7 - 51	005-9437-003	9.437	9.660	10.192	20
13 3/8	77 - 102	005-1156-003	11.562	11.633	12.464	20
13 3/8	48 - 72	005-1200-003	12.000	12.175	12.715	20

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AWM 000532

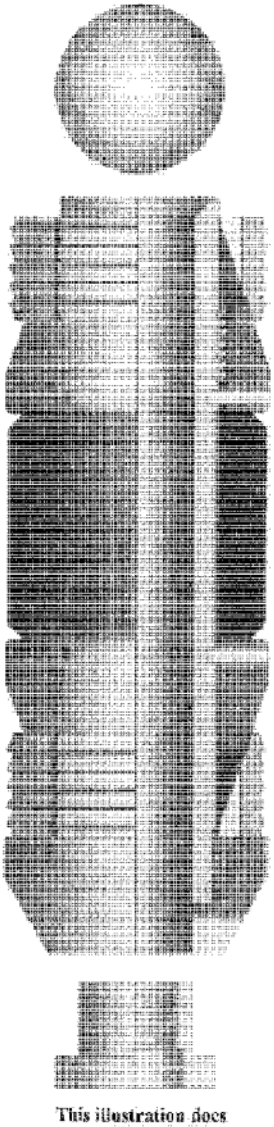
MEGCO Ex. 1007

Standard Frac Plug

Wireline Set

The Standard Frac Plug provides an economical means of a temporary zone isolation for fracturing or other treatments. The plug can be set on different types of wireline pressure setting tools.

The Standard Frac 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.



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FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Bottom set with shear ring
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running

SPECIFICATIONS

CASING		PLUG		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
4 1/2	9.5 - 16.6	002-3500-000	3.50	3.826	4.090	10	3 1/2
4 1/2	9.5 - 13.5	002-3710-000	3.71	3.920	4.560	10	3 1/2
5	11.5 - 21	002-3710-000	3.71	3.920	4.560	10	3 1/2
5 1/2	13 - 25	002-4240-000	4.24	4.580	5.047	20	3 1/2
5 3/4	22.5 - 25.2	002-4240-000	4.24	4.580	5.047	20	3 1/2
6 5/8	17 - 32	002-5610-000	5.61	5.989	6.655	20	3 1/2
7	17 - 35	002-5610-000	5.61	5.989	6.655	20	3 1/2

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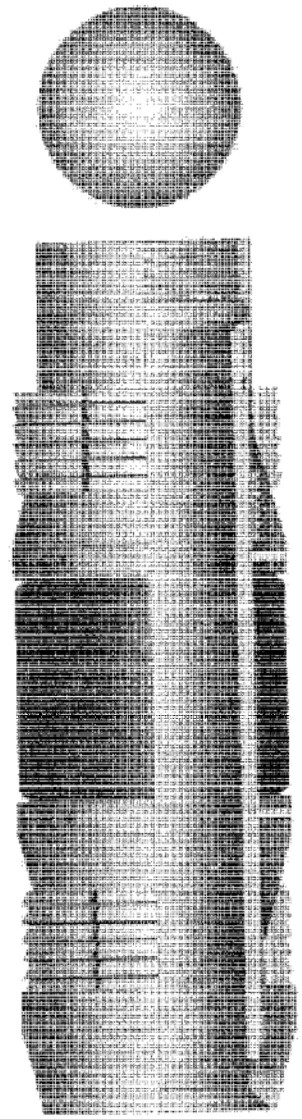
AWM 000533

MEGCO Ex. 1007

Big Bore Frac Plug

Wireline Set



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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

SPECIFICATIONS

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	002-3718-000	3.718	3.920	4.090	10	3 1/2
5 1/2	13 - 17	002-4500-000	4.500	4.812	5.044	20	3 1/2
6 5/8	17 - 20	002-5687-000	5.687	6.004	6.366	20	3 1/2
7	23 - 35	002-5687-000	5.687	6.004	6.366	20	3 1/2

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AWM 000534

MEGCO Ex. 1007

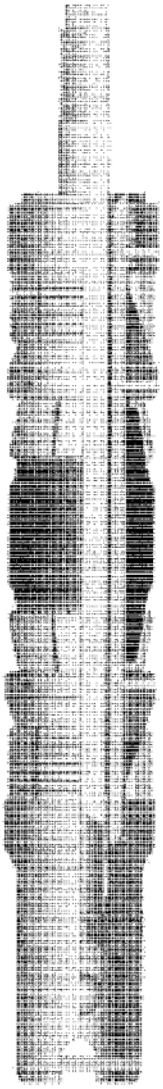
Model "A" Ball Check Cement Retainer

Wireline Set

The Model "A" Ball Check Cement Retainers combine outstanding features with design simplicity. It has a compact design and small O.D. for fast running. The Model "A" Ball Check Cement Retainer is economical, dependable and unsurpassed by any similar retainer on the market.

There are no springs, latches or sliding valves to complicate the operation. A simple ball-check acts as a one-way valve to prevent back flow of fluids from the formation up the well.

The internal surface of the retainer is finished to receive a seal nipple for cementing. The ball-check valve is located at the bottom. The retainer sustains high pressure and temperatures.



This illustration does not reflect all sizes

FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade tubing
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force

SPECIFICATIONS

CASING		RETAINER		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
2 3/8	3.3 - 5.9	004-1710-002	1.71	1.867	2.107	05	
2 3/8	3.3 - 5.9	004-1710-000	1.71	1.867	2.107		1 11/16
2 7/8	6.4 - 6.5	004-2100-002	2.10	2.280	2.563	05	
2 7/8	6.4 - 6.5	004-2100-000	2.10	2.280	2.563		1 11/16
2 7/8	6.4 - 6.5	004-2100-000	2.10	2.280	2.563		2 1/8
3 1/2	9.7 - 10.2	004-2750-002	2.75	2.867	3.258	05	
3 1/2	9.7 - 10.2	004-2750-000	2.75	2.867	3.258	10	
3 1/2	9.7 - 10.2	004-2750-000	2.75	2.867	3.258		1 11/16
3 1/2	9.7 - 10.2	004-2750-000	2.75	2.867	3.258		2 1/8
4	9.6 - 14	004-3120-002	3.12	3.340	3.732	10	2 1/8

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Alpha plugs will not be guaranteed against failure from perforating above a plug which has not had cement dumped on it. This includes any other means of shock that will directly transfer to the plug.

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AWM 000535

MEGCO Ex. 1007

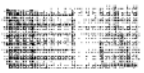
Model "A" Sleeve Valve Cement Retainer

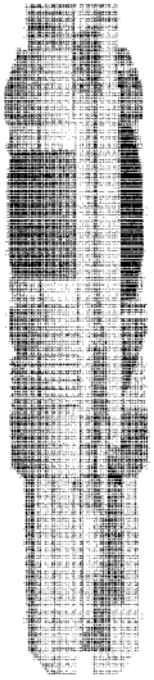
Wireline Set

The Model A Sleeve Valve Cement Retainer is a high quality tool for squeeze cementing. The sleeve valve is controlled from the surface by simply picking up to close and setting down to open.

The tubing string can be tested before the squeeze takes place. The valve is automatically closed when the seal nipple is removed from the retainer.

Conversion to tubing set is easy and requires minimal parts change. This retainer plug sustains high pressures and temperatures.





This illustration does not reflect all sizes

FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running

SPECIFICATIONS

CASING		RETAINER		SETTING RANGE		SETTING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	BAKER	GO
4 1/2	9.5 - 16.6	003-3593-002	3.593	3.826	4.090	10	3 1/2
5	11.5 - 18	003-3937-002	3.937	4.154	4.560	10	3 1/2
5 1/2	13 - 25	003-4249-002	4.24	4.580	5.047	20	3 1/2
5 3/4	22.5 - 25.2	003-4249-002	4.24	4.580	5.047	20	3 1/2
6	14 - 26	003-4750-002	4.75	5.140	5.595	20	3 1/2
6 5/8	34	003-4750-002	4.75	5.140	5.595	20	3 1/2
6	10.5 - 32	003-5340-002	5.34	5.595	6.366	20	3 1/2
6 5/8	17 - 34	003-5340-002	5.34	5.595	6.366	20	3 1/2
7	23 - 40	003-5340-002	5.34	5.595	6.366	20	3 1/2
6 5/8	17 - 22	003-5610-002	5.61	5.989	6.655	20	3 1/2
7	17 - 35	003-5610-002	5.61	5.989	6.655	20	3 1/2
7 5/8	20 - 39	003-6090-002	6.09	6.625	7.263	20	3 1/2
8 5/8	24 - 49	003-6960-002	6.96	7.511	8.248	20	3 1/2
9 5/8	29.3 - 53.5	003-7710-002	7.71	8.436	9.063	20	3 1/2
10 3/4	34 - 81	003-8710-002	8.71	9.230	9.784	20	3 1/2
10 3/4	32.7 - 51	003-9500-002	9.50	9.850	11.150	20	3 1/2
11 3/4	38 - 60	003-9500-002	9.50	9.850	11.150	20	3 1/2
13 3/8	77 - 102	003-11560-002	11.56	11.633	12.464	20	3 1/2
13 3/8	48 - 72	003-12360-002	12.80	12.347	12.715	20	3 1/2
16	65 - 109	003-14250-002	14.25	14.088	15.250	20	3 1/2
18 5/8	78 - 96.5	003-17250-002	17.25	17.655	18.730	20	3 1/2
20	133 - 169	003-17250-002	17.25	17.655	18.730	20	3 1/2

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AWM 000536

MEGCO Ex. 1007

ALPHA OIL TOOLS

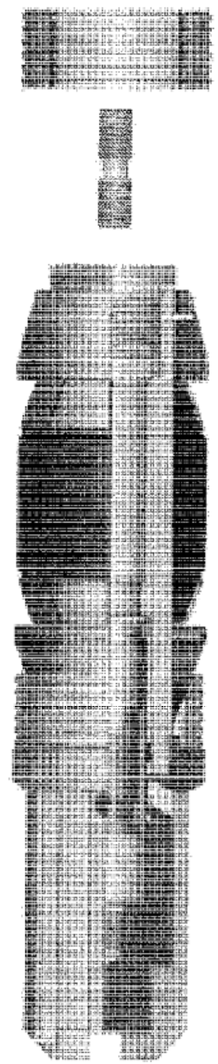
Model "B" Sleeve Valve Cement Retainer

Wireline Set

The Model "B" Sleeve Valve Cement Retainer is a high quality tool for squeeze cementing. The sleeve valve is controlled from the surface by simply picking up to close and setting down to open.

This Retainer is set on wireline pressure setting tools. This is followed with a tubing seal nipple and the tubing string can be tested before the squeeze takes place. The valve is automatically closed when nipple is removed.

Conversion to tubing set is easy and requires minimal parts. The retainer sustains high pressure and temperatures.



This illustration does not reflect all sizes

FEATURES:

- Electric wireline set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force

SPECIFICATIONS

CASING		PLUG		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	005-3593-002	3.593	3.826	4.090
5	15.5 - 18	005-3937-002	3.937	4.154	4.560
5 1/2	13 - 23	005-4312-002	4.312	4.580	5.044
6	10.5 - 12	005-5375-002	5.375	5.595	6.135
6 5/8	17 - 34	005-5375-002	5.375	5.595	6.135
7	32 - 38	005-5375-002	5.375	5.595	6.135
7	17 - 35	005-5687-002	5.687	6.004	6.538
7 5/8	20 - 39	005-6312-002	6.312	6.625	7.263
8 5/8	24 - 49	005-7125-002	7.125	7.511	8.248
9 5/8	29.3 - 53.5	005-8125-002	8.125	8.435	9.663
10 3/4	55 - 85	005-9000-002	9.000	9.250	9.660
10 3/4	32.7 - 51	005-9437-002	9.437	9.660	10.192
13 3/8	77 - 102	005-1156-002	11.562	11.633	12.464
13 3/8	48 - 72	005-1200-002	12.000	12.175	12.715

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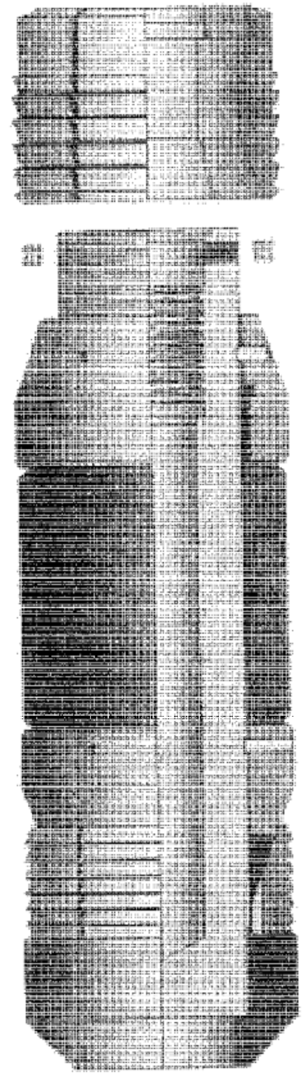
ALPHA OIL TOOLS

Model "A" Midget Bridge Plug

Tubing Set

The Model "A" Midget Bridge Plug provides an economical means of a temporary zone isolation for fracturing or other treatments. This plug can be set on mechanical setting tools using the tubing string. This plug sustains moderate pressures and temperatures.



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FEATURES:

- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running

SPECIFICATIONS

CASING		PLUG		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	000-3500-046	3.50	3.826	4.090
4 1/2	9.5 - 13.5	000-3710-046	3.71	3.920	4.560
5	11.5 - 24	000-3710-046	3.71	3.920	4.560
5 1/2	13 - 26	000-4240-046	4.24	4.580	5.047
5 3/4	22.5 - 25.2	000-4240-046	4.24	4.580	5.047
6 5/8	17 - 24	000-5610-046	5.61	5.989	6.655
7	17 - 35	000-5610-046	5.61	5.989	6.655

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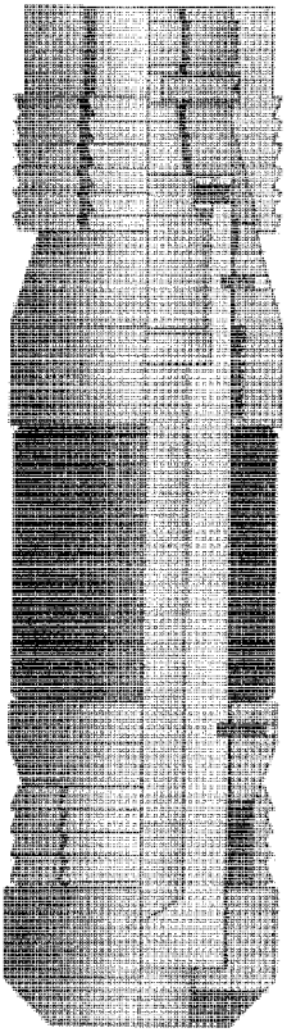
Model "B" Midget Bridge Plug

Tubing Set

The Alpha Oil Tool's "B" Midget Bridge Plug is an excellent plug providing an economical means of temporary or permanent zone isolation for well servicing. This plug is set on the tubing string using Alpha's Mechanical Setting Tool as well as some competitors. It is intended to sustain moderate temperatures and pressures.



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FEATURES:

- Drillable
- Tubing Set
- Cast iron construction
- One piece bottom slip - hardened to depth of wicker
- Sets in any grade casing including P-110
- For temporary or permanent service
- Ratcheting lock ring holds setting force

SPECIFICATIONS

CASING		PLUG		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
5 1/2	13-23	000-5512-046	5.312	4.580	5.044
6	10 5/12	000-5375-046	5.375	5.595	6.135
6 5/8	17-34	000-5375-046	5.375	5.595	6.135
7	32-38	000-5375-046	5.375	5.595	6.135
7	17-35	000-5687-046	5.687	6.004	6.538

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ALPHA OIL TOOLS

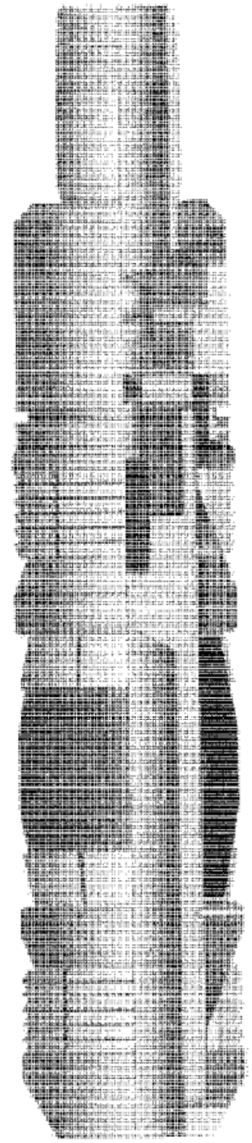
Model "P" & "E" H-M Bridge Plug

Tubing Set

The Alpha H-M Bridge Plug is set using hydraulic power to set the top slips and then mechanical pull to complete the set. The Model P is for high pressure and temperature while the Model E sustains moderate temperature and pressure.

The need for a mechanical setting tool does not exist because the setting mechanism is built-in. A ball is placed in the tubing string plugging off the built-in equalizing ports. Pressure is then applied to set the top slip and then mechanical pull is applied to finish the set. Releasing the tubing string from the plug is done by simply turning to the right.

Full tubing I.D. is available after releasing from the plug allowing other equipment to extend through the end of the tubing string.



Model "P"

FEATURES:

- Drillable
- Cast iron construction
- One piece slip
- Sets in any grade casing including P-110
- Metal back-up to prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Excellent for deviated wells

SPECIFICATIONS

CASING		PLUG			SETTING RANGE	
OD	WT. (LBS/FT)	"P" PART NO.	"E" PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	000-3500-055	000-3500-065	3.50	3.826	4.096
5	11.5 - 18	000-3710-055	000-3710-065	3.71	3.920	4.560
5 1/2	13 - 23	000-4240-055	000-4240-065	4.24	4.580	5.047
5 3/4	22.5 - 25.2	000-4240-055	000-4240-065	4.24	4.580	5.047
6	14 - 26	000-4750-055	-	4.75	5.140	5.593
6 5/8	34	000-4750-055	-	4.75	5.140	5.593
6	10.5 - 12	000-5340-055	000-5340-065	5.34	5.595	6.366
6 5/8	17 - 34	000-5340-055	000-5340-065	5.34	5.595	6.366
7	23 - 40	000-5340-055	000-5340-065	5.34	5.595	6.366
6 5/8	17 - 22	000-5610-055	000-5610-065	5.61	5.989	6.655
7	17 - 35	000-5610-055	000-5610-065	5.61	5.989	6.655
7 5/8	20 - 39	000-6090-055	-	6.09	6.625	7.263
8 5/8	24 - 49	000-6960-055	-	6.96	7.511	8.248
9 5/8	29.3 - 53.5	000-7710-055	-	7.71	8.435	9.063
10 3/4	54 - 81	000-8710-055	-	8.71	9.250	9.784
10 3/4	32.7 - 51	000-9500-055	-	9.50	9.850	11.150
11 3/4	38 - 60	000-9500-055	-	9.50	9.850	11.150
13 3/8	77 - 102	000-1156-055	-	11.56	11.633	12.464
13 3/8	48 - 72	000-1200-055	-	12.00	12.347	12.715

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AWM 000540

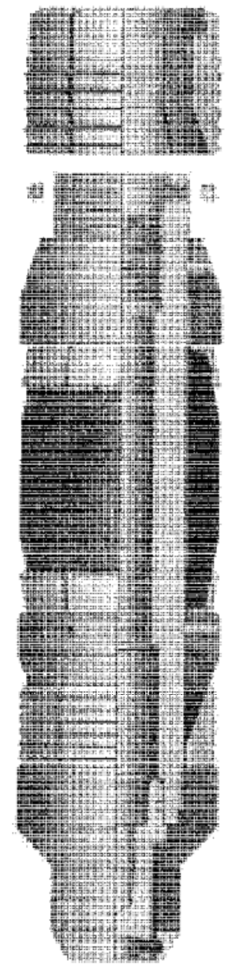
MEGCO Ex. 1007

ALPHA OIL TOOLS

Model "A-1" Bridge Plug

Tubing Set

The A-1 Bridge Plug is a premium plug providing an economical means of a temporary zone isolation for treatments. This plug may be set on mechanical setting tools using the tubing string. Conversion to wireline set is possible with minimal parts change. It will sustain high pressures and temperatures.



This illustration does not reflect all sizes

FEATURES:

- Tubing set
- Drillable
- Cast iron construction
- One piece bottom slip - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force
- Small O.D.'s for speed and safety when running

SPECIFICATIONS

CASING		RETAINER		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	003-3593-001	3.593	3.826	4.090
5	11.5 - 18	003-3937-001	3.937	4.154	4.560
5 1/2	13 - 25	003-4240-001	4.24	4.580	5.047
5 3/4	22.5 - 25.2	003-4240-001	4.24	4.580	5.047
6	14 - 26	003-4750-001	4.75	5.140	5.595
6 5/8	34	003-4750-001	4.75	5.140	9.595
6	10.5 - 12	003-5340-001	5.34	5.595	6.366
6 5/8	17 - 34	003-5340-001	5.34	5.595	6.366
7	23 - 40	003-5340-001	5.34	5.595	6.366
6 5/8	17 - 22	003-5610-001	5.61	5.989	6.655
7	17 - 35	003-5610-001	5.61	5.989	6.655
7 5/8	20 - 39	003-6090-001	6.09	6.625	7.263
8 5/8	24 - 49	003-6960-001	6.96	7.511	8.248
9 5/8	29.3 - 53.5	003-7710-001	7.71	8.435	9.063
10 3/4	54 - 81	003-8710-001	8.71	9.250	9.784
10 3/4	32.7 - 51	003-9500-001	9.50	9.850	11.150
11 3/4	38 - 60	003-9500-001	9.50	9.850	11.150
13 3/8	77 - 102	003-1156-001	11.56	11.933	12.464
13 3/8	48 - 72	003-1200-001	12.00	12.347	12.715
16	65 - 109	003-1425-001	14.25	14.688	15.250
18 5/8	76 - 96.5	063-1725-001	17.25	17.655	18.730
20	133 - 169	003-1725-001	17.25	17.655	18.730

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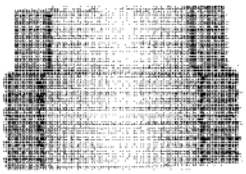
AWM 000541

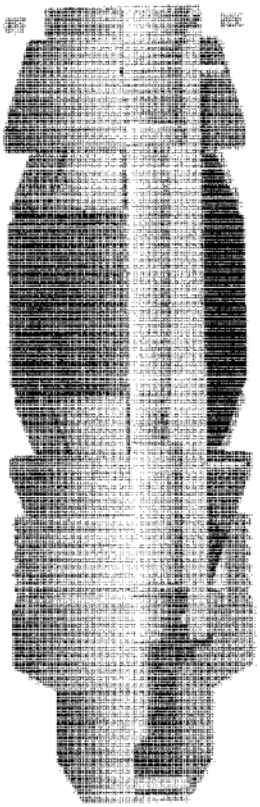
MEGCO Ex. 1007

Model "B-1" Bridge Plug

Tubing Set

The B-1 Bridge Plug is a premium plug providing an economical means of a temporary zone isolation for treatments. This plug may be set on mechanical setting tools using the tubing string. Conversion to wireline set is possible with minimal parts change. It will sustain high pressures and temperatures.





This illustration does not reflect all sizes

FEATURES:

- Tubing set
- Drillable
- Cast iron construction
- One piece bottom slip - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force

SPECIFICATIONS

CASING		PLUG		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	005-3935-001	3.593	3.826	3.989
5	11.5 - 18	005-3937-001	3.937	4.154	4.360
5 1/2	13 - 23	005-4312-001	4.312	4.580	5.044
6	10.5 - 15	005-5375-001	5.375	5.595	6.135
6 5/8	17 - 34	005-5375-001	5.375	5.595	6.135
7	32 - 38	005-5375-001	5.375	5.595	6.135
7	17 - 35	005-6687-001	6.687	6.004	6.538
7 5/8	20 - 39	005-6312-001	6.312	6.625	7.263
8 5/8	24 - 49	005-7125-001	7.125	7.511	8.248
9 5/8	29.3 - 53.5	005-8125-001	8.125	8.435	9.068
10 3/4	34 - 81	005-9000-001	9.000	9.270	9.902
10 3/4	32.7 - 51	005-9437-001	9.437	9.660	10.192
13 3/8	77 - 102	005-1156-001	11.562	11.653	12.480
13 3/8	48 - 72	005-1200-001	12.000	12.175	12.715

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AWM 000542

MEGCO Ex. 1007

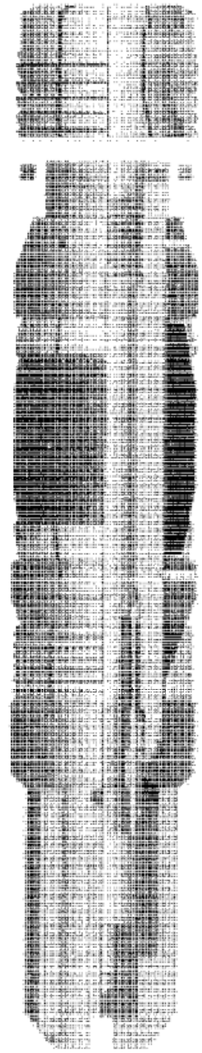
Model "A" Sleeve Valve Cement Retainer

Tubing Set

The Model "A" Sleeve Valve Cement Retainer is a high quality tool for squeeze cementing. The sleeve valve is controlled from the surface by simply picking up to close and setting down to open.

This Retainer is set on the tubing string or drill pipe using a mechanical setting tool. Tubing may be tested before the squeeze takes place. The valve is automatically closed when releasing the retainer.

Conversion to wireline set is easy and requires minimal parts. The retainer sustains high pressure and temperature.



This illustration does not reflect all sizes

FEATURES:

- Tubing set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service

SPECIFICATIONS

CASING		RETAINER		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	003-3593-000	3.593	3.826	4.090
5	11.5 - 18	003-3937-000	3.937	4.154	4.560
5 1/2	13 - 23	003-4240-000	4.24	4.580	5.047
5 3/4	22.5 - 25.2	003-4240-000	4.24	4.580	5.047
6	14 - 26	003-4750-000	4.75	5.140	5.595
6 5/8	34	003-4750-000	4.75	5.140	5.595
6	10.5 - 12	003-5340-000	5.34	5.595	6.366
6 5/8	17 - 34	003-5340-000	5.34	5.595	6.366
7	23 - 40	003-5340-000	5.34	5.595	6.366
6 5/8	17 - 22	003-5610-000	5.61	5.989	6.655
7	17 - 35	003-5610-000	5.61	5.989	6.655
7 5/8	26 - 39	003-6090-000	6.09	6.625	7.263
8 5/8	24 - 49	003-6960-000	6.96	7.511	8.248
9 5/8	29.3 - 53.5	003-7710-000	7.71	8.435	9.063
10 3/4	54 - 81	003-8710-000	8.71	9.250	9.784
10 3/4	32.7 - 51	003-9500-000	9.50	9.850	11.150
11 3/4	38 - 60	003-9500-000	9.50	9.850	11.150
13 3/8	77 - 102	003-1156-000	11.56	11.633	12.464
13 3/8	48 - 72	003-1200-000	12.00	12.347	12.715
16	65 - 109	003-1425-000	14.25	14.688	15.250
18 5/8	76 - 96.5	003-1725-000	17.25	17.655	18.730
20	133 - 169	003-1725-000	17.25	17.655	18.730

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Alpha plugs will not be warranted against failure from damage resulting from perforating above a plug which has not had cement dumped on it. This includes any other means of shock that will directly transfer to the plug.

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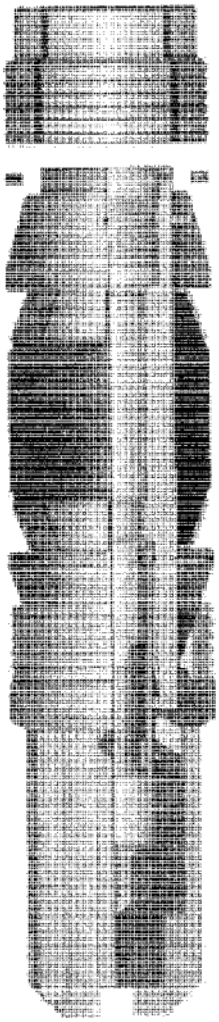
Model "B" Sleeve Valve Cement Retainer

Tubing Set

The "B" Sleeve Valve Cement Retainer is a high quality tool for squeeze cementing. The sleeve valve is controlled from the surface by simply picking up to close and setting down to open.

This Retainer is set on the tubing string or drill pipe using a mechanical setting tool. The tubing may be tested before squeeze takes place. The valve is automatically closed when releasing retainer.

Conversion to wireline set is easy and requires minimal parts. The retainer sustains high pressure and temperature.



This illustration does not reflect all sizes

FEATURES:

- Tubing set
- Drillable
- Cast iron construction
- One piece slips - hardened to depth of wicker only
- Sets in any grade casing including P-110
- Form-fitting metal back-ups prevent rubber extrusion
- For temporary or permanent service
- Ratcheting lock ring holds setting force

SPECIFICATIONS

CASING		PLUG		SETTING RANGE	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.
4 1/2	9.5 - 16.6	005-3593-000	3.593	3.826	4.090
5	11.5 - 18	005-3932-000	3.937	4.154	4.560
5 1/2	13 - 23	005-4312-000	4.312	4.580	5.044
6	19.5 - 32	005-5375-000	5.375	5.595	6.135
6 5/8	17 - 34	005-5375-000	5.375	5.595	6.135
7	32 - 38	005-5375-000	5.375	5.595	6.135
7	17 - 35	005-5687-000	5.687	6.004	6.538
7 5/8	20 - 39	005-6312-000	6.312	6.623	7.263
8 5/8	24 - 49	005-7125-000	7.125	7.511	8.238
9 5/8	29.3 - 53.5	005-8125-000	8.125	8.435	9.063
10 3/4	54 - 81	005-9000-000	9.000	9.350	9.660
10 3/4	32.7 - 51	005-9437-000	9.437	9.660	10.192
13 3/8	27 - 102	005-1156-000	11.562	11.693	12.384
13 3/8	48 - 72	005-1200-000	12.000	12.175	12.715

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AWM 000544

MEGCO Ex. 1007

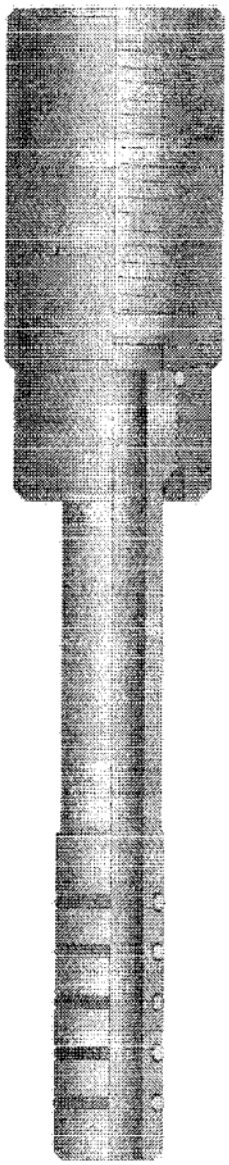
Locator Seal Nipple

for Ball Check Cement Retainers

The Locator Seal Nipple is designed to seal the tubing string to the retainer, allowing the casing to be isolated from high pressure while testing or during pressure operations.

The tubing can be tested by circulating a test ball down the tubing. The ball will seat in the top of the seal nipple and provide positive shut-off to the tubing string. Pressure can then be applied to the tubing string.

After testing is completed the test ball can be reverse circulated out of the tubing string. After the ball is retrieved the job can be completed by lowering the tubing to sting into the retainer or by raising the tubing to sting out of the retainer.



SPECIFICATIONS

	Ball Check Retainer Size	
	1.71	2.10 - 3.12
Locator Seal Nipple	016-1710-070	016-2100-070

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AWM 000545

MEGCO Ex. 1007

Model "A" Seal Nipples

for "A" Sleeve Valve Cement Retainers

Locator Type:

This unit provides positive control of the sleeve valve and seals the tubing to the retainer during pressuring operations when the need for anchoring is not warranted.

The tubing can be tested by stinging into the retainer, then raising the tubing approximately 4" at the retainer, which allows the valve to be closed and the stinger to remain sealed off in the retainer bore. Pressure can then be applied to the tubing string for testing.

To remove the stinger from the retainer, simply raise the tubing to free the stinger from the retainer bore.

A centralizing unit should be run above to assure the seal nipple stings in accurately.

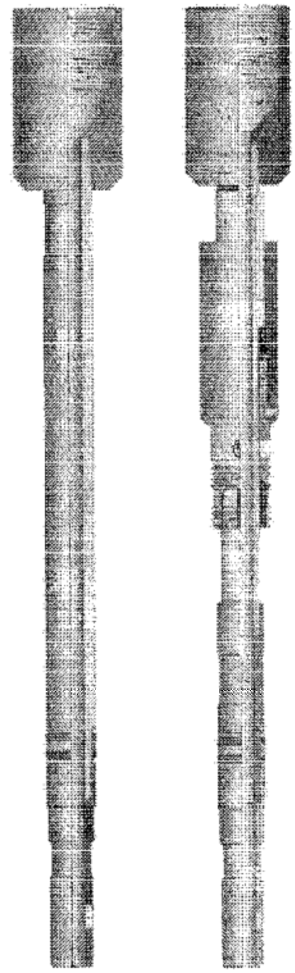
Latching Type:

This unit provides positive control of the sleeve valve and seals the tubing to the retainer during pressuring operations while effectively anchoring the tubing in the retainer.

The tubing can be tested by stinging into the retainer, then raising the tubing approximately 4" at the retainer, which allows the valve to be closed and the stinger to remain sealed off in the retainer bore. Pressure can then be applied to the tubing string for testing.

Release is accomplished by taking an upward pull of approximately 8,000 lbs. which will collapse the snap latch and free the seal unit from the retainer. After repeated usage the snap-in and snap-out values will decrease to 2,500 lbs. snap-in and 5,000 lbs. snap-out force.

A centralizing unit should be run above to assure the seal nipple stings in accurately.



Locator Type | Latching Type

SPECIFICATIONS

	Retainer Size		
	3.50 - 4.75	5.34 – 5.61	6.09 – 17.25
Model A Locator Type	016-3500-070	016-5610-070	
Model A Latching Type	016-3500-080	016-5610-080	016-6090-080

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Model "B" Seal Nipples

for "B" Sleeve Valve Cement Retainers

Locator Type:

This unit provides positive control of the sleeve valve and seals the tubing to the retainer during pressuring operations when the need for anchoring is not warranted.

The tubing can be tested by stinging into the retainer, then raising the tubing approximately 4" at the retainer, which allows the valve to be closed and the stinger to remain sealed off in the retainer bore. Pressure can then be applied to the tubing string for testing.

To remove the stinger from the retainer, simply raise the tubing to free the stinger from the retainer bore.

A centralizing unit should be run above to assure the seal nipple stings in accurately.

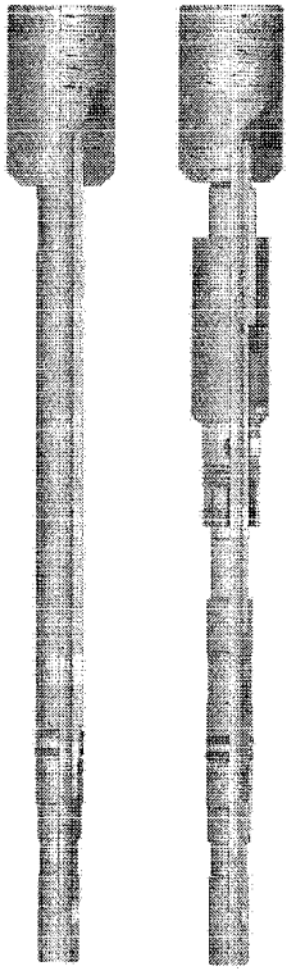
Latching Type:

This unit provides positive control of the sleeve valve and seals the tubing to the retainer during pressuring operations while effectively anchoring the tubing in the retainer.

The tubing can be tested by stinging into the retainer, then raising the tubing approximately 4" at the retainer, which allows the valve to be closed and the stinger to remain sealed off in the retainer bore. Pressure can then be applied to the tubing string for testing.

Release is accomplished by taking an upward pull of approximately 8,000 lbs. which will collapse the snap latch and free the seal unit from the retainer. After repeated usage the snap-in and snap-out values will decrease to 2,500 lbs. snap-in and 5,000 lbs. snap-out force.

A centralizing unit should be run above to assure the seal nipple stings in accurately.



Locator Type | Latching Type

SPECIFICATIONS

	Retainer Size	
	3.593 - 4.312	5.375 - 12.00
Model B Locator Type	017-3593-070	017-5687-070
Model B Latching Type	017-3593-080	017-5687-080

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ALPHA OIL TOOLS

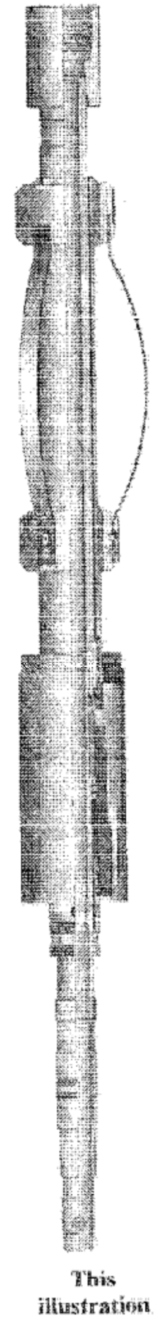
Model "A" Mechanical Setting Tool

for "A" Sleeve Valve Cement Retainers and "A-1" Bridge Plugs

The Model A Mechanical Setting Tool is designed to run and set Alpha's Model A Sleeve Valve Cement Retainer and Model A-1 Bridge Plug. It is easy to operate and has low maintenance.

This tool incorporates both a stinger seal and built-in snap latch allowing the tool to be latched into the retainer with set-down weight and released with up-strain and/or right hand rotation. This tool can be run time after time by simply moving the drive housing into the running position. Disassembly is not required every time.

The setting tool can be converted for 4 1/2 through 20" casing sizes.



This illustration does not reflect all sizes

SPECIFICATIONS

CASING		SETTING TOOL		SETTING RANGE		MATCHING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	"A" Ret.	"A-1" Plug
4 1/2	9.5 - 13.5	016-3593-000	3.593	3.826	4.090	003-3593-002	003-3593-003
5	11.5 - 18	016-3593-000	3.937	4.154	4.560	003-3937-002	003-3937-003
5 1/2	13 - 23	016-4240-000	4.24	4.580	5.047	003-4240-002	003-4240-003
5 3/4	22.5 - 25.2	016-4240-000	4.24	4.580	5.047	003-4240-002	003-4240-003
6	14 - 26	016-4240-000	4.75	5.140	5.595	003-4750-002	003-4750-003
6 5/8	34	016-4240-000	4.75	5.140	5.595	003-4750-002	003-4750-003
6	10.5 - 12	016-5610-000	5.34	5.595	6.366	003-5340-002	003-5340-003
6 5/8	17 - 34	016-5610-000	5.34	5.595	6.366	003-5340-002	003-5340-003
7	23 - 40	016-5610-000	5.34	5.595	6.366	003-5340-002	003-5340-003
6 5/8	17 - 22	016-5610-000	5.61	5.989	6.655	003-5610-002	003-5610-003
7	17 - 35	016-5610-000	5.61	5.989	6.655	003-5610-002	003-5610-003
7 5/8	20 - 39	016-6090-000	6.09	6.625	7.263	003-6090-002	003-6090-003
8 5/8	24 - 49	016-6960-000	6.96	7.511	8.348	003-6960-002	003-6960-003
9 5/8	29.3 - 53.5	016-7710-000	7.71	8.435	9.063	003-7710-002	003-7710-003
10 3/4	54 - 81	016-8710-000	8.71	9.250	9.784	003-8710-002	003-8710-003
10 3/4	32.7 - 51	016-9500-000	9.50	9.850	11.150	003-9500-002	003-9500-003
11 3/4	38 - 60	016-9500-000	9.50	9.850	11.150	003-9500-002	003-9500-003
13 3/8	77 - 102	016-1156-000	11.56	11.633	12.464	003-1156-002	003-1156-003
13 3/8	48 - 72	016-1200-000	12.00	12.347	12.715	003-1200-002	003-1200-003
16	65 - 109	016-1425-000	14.25	14.688	15.250	003-1425-002	003-1425-003
18 5/8	76 - 96.5	016-1725-000	17.25	17.655	18.730	003-1725-002	003-1725-003
20	133 - 169	016-1725-000	17.25	17.655	18.730	003-1725-002	003-1725-003

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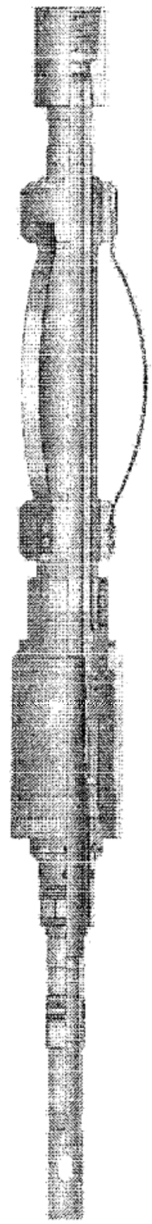
AWM 000548

MEGCO Ex. 1007

ALPHA OIL TOOLS

Model "B" Mechanical Setting Tool

for "B" Sleeve Valve Cement Retainers and "B-1" Bridge Plugs



This illustration does not reflect all sizes

The Model B Mechanical Setting Tool is designed to run and set Alpha's Model B Sleeve Valve Cement Retainer and Model B-1 Bridge Plug. It is easy to operate and has low maintenance.

This tool incorporates both a stinger seal and built-in snap latch allowing the tool to be latched into the retainer with set-down weight and released with up-strain and/or right hand rotation. This tool can be run time after time by simply moving the drive housing into the running position. Disassembly is not required every time.

The setting tool can be converted for 4 1/2 through 13 3/8" casing sizes.

SPECIFICATIONS

CASING		SETTING TOOL		SETTING RANGE		MATCHING TOOL	
OD	WT. (LBS/FT)	PART NO.	O.D.	MIN.	MAX.	"B" Ret.	"B-1" Plug
4 1/2	9.5 - 15.6	017-3593-000	3.593	3.826	4.090	005-3593-000	005-3593-001
5	11.5 - 18	017-3593-000	3.937	4.154	4.560	005-3937-000	005-3937-001
5 1/2	13 - 23	017-4312-000	4.312	4.580	5.044	005-4312-000	005-4312-001
6	10.5 - 17	017-5687-000	5.375	5.595	6.135	005-5375-000	005-5375-001
6 5/8	17 - 34	017-5687-000	5.375	5.595	6.135	005-5375-000	005-5375-001
7	32 - 38	017-5687-000	5.375	5.595	6.135	005-5375-000	005-5375-001
7	17 - 35	017-5687-000	5.687	6.004	6.538	005-5687-000	005-5687-001
7 5/8	20 - 39	017-6312-000	6.312	6.625	7.263	005-6312-000	005-6312-001
8 5/8	24 - 49	017-7125-000	7.125	7.511	8.248	005-7125-000	005-7125-001
9 5/8	29.3 - 53.5	017-8125-000	8.125	8.435	9.063	005-8125-000	005-8125-001
10 3/4	54 - 81	017-9000-000	9.000	9.250	9.660	005-9000-000	005-9000-001
10 3/4	32.7 - 51	017-9437-000	9.437	9.660	10.192	005-9437-000	005-9437-001
13 3/8	77 - 102	017-1156-000	11.562	11.633	12.464	005-1156-000	005-1156-001
13 3/8	48 - 72	017-1200-000	12.000	12.175	12.715	005-1200-000	005-1200-001

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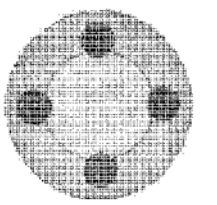
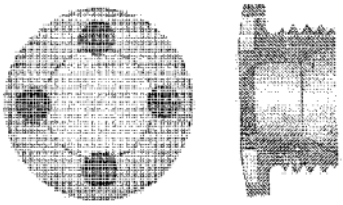
ALPHA OIL TOOLS

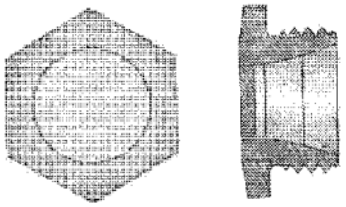
Perforating Supplies



Round Port Plug - Grooved



Round Port Plug - Ungrooved



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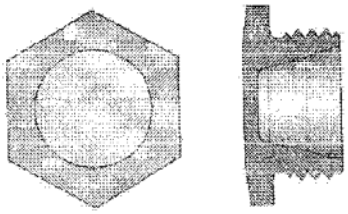
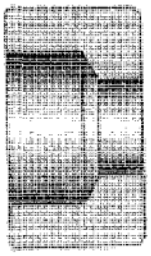
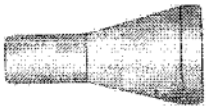


Hex Port Plug - Ungrooved

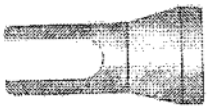


Dart Seat
012-3125-051

is offered for the systems which use the tandem select subs and require these seats.



Dart
012-3125-053



Split Dart
012-3125-052

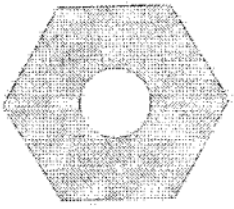
The Alpha Grooved Port Plugs provide longer gun life with twenty five percent reduction in average blow-out pressure. This is achieved by adding the groove in the ID. They are tested to 20,000 psi. Threadsare rolled for extra strength. The round type have four wrench holes for added gripping.

Some prefer no grooves in the ID. These port plugs are exactly the same as the grooved ones minus the groove.

All parts shown on this page have a double coat of zinc for a longer rust free shelf life.

Dart Retainer
012-3125-050

is made in the hex style for easy installation and removal. Made from C-1215 material which is lead free. The threads are rolled for added strength.



GROOVED PORT PLUGS				
	ROUND		HEX	
SIZE	REGULAR	EXTENDED	REGULAR	EXTENDED
3 1/8	012-3125-010		012-3125-020 "S"	
3 1/8			012-3125-022 "M"	
4	012-4000-010	012-4000-012	012-4000-020	012-4000-022
5	012-5000-010		012-5000-020	

UNGROOVED PORT PLUGS				
	ROUND		HEX	
SIZE	REGULAR	EXTENDED	REGULAR	EXTENDED
3 1/8	013-3125-010		013-3125-020 "S"	
3 1/8			013-3125-022 "M"	
4	013-4000-010	013-4000-012	013-4000-020	013-4000-022
5	013-5000-010		013-5000-020	

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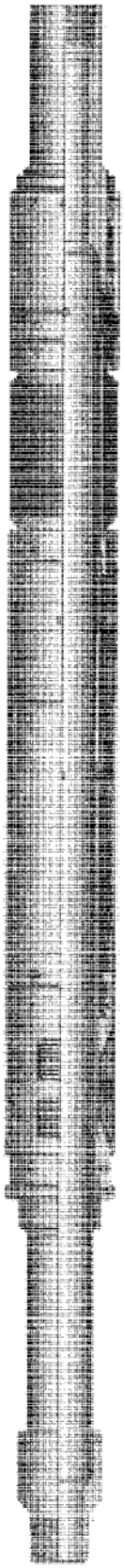
Accounting: account@alphatx.com

Model "SRHP" Single String Retrievable Hydraulic Packer



The Alpha "SRHP" is a pure hydraulic set packer that can be run in single or multiple zone installations. It is highly recommended for deviated wells where conditions are not suitable for mechanical or wireline set packers.

No tubing movement is required or generated in order to set the packer. This allows the well to be kept positively controlled at all times because the tubing is landed and the wellhead installed before circulating or displacing well fluids prior to setting the packer. Two or more packers can be set either at once or in any desired sequence.

The SRHP packer design features bi-directional, one piece slips located below a three element packing system consisting of dual durometer rubber elements. The slips are fully enclosed in a shear pinned slip housing which in turn is protected by a full diameter guide located below the slip housing.

The SRHP packer requires a means of establishing a maximum of 3,500 psi pressure inside the tubing at the packer (for 7" and smaller). The hydraulic setting chamber is adjustable between 900 to 2,500 PSI which allows the tubing to be pressure tested before the packer begins to stroke and set. Two balanced pistons are utilized during the setting process. The lower piston moves down to set and anchor the slips before the upper piston moves upward to compress the packing. This action imparts the total setting force to both slips and packing thus assuring a positive anchor and pack-off. The pack-off is retained by a one-piece ratchet ring that locks in and stores the setting force applied to both the slips and packing elements.

The SRHP packer incorporates two methods of release, straight pull or rotation. Both methods are contained in the same releasing nut which is located at the upper end of the packer. Straight pull release is accomplished by shearing a predetermined quantity of brass retaining screws which frees the tubing. Rotation release is accomplished by approximately eight right hand turns of the tubing which also frees the packer. Straight pull then is applied to completely relax the packer for retrieval. The SRHP packer can be ordered with only one method of release if desired. A positive acting equalizing valve is also located in the releasing section which automatically opens during the releasing procedure to equalize pressures and allow circulation between the annulus and tubing. In addition, a large diameter fluid by-pass is located inside the packing mandrel which allows fluid passage for rapid retrieving while reducing element swabbing.

SPECIFICATIONS

CASING		SETTING RANGE		PACKER				
O.D.	WT. LBS/FT.	MIN.	MAX.	PART NO.	GUIDE OD	PKR ID	THREAD	PSI TO SET
5 1/2	14-23	4.670	5.012	062-4500-003	4.500	1.94	2 3/8 8RD EUE	3,500
5 1/2	13-15.5	4.950	5.044	062-4500-003	4.781	1.94	2 3/8 8RD EUE	3,500
5 1/2	14-23	4.670	5.012	062-4500-006	4.500	1.94	2 7/8 8RD EUE	3,500
5 1/2	13-15.5	4.950	5.044	062-4500-006	4.781	1.94	2 7/8 8RD EUE	3,500
7	29-38	5.920	6.184	062-5960-000	5.698	2.44	2 7/8 8RD EUE	3,500
7	26-29	6.184	6.276	062-5960-000	5.908	2.44	2 7/8 8RD EUE	3,500
7	20-26	6.276	6.456	062-6070-000	6.078	2.44	2 7/8 8RD EUE	3,500
7	17-20	6.456	6.538	062-6260-000	6.266	2.44	2 7/8 8RD EUE	3,500
7	29-38	5.920	6.184	062-5680-005	5.688	3.00	3 1/2 8RD EUE	3,500
7	26-29	6.184	6.276	062-5960-005	5.908	3.00	3 1/2 8RD EUE	3,500
7	20-26	6.276	6.456	062-6070-005	6.078	3.00	3 1/2 8RD EUE	3,500
7	17-20	6.456	6.538	062-6260-005	6.266	3.00	3 1/2 8RD EUE	3,500
9 5/8	47-53.5	8.535	8.681	062-8210-000	8.218	2.44	2 7/8 8RD EUE	3,500
9 5/8	40-47	8.681	8.835	062-8430-000	8.437	2.44	2 7/8 8RD EUE	3,500
9 5/8	29.3-36	8.836	9.063	062-8590-000	8.593	2.44	2 7/8 8RD EUE	3,500
9 5/8	47-53.5	8.535	8.681	062-8210-005	8.218	3.00	3 1/2 8RD EUE	3,500
9 5/8	40-47	8.681	8.835	062-8430-005	8.437	3.00	3 1/2 8RD EUE	3,500
9 5/8	29.3-36	8.836	9.063	062-8590-005	8.593	3.00	3 1/2 8RD EUE	3,500

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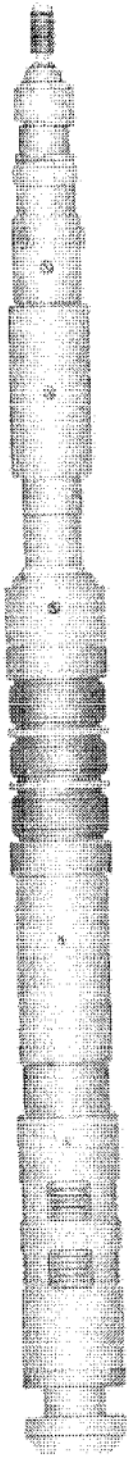
AWM 000551

MEGCO Ex. 1007

Model "D" Retrievable Bridge Plug

Wireline Set



Description:

Alpha's Model D Bridge Plug is a wireline set, tubing or wireline retrievable, packer type bridge plug capable of holding differential pressure from above or below.

Applications:

Temporary bridge plug for acidizing, fracturing, casing pressure tests, well head replacement, zone isolation and cementing.

Features:

- Electric line set
- Balanced equalizing system
- Overshot will wash to gage ring
- Straight pull release
- Three piece packing system
- Compact design
- Retrievable on wireline, tubing or coil tubing
- Emergency release mechanism
- By-pass valve opens before plug is released
- Caged bi-directional slips
- Rated to 8,000 psi above or below @ 225 deg. F

Availability:

Casing				Packer	
O.D.	Wt.	Minimum	Maximum	Size	Maximum O.D.
4 1/2	9.5-13.5	3.910	4.090	43A	3.771

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Model "J & L"
Permanent Production Packers

The Alpha Oil Tools Model "J" & "L" Production Packers are available to fit your needs and provide the versatility of our excellent pack-off system for a positive secure set in the well bore.

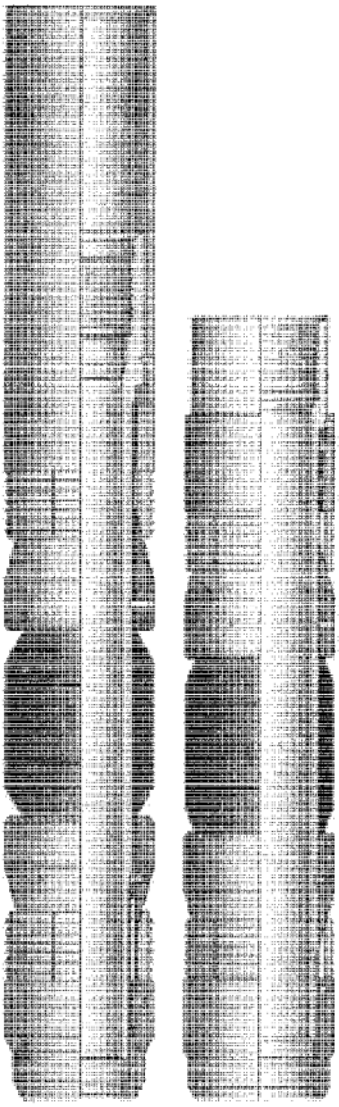
These packers assist in the economical operation of a variety of completion and production jobs. They are designed to accommodate seal bore extensions used in deep wells requiring a longer seal bore interval. Seal Nipples are available with either automatic square-thread latch or locating shoulder. These packers can be used as test tools. Full opening bores allow the passage of perforating guns used to perforate a zone below for testing. If the zone proves to be non-productive, the packer can be used as a squeeze tool.

The packers are designed to provide high-impact resistance and a dependable seal. The high quality packing system will conform to the casing and close off any extrusion of rubber, as the packer is set, even at high temperatures and pressures.

Alpha's Model J Production Packers provide excellent clearance for run-in while the Alpha Model "L" Production Packers offer a larger seal bore. The two models carry different pressure ratings noted later in this document.

R22 is the designation for standard service that Alpha Oil Tools puts on the equipment listed below. Equipment for service other than standard can be specified upon request from the customer.

For additional information, please contact Alpha Oil Tools or an authorized representative



Model J Model L

Features:

- E.C.N.E.R. Array packing element system
- One piece slips hardened to depth of wicker only
- Sets in any grade casing including P-110
- Choice of bottom to fit your application - specified when ordering
- Ratcheting lock ring holds setting force

Availability:

- Model J's - 4 1/2 thru 9 5/8 Casing
- Model L's - 5 1/2 thru 7 5/8 Casing

E.C.N.E.R. is a registered trademark of QEH Technologies.
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AWM 000553

MEGCO Ex. 1007

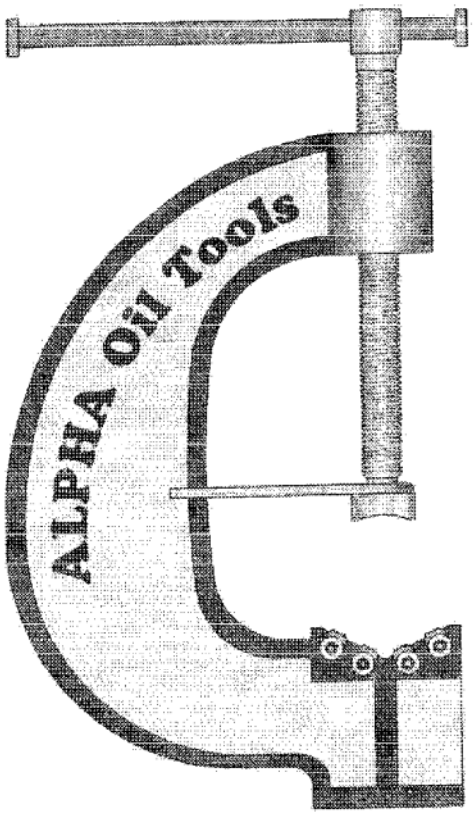
Pipe Vise

The Alpha Pipe Vise is a screw type vise that may be used for clamping tubing, pipe, fittings and valves. It features a sliding handle for extra leverage. Equipment may be loaded from three sides. The pipe vise comes in two sizes.

The 4 inch vise clamps up to 4 3/4 inches diameter. This vise can be used in the shop or mounted on your field servicing vehicle.

The 8 inch vise clamps up to 8 5/8 inches diameter.

These vises are excellent additions to your equipment and have a proven history of success. The gripping ability is exerted by hand and no more than that is ever needed. If slipping ever occurs, the tong dies are simply replaced. These tong dies are the only parts that should experience wear.



8" Vise Illustration

SPECIFICATIONS

PARTS LIST	4 INCH	8 INCH	QTY.
Vise Assy. - Complete	027-0000-000	027-1000-000	-
Body - Casting	027-0000-008	027-1000-008	1
Handle	027-0000-011	027-1000-011	1
Handle Nut	3/4-16	1"-14	2
Screw	027-0000-009	027-1000-009	1
Sleeve	027-0000-010	027-1000-010	1
Pad	027-0000-012	027-1000-012	1
Tong Die (4 inch only)	027-1000-014		2
Tong Die (8 inch only)		027-1000-014	4
Cap Screw (4 inch only)	5/16-18x1/2		4
Cap Screw (8 inch only)		5/16-18x1/2	8
Flat Washer (4 inch only)	5/16		8
Flat Washer (8 inch only)		5/16	16

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Wireline Setting Equipment

for Alpha's bridge plugs, frac plugs & cement retainers

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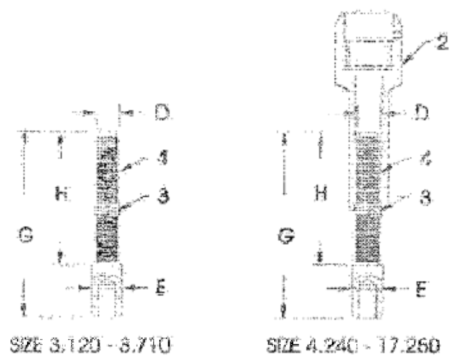
Big Boy Bridge Plug, Midget 1 Bridge Plug, Midget 2 Bridge Plug
on Baker Wireline Pressure Setting Tool

TENSION MANDRELS & LOCK SPRINGS



SETTING SLEEVES

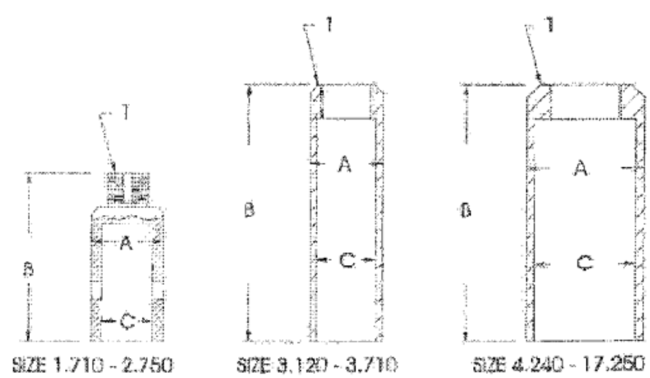


Figure 1

Big Boy Bridge Plug, Midget 1 Bridge Plug, Midget 2 Bridge Plug on Baker Wireline Pressure Setting Tool — Continued

DIMENSIONAL DATA
REFER TO FIGURE 1

DIM.	1.71	2.10	2.75	3.12	3.50/ 3.71	4.24/ 4.75	5.34/ 5.61	6.09	6.96	7.71	8.71	9.50	11.56	12.00	14.25	17.25
A	1.710	2.100	2.750	3.120	3.500	4.250	5.250	6.090	6.960	7.710	8.710	9.500	11.560	12.000	14.250	17.250
B	5.980			14.123	16.500	16.250	16.000								12.750	15.000
C	1.250	1.750		2.625	2.969	3.750	4.750	5.500	6.500	7.125	8.125	9.000	10.500	11.250	13.250	15.250
D	not applicable			1.000	1.125											
E	not applicable			1.250	1.375	1.750										
G	not applicable			5.000	4.625	5.187	5.250									
H	not applicable			3.000	3.062	3.500										

The number given for "C" can change due to material available at the time of manufacture. This is given as nominal and to some cases max. dimension.

PARTS LIST
REFER TO FIGURE 1

ITEM	DESCRIPTION	QTY	SIZE 1.71	2.10	2.75	3.12	3.50/3.71	4.24/4.75
-	Complete Adapter Kit	-	000-1710-900	000-2100-900	000-2750-900	000-3120-900	000-3500-900	000-4250-900
1	Setting Sleeve	1	000-1710-200	000-2100-200	000-2750-200	000-3120-200	000-3500-200	000-4250-200
2	Adjuster Sub	1	not required					000-4240-209
-	Socket Head Set Screw	1	not required					5/16 - 18 x 3/8 lg.
3	Lock Spring	1	not required			000-3500-205		000-4240-205
4	Tension Mandrel	1	not required			000-3120-206	000-3500-206	000-4240-206

PARTS LIST - continued
REFER TO FIGURE 1

ITEM	DESCRIPTION	QTY	SIZE 5.34/5.61	6.09	6.96	7.71	8.71	9.50
-	Complete Adapter Kit	-	000-5610-900	000-6090-900	000-6960-900	000-7710-900	000-8710-900	000-9500-900
1	Setting Sleeve	1	000-5610-200	000-6090-200	000-6960-200	000-7710-200	000-8710-200	000-9500-200
2	Adjuster Sub	1	000-4240-209					
-	Socket Head Set Screw	1	5/16 - 18 x 3/8 lg.					
3	Lock Spring	1	000-4240-205					
4	Tension Mandrel	1	000-5610-206					

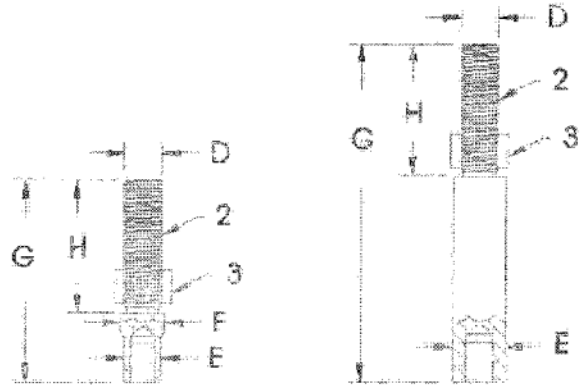
PARTS LIST - continued
REFER TO FIGURE 1

ITEM	DESCRIPTION	QTY	SIZE 11.56	12.00	14.25	17.25
-	Complete Adapter Kit	-	000-1156-900	000-1200-900	000-1425-900	000-1725-900
1	Setting Sleeve	1	000-1156-200	000-1200-200	000-1425-200	000-1725-200
2	Adjuster Sub	1	000-4240-209			
-	Socket Head Set Screw	1	5/16 - 18 x 3/8 lg.			
3	Lock Spring	1	000-4240-205			
4	Tension Mandrel	1	000-5610-206			

AWM 000556

MEGCO Ex. 1007

ADAPTER RODS & LOCK NUTS



SETTING SLEEVES

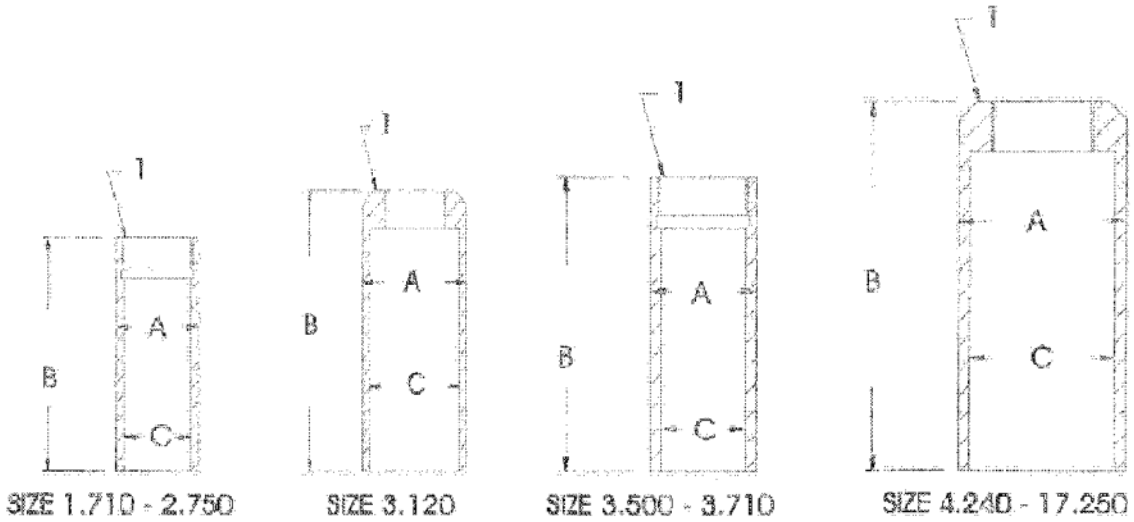


Figure 2

AWM 000557

MEGCO Ex. 1007

Big Boy Bridge Plug, Midget 1 Bridge Plug, Midget 2 Bridge Plug
on GO Wireline Pressure Setting Tool Continued

DIMENSIONAL DATA
REFER TO FIGURE 2

DIM.	1.71	1 11/16 2.10	2 1/8 2.10	1 11/16 2.75	2 1/8 2.75	3.12	3.50/ 3.71	4.24/ 4.75	5.34/ 5.61	6.09	6.96	7.71	8.71	9.50	11.56	12.00	14.25	17.25
A	2.710	2.080	2.100	2.750	2.750	2.120	3.500	4.240	5.250	6.088	6.960	7.710	8.710	9.560	11.564	12.060	14.250	17.250
B	7.343					N/A1	8.812	9.250	11.250									
C	1.437	1.500	1.750			2.188	2.000	2.750	4.250	5.500	6.500	7.125	8.125	9.000	10.500	11.250	13.250	
D	not applicable						1.375											
E	not applicable						1.250			1.710								
F	not applicable						1.500			not applicable								
G	not applicable						6.562			7.375								
H	not applicable						3.500			4.050								

The number given for "C" can change due to materials available at the time of manufacture. This is given as a nominal and is approximate only. Approx.

PARTS LIST
REFER TO FIGURE 2

ITEM	DESCRIPTION	QTY	SIZE					
			1.71	2.10 (1 11/16)	2.10 (2 1/8)	2.75 (1 11/16)	2.10 (2 1/8)	3.12
1	Setting Sleeve	1	000-1710-101	000-2100-101	000-2102-102	000-2750-101	000-2750-102	000-3120-100
2	Adapter Rod	--	not required					
3	Lock Nut	--	not required					

PARTS LIST - continued
REFER TO FIGURE 2

ITEM	DESCRIPTION	QTY	SIZE					
			3.50/3.71	4.24/4.75	5.34/5.61	6.09	6.96	7.71
1	Setting Sleeve	1	000-3500-103	000-4240-103	000-5625-100	000-6090-100	000-6960-100	000-7710-100
2	Adapter Rod	1	000-3500-106		000-5610-100			
3	Lock Nut	1	000-3500-107					

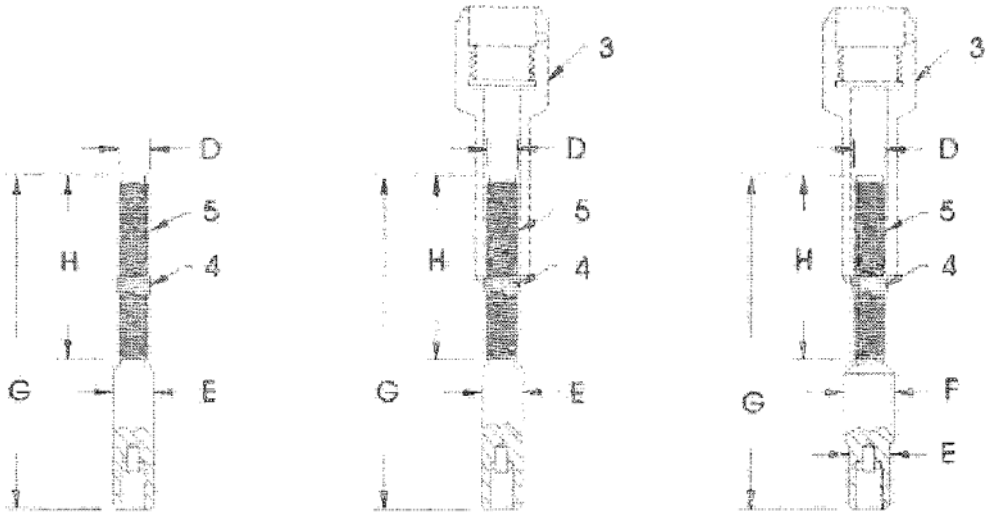
PARTS LIST - continued
REFER TO FIGURE 2

ITEM	DESCRIPTION	QTY	SIZE					
			8.71	9.50	11.56	12.00	14.25	17.25
1	Setting Sleeve	1	000-8710-100	000-9500-103	000-11560-100	000-12600-100	000-14250-100	000-17250-100
2	Adapter Rod	1	000-5610-100					
3	Lock Nut	1	000-5500-107					

AWM 000558

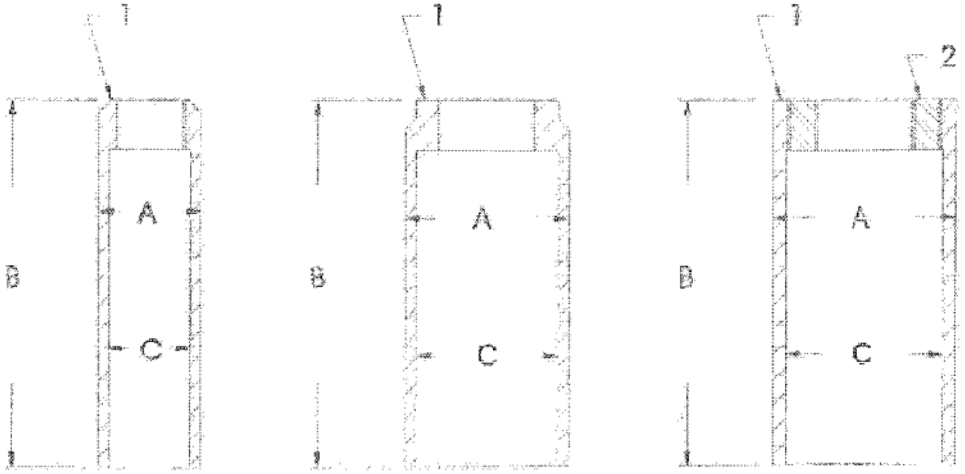
MEGCO Ex. 1007

TENSION MANDRELS & LOCK SPRINGS



SIZE 3.593 | SIZE 3.937 - 4.937 | SIZE 5.375 - 12.000

SETTING SLEEVES



SIZE 3.593 | SIZE 3.937 - 7.125 | SIZE 8.125 - 12.000

Figure 3

AWM 000559

MEGCO Ex. 1007

Model B Sleeve Valve Cement Retainer, Model B-1 Bridge Plug
on Baker Wireline Pressure Setting Tool Continued

DIMENSIONAL DATA
REFER TO FIGURE 3

DIM.	3.593	3.937/ 4.312	5.375/ 5.687	6.312	7.125	8.125	9.000	9.437	10.437	11.560	13.000
A	3.500	3.812	5.375	6.312	7.000	8.000	8.875	9.437	10.437	11.560	11.750
B	12.875	12.500	10.540	5.560	9.120	9.687	9.687	9.687	9.937	10.125	10.156
C	2.875	3.000	4.687	5.000	6.375	6.968	7.000	7.000	8.250	10.875	10.875
D	1.000		1.125								
E	1.187	1.200	1.437								
F	not applicable		1.750								
G	20.000	18.000	16.000								
H	3.500	10.125	16.000								

The number given for "C" can change due to materials available at the time of manufacture. This is given as nominal and in some cases max. diameter.

PARTS LIST
REFER TO FIGURE 3

ITEM	DESCRIPTION	QTY	SIZE 3.593	3.937/4.312	5.375/5.687	6.312	7.125
-	Complete Adapter Kit	-	005-3593-900	005-3937-900	005-5687-900	005-6312-900	005-7125-900
1	Setting Sleeve	1	005-3593-200	005-3937-200	005-5687-200	005-6312-200	005-7125-200
2	Stub Sleeve Bushing	-	not required				
3	Adjuster Sub	1	not required		006-1240-205		
-	Socket Head Set Screw	1	not required		3/16 - 18 x 3/8 lg.		
4	Lock Spring	1	006-2530-205		005-4240-205		
5	Tension Mandrel	1	005-3593-205	005-3937-205	005-5687-205		

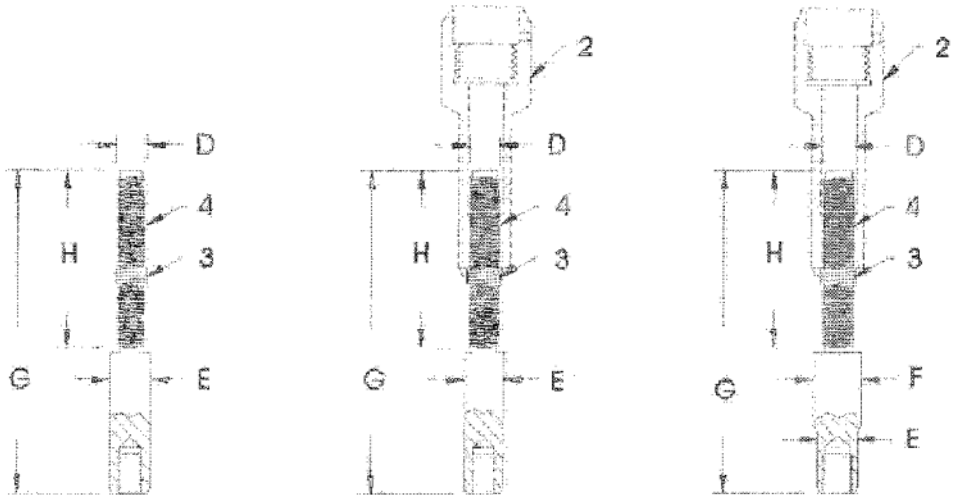
PARTS LIST - continued
REFER TO FIGURE 3

ITEM	DESCRIPTION	QTY	SIZE 8.125	9.000	9.437	10.437	11.560	13.00
-	Complete Adapter Kit	-	005-8125-900	005-9000-900	005-9437-900	005-1043-900	005-1156-900	005-1300-900
1	Setting Sleeve	1	005-8125-200	005-9000-200	005-9437-200	005-1043-200	005-1159-200	005-1200-200
2	Stub Sleeve Bushing	1	005-8125-205					
3	Adjuster Sub	1	006-1240-205					
-	Socket Head Set Screw	1	3/16 - 18 x 3/8 lg.					
4	Lock Spring	1	006-4240-205					
5	Tension Mandrel	1	005-5687-205					

AWM 000560

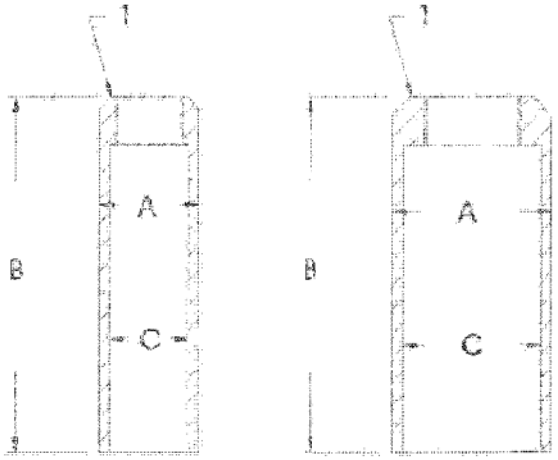
MEGCO Ex. 1007

TENSION MANDRELS & LOCK SPRINGS



SIZE 3.593 - 3.937 SIZE 3.937 - 4.750 SIZE 5.340 - 12.000

SETTING SLEEVES



SIZE 3.593 - 4.750 SIZE 5.340 - 12.000

Figure 4

AWM 000561

MEGCO Ex. 1007

Model A Sleeve Valve Cement Retainer, Model A-1 Bridge Plug on Baker Wireline Pressure Setting Tool — Continued

DIMENSIONAL DATA
REFER TO FIGURE 4

DIM.	3.593/ 3.937 *	3.937 **	4.240 4.750	5.340/ 5.610	6.090	6.960	7.710	8.710	9.500	11.560	12.000	14.250	17.250
A	3.500	3.812	4.240	5.250	6.090	6.960	7.710	8.710	9.500	11.560	12.000	14.250	17.250
B	16.500	15.812	16.250	15.000								17.250	15.000
C	3.000		3.750	4.750	5.500	6.500	7.125	8.125	9.000	10.500	11.250	13.250	15.250
D	1.000		1.625										
E	1.156		1.200										
F	not applicable		1.750										
G	13.312	12.625	19.500	23.500	27.000								
H	4.000	4.500	4.000	5.000									

The number given for "G" may change due to materials available at the time of manufacture. This is given as constant and in some cases max. dimension

* - when setting 3.937 on #710 setting tool

** - when setting 3.937 on #520 setting tool

PARTS LIST
REFER TO FIGURE 4

ITEM	DESCRIPTION	QTY	SIZE 3.593/3.937 *	3.937 **	4.240/4.750	5.340/5.610	6.090	6.960
	Complete Adapter Kit	-	003-3500-900	003-3937-900	003-4240-900	003-5610-900	003-6088-900	003-6960-900
1	Setting Sleeve	1	000-3500-200	003-3937-200	000-4240-200	000-5610-200	000-6088-200	000-6960-200
2	Adjuster Sub	1	not required	000-4240-200				
-	Socket Head Set Screw	1	not required	5/16 - 18 x 3/8 lg.				
3	Lock Spring	1	000-3500-203	000-4240-203				
4	Tension Mandrel	1	003-3500-205	003-4240-205		003-5610-205	003-6088-205	

* - when setting 3.937 on # 10 setting tool

** - when setting 3.937 on #20 setting tool

PARTS LIST - continued
REFER TO FIGURE 4

ITEM	DESCRIPTION	QTY	SIZE 7.710	8.710	9.500	11.560	12.000	14.250
	Complete Adapter Kit	-	003-7710-900	003-8710-900	003-9500-900	003-1156-900	003-1200-900	003-1425-900
1	Setting Sleeve	1	000-7710-200	000-8710-200	000-9500-200	000-1156-200	000-1200-200	000-1425-200
2	Adjuster Sub	1	000-4240-200					
-	Socket Head Set Screw	1	5/16 - 18 x 3/8 lg.					
3	Lock Spring	1	000-4240-203					
4	Tension Mandrel	1	003-7710-205					

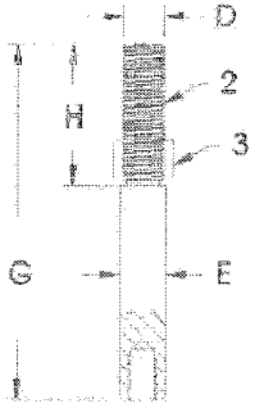
PARTS LIST - continued
REFER TO FIGURE 4

ITEM	DESCRIPTION	QTY	SIZE 17.250
	Complete Adapter Kit	-	003-1725-900
1	Setting Sleeve	1	000-1725-200
2	Adjuster Sub	1	000-4240-200
-	Socket Head Set Screw	1	5/16 - 18 x 3/8 lg.
3	Lock Spring	1	000-4240-203
4	Tension Mandrel	1	003-7710-205

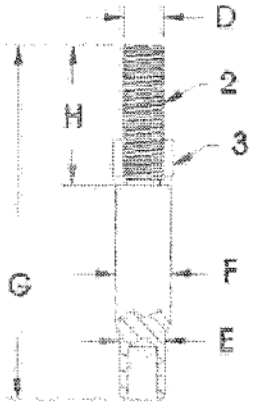
AWM 000562

MEGCO Ex. 1007

ADAPTER RODS & LOCK NUTS

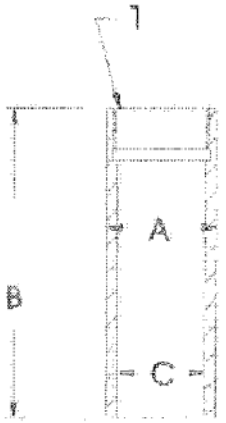


SIZE 3.593 - 4.760

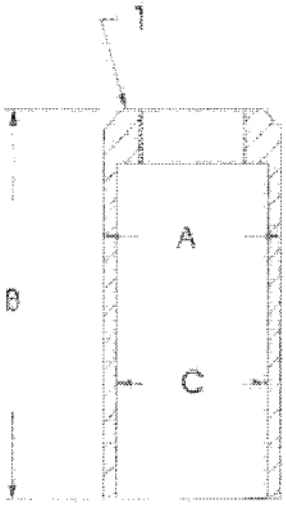


SIZE 5.340 - 17.250

SETTING SLEEVES



SIZE 3.593 - 3.937



SIZE 4.240 - 17.250

Figure 5

AWM 000563

MEGCO Ex. 1007

Model A Sleeve Valve Cement Retainer, Model A-1 Bridge Plug on GO Wireline Pressure Setting Tool Continued

DIMENSIONAL DATA

REFER TO FIGURE 5

DIM.	3.593	3.937	4.249/4.750	5.340/5.610	6.090	6.960	7.710	8.710	9.500	11.560	12.000	13.250	17.250
A	3.500	3.812	4.240	5.281	6.000	6.960	7.710	8.710	9.500	11.560	12.000	13.250	17.250
B	8.812		9.250	15.000								15.000	
C	3.000		3.750	4.750	5.500	6.960	7.125	8.125	9.000	10.500	11.250	13.250	15.250
D	3.375												
E	1.156			1.700									
F	not applicable			1.750									
G	26.375		18.000	27.500	31.000	34.187							
H	4.000												

The number given for "C" can change due to materials available at the time of manufacture. This is given as nominal and/or some sizes may duplicate.

PARTS LIST

REFER TO FIGURE 5

ITEM	DESCRIPTION	QTY	SIZE					
			3.593	3.937	4.249/4.250	5.340/5.610	6.090	6.960
1	Setting Sleeve	1	003-3500-100	003-3937-100	000-4250-100	000-5610-100	000-6090-100	000-6960-100
3	Lock Nut	1	000-3500-107					
2	Adapter Rod	1	003-3593-105		003-3500-105	003-5610-105	003-6090-105	

PARTS LIST - continued

REFER TO FIGURE 5

ITEM	DESCRIPTION	QTY	SIZE					
			7.710	8.710	9.500	11.560	12.000	14.250
1	Setting Sleeve	1	000-7710-100	000-8710-100	000-9500-100	000-11560-100	000-12000-100	000-14250-100
3	Lock Nut	1	000-3500-107					
2	Adapter Rod	1	003-7710-105					

PARTS LIST - continued

REFER TO FIGURE 5

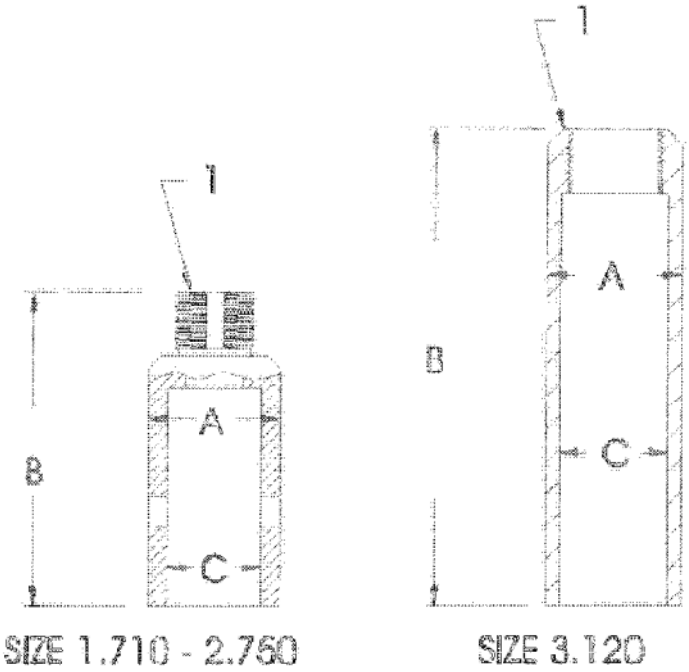
ITEM	DESCRIPTION	QTY	SIZE
			17.250
1	Setting Sleeve	1	000-17250-100
3	Lock Nut	1	000-3500-107
2	Adapter Rod	1	003-7710-105

AWM 000564

MEGCO Ex. 1007

Model A Ball Check Cement Retainer
on Baker Wireline Pressure Setting Tool

SETTING SLEEVES



SIZE 1.710 - 2.760 SIZE 3.120

Figure 6

DIMENSIONAL DATA
REFER TO FIGURE 6

DIM.	1.71	2.10	2.75	3.12
A	1.710	2.100	2.750	3.120
B	5.00			14.125
C	1.250	1.750		2.625

The number given for "C" can change due to materials available at the time of manufacture. This is given as nominal and in some cases max. dimension.

PARTS LIST
REFER TO FIGURE 6

ITEM	DESCRIPTION	QTY	SIZE			
			1.71	2.10	2.75	3.12
1	Setting Sleeve	1	000-1710-200	000-2100-200	000-2750-200	000-3120-200
* 2	Torsion Mandrel	1	NA	NA	NA	004-3120-045

* - Not shown above

AWM 000565

MEGCO Ex. 1007

SETTING SLEEVES

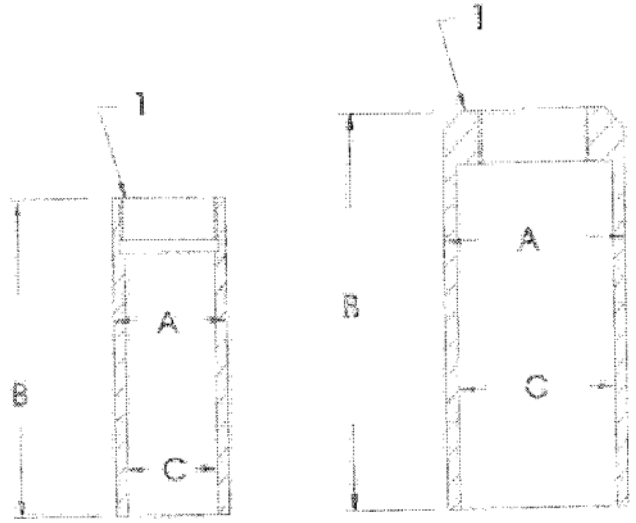


Figure 7

DIMENSIONAL DATA
REFER TO FIGURE 7

DIM.	1.71	1 11/16 2.10	2 1/8 2.10	1 11/16 2.75	2 1/8 2.75	3.12
A	1.710	2.060	2.102	2.750	2.750	3.120
B	7.340					9.381
C	1.437	1.500	2.250			2.125

The number given for "C" can change due to materials available at the time of manufacture. This is given as nominal and is approximate max. diameter.

PARTS LIST
REFER TO FIGURE 7

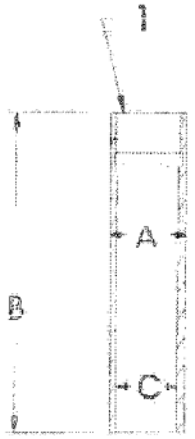
ITEM	DESCRIPTION	QTY	SIZE 1.71	2.10 (1 11/16)	2.10 (2 1/8)	2.75 (1 11/16)	2.75 (2 1/8)	3.12
1	Setting Sleeve	1	060-1710-101	060-2103-101	060-2108-102	060-2750-101	060-2750-102	060-3120-100
*2	Adapter Rod	1	NA	NA	NA	NA	NA	064-3120-105

*= Not shown above

AWM 000566

MEGCO Ex. 1007

SETTING SLEEVES



SIZE 1.406 - 2.750

Figure 8

DIMENSIONAL DATA
REFER TO FIGURE 8

DIM.	1.406	1.750	1.906	2.187/2.281	2.500	2.750
A	1.500	1.750	1.906	2.187	2.500	2.750
B	9.625	8.437	8.219	8.125	8.625	8.625
C	1.203	1.437	1.437	1.750	1.750	1.750

The number given for "C" can change due to materials available at the time of manufacture. This is given as nominal and in some cases max. diameter.

PARTS LIST
REFER TO FIGURE 8

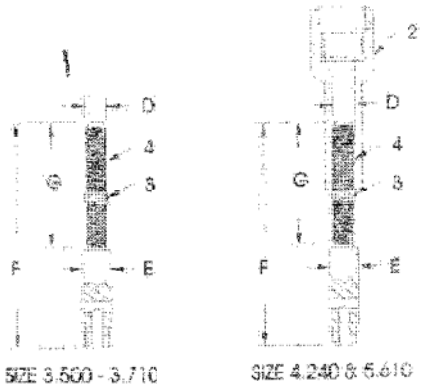
ITEM	DESCRIPTION	QTY	SIZE					
			1.406	1.750	1.906	2.187/2.281	2.500	2.750
1	Setting Sleeve	1	001-1406-100	001-1750-100	001-1906-100	001-2187-100	001-2500-100	001-2750-100

AWM 000567

MEGCO Ex. 1007

Standard Frac Plug
on Baker Wireline Pressure Setting Tool

TENSION MANDRELS & LOCK SPRINGS



SETTING SLEEVES

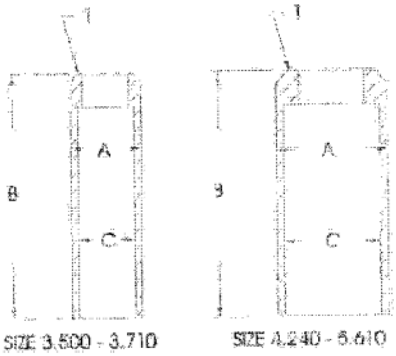


Figure 9

DIMENSIONAL DATA
REFER TO FIGURE 9

DIM.	3.50/ 3.71	4.24	5.61
A	3.593	4.240	5.250
B	10.500	16.250	12.000
C	3.000	3.750	4.750
D	1.000	1.125	
E	1.375		
F	14.687	16.468	18.281
G	3.062	3.500	3.500

The number given for "G" can change due to materials available at the time of manufacture. This is given as nominal and to some upper max. diameter

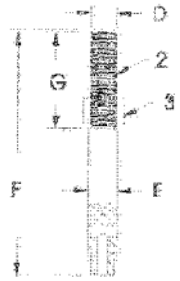
PARTS LIST
REFER TO FIGURE 9

ITEM	DESCRIPTION	QTY	SIZE 3.50/3.71	SIZE 4.24	SIZE 5.61
	Complete Adaptor Kit	-	0802-3500-000	0802-4240-000	0802-5610-000
1	Setting Sleeve	1	0803-3500-200	0803-4240-200	0803-5610-200
2	Adjuster Sub	1	Not required	0805-3203-203	
3	Socket Head Set Screw	3	24oz required	5/16 - 18 x 5/8 lg	
3	Lock Spring	1	0001-3506-203	0800-4240-203	
4	Tension Mandrel	1	0802-3500-203	0802-4240-203	0802-5610-203

AWM 000568

MEGCO Ex. 1007

ADAPTER ROD & LOCK NUT



SIZE 3.500 - 5.610

SETTING SLEEVES

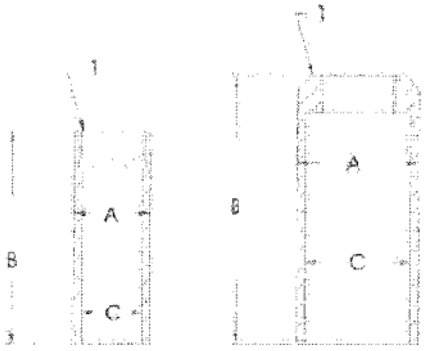


Figure 10

DIMENSIONAL DATA
REFER TO FIGURE 10

DIM.	3.50 3.71	4.24	5.61
A	3.540	4.240	5.256
B	8.313	9.559	14.250
C	3.000	3.750	4.750
D	1.375		
E	1.375		
F	17.312	19.157	26.656
G	4.000		

The number given for "C" can change due to materials available at the time of manufacture. This is given as nominal and in some cases max. dimension.

PARTS LIST - continued
REFER TO FIGURE 10

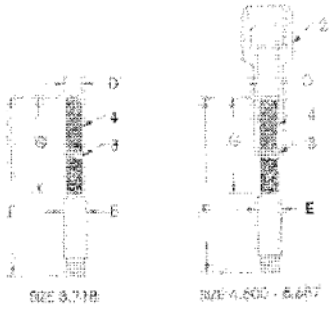
ITEM	DESCRIPTION	QTY	SIZE 3.50/3.71	4.24	5.61
1	Setting Sleeve	1	060-5500-100	060-4246-100	060-5610-100
2	Adapter Rod	1	060-5500-104	060-4240-104	060-5610-104
3	Lock Nut	1	060-5500-107		

AWM 000569

MEGCO Ex. 1007

Big Bore Frac Plug
on Baker Wireline Pressure Setting Tool

TENSION MANDRELS & LOCK SPRINGS



SETTING NUT

SETTING SLEEVES

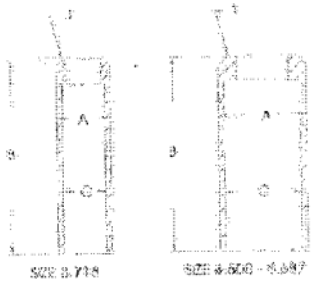


Figure 11

DIMENSIONAL DATA
REFER TO FIGURE 11

DIM.	3.718	4.500	5.687
A	3.625	4.500	5.687
B	14.187	20.437	12.750
C	3.125	3.750	4.750
D	1.000	1.125	
E	1.500		
F	6.687	6.437	7.500
G	4.000		
H	2.865		4.125
J	1.625		3.125

The number given for "C" can change due to materials available at the time of manufacture. This is given as a initial setup to the tools max. diameter.

PARTS LIST
REFER TO FIGURE 11

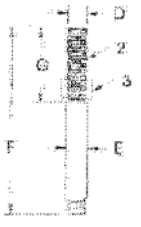
ITEM	DESCRIPTION	QTY	SIZE 3.718	SIZE 4.500	SIZE 5.687
-	Complete Adapter Kit	-	002-3718-900	002-4500-900	002-5687-900
1	Setting Sleeve	1	002-3718-200	002-4500-200	002-5687-200
2	Adapter Sub	1	Not required	002-4240-202	
3	Socket Head Set Screw	1	Not required	5/16 - 18 x 3/8 Lg.	
4	Tension Mandrel	1	002-3718-204	002-4500-204	002-5687-204
5	Lock Spring	1	003-3718-205	003-4500-205	003-5687-205
6	Setting Nut	1	002-3718-104	002-4500-104	002-5687-102

AWM 000570

MEGCO Ex. 1007

Big Bore Frac Plug
on GO Wireline Pressure Setting Tool

ADAPTER ROD & LOCK NUT



SETTING NUT

SETTING SLEEVES

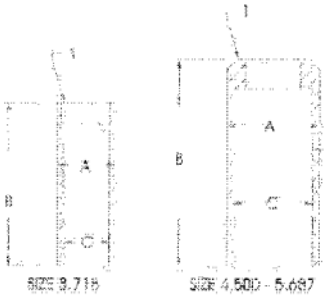


Figure 12

DIMENSIONAL DATA
REFER TO FIGURE 12

DIM.	3.718	4.500	5.687
A	3.625	4.500	5.687
B	14.250	15.312	14.250
C	3.125	3.750	4.750
D	1.275		
E	1.500		1.750
F	12.375	11.937	10.625
G	1.000		
H	2.365		3.125
J	1.625		2.125

The number given for "A" can change due to materials available at the time of manufacture. This is given as nominal and in some cases max. diameter.

PARTS LIST
REFER TO FIGURE 12

ITEM	DESCRIPTION	QTY	SIZE		
			3.718	4.500	5.687
1	Setting Sleeve	1	002-3718-100	002-4500-100	002-5687-100
2	Adapter Rod	1	002-3718-104	002-4500-104	002-5687-104
3	Lock Nut	1	000-3500-107		
4	Setting Nut	1	002-3718-103		002-5687-103

AWM 000571

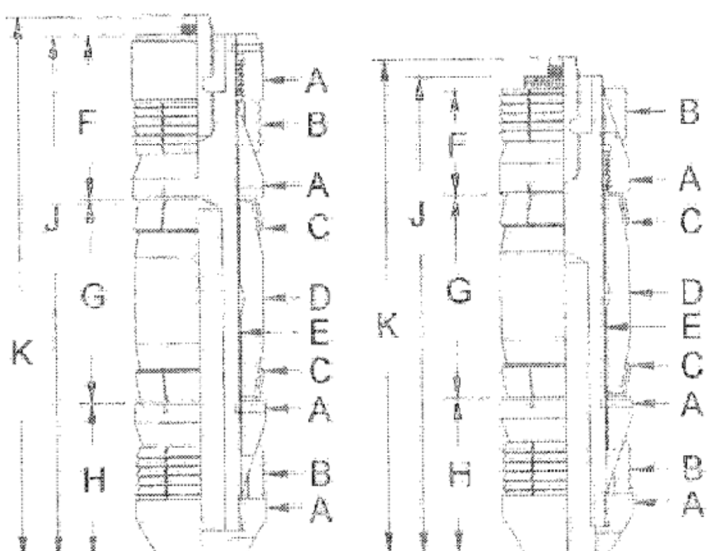
MEGCO Ex. 1007

Big Boy Bridge Plug

DIMENSIONAL DATA

Plug Size O.D.	*	A	B	C	D	E	F	G	H	J	K
1.71 GO	L	1.710	1.656	1.687	1.687	1.062	[illegible]	[illegible]	[illegible]	9.687	[illegible]
1.71 Baker	L	1.710	1.656	1.687	1.687	1.098	[illegible]	[illegible]	[illegible]	9.687	[illegible]
2.10 GO	L	2.109	2.031	2.062	2.062	1.250	[illegible]	3.812	2.790	[illegible]	12.218
2.10 Baker	L	2.100	2.031	2.062	2.062	1.250	[illegible]	[illegible]	2.790	[illegible]	16.093
2.75 GO	R	2.750	2.571	2.687	2.687	1.500	2.433	5.093	4.079	11.843	[illegible]
2.75 Baker	R	2.750	2.571	2.687	2.687	1.500	2.433	[illegible]	4.078	11.843	[illegible]
3.12	R	3.130	3.062	3.062	3.062	1.875	[illegible]	[illegible]	[illegible]	11.843	15.718
3.50	L	3.500	3.421	3.437	3.437	2.125	4.221	[illegible]	4.235	[illegible]	[illegible]
3.71	L	3.710	3.625	3.648	3.648	2.125	4.921	[illegible]	[illegible]	15.133	15.655
4.24	L	4.240	4.187	4.187	4.157	2.750	4.822	[illegible]	5.078	15.345	15.843
4.75	L	4.750	4.687	4.687	4.687	2.750	[illegible]	[illegible]	5.028	15.515	15.812
5.34	L	5.340	5.250	5.266	5.232	2.687	5.962	7.250	5.682	19.124	**
5.64	L	5.640	5.562	5.546	5.546	3.387	[illegible]	[illegible]	5.932	19.124	**
6.09	R	6.000	6.015	5.968	5.968	4.125	5.860	8.650	7.132	20.250	**
6.96	R	6.960	6.875	6.865	6.943	4.625	[illegible]	[illegible]	7.461	[illegible]	**
7.71	R	7.710	7.580	7.593	7.563	5.125	[illegible]	13.046	7.625	[illegible]	**
8.71	R	8.710	[illegible]	6.593	8.593	5.687	4.867	[illegible]	6.250	[illegible]	**
9.50	R	9.500	[illegible]	9.375	9.375	6.750	5.694	10.562	9.641	25.504	**
11.56	R	11.560	10.437	11.437	11.437	9.800	[illegible]	[illegible]	8.250	[illegible]	**
12.00	R	12.00	11.875	11.875	11.875	9.800	5.250	[illegible]	8.250	25.862	**
14.25	R	14.25	14.125	14.125	14.125	11.500	[illegible]	[illegible]	[illegible]	[illegible]	**
17.25	R	17.25	17.125	17.125	17.125	14.000	[illegible]	[illegible]	8.500	[illegible]	**

* The second column indicates which illustration to use for plug dimensioning (left or right).
** [illegible]
[illegible]



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AWM 000572

MEGCO Ex. 1007

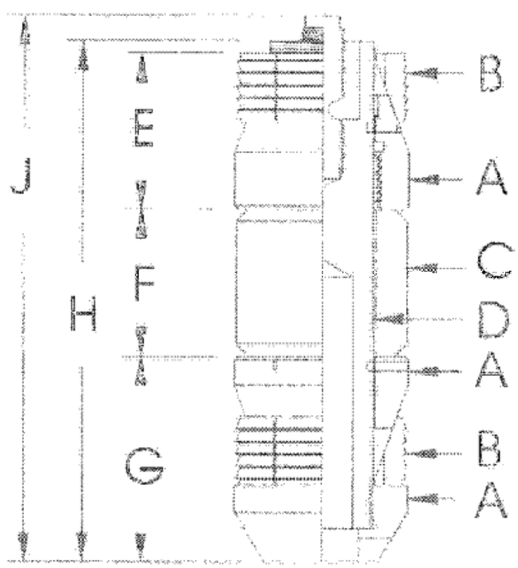
Midget Bridge Plug (1 & 2)

Wireline Set

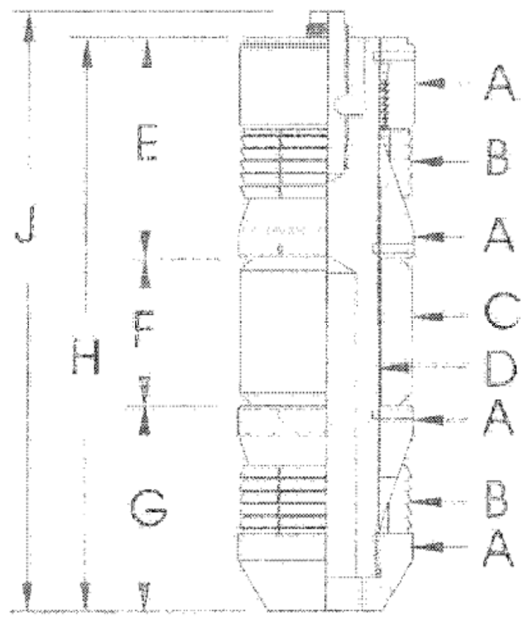
DIMENSIONAL DATA

Plug Size O.D.	*	A	B	C	D	E	F	G	H	J
2.10 M1 GO	L	2.100	2.031	2.062	1.250	1.796	2.220	2.796	7.000	9.312
2.10 M1 Baker	L	2.100	2.031	2.062	1.250	1.798	2.220	2.796	7.000	13.187
3.50 M1	L	3.500	3.421	3.437	2.125	3.455	2.955	4.733	11.500	12.000
3.71 M1	L	3.710	3.625	3.648	2.125	3.455	2.955	4.733	11.500	12.000
4.24 M1	L	4.240	4.187	4.187	2.750	3.623	3.890	5.028	12.905	13.405
5.61 M1 **	L	5.610	3.562	5.546	3.687	4.151	4.915	5.932	15.343	15.343
3.50 M2	R	3.500	3.421	3.437	2.125	4.921	2.955	4.733	12.656	13.156
3.71 M2	R	3.710	3.625	3.648	2.125	4.921	2.955	4.733	12.656	13.156
4.24 M2	R	4.240	4.187	4.187	2.250	4.872	3.890	5.028	13.843	14.343
5.61 M2 **	R	5.610	3.562	5.546	3.687	5.932	4.515	5.932	16.875	16.875

* - The second column indicates which illustration to use for plug dimensioning (left or right).
** - The shear stud on this size does not extend above the top of the body.
Some sizes differ slightly from the illustrations shown



Midget 1



Midget 2

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AWM 000573

MEGCO Ex. 1007

Extra Range Bridge Plug

DIMENSIONAL DATA

Plug Size O.D.	A	B	C	D	E	F	G	H	J	K	L	M
1.406	.625	[illegible]	[illegible]	[illegible]	1.406	.625	[illegible]	5.015	[illegible]	3.977	[illegible]	12.650
1.750	.687	1.687	1.750	1.656	1.750	.750	1.547	5.008	4.275	3.746	14.525	16.500
1.906	.687	1.906	1.906	1.800	1.875	.750	1.295	5.356	5.237	4.043	16.031	17.906
2.187	.687	2.125	2.187	2.125	2.125	.750	1.459	5.565	5.992	4.257	17.250	19.125
2.281	.687	2.218	2.281	2.125	2.125	.750	1.040	6.027	5.866	4.715	17.250	19.625
2.500	1.000	2.468	2.500	2.437	2.437	1.250	1.072	4.102	6.436	5.352	17.562	19.562
2.750	1.000	2.687	2.750	2.687	2.687	1.250	1.072	4.102	6.436	5.352	17.562	19.562

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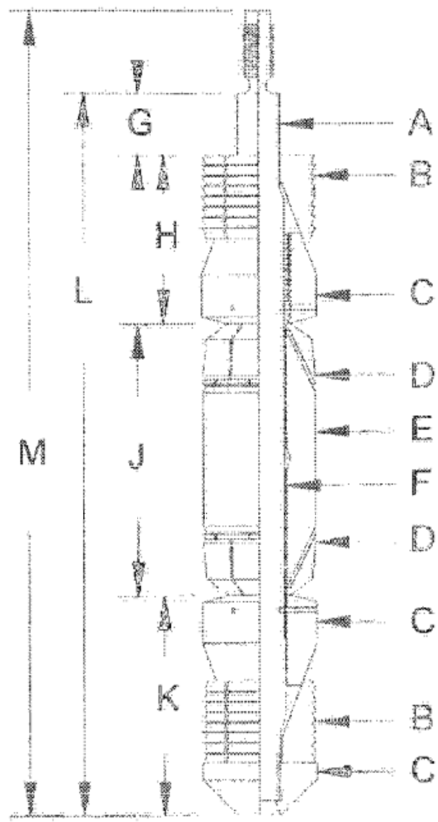

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[illegible]

AWM 000574

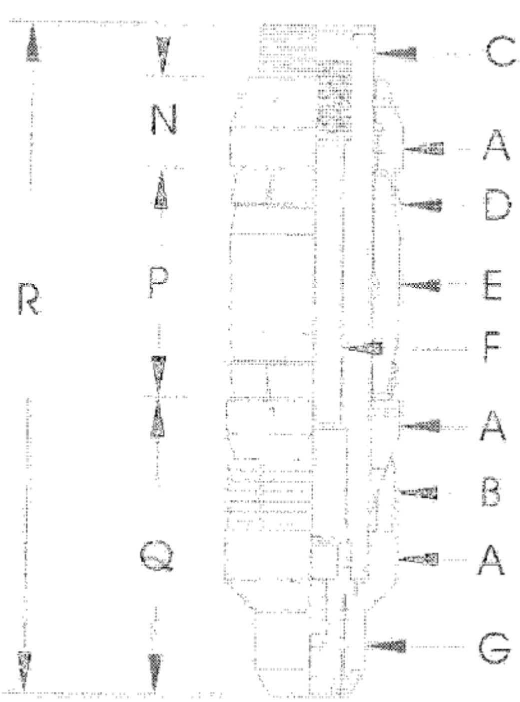
MEGCO Ex. 1007

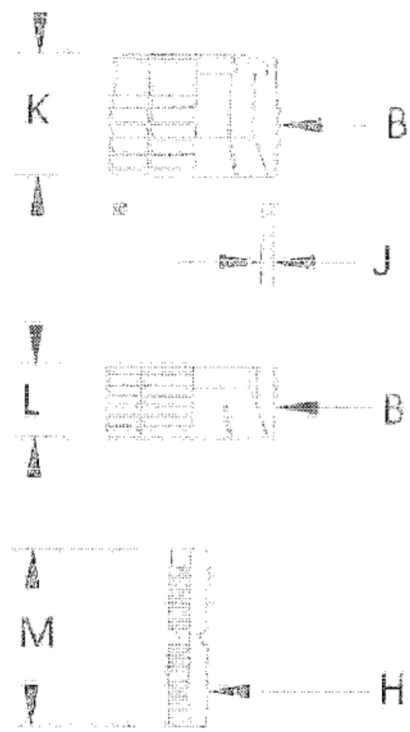
Model A-1 Bridge Plug

DIMENSIONAL DATA

Plug O.D.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
3.593	3.593	3.500	2.500	3.531	3.531	1.345	2.750	.750	.437	2.437	2.187	3.375	2.437	5.312	7.880	16.218
3.937	3.937	3.875	2.500	3.875	3.875	1.345	2.750	.750	.437	2.437	2.187	3.375	2.437	5.125	7.866	16.218
4.24	4.240	4.187	2.750	4.187	4.187	1.345	2.750	.750	.750	3.125	1.625	3.375	2.343	5.390	[illegible]	16.218
4.75	4.750	4.687	2.750	4.687	4.687	1.345	2.750	.750	.750	3.125	1.625	3.375	2.593	5.350	[illegible]	16.218
5.34	5.340	5.281	3.687	5.250	5.250	2.000	3.500	1.125	.750	3.125	2.187	4.125	3.812	9.250	8.213	[illegible]
5.61	5.610	5.562	3.187	5.546	5.546	2.000	3.500	1.125	.750	3.125	2.437	4.125	3.812	7.250	8.213	19.812
6.09	6.090	6.015	4.125	5.968	5.968	2.000	3.500	1.125	.750	3.750	2.375	4.125	2.312	8.850	9.000	24.812
6.96	6.960	6.875	4.625	6.843	6.843	2.000	3.500	1.125	.750	4.125	2.750	4.125	2.750	5.796	[illegible]	24.812
7.71	7.710	7.680	5.125	7.593	7.593	2.000	3.500	1.125	.750	4.500	2.875	4.125	2.937	10.046	11.250	28.125
8.71	8.710	8.680	5.687	8.593	8.593	2.000	3.500	1.125	.750	4.500	2.875	4.125	2.937	10.562	11.560	28.250
9.50	9.500	9.375	6.750	9.375	9.375	2.000	3.500	1.125	.750	4.500	3.125	4.125	3.250	10.593	11.688	28.437
11.56	11.36	11.437	9.000	11.437	11.437	2.000	3.500	1.125	.750	4.500	3.250	4.125	3.875	10.609	10.187	28.437
12.00	12.00	11.875	9.000	11.875	11.875	2.000	3.500	1.125	.750	4.500	3.250	4.125	3.825	10.609	10.187	28.437
14.29	14.25	14.125	11.500	14.125	14.125	2.000	3.500	1.125	.750	4.500	1.625	4.125	3.375	9.859	11.680	28.437
17.25	17.25	17.125	14.000	17.125	17.125	2.000	3.500	1.125	.750	2.500	2.812	4.125	3.675	7.609	11.680	28.437

Some sizes differ slightly from the illustration, as may [illegible]





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AWM 000575

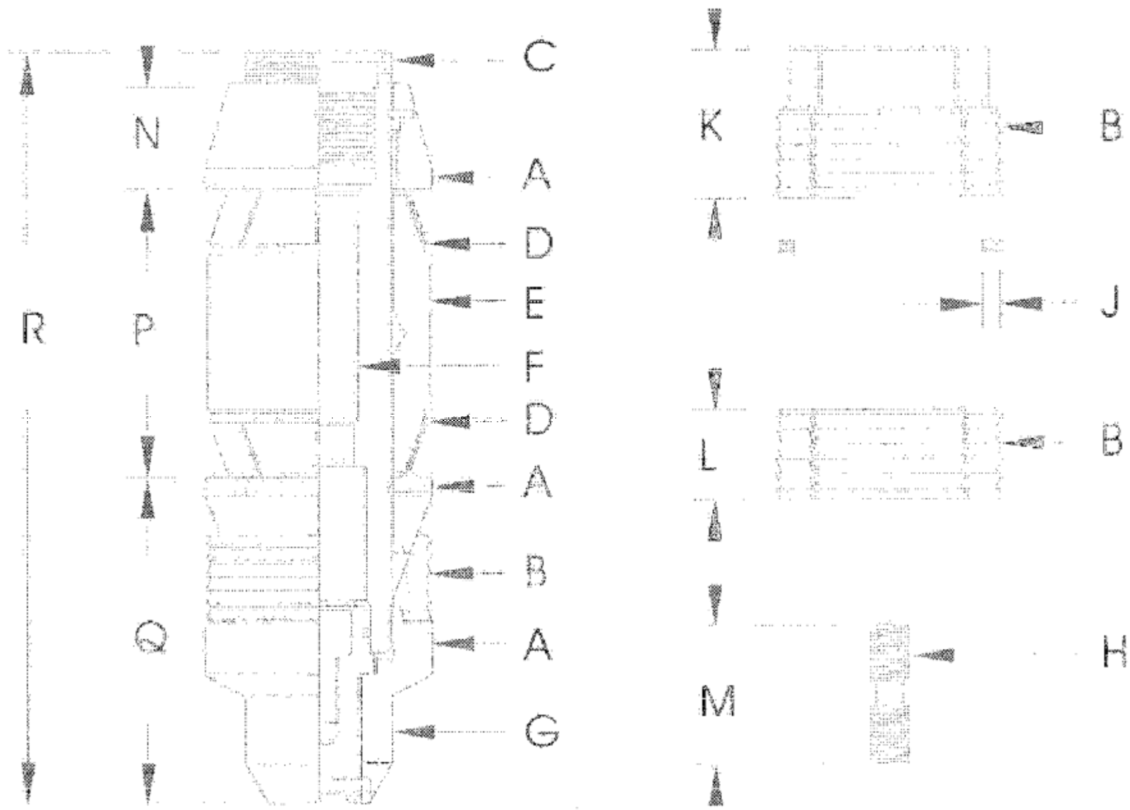
MEGCO Ex. 1007

Model B-1 Bridge Plug

DIMENSIONAL DATA

Plug O.D.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
3.593	3.593	3.500	2.500	3.375	3.531	1.345	2.875	.375	.337	3.187	3.187	3.500	2.437	5.312	8.125	16.750
3.937	3.937	3.875	2.500	3.875	3.875	1.345	2.875	.375	.337	3.187	2.387	3.500	2.437	5.125	8.278	16.750
4.312	4.312	4.250	2.750	4.187	4.187	1.345	2.875	.375	.750	3.562	2.250	3.500	3.187	5.500	7.278	16.750
5.375	5.375	5.312	3.187	3.240	[illegible]	2.030	3.625	1.000	.750	3.781	2.562	3.500	2.687	7.250	8.469	18.200
5.687	5.687	5.625	3.187	5.340	5.340	2.030	3.625	1.000	.750	3.781	2.562	3.500	2.687	7.250	8.164	18.200
6.312	6.312	6.250	4.125	5.868	5.868	2.030	3.625	1.000	.750	5.000	2.812	3.500	3.062	8.850	8.866	19.000
7.125	7.125	7.062	4.625	6.845	6.845	2.030	3.625	1.000	.750	4.062	2.500	3.500	2.250	9.750	8.866	19.000
8.125	8.125	8.000	5.125	7.595	7.593	2.030	3.625	1.000	1.250	3.875	3.062	3.500	3.062	10.040	10.257	19.718
9.437	9.437	9.375	6.750	9.375	9.375	2.030	3.625	1.000	1.250	4.062	2.812	3.500	3.500	10.562	8.419	23.875
12.00	12.00	11.750	4.000	11.875	11.875	2.030	3.625	1.000	1.250	3.375	3.312	3.500	4.625	10.609	8.250	22.845

Some sizes differ slightly from the illustrations shown



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AWM 000576

MEGCO Ex. 1007

H-M Bridge Plug

DIMENSIONAL DATA

Plug Size O.D.	A	B	C	D	E	F	G	H	J	K	L	M
2.75 P	2.093	2.750	2.750	2.671	2.687	2.687	1.500	7.000	2.453	5.093	4.078	23.531
3.12 P	2.600	3.120	3.120	3.062	3.062	3.062	1.875	6.281	2.395	5.250	3.952	22.781
3.50 P	2.600	3.500	3.500	3.421	3.437	3.437	2.125	8.531	3.455	5.470	4.733	27.187
3.50 E	2.600	3.500	3.500	3.421	n/a	3.437	2.125	8.531	3.455	2.890	4.733	24.687
3.71 P	2.600	3.500	3.710	3.625	3.648	3.648	2.125	8.531	3.455	5.470	4.733	27.187
3.71 E	2.600	3.500	3.710	3.625	n/a	3.648	2.125	8.531	3.455	2.890	4.733	24.687
4.24 P	2.600	3.500	4.240	4.187	4.187	4.187	2.750	8.531	3.623	5.390	5.028	27.375
4.24 E	2.600	3.500	4.240	4.187	n/a	4.187	2.750	8.531	3.623	3.890	5.028	25.875
4.75 P	2.600	3.500	4.750	4.687	4.687	4.687	2.750	8.531	3.623	5.390	5.028	27.375
5.34 P	3.100	5.340	5.340	5.281	5.260	5.260	3.687	9.125	4.151	7.250	5.932	31.125
5.34 E	3.100	5.340	5.340	5.281	n/a	5.260	3.687	9.125	4.151	4.915	5.932	28.781
5.61 P	3.100	5.340	5.610	5.562	5.546	5.546	3.687	9.125	4.151	7.250	5.932	31.125
5.61 E	3.100	5.340	5.610	5.562	n/a	5.546	3.687	9.125	4.151	4.915	5.932	28.781
6.09 P	3.100	5.340	6.090	6.015	5.968	5.968	4.125	11.031	4.800	8.859	7.132	35.407
6.96 P	3.100	5.340	6.960	6.875	6.843	6.843	4.625	11.031	4.960	9.796	7.400	37.687
7.71 P	3.100	5.340	7.710	7.640	7.593	7.593	5.125	11.031	5.125	10.046	7.625	38.375
8.71 P	3.100	5.340	8.710	8.640	8.593	8.593	5.687	11.031	4.867	10.562	8.225	39.250
9.50 P	3.100	5.340	9.500	9.375	9.375	9.375	6.750	10.781	5.044	10.562	9.011	40.781
11.56 P	3.100	5.340	11.56	11.437	11.437	11.437	9.000	11.531	5.750	10.609	8.250	41.156
12.00 P	3.100	5.340	12.00	11.875	11.875	11.875	9.000	11.531	5.750	10.609	8.250	41.156
14.25 P	3.100	5.340	14.25	14.125	14.125	14.125	13.500	11.343	6.985	8.859	10.233	41.750
17.25 P	3.100	5.340	17.25	17.125	17.125	17.125	14.000	10.843	6.901	7.609	9.401	43.312

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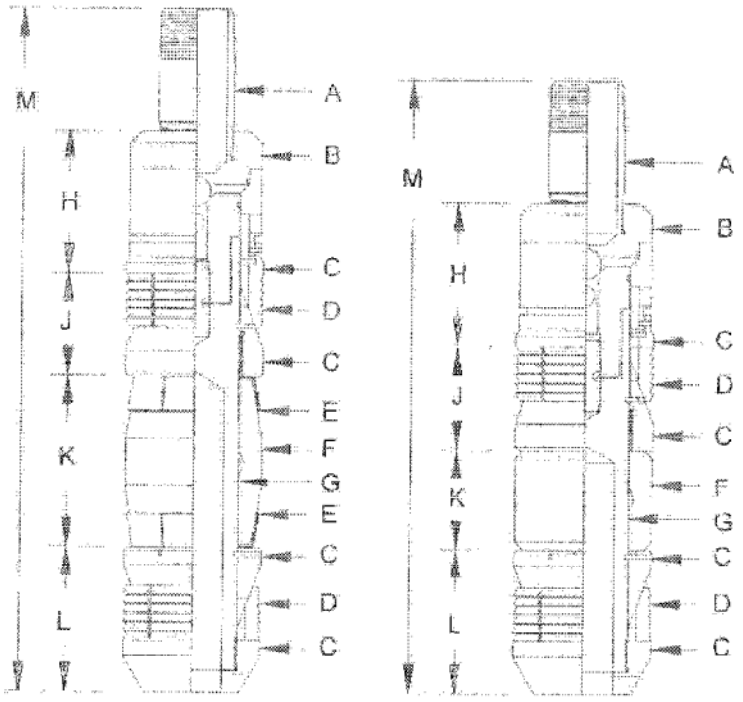

Model P Model E

AWM 000577

MEGCO Ex. 1007

Alpha Oil Tools Guidelines for Running H-M Bridge Plugs:

RECOMMENDED PROCEDURE BEFORE RUNNING H-M BRIDGE PLUG:

1. Run a casing scraper (if necessary) to clean inner wall of casing and free any debris or obstructions.
2. Circulate well to clean well of debris and junk.
3. Check casing I.D. 2 ft -3 ft. below setting depth to insure no restrictions exist.

MAKE-UP PROCEDURE:

1. Make up tubing on tubing adapter by placing back-up on tubing adapter and rotate tubing to the right until tight.
2. DO NOT REMOVE TUBING ADAPTER FROM PLUG TO MAKE-UP!!

RUNNING IN:

1. Run into well at uniform rate - no faster than 30 seconds per 90 foot stand. Be certain tubing is free of debris and excessive scale.
2. Avoid unnecessary right-hand rotation of tubing string.
3. Use slow starts and stops when moving tubing string - no jerking.

SETTING H-M PLUG:

1. Run tubing to desired setting point. Never set in collars or where milling has occurred. Set in static conditions (no fluid or gas movement).
2. Drop ball down tubing string - the ball should be 1 1/4 diameter. Allow approximately 5 minutes per 1000 feet for ball to travel in water. More time is needed in mud or viscous fluids.
3. Apply pump pressure to tubing string until 2000 p.s.i. is reached. This pressure will stroke cylinder down into slip. The slip will break into segments and make contact with casing.

   NOTE: If you lose pressure before reaching 2000 p.s.i., go on to the next step. In heavier weights of casing, slip and hydro sleeve travel is limited which prevents pressure loss. Simply stop at 2000 p.s.i. and proceed to the next step.
4. Pull recommended tension above the pipe weight at the tool, to complete setting the plug. Hold tension for 3 to 5 minutes. It is recommended to calculate tubing stretch versus using weight indicator for true pull. See formula below.
5. The tubing string may be released from the H-M Plug by pulling 500 lbs. tension at the tool and rotating the workstring 9 turns to the right at the tool.

PLUG	SETTING FORCES	
Size OD	Minimum Tension	Maximum Tension
2.75	9,000 lbs.	12,000 lbs.
3.42	20,000 lbs.	25,000 lbs.
3.50-4.75	22,000 lbs.	30,000 lbs.
5.34-6.09	30,000 lbs.	45,000 lbs.
6.96-7.71	35,000 lbs.	48,000 lbs.
8.71-9.50	35,000 lbs.	48,000 lbs.
11.50-12.00	35,000 lbs.	48,000 lbs.
14.25-17.25	40,000 lbs.	48,000 lbs.

SPECIAL NOTE: For low fluid level wells

In low fluid level wells, any fluids placed in the tubing after the setting ball has reached it's seat, will tend to shear the cylinder downward on the H-M Bridge Plug. Chart #1 shows the pressure created in psi. per barrel of fluid added, and Chart #2 shows the feet of fill-up per barrel of fluid added. Since 2000 psi. pressure in favor of the tubing at the tool is required to initiate the setting sequence, we suggest the following method for calculating the required applied pump pressure.

1. Determine fluid weight in pounds per gallon (#/gal) or p.s.i. per foot (psi/ft).
2. Estimate fluid level from surface of well. NOTE: The tubing string will fill during running in through the fluid fill ports.
3. From Chart #1, select the appropriate column for the size of tubing string and line for appropriate fluid weight.
4. From Chart #2, select the appropriate column for the size of tubing string and determine the lineal feet per barrel of fluid.
5. Multiply the depth of fluid level from surface by the lineal feet per barrel from Chart #2 to determine the required amount of barrels of fluid to fill the tubing string.
6. Multiply the barrels required to fill the tubing string by the psi. barrel figure from Chart #1. This figure will give you the total hydrostatic head exerted by the fluid in the tubing string when completely filled. If this figure is less than the required 2000 psi., sufficient pump pressure must be added to achieve the 2000 p.s.i. required pressure. In those cases where the calculated pressure for the fluid to fill the tubing string exceeds the required 2000 p.s.i., you need only to add

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MEGCO Ex. 1007

or fill with the necessary barrels of fluid to achieve the required 2000 p.s.i. This may be calculated by dividing 2000 p.s.i. by the psi. per barrel figure from Chart #1. Over pressuring cannot occur since the tool will be activated at 2000 p.s.i. and the downward travel of the cylinder will vent the excess fluid into the annulus above the plug before damage occurs. Once the required pressure is created at the plug, sufficient tension must be applied as shown in step #4 under setting H-M plug. Complete setting sequence as described in step #5.

To Calculate Stretch To Set: S = (F x L x 12) / (E x A) = Elongation due to tension

F = Tension pulled over normal weight in pounds
E = 30,000,000 = Modulus of elasticity for steel
L = Length of running-in string
A = Cross-sectional area of running-in string

Chart # 1

Mud Wt. API GR #/GAL.	PSI/FT	2 3/8 EU Tubing 4.7 #/FT.	2 7/8 EU Tubing 6.5 #/FT.	2 7/8 IU Drill Pipe 10.4 #/FT.	3 ½ IU Drill Pipe 13.3 #/FT.
8.34	.433	111.09	74.8	97.6	58.9
9.0	.468	120.8	80.7	105.4	63.6
9.2	.478	123.7	82.5	107.8	65.0
9.4	.488	126.1	84.3	110.1	66.4
9.6	.499	128.8	86.1	112.4	67.8
9.8	.509	131.5	87.9	114.8	69.2
10.0	.519	134.3	89.7	117.1	70.7
10.2	.530	136.9	91.4	119.5	72.1
10.4	.540	139.6	93.2	121.8	73.4
10.6	.551	142.2	95.0	124.2	74.9
10.8	.561	145.0	96.8	126.5	76.3
11.0	.571	147.6	98.6	128.8	77.7
11.2	.582	150.3	100.4	131.2	79.2
11.4	.592	153.0	102.2	133.6	80.5
11.6	.603	155.7	104.0	135.9	82.0
11.8	.613	158.3	105.8	138.2	83.4
12.0	.623	161.0	107.6	140.6	84.8
12.2	.634	163.7	109.4	142.9	86.2
12.4	.644	166.4	111.2	145.2	87.6
12.6	.655	169.1	113.0	147.6	89.0
12.8	.665	171.8	114.8	149.9	90.4
13.0	.675	174.5	116.6	152.3	91.8
13.2	.686	177.1	118.3	154.6	93.3
13.4	.696	179.8	120.1	157.0	94.7
13.6	.706	182.5	121.9	159.3	96.1
13.8	.717	185.2	123.7	161.6	97.5
14.0	.727	187.9	125.5	164.0	98.9
14.5	.753	194.6	130.0	169.8	102.4
15.0	.779	201.3	134.5	175.7	105.9
15.5	.805	208.0	139.0	181.6	109.5
16.0	.831	214.7	143.4	187.4	113.0
16.5	.857	221.4	147.9	193.3	116.6
17.0	.883	228.1	152.4	199.1	120.1
17.5	.909	234.8	156.9	205.0	123.6
18.0	.935	241.5	161.4	210.8	127.2
18.5	.961	248.3	165.8	216.7	130.7
19.0	.987	255.0	170.2	222.6	134.2
19.5	1.01	261.7	174.8	228.4	137.8
20.0	1.04	268.4	179.4	234.3	141.3

Chart # 2

O.D.	Wt. (lbs./ft.)	Barrels per Lineal Ft.	Lineal Ft. per Barrel	A
2 3/8	4.7 EU	.00387	258.4	1.304
2 3/8	4.6 NU	.00387	258.4	1.304
2 7/8	6.5 EU	.00579	172.4	1.812
2 7/8	6.4 NU	.00579	172.4	1.812
2 7/8	10.4 IU DP	.00449	222.3	2.858
3 1/2	13.3 IU DP	.00742	134.7	3.912

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AWM 000579

MEGCO Ex. 1007

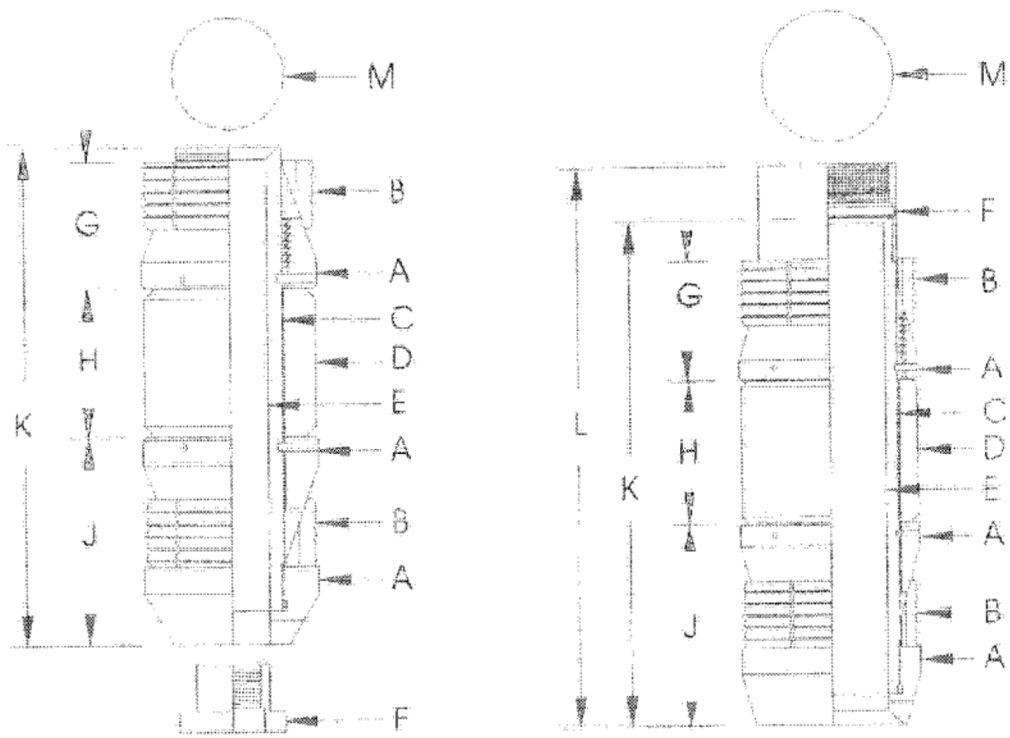
Frac Plug

Wireline Set

DIMENSIONAL DATA

Plug Size O.D.	*	A	B	C	D	E	F	G	H	J	K	L	M
3.50 Standard	L	3.500	3.437	2.125	3.437	1.500	2.125	3.455	2.955	4.733	12.500	NA	2.250
3.71 Standard	L	3.710	3.648	2.125	3.648	1.500	2.125	3.455	2.955	4.733	12.500	NA	2.250
4.24 Standard	L	4.240	4.187	2.750	4.187	2.000	2.750	3.623	3.890	5.028	12.986	NA	3.000
5.61 Standard	L	5.610	5.562	3.687	5.546	2.500	3.000	4.151	4.915	5.952	15.343	NA	3.510
3.718 Big Bore	R	3.718	3.625	2.875	3.648	2.375	2.865	2.609	2.958	4.265	10.656	11.784	3.540
4.500 Big Bore	R	4.500	4.437	3.250	4.187	2.687	3.250	2.702	3.890	4.452	11.937	13.062	3.540
5.687 Big Bore	R	5.687	5.625	4.125	5.546	3.250	4.125	2.955	4.915	5.390	13.468	14.468	3.540

*- The second column indicates which illustration to use for plug dimensioning (left or right)



STANDARD BIG BORE

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AWM 000580

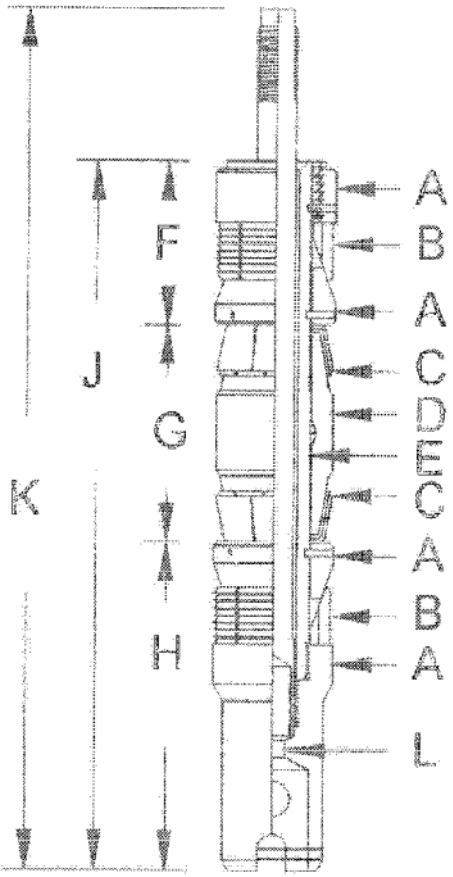
MEGCO Ex. 1007

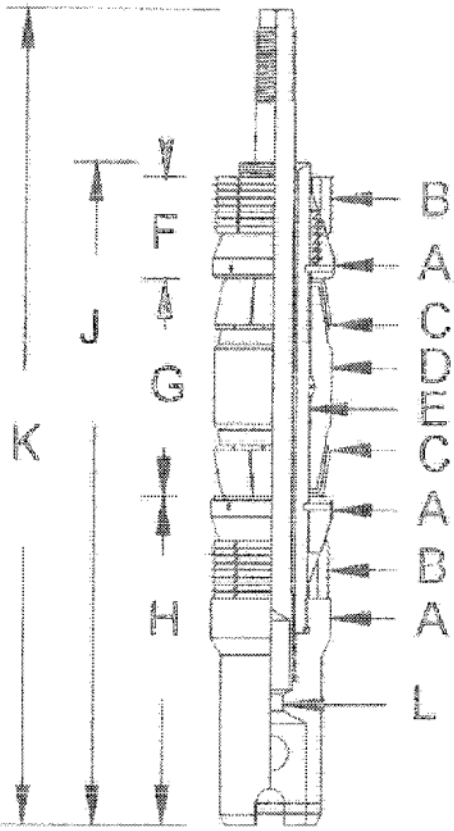
Model "A" Ball Check Cement Retainer

DIMENSIONAL DATA

Ret. Size O.D.	*	A	B	C	D	E	F	G	H	J	K	L
1.71 GO	L	1.710	1.656	1.687	1.687	1.093	3.390	3.218	5.828	12.437	18.781	437
1.71 Baker	L	1.710	1.656	1.687	1.687	1.093	3.390	3.218	5.828	12.437	18.500	437
2.10 GO	L	2.100	2.071	2.062	2.062	1.250	3.296	3.812	5.796	12.000	14.812	437
2.10 Baker	L	2.100	2.031	2.062	2.062	1.250	3.296	3.812	5.796	12.000	18.437	437
2.75 GO	R	2.750	2.671	2.687	2.687	1.500	2.453	5.093	7.140	12.687	17.125	437
2.75 Baker	R	2.750	2.671	2.687	2.687	1.500	2.453	5.093	7.140	12.687	20.656	437
3.12 **	R	3.129	3.062	3.062	3.062	1.875	2.390	5.250	7.890	13.781	14.843	437

* - The second optional indicator will illustrate to use for retainer direction only (left or right).
** - This size uses a short fluid by-pass.





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AWM 000581

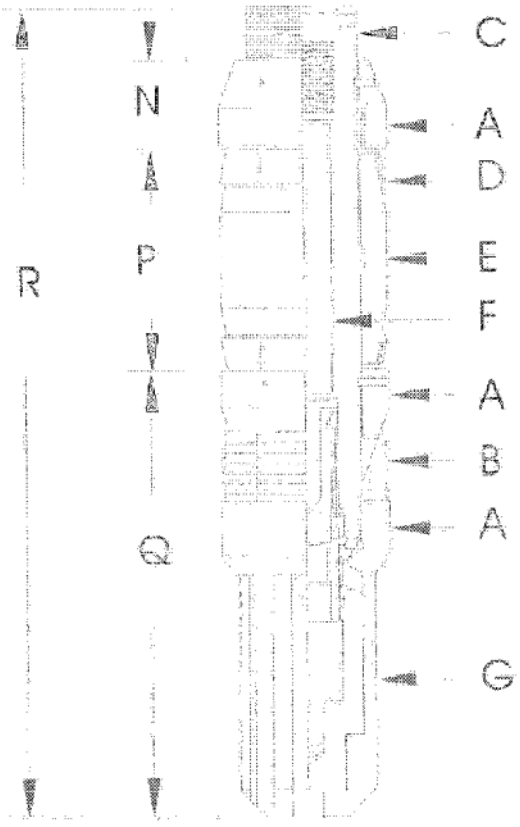
MEGCO Ex. 1007

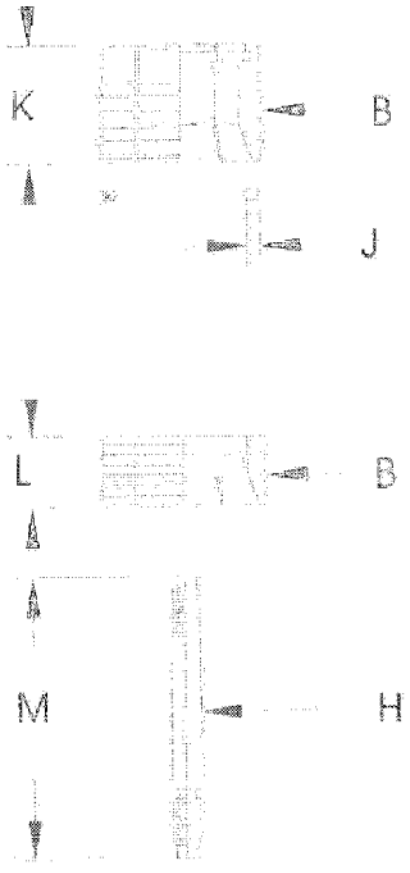
Model A Sleeve Valve Cement Retainer

DIMENSIONAL DATA

Ref. O.D.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
3.593	3.593	3.500	2.500	3.531	3.531	1.345	3.375	.750	.437	2.437	2.187	7.062	2.437	5.312	11.685	20.093
3.937	3.937	3.875	2.500	3.875	3.875	1.345	3.375	.750	.437	2.437	2.187	7.062	2.437	5.125	11.841	20.093
4.24	4.240	4.187	2.750	4.187	4.187	1.345	3.375	.750	.750	3.325	1.625	7.062	2.593	5.390	10.841	20.093
4.75	4.750	4.687	2.750	4.687	4.687	1.345	3.375	.750	.750	3.125	1.625	7.062	2.593	5.390	10.841	20.093
5.34	5.340	5.281	3.687	5.260	5.260	2.000	4.500	1.125	.750	3.125	2.187	7.750	2.812	7.250	12.088	25.687
5.61	5.610	5.502	3.687	5.546	5.546	2.000	4.500	1.125	.750	3.125	2.187	7.250	2.812	7.250	12.088	25.687
6.09	6.090	6.015	4.125	5.968	5.968	2.000	4.500	1.125	.750	3.250	2.375	7.750	2.312	8.859	12.944	28.087
6.96	6.960	6.875	4.625	6.843	6.843	2.000	4.500	1.125	.750	4.125	2.750	7.750	2.250	9.796	15.212	28.087
7.71	7.710	7.640	5.125	7.593	7.593	2.000	4.500	1.125	.750	4.500	2.875	7.750	2.937	10.046	18.125	32.000
8.71	8.710	8.640	5.687	8.593	8.593	2.000	4.500	1.125	.750	4.500	2.875	7.750	2.937	10.562	15.733	32.125
9.50	9.500	9.375	6.750	9.375	9.375	2.000	4.500	1.125	.750	4.500	3.125	7.750	3.250	10.562	14.823	32.312
11.56	11.56	11.437	9.000	11.437	11.437	2.000	4.500	1.125	.750	4.500	3.250	7.250	3.875	10.609	14.062	32.312
12.00	12.00	11.875	9.000	11.875	11.875	2.000	4.500	1.125	.750	4.500	3.250	7.250	3.875	10.609	14.062	32.312
14.25	14.25	14.125	11.500	14.125	14.125	2.000	4.500	1.125	.750	4.500	3.625	7.750	3.875	8.859	15.565	32.312
17.25	17.25	17.125	14.000	17.125	17.125	2.000	4.500	1.125	.750	5.500	3.625	7.750	3.875	7.609	15.565	32.312

The figures contained herein are subject to change without notice.
Some sizes differ slightly from the illustrations shown.





AWM 000582

MEGCO Ex. 1007

Model "A" Sleeve Valve Cement Retainer is a safe, reliable, fast and inexpensive means of placing a cement retainer at a predetermined depth in the casing. Designed with high-quality materials insures an excellent combination of strength and drillability. Can easily be converted to Wireline Set - Tubing Set Bridge Plug. The "A" Cement Retainer has many features. The most notable ones being:

- Locked Upper Cone, cannot move upward under slips due to impact from below because of stop ring attached to the body of retainer.
- Locked Lower Cone is pinned to body and supported through packing system to stationary upper cone. This greatly reduces risk of premature set.
- Locked-in Full Circle Lower Slips are securely locked against mating shoulder in body and cannot be knocked loose by impact from below

INSTALLATION ONTO MECHANICAL SETTING TOOL

The Cement Retainer is made up on the Mechanical Setting Assembly without the top slips in place (these instructions are for assembly of Alpha "A" Cement Retainer onto the Alpha "A" Mechanical Setting Tool. If another setting tool is being used please follow the directions for that particular setting tool.) As retainer is going on the setting tool note that the threads are left-handed. Once the threads catch, make it up until the torque screw holes align with the holes on the setting tool. Insert desired number of torque screws (the brass torque screws require approximately 200 ft./lbs. each to shear). Now place the top slip on the assembly. Hold the slip segments in place for the slip retaining sleeve to screw down and cover the top portion of slip. The upset on the setting tool will fit into the inside groove near the top end of slip. Make certain that the setting tool is bottomed against the stop and ready for run in.

NOTE: As a precaution, one left-hand turn should be taken every five to ten stands during run-in for prevention of premature top slip release which results in premature setting of the retainer.

RUNNING MECHANICALLY

1. At the desired setting depth pick-up 2 feet. The Mechanical Setting Assembly is actuated by rotating the tubing to the right ten turns. The top slips are released to make contact with the casing.
2. Next an upstrain on the tubing string pulls the body of the Cement Retainer up with respect to the top slip setting and packing-off the Cement Retainer. When desired force is stored in the retainer (refer to the chart for acceptable setting force) going by tubing stretch charts lock down tubing for a few minutes and allow packoff to set. At this time the valve in retainer is closed. The stroke for opening and closing the valve is two inches.
3. Release setting tool from cement retainer by placing an upstrain on tubing of 800 lbs. and rotating to the right initially breaking torque screws. Continuing with ten turns to the right.

TUBING SETTING FORCES

Retainer O.D.	Minimum Strain	Maximum Strain
3.500 - 4.750	22,000 lbs.	30,000 lbs.
5.340 - 5.610	30,000 lbs.	45,000 lbs.
6.090 - 17.25	35,000 lbs.	48,000 lbs.

NOTE: If desired, the setting tool may be released from retainer with four to five right-hand turns at the tool and 8,000 to 10,000 lbs. upstrain. This is accomplished by unscrewing the top portion of the threads on the control latch and collapsing the threads on the lower end.

After releasing from the retainer, a set down weight of 3,000 to 5,000 lbs. will re-latch the setting tool and an 8,000 to 10,000 lbs. upstrain will remove it. The stinger seal will remain in the retainer seal bore as long as the snap-out force is not exceeded.

More information about Alpha's "A" Mechanical Setting Tool and its operation are contained in the technical unit for that tool.

NOTE: The cement retainer body is made of a readily drillable material. Each time the setting tool is snapped out of the retainer, the snap-in and snap-out values will decrease slightly until they reach approximately 2500 (snap-in) and 5000 - 6000 lbs. (snap-out) where they level out. This pattern will occur with each retainer run. Control of the valve is maintained by setting down to open and picking up to close.

Please read Cement Retainer Hydraulics on the following pages.

AWM 000583

MEGCO Ex. 1007

Cement Retainer Hydraulics:

There are varied forces exerted by pressures to the casing and to the cementing string which act on the Stinger sub and cementing string during the operation of cementing. The effects of these forces are governed by the size of the Stinger sub, the size, weight per foot and length of the tubing or drill pipe, mud weight, casing pressure, and the cementing string pressure.

When pressure is applied to the casing annulus the Stinger Sub tends to lift upward and thereby close the Control Valve with a force equal to the annulus pressure at the Cement Retainer times the difference between the area of the outside of the cementing string and the area of the Cement Retainer bore.

When pressure is applied to the cementing string a force is exerted at the top of the string which reduces the hook-load. This pressure also applies a force at the bottom holding the Stinger Sub in the Cement Retainer bore and keeps the valve open. These two forces have a net effect of upward force equal to the cementing pressure times the area of the Cement Retainer bore. When the hook-load is reduced to zero-weight, the upward force acting against the top of the cementing string will close the Control Valve by lifting the tubing string.

The pressure in the annulus and in the cementing string will determine the amount of weight that must be set on the Cement Retainer to keep the Stinger Sub in the correct place and the Control Valve open. Having the Stinger Sub in place and the Control Valve open will be the two requirements necessary to determine the minimum depth at which the Cement Retainer can be set.

Therefore, the amount of cementing string pressure and annulus pressure that can be utilized will be limited for any size and length of cementing string. If the total of the forces trying to close the Control Valve is equal to the weight of the cementing string in the well fluid, an increase in either of these pressures will close the Control Valve. It is possible however to increase the cementing pressure if the casing pressure is decreased and vice versa.

If the snap-out force of from 8,000 to 10,000 lbs. is not exceeded the Stinger Sub will remain in the Cement Retainer Seal Bore.

It is possible to pump the Stinger Sub out of the retainer bore in situations such as a load put on the tubing such as during pressure testing, or if a high annulus pressure is encountered. The opening or closing of the valve after the retainer has been set has no bearing on the Snap-Latch feature of the Stinger Sub. Two inches of movement at the Retainer (Up to Close, Down to open) will open or close the Control Valve.

The values in the chart "Areas (In Sq. In.) Acted Upon by Tubing and Annulus Pressures" are printed shaded and unshaded. These values are the number of square inches acted upon by the pressure change, and also the resulting direction of force. The unshaded areas will, with a pressure increase, cause a force tending to keep the Control Valve open. The shaded areas will have an upward force, or a force wanting to close the Control Valve.

When the net force is upward, the set-down weight must be used to keep the Control Valve Open.

Note: Columns 1, 2, 4, 5, 6, & 7 must be multiplied by the change in pressure at the tool. Whereas column 3 must be multiplied by the tubing gage pressure.

HOW TO USE AREA PRESSURE CHART:

1. Multiply whichever column is applicable (Col 1, 4, 6) times the change in tubing pressure at the tool.2. Multiply whichever column is applicable (Col 2, 5, or 7) times the change in annulus pressure at the tool.3. Multiply Column 3 by the tubing gage pressure.

As the figure is always shaded in Column 3, the resulting force tends to close the Control Valve by lifting the tubing at the surface. The tubing will raise and the valve will be closed if by adding all three forces the result is a force tending to close the valve, and is greater than the maximum hook-load of the tubing before setting the tool.

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MEGCO Ex. 1007

Areas (in.2) Acted Upon By Tubing and Annulus Pressures

Cement Retainer Size (OD)	Tubing or Drill Pipe OD	Tubing Pressure Greater Than Annulus Pressure At The Tool			Annulus Pressure Greater Than Tubing Pressure At The Tool		Annulus Pressure Greater Than Tubing Pressure At The Tool Because Of Swabbing The Tool	
		Tubing Area	Annulus Area	Tubing ID Area	Tubing Area	Annulus Area	Tubing Area	Annulus Area
		Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
	1.660	.1	.7	1.5	.1	.7	.1	.7
3.500	1.900	.6	1.4	2.0	.6	1.4	.6	1.4
thru	2.062	1.0	1.9	2.4	1.0	1.9	1.0	1.9
4.750	2 3/8	1.7	3.0	3.1	1.7	3.0	1.7	3.0
	2 7/8	3.3	5.1	4.7	3.3	5.1	3.3	5.1
5.340	2 3/8	.0	1.3	3.1	.0	1.3	.0	1.3
thru	2 7/8	1.5	3.4	4.2	1.5	3.4	1.5	3.4
17.25	3 1/2	3.9	6.5	7.0	3.9	6.5	3.9	6.5

Example

Cement Retainer (OD)		3.500
Tubing		2 3/8 OD EU
Maximum hookload before stabbing stinger sub		7,000 lbs.
Maximum cementing pressure		2,800 PSI
Change in tubing pressure at tool (due to heavier fluid introduced during cementing plus cementing pressure)		3,700 PSI
Annulus pressure to be applied during cementing		1,200 PSI
3,700 PSI (Tubing pressure change at tool) x 1.7 (column 1)	=	6,290 lbs. DOWN
1,200 PSI (Annulus pressure change at tool) x 3.0 (column 2)	=	3,600 lbs. UP
6,290 - 3,600 = 2690 lbs. DOWN	So the Set DOWN weight will not be needed	
2,800 PSI (Gage pressure) x 3.1 (column 3)	=	8,680 lbs. UP
6,290 - 2,800 = 8,680	=	5,190 lbs. UP

The job may be completed successfully because the maximum hookload has not been exceeded.

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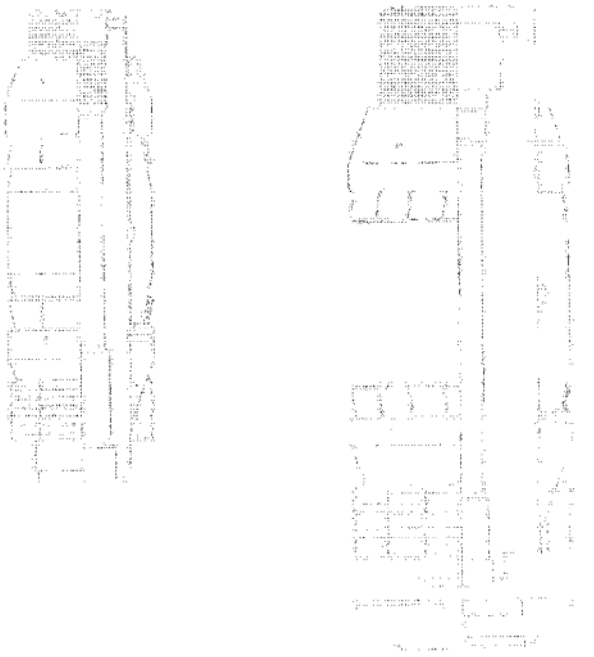
AWM 000585
MEGCO Ex. 1007

Conversion of
Model A Sleeve Valve Cement Retainer
& Model A-1 Bridge Plug

The Alpha Model A Cement Retainer and Model A-1 Bridge Plug designs incorporate conversion features that involve very little time and effort. These conversions may be done in the shop or on location without creating a problem. The tool to be converted must first be broken down to a basic unit (as shown below) then the correct kit may be installed. Please note that the four tool types listed here are Mechanical Set and Wireline Set Model A Sleeve Valve Cement Retainers and Mechanical Set and Wireline Set Model A-1 Bridge Plugs. The Mechanical Set and Wireline Set Model A Flapper Valve Retainer may be supplied upon special request.

BASIC UNIT
(conversion illustration only)



Sizes 3.593 - 5.610 Sizes 6.090 - 17.250

HOW TO OBTAIN A BASIC UNIT FROM A "A" SLEEVE VALVE CEMENT RETAINER, "A-1" BRIDGE PLUG, OR "A" FLAPPER VALVE RETAINER - Sizes 3.593 thru 12.000

1. Place tool in vise on the lower cone. Remove shoe and lower slip. On 6.090 and larger, the shoe will have a bushing on the outside. If the shoe is being changed, the bushing will make-up on the new shoe.
2. Insert tension mandrel from the appropriate wireline adapter kit into upper end of tool until it makes contact with valve body.
3. Strike tension mandrel until all parts from lower end of body are removed. These may consist of bridging plug, flapper unit, molded seal, seal retainer, sleeve, and valve body.

AWM 000586

MEGCO Ex. 1007

CONVERSION TO
"A" SLEEVE VALVE CEMENT RETAINER - WIRELINE SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard brass torque screw if they are present.
2. Install collet sleeve (Item 4) in bottom end of retainer body. Small end first
3. Install molded seal (Item 5) small end first. Use a wood block and hammer to tap it in and prevent damage to seal.
4. Insert seal retainer (Item 6).
5. Install valve body (Item 3). Lead with fingers and tap in with wood block until a dead stop is reached.
6. Install O-ring (Item 7) in shoe. If 6.090 or larger, make-up outer bushing onto the shoe.
7. Install shoe (Item 8)
8. The release stud can be installed when retainer is installed on the setting tool. The stud is placed in the tension mandrel and then screwed into retainer shoe.

PARTS LIST

ITEM	PART NAME	QTY.	SIZE						
			3.593	3.937	4.240	4.750	5.340	5.610	6.090
-	Kit Complete	1	003-3593-450	003-3937-450	003-4240-450	003-4750-450	003-5340-450	003-5610-450	003-6090-450
1	Wireline Sltr	1	003-3593-011	003-3937-011	003-4240-011	003-4750-011	003-5340-011	003-5610-011	003-6090-011
2	Release Stud	1	003-3500-014				003-5610-014		
3	Valve Body	1	003-3500-021				003-5610-021		
4	Collet Sleeve	1	003-3500-026				003-5610-026		
5	Molded Seal	1	003-3500-025				003-5610-025		
6	Seal Retainer	1	003-3500-020				003-5610-020		
7	O-Ring	1	160-2223-090 N				160-2331-090 N		
8	Shoe	1	003-3593-007	003-3937-007	003-4240-007	003-4750-007	003-5340-007	003-5610-007	003-6090-007

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE						
			6.960	7.710	8.710	9.500	11.562	12.00	
-	Kit Complete	1	003-6960-450	003-7710-450	003-8710-450	003-9500-450	003-11562-450	003-12000-450	
1	Wireline Sltr	1	003-6960-011	003-7710-011	003-8710-011	003-9500-011	003-11562-011	003-12000-011	
2	Release Stud	1	003-5610-014						
3	Valve Body	1	003-5610-021						
4	Collet Sleeve	1	003-5610-026						
5	Molded Seal	1	003-5610-025						
6	Seal Retainer	1	003-5610-020						
7	O-Ring	1	160-2331-090 N						
8	Shoe	1	003-6090-007						

AWM 000587

MEGCO Ex. 1007

CONVERSION TO
"A" SLEEVE VALVE CEMENT RETAINER - MECHANICAL SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard release stud if present
2. Install brass torque screws (Item 2).
3. Install collet sleeve (Item 4) in bottom end of retainer body. Small end first.
4. Install molded seal (Item 5) small end first. Use a wood block and hammer to tap it in and prevent damage to seal.
5. Insert seal retainer (Item 6).
6. Install valve body (Item 3). Lead with fingers and tap in with wood block until a dead stop is reached
7. Install o-ring (Item 7) in shoe. If 6.090 or larger, make-up outer bushing onto the shoe.
8. Install shoe (Item 8).

PARTS LIST

ITEM	PART NAME	QTY.	SIZE 3.893	3.937	4.240	4.750	5.340	5.610	6.090
-	Kit Complete	1	003-3503-440	003-3937-440	003-4240-440	003-4750-440	003-5340-440	003-5610-440	003-6090-440
1	Mechanical Slip	1	003-3501-010	003-3937-010	003-4240-010	003-4751-010	003-5340-010	003-5610-010	003-6090-010
2	Torque Screw	2	003-3500-019				003-4240-019		
3	Valve Body	1	003-3500-021					003-5610-021	
4	Collet Sleeve	1	003-3500-026					003-5610-026	
5	Molded Seal	1	003-3500-025					003-5610-025	
6	Seal Retainer	1	003-3501-020					003-5610-020	
7	O-Ring	1	109-233-090 N					109-233-090 N	
8	Shoe	1	003-3503-007	003-3937-007	003-4240-007	003-4750-007	003-5340-007	003-5610-007	003-6090-007

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE 6.960	7.710	8.710	9.500	11.562	12.00
-	Kit Complete	1	003-6960-440	003-7710-440	003-8710-440	003-9500-440	003-11562-440	003-12000-440
1	Mechanical Slip	1	003-6960-010	003-7710-010	003-8710-010	003-9500-010	003-11562-010	003-12000-010
2	Torque Screw	2	003-4240-019					
3	Valve Body	1	003-5610-021					
4	Collet Sleeve	1	003-5610-026					
5	Molded Seal	1	003-5610-025					
6	Seal Retainer	1	003-5610-020					
7	O-Ring	1	109-233-090 N					
8	Shoe	1	003-6090-007					

AWM 000588

MEGCO Ex. 1007

CONVERSION TO "A-1" BRIDGE PLUG
WIRELINE SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard brass torque screws if they are present.
2. Install release stud (Item 2) into the bridging plug (Item3).
3. Install o-ring (Item 4) on bridging plug (Item 3).
4. Drive roll pin (Item 6) into bridging plug (Item 3).
5. Install bridging plug (Item 3).
6. If 6.090 or larger, make-up outer bushing onto the shoe.
7. Install shoe (Item 5).

PARTS LIST

ITEM	PART NAME	QTY.	SIZE						
			3.593	3.937	4.250	4.750	5.340	5.610	6.090
-	Kit Complete	1	003-3593-470	003-3937-470	003-4240-470	003-4750-470	003-5310-470	003-5610-470	003-6090-470
1	Wireline Slip	1	003-3593-011	003-3937-011	003-4240-011	003-4750-011	003-5240-011	003-5610-011	003-6090-011
2	Release Stud	1	003-3560-011				003-3610-014		
3	Bridging Plug	1	003-2560-071				003-3610-071		
4	O-Ring	1	106-2255-090 N				106-2342-090 N		
5	Shoe	1	003-3593-070	003-3937-070	003-4240-070	003-4750-070	003-5310-070	003-3610-070	003-6090-070
6	Roll Pin	1	3/16 - 3/8 long						

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE						
			6.960	7.710	8.710	9.500	11.562	12.00	
-	Kit Complete	1	003-6960-470	003-7710-470	003-8710-470	003-9500-470	003-11562-470	003-12000-470	
1	Wireline Slip	1	003-6960-011	003-7710-011	003-8710-011	003-9500-011	003-11562-011	003-12000-011	
2	Release Stud	1	003-3610-013						
3	Bridging Plug	1	003-3610-071						
4	O-Ring	1	106-2342-090 N						
5	Shoe	1	003-6960-070						
6	Roll Pin	1	3/16 - 3/8 long						

AWM 000589

MEGCO Ex. 1007

CONVERSION TO "A-1" BRIDGE PLUG
MECHANICAL SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard release stud if one is present.
2. Install brass torque screws (Item 2).
3. Install o-ring (Item 4) on bridging plug (Item 3).
4. Drive roll pin (Item 6) into bridging plug (Item 3).
5. Install bridging plug (Item 3).
6. If 6.090 or larger, make-up outer bushing onto the shoe.
7. Install shoe (Item 5).

PARTS LIST

ITEM	PART NAME	QTY.	SIZE 3.593	3.937	4.240	4.750	5.340	5.610	6.090
-	Kit Complete	1	003-3593-460	003-3937-460	003-4240-460	003-4750-460	003-5340-460	003-5610-460	003-6090-460
1	Mechanical Slip	1	003-3593-010	003-3937-010	003-4240-010	003-4750-010	003-5340-010	003-5610-010	003-6090-010
2	Torque Screw	2	003-3500-019		003-4240-019				
3	Bridging Plug	1	003-3500-071				003-5610-071		
4	O-Ring	1	100-2233-090 N				100-2342-090 N		
5	Shoe	1	003-3593-070	003-3937-070	003-4240-070	003-4750-070	003-5340-070	003-5610-070	003-6090-070
6	Roll Pin	1	3/16 - 3/8 long						

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE 6.960	7.710	8.718	9.500	11.562	12.00
-	Kit Complete	1	003-6960-460	003-7710-460	003-8710-460	003-9500-460	003-1156-460	003-1200-460
1	Mechanical Slip	1	003-6960-010	003-7710-010	003-8710-010	003-9500-010	003-1156-010	003-1200-010
2	Torque Screw	2	003-4240-019					
3	Bridging Plug	1	003-5610-071					
4	O-Ring	1	100-2342-090 N					
5	Shoe	1	003-6960-070					
6	Roll Pin	1	3/16 - 3/8 long					

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AWM 000590

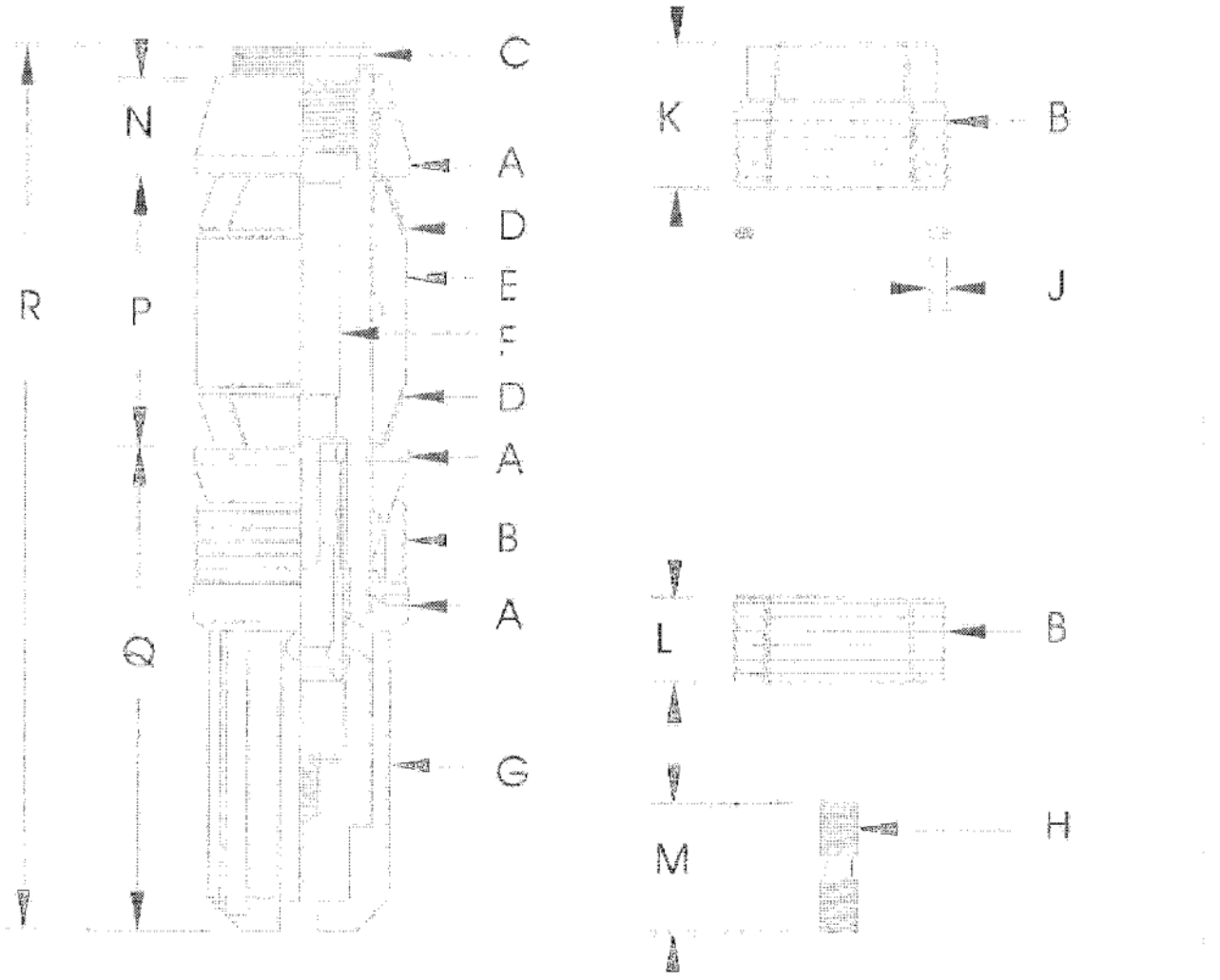
MEGCO Ex. 1007

Model B Sleeve Valve Cement Retainer

DIMENSIONAL DATA

Ref. O.D.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
3.593	3.593	3.500	2.500	3.531	3.531	1.345	3.375	.875	.437	3.187	2.187	6.750	2.437	5.312	11.687	20.312
3.937	3.937	3.875	2.500	3.875	3.875	1.345	3.375	.875	.437	3.187	2.187	6.750	2.437	5.125	11.840	20.312
4.312	4.312	4.250	3.750	4.187	4.187	1.345	3.375	.875	.750	3.562	2.750	6.750	3.187	5.300	10.840	20.312
5.375	5.375	5.312	3.687	5.260	5.260	2.000	4.500	1.000	.750	3.781	2.562	3.500	2.687	7.250	11.526	21.968
5.687	5.687	5.625	3.687	5.546	5.546	2.000	4.500	1.000	.750	3.781	2.562	3.500	2.687	7.250	11.526	21.968
6.312	6.312	6.250	4.125	5.968	5.968	2.000	4.500	1.000	.750	5.000	2.875	3.500	3.062	8.859	11.928	22.062
7.125	7.125	7.062	4.625	6.843	6.843	2.000	4.500	1.000	.750	4.062	2.560	3.500	2.750	9.796	11.928	22.062
8.125	8.125	8.000	5.125	7.593	7.593	2.000	4.500	1.000	1.250	3.875	3.062	3.500	3.062	10.046	13.720	22.781
9.437	9.437	9.375	6.750	9.375	9.375	2.000	4.500	1.000	1.250	4.062	2.812	3.500	3.500	10.562	9.880	23.313
12.00	12.00	11.750	9.000	11.875	11.875	2.000	4.500	1.000	1.250	4.375	3.312	3.500	4.625	10.609	8.250	23.843

The figures contained herein are subject to change without notice.
Some sizes differ slightly from the illustrations shown



AWM 000591

MEGCO Ex. 1007

Model "B" Sleeve Valve Cement Retainer is a safe, reliable, fast and inexpensive means of placing a cement retainer at a predetermined depth in the casing. Designed with high quality materials insures an excellent combination of strength and drillability. Can easily be converted to Wireline Set / Tubing Set Bridge Plug. The "B" Cement Retainer has many features The most notable ones being.

- Locked Upper Cone, cannot move upward under slips due to impact from below because of stop ring attached to the body of retainer.
- Locked Lower Cone is pinned to body and supported through packing system to stationary upper cone. This greatly reduces risk of premature set.
- Locked-in Full Circle Lower Slips are securely locked against mating shoulder in body and cannot be knocked loose by impact from below.

INSTALLATION ONTO MECHANICAL SETTING TOOL

The Cement Retainer is made up on the Mechanical Setting Assembly without the top slips in place (these instructions are for assembly of Alpha "B" Cement Retainer onto the Alpha "B" Mechanical Setting Tool. If another setting tool is being used please follow the directions for that particular setting tool.) As retainer is going on the setting tool note that the threads are left-handed. Once the threads catch, make it up until the torque screw holes align with the holes on the setting tool. Insert desired number of torque screws (the brass torque screws require approximately 200 ft./lbs. each to shear). Now place the top slip on the assembly. A clamp will be required to hold the slips down tight enough for the slip retaining sleeve to cover the top portion of slip. The upset on the setting tool will fit into the inside groove near the top end of slip. Now cover top of slip with sleeve and remove clamp. Make certain that the setting tool is bottomed against the step and ready for run in.

NOTE: As a precaution, one left-hand turn should be taken every five to ten stands during run-in for prevention of premature top slip release which results in premature setting of the retainer.

RUNNING MECHANICALLY

1. At the desired setting depth pick-up 2 feet. The Mechanical Setting Assembly is actuated by rotating the tubing to the right ten turns.
2. Lower the tubing back down 2 feet. The top slips are released to make contact with the casing.
3. Next an upstrain on the tubing string pulls the body of the Cement Retainer up with respect to the top slip setting and packing-off the Cement Retainer. When desired force is stored in the retainer (refer to the chart for acceptable setting force) going by tubing stretch charts lock down tubing for a few minutes and allow packoff to set. At this time the valve in retainer is closed. The stroke for opening and closing the valve is two inches.
4. Release setting tool from cement retainer by placing an upstrain on tubing of 800 lbs. and rotating to the right initially breaking torque screws. Continuing with ten turns to the right.

TUBING SETTING FORCES

Retainer O.D.	Minimum Strain	Maximum Strain
3.593-4.312	22,000 lbs.	30,000 lbs.
5.375 - 5.687	30,000 lbs.	45,000 lbs.
6.312 - 12.00	35,000 lbs.	48,000 lbs.

NOTE: If desired, the setting tool may be released from retainer with four to five right-hand turns at the tool and 8,000 to 10,000 lbs. upstrain. This is accomplished by unscrewing the top portion of the threads on the control latch and collapsing the threads on the lower end.

After releasing from the retainer, a set down weight of 3,000 to 5,000 lbs. will re-latch the setting tool and an 8,000 to 10,000 lbs. upstrain will remove it. The stinger seal will remain in the retainer seal bore as long as the snap-out force is not exceeded.

More information about Alpha's "B" Mechanical Setting Tool and its operation are contained in the technical unit for that tool.

NOTE: The cement retainer body is made of a readily drillable material. Each time the setting tool is snapped out of the retainer, the snap-in and snap-out values will decrease slightly until they reach approximately 2500 (snap-in) and 5000 - 6000 lbs. (snap-out), where they level out. This pattern will occur with each retainer run. Control of the valve is maintained by setting down to open and picking up to close.

Please read Cement Retainer Hydraulics on the following pages.

AWM 000592

MEGCO Ex. 1007

Cement Retainer Hydraulics:

There are varied forces exerted by pressures to the casing and to the cementing string which act on the Stinger sub and cementing string during the operation of cementing. The effects of these forces are governed by the size of the Stinger sub, the size, weight per foot and length of the tubing or drill pipe, mud weight, casing pressure, and the cementing string pressure.

When pressure is applied to the casing annulus the Stinger Sub tends to lift upward and thereby close the Control Valve with a force equal to the annulus pressure at the Cement Retainer times the difference between the area of the outside of the cementing string and the area of the Cement Retainer bore.

When pressure is applied to the cementing string a force is exerted at the top of the string which reduces the hook-load. This pressure also applies a force at the bottom holding the Stinger Sub in the Cement Retainer bore and keeps the valve open. These two forces have a net effect of upward force equal to the cementing pressure times the area of the Cement Retainer bore. When the hook-load is reduced to zero-weight, the upward force acting against the top of the cementing string will close the Control Valve by lifting the tubing string.

The pressure in the annulus and in the cementing string will determine the amount of weight that must be set on the Cement Retainer to keep the Stinger Sub in the correct place and the Control Valve open. Having the Stinger Sub in place and the Control Valve open will be the two requirements necessary to determine the minimum depth at which the Cement Retainer can be set.

Therefore, the amount of cementing string pressure and annulus pressure that can be utilized will be limited for any size and length of cementing string. If the total of the forces trying to close the Control Valve is equal to the weight of the cementing string in the well fluid, an increase in either of these pressures will close the Control Valve. It is possible however to increase the cementing pressure if the casing pressure is decreased and vice versa.

If the snap-out force of from 8,000 to 10,000 lbs. is not exceeded the Stinger Sub will remain in the Cement Retainer Seal Bore.

It is possible to pump the Stinger Sub out of the retainer bore in situations such as a load put on the tubing such as during pressure testing, or if a high annulus pressure is encountered. The opening or closing of the valve after the retainer has been set has no bearing on the Snap-Latch feature of the Stinger Sub. Two inches of movement at the Retainer (Up to Close, Down to open) will open or close the Control Valve.

The values in the chart "Areas (In Sq. In.) Acted Upon by Tubing and Annulus Pressures" are printed shaded and unshaded. These values are the number of square inches acted upon by the pressure change, and also the resulting direction of force. The unshaded areas will, with a pressure increase, cause a force tending to keep the Control Valve open. The shaded areas will have an upward force, or a force wanting to close the Control Valve.

When the net force is upward, the set-down weight must be used to keep the Control Valve Open.

Note: Columns 1, 2, 4, 5, 6, & 7 must be multiplied by the change in pressure at the tool. Whereas column 3 must be multiplied by the tubing gage pressure.

HOW TO USE AREA PRESSURE CHART:

1. Multiply whichever column is applicable (Col 1, 4, 6) times the change in tubing pressure at the tool.2. Multiply whichever column is applicable (Col 2, 5, or 7) times the change in annulus pressure at the tool.3. Multiply Column 3 by the tubing gage pressure.

As the figure is always shaded in Column 3, the resulting force tends to close the Control Valve by lifting the tubing at the surface. The tubing will raise and the valve will be closed if by adding all three forces the result is a force tending to close the valve, and is greater than the maximum hook-load of the tubing before setting the tool.

AWM 000593

MEGCO Ex. 1007

Areas (in.2) Acted Upon By Tubing and Annulus Pressures

Cement Retainer Size (OD)	Tubing or Drill Pipe OD	Tubing Pressure Greater Than Annulus Pressure At The Tool			Annulus Pressure Greater Than Tubing Pressure At The Tool		Annulus Pressure Greater Than Tubing Pressure At The Tool Because Of Swabbing The Tool	
		Tubing Area	Annulus Area	Tubing ID Area	Tubing Area	Annulus Area	Tubing Area	Annulus Area
		Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
	1.660	.1	.7	1.5	.1	.7	.1	.7
3.593	1.900	.6	1.4	2.0	.6	1.4	.6	1.4
thru	2.062	1.0	1.9	2.4	1.0	1.9	1.0	1.9
4.312	2 3/8	1.7	3.0	3.1	1.7	3.0	1.7	3.0
	2 7/8	3.3	5.1	4.7	3.3	5.1	3.3	5.1
5.375	2 3/8	.0	1.3	3.1	.0	1.3	.0	1.3
thru	2 7/8	1.5	3.4	4.7	1.5	3.4	1.5	3.4
12.00	3 1/2	3.9	6.5	7.0	3.9	6.5	3.2	6.5

Example

Cement Retainer (OD)		3.593
Tubing		2 3/8 OD EU
Maximum hookload before stabbing stinger sub		7,000 lbs.
Maximum cementing pressure		2,800 PSI
Change in tubing pressure at tool (due to heavier fluid introduced during cementing plus cementing pressure)		3,700 PSI
Annulus pressure to be applied during cementing		1,200 PSI
3,700 PSI (Tubing pressure change at tool) x 1.7 (column 1)	=	6,290 lbs. DOWN
1,200 PSI (Annulus pressure change at tool) x 3.0 (column 2)	=	3,600 lbs. UP
6,290 - 3,600 = 2690 lbs. DOWN So the Set DOWN weight will not be needed		
2,800 PSI (Gage pressure) x 3.1 (column 3)	=	8,680 lbs. UP
6,290 - 2,800 - 8,680	=	5,190 lbs. UP

The job may be completed successfully because the maximum hookload has not been exceeded.

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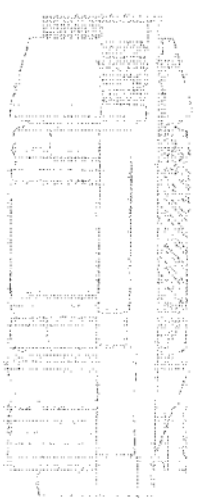
AWM 000594

MEGCO Ex. 1007

Conversion of
Model B Sleeve Valve Cement Retainer
& Model B-1 Bridge Plug

The Alpha Model B Cement Retainer and Model B-1 Bridge Plug designs incorporate conversion features that involve very little time and effort. These conversions may be done in the shop or on location without creating a problem. The tool to be converted must first be broken down to a basic unit (as shown below) then the correct kit may be installed. Please note that the four tool types listed here are Mechanical Set and Wireline Set Model B Sleeve Valve Cement Retainers and Mechanical Set and Wireline Set Model B-1 Bridge Plugs. The Mechanical Set and Wireline Set Model B Flapper Valve Retainer may be supplied upon special request.

BASIC UNIT
(conversion illustration only)



Sizes 3.593 - 7.125

Sizes 8.125 - 12.000

HOW TO OBTAIN A BASIC UNIT FROM A "B" SLEEVE VALVE CEMENT RETAINER, "B-1" BRIDGE PLUG, OR "B" FLAPPER VALVE RETAINER

Sizes 3.593 thru 7.125

1. Place tool in vise on the lower cone. Remove shoe and lower slip. Do not drop lower slip.
2. Insert tension mandrel from the appropriate wireline adapter kit into upper end of tool until it makes contact with valve body.
3. Strike tension mandrel until all parts from lower end of body are removed. These may consist of bridging plug, flapper unit, molded seal, seal retainer, sleeve, and valve body.

Sizes 8.125 thru 12.00

1. Position retainer or plug on the floor with shoe facing up. Insert a 5/32 Allen wrench thru the hole in top cone and remove set screws. Remove inner body and shoe components by rotating counter clockwise. **Note:** Set screw extends through body into the guide on sizes 8.125 thru 12.000.
2. Place inner body in vise gripping the smaller OD toward the middle of body. Remove set screw and shoe.
3. Insert tension mandrel from the appropriate wireline adapter kit into upper end of tool until it makes contact with valve body.
4. Strike tension mandrel until all parts from lower end of body are removed. These may consist of bridging plug, flapper unit, molded seal, seal retainer, sleeve, and valve body.

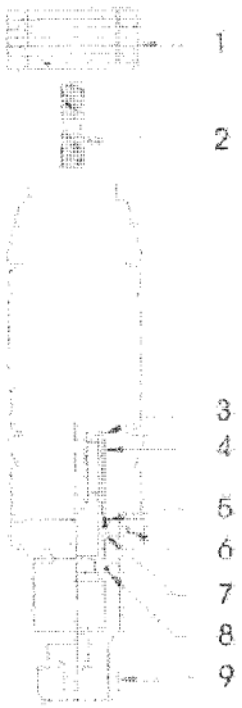
AWM 000595

MEGCO Ex. 1007

CONVERSION TO
"B" SLEEVE VALVE CEMENT RETAINER - WIRELINE SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard brass torque screw if they are present.
2. Install collet sleeve (Item 4) in bottom end of retainer body, Small end first.
3. Install molded seal (Item 5) small end first. Use a wood block and hammer to tap it in and prevent damage to seal.
4. Insert seal retainer (Item 7).
5. Install valve body (Item 3). Lead with fingers and tap in with wood block until a dead stop is reached.
6. Install O-ring (Item 8) in shoe.
7. Install shoe (Item 9)
8. Insert set screw (Item 6) on 8.125 and larger
9. 8.125 and Larger - Install inner body into outer body and install set screw.
10. The release stud can be installed when retainer is installed on the setting tool. The stud is placed in the tension mandrel and then screwed into retainer shoe.



PARTS LIST

ITEM	PART NAME	QTY.	SIZE 3.593	3.937	4.312	5.375	5.687	6.312
-	Kit Complete	1	005-3593-450	005-3937-450	005-4312-450	005-5375-450	005-5687-450	005-6312-450
1	Wireline Slip	1	005-3593-011	005-3937-011	005-4312-011	005-5375-011	005-5687-011	005-6312-011
2	Release Stud	1	005-3593-014			005-5687-014		
3	Valve Body	1	005-3593-021			005-5687-021		
4	Collet Sleeve	1	005-3593-026			005-5687-026		
5	Molded Seal	1	005-5600-025			005-5610-025		
6	Set Screw	--	n/a			3/16 - 18 x 1/2 LONG SOCKET HEAD		
7	Seal Retainer	1	005-3593-020			005-5687-020		
8	O-Ring	1	100-2225-490 N			100-2331-490 N		
9	Shoe	1	005-3593-007	005-3937-007	005-4312-007	005-5375-007	005-5687-007	005-6312-007

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE 7.125	8.125	9.000	9.437	11.562	12.00
-	Kit Complete	1	005-7125-450	005-8125-450	005-9000-450	005-9437-450	005-1156-450	005-1200-450
1	Wireline Slip	1	005-7125-011	005-8125-011	005-9000-011	005-9437-011	005-1156-011	005-1200-011
2	Release Stud	1	005-5687-014					
3	Valve Body	1	005-5687-021					
4	Collet Sleeve	1	005-5687-026					
5	Molded Seal	1	005-5610-025					
6	Set Screw	2	n/a	3/16 - 18 x 1/2 LONG SOCKET HEAD				
7	Seal Retainer	1	005-5687-020					
8	O-Ring	3	100-2331-490 N					
9	Shoe	1	005-7125-007	005-8125-007				

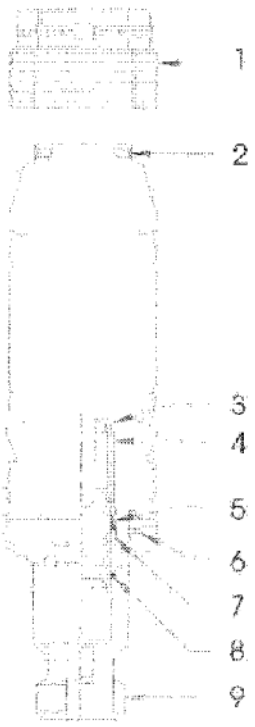
AWM 000596

MEGCO Ex. 1007

CONVERSION TO
"B" SLEEVE VALVE CEMENT RETAINER - MECHANICAL SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard release stud if present.
2. Install brass torque screws (Item 2).
3. Install collet sleeve (Item 4) in bottom end of retainer body. Small end first.
4. Install molded seal (Item 5) small end first. Use a wood block and hammer to tap it in and prevent damage to seal.
5. Insert seal retainer (Item 7).
6. Install valve body (Item 3). Lead with fingers and tap in with wood block until a dead stop is reached.
7. Install o-ring (Item 8) in shoe.
8. Install shoe (Item 9).
9. Insert set screw (Item 6) on 8.125 and larger.
10. 8.125 and Larger - Install inner body into outer body and install set screw.



PARTS LIST

ITEM	PART NAME	QTY.	SIZE						
			3.593	3.937	4.312		5.375	5.687	6.312
-	Kit Complete	1	005-3593-440	005-3937-440	005-4312-440		005-5375-440	005-5687-440	005-6312-440
1	Mechanical Slip	1	005-3593-010	005-3937-010	005-4312-010		005-5375-010	005-5687-010	005-6312-010
2	Torque Screw	2	005-3500-019				005-4240-019		
3	Valve Body	1	005-3593-021				005-5687-021		
4	Collet Sleeve	1	005-3593-026				005-5687-026		
5	Molded Seal	1	005-3500-025				005-5010-025		
6	Set Screw	-	n/a						
7	Seal Retainer	1	005-3593-020				005-5687-020		
8	O-Ring	1	103-2233-496 N				103-2331-496 N		
9	Shoe	1	005-3593-007	005-3937-007	005-4312-007		005-5375-007	005-5687-007	005-6312-007

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE						
			7.125	8.125	9.000	9.437		11.562	12.00
-	Kit Complete	1	005-7125-440	005-8125-440	005-9000-440	005-9437-440		005-1156-440	005-1200-440
1	Mechanical Slip	1	005-7125-010	005-8125-010	005-9000-010	005-9437-010		005-1156-010	005-1200-010
2	Torque Screw	2	005-4240-019	005-8125-019					
3	Valve Body	1	005-5687-021						
4	Collet Sleeve	1	005-5687-026						
5	Molded Seal	1	005-5610-025						
6	Set Screw	2	n/a	5/16 - 18 x 1.25 LONG SOCKET HEAD					
7	Seal Retainer	1	005-5687-020						
8	O-Ring	1	103-233-496 N						
9	Shoe	1	005-7125-007	005-8125-007					

AWM 000597

MEGCO Ex. 1007

CONVERSION TO "B-1" BRIDGE PLUG
WIRELINE SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard brass torque screws if they are present.
2. Install release stud (Item 2) into the bridging plug (Item 3).
3. Install o-ring (Item 4) on bridging plug (Item 3).
4. Drive roll pin (Item 7) into bridging plug (Item 3).
5. Install bridging plug (Item 3).
6. Install shoe (Item 6).
7. Insert set screw (Item 5) on 8.125 and larger.
8. 8.125 and Larger - Install inner body into outer body and install set screw.

PARTS LIST

ITEM	PART NAME	QTY.	SIZE 3.593	3.937	4.312		5.375	5.687	6.312
	Kit Complete	1	005-3595-470	005-3937-470	005-4312-470		005-5375-470	005-5687-470	005-6312-470
1	Wireline Slip	1	005-3595-011	005-3937-011	005-4315-011		005-5375-011	005-5687-011	005-6312-011
2	Release Stud	1	005-3595-014				005-5687-014		
3	Bridging Plug	1	005-3595-071				005-5687-071		
4	O-Ring	1	100-2333-090 N				100-2342-090 N		
5	Set Screw	2	n/a				n/a		
6	Shoe	1	005-3595-070	005-3937-070	005-4312-070		005-5375-070	005-5687-070	005-6312-070
7	Roll Pin	1	3/16 - 3/8 long						

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE 7.125	8.125	9.000	9.437		11.562	12.00
	Kit Complete	1	005-7125-470	005-8125-470	005-9000-470	005-9437-470		005-1156-470	005-1200-470
1	Wireline Slip	1	005-7125-011	005-8125-011	005-9000-011	005-9687-011		005-1156-011	005-1200-011
2	Release Stud	1	005-5687-014						
3	Retainer Plug	1	005-5687-071						
4	O-Ring	1	100-2342-090 N						
5	Set Screw	2	5/16 - 18 x 1/2 LONG SOCKET HEAD						
6	Shoe	1	005-7125-070	005-8125-070					
7	Roll Pin	1	3/16 - 3/8 long						

AWM 000598

MEGCO Ex. 1007

CONVERSION TO "B-1" BRIDGE PLUG
MECHANICAL SET

Assembly Using "Basic Unit" and Parts Listed Below

1. Discard release stud if one is present.
2. Install brass torque screws (Item 2).
3. Install o-ring (Item 4) on bridging plug (Item 3).
4. Drive roll pin (Item 7) into bridging plug (Item 3).
5. Install bridging plug (Item 3).
6. Install shoe (Item 6).
7. Insert set screw (Item 5) on 8.125 and larger.
8. 8.125 and Larger - Install inner body into outer body and install set screw.

PARTS LIST

ITEM	PART NAME	QTY.	SIZE 3.593	3.937	4.312	5.375	5.687	6.312
-	Kit Complete	1	005-3593-460	005-3937-460	005-4312-460	005-5375-460	005-5687-460	005-6312-460
1	Mechanical Slip	1	005-3593-010	005-3937-010	005-4312-010	005-5375-010	005-5687-010	005-6312-010
2	Torque Screw	2	005-3500-019			005-4240-019		
3	Bridging Plug	1	005-3500-071			005-5687-071		
4	O-Ring	1	109-2325-090 N			109-2342-090 N		
5	Set Screw	-	n/a					
6	Shoe	1	005-3593-030	005-3937-070	005-4312-070	005-5375-070	005-5687-070	005-6312-070
7	Roll Pin	1	3/16 - 3/8 long					

PARTS LIST (continued)

ITEM	PART NAME	QTY.	SIZE 7.125	8.125	9.000	9.437	11.562	12.00
-	Kit Complete	1	005-7125-460	005-8125-460	005-9000-460	005-9437-460	005-1156-460	005-1200-460
1	Mechanical Slip	1	005-7125-010	005-8125-010	005-9000-010	005-9437-010	005-1156-010	005-1200-010
2	Torque Screw	2	022-4240-019	005-8125-019				
3	Bridging Plug	1	005-5687-071					
4	O-Ring	1	109-2342-090 N					
5	Set Screw	2	n/a	5/16 - 18 x 1/2 LONG SOCKET HEAD				
6	Shoe	1	005-7125-070	005-8125-070				
7	Roll Pin	1	3/16 - 3/8 long					

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AWM 000599

MEGCO Ex. 1007

"A" Midget Bridge Plug

Tubing Set

DIMENSIONAL DATA

Plug Size O.D.	A	B	C	D	E	F	G	H	J	K	L
3.50	3.500	3.437	2.125	2.125	3.437	1.375	2.937	2.312	2.955	4.799	11.281
3.71	3.710	3.648	2.125	2.125	3.648	1.375	2.937	2.312	2.955	4.799	11.281
4.24	4.240	4.187	2.750	2.750	4.187	1.375	3.125	2.593	3.890	5.028	12.781
5.34	5.340	5.280	3.687	3.687	5.280	2.000	3.125	2.812	4.915	5.932	15.281
5.61	5.610	5.562	3.687	3.687	5.562	2.000	3.125	2.812	4.915	5.932	15.281

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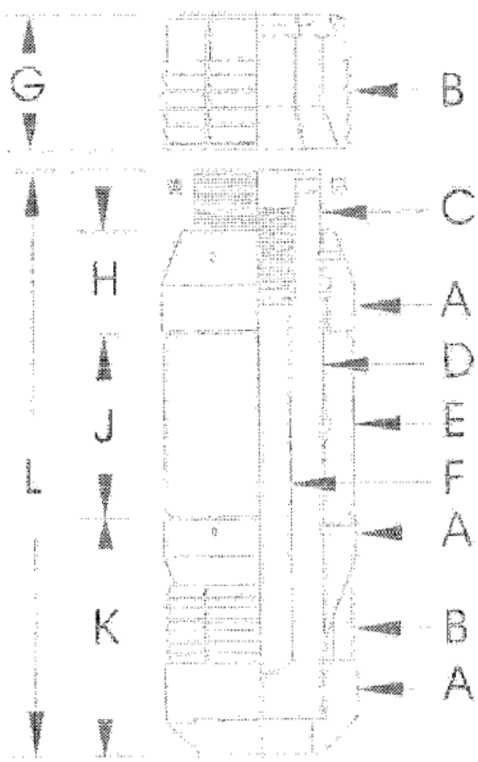

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AWM 000600

MEGCO Ex. 1007

"B" Midget Bridge Plug - Tubing Set

DIMENSIONAL DATA

Plug O.D.	A	B	C	D	E	F	G	H	J
4.312	4.312	4.250	2.750	4.187	3.562	3.187	3.890	5.028	12.875
5.375	5.375	5.312	3.687	5.280	3.781	2.687	4.915	5.745	14.281
5.687	5.687	5.625	3.687	5.562	3.781	2.687	4.915	5.745	14.281

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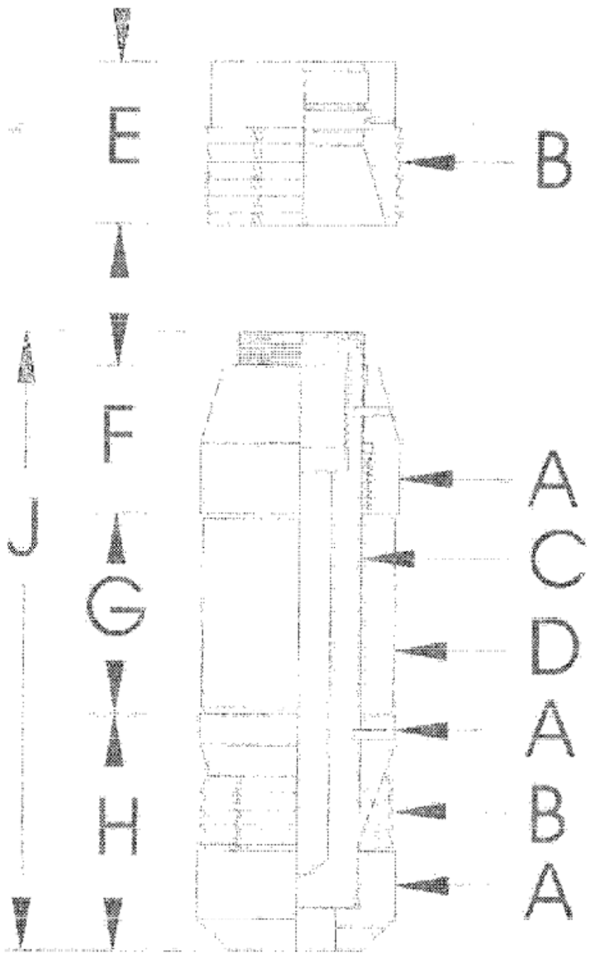

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AWM 000601

MEGCO Ex. 1007

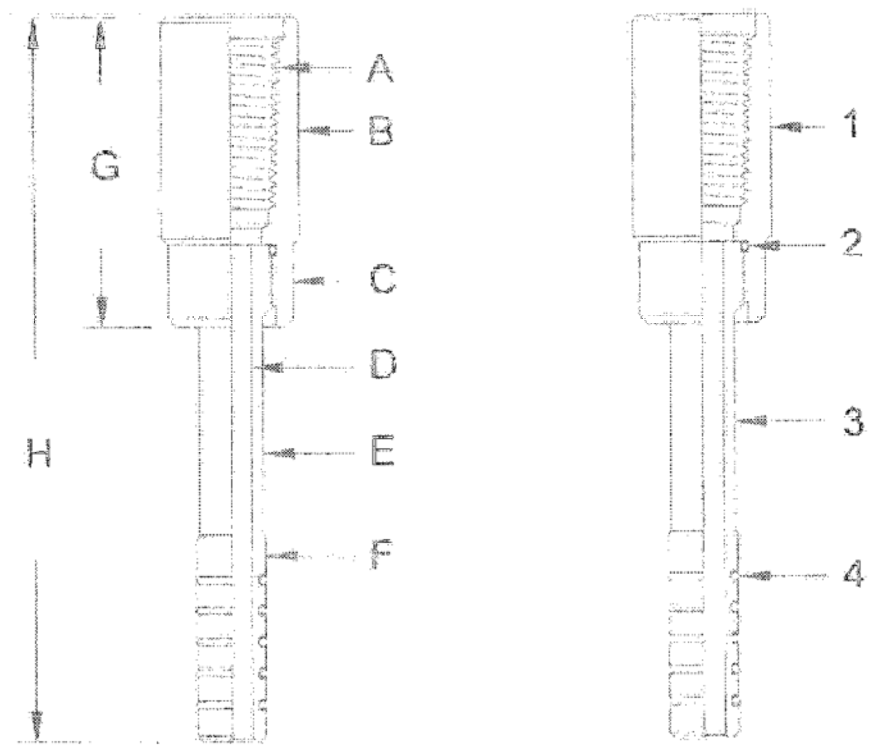
Locator Seal Nipple

For Ball Check Cement Retainers

DIMENSIONAL DATA

Ret. Size O.D.	A	B	C	D	E	F	G	H
1.71	1.050 - 10RD - EUE	[illegible]	[illegible]	[illegible]	.750	[illegible]	3.750	7.750
2.10-3.12	1.050 - 10RD - EUE	[illegible]	1.500	.500	.750	.937	3.750	7.750

Parts List				
Item	Qty.	Description	1.71	2.10-3.12
		Assy. Complete - Locator Seal Nipple	[illegible]	[illegible]
1	1	Top Coupling	[illegible]	[illegible]
2	1	O-ring	[illegible]	[illegible]
3	1	Seal Nipple [illegible]	[illegible]	[illegible]
4	3	O-ring	[illegible]	[illegible]



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AWM 000602

MEGCO Ex. 1007

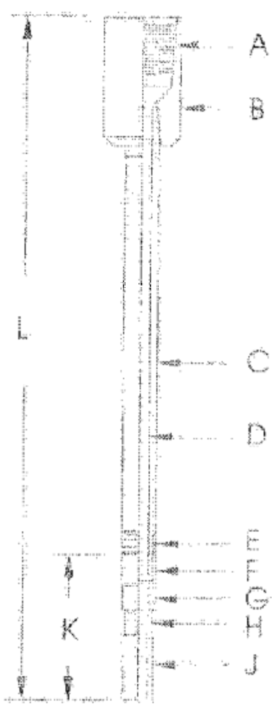
Model A Locator Seal Nipple

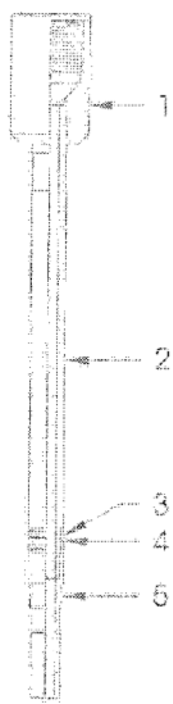
For "A" Sleeve Valve Cement Retainers

DIMENSIONAL DATA

Ret. Size O.D.	A	B	C	D	E	F	G	H	J	K	L
3.50-4.75	2 3/8 EU 8RD	2.062	1.320	.750	1.320	1.320	1.250	1.062	1.756	5.718	22.718
5.34-17.25	2 7/8 EU 8RD	3.625	1.990	1.375	1.990	1.990	1.875	1.593	1.687	7.593	37.390

Parts List				
Item	**Qty.**	**Description**	**3.50-4.75**	**5.34-17.25**
		Assy. Complete - "A" Locator Seal Nipple	016-3500-070	016-5610-070
1	1	Top Coupling	016-3500-076	016-5610-076
2	1	Seal Sub	016-3500-077	016-5610-077
3	1	Molded Seal	016-3500-035	016-5610-033
4	1	O-Ring	100-2024-090N	100-2130-090N
5	1	Shifter Sub	016-3500-034	016-5610-034





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AWM 000603

MEGCO Ex. 1007

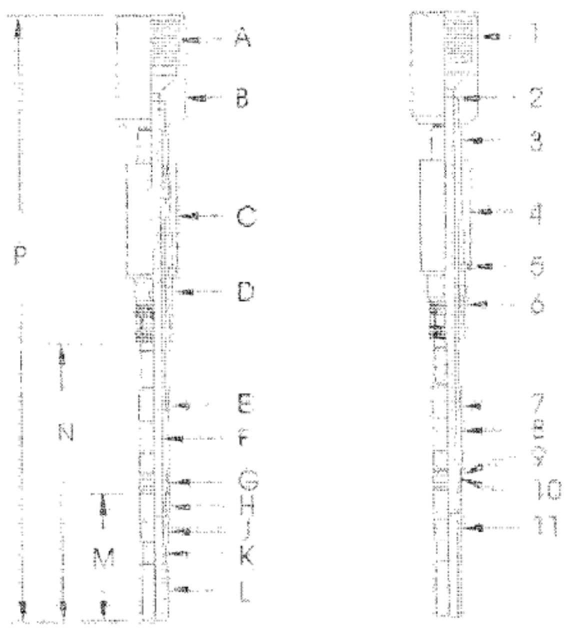
Model A Snap Latch Seal Nipple

For "A" Sleeve Valve Cement Retainers

DIMENSIONAL DATA

Ret. O.D.	A	B	C	D	E	F	G	H	J	K	L	M	N*	P
3.50-4.75	2 3/8 EU 8RD	3.062	2.250	1.656	1.320	.750	1.320	1.336	1.250	1.562	1.156	3.718	16.531	27.717
5.34-5.61	2 7/8 EU 8RD	3.625	3.375	2.531	1.990	1.375	1.990	1.990	1.875	1.593	1.687	7.593	13.468	31.781
6.09-17.25	2 7/8 EU 8RD	3.625	3.375	2.531	1.990	1.375	1.990	1.990	1.875	1.593	1.687	7.593	18.593	36.468

Parts List					
Item	**Qty.**	**Description**	**3.50-4.75**	**5.34-5.61**	**6.09-17.25**
		Assy. Complete - "A" Snap Latch Seal Nipple	016-3500-080	016-5610-080	016-6090-080
1	1	Top Coupling	016-3500-082	016-5610-082	
2	1	O-Ring	100-2122-090N	100-2326-090N	
3	1	Mandrel	016-3500-083	016-5610-083	
4	1	Adapter Sub	016-3500-084	016-5610-084	
5	4	Socket Head Set Screw	5/16 - 18 x 3/8		
6	1	Latch	016-3500-021	016-5610-021	
7	1	O-Ring	100-2023-090N	100-2130-090N	
8	1	Seal Sub	016-3500-032	016-5610-032	016-6090-032
9	3	Molded Seal	016-3500-033	016-5610-033	
10	1	O-Ring	100-2024-090N	100-2131-090N	
11	1	Shifter Sub	016-3500-034	016-5610-034	



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AWM 000604

MEGCO Ex. 1007

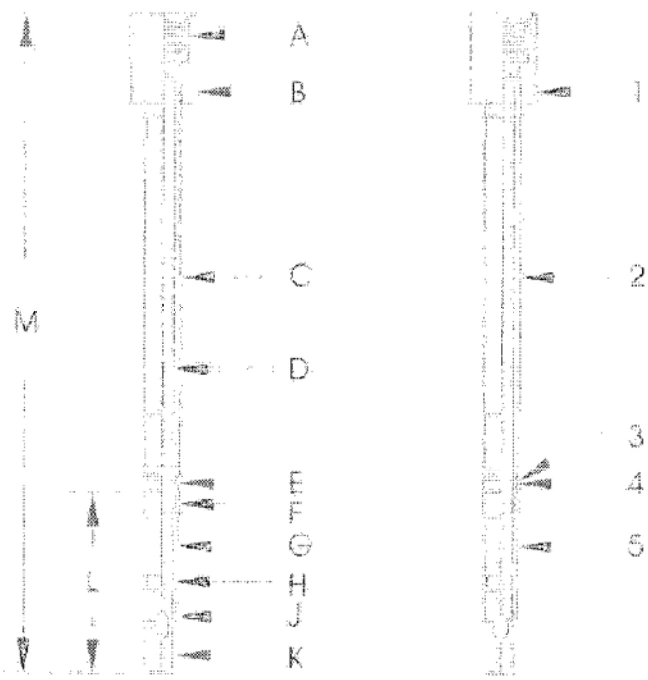
Model B Locator Seal Nipple

For "B" Sleeve Valve Cement Retainers

DIMENSIONAL DATA

Ret. Size O.D.	A	B	C	D	E	F	G	H	J	K	L	M
3.593-4.312	2 3/8 EU 8RD	3.062	1.320	.750	1.320	1.320	1.218	1.062	1.218	1.156	8.281	23.594
5.375-12.00	2 7/8 EU 8RD	3.625	1.090	1.250	1.090	1.090	1.750	1.562	1.750	1.687	10.125	39.875

Parts List				
Item	Qty.	Description	3.593-4.312	5.375-12.00
		Assy. Complete - "B" Locator Seal Nipple	017-3593-070	017-5687-070
1	1	Top Coupling	016-3500-076	016-5610-076
2	1	Seal Sub	017-3593-077	016-5610-077
3	1	Molded Seal	016-3500-033	016-5610-033
4	1	O-Ring	100-2024-090N	100-2150-090N
5	1	Shifter Sub	017-3593-034	017-5687-034



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AWM 000605

MEGCO Ex. 1007

Model B Snap Latch Seal Nipple

For "B" Sleeve Valve Cement Retainers

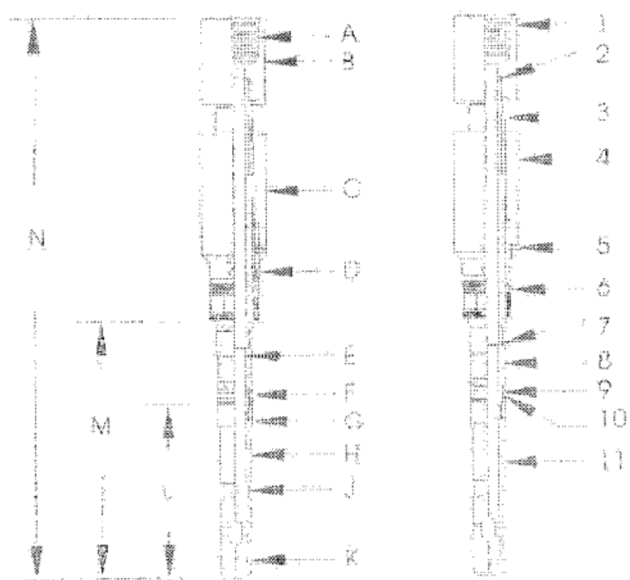
DIMENSIONAL DATA

Ret. O.D.	A	B	C	D	E	F	G	H	J	K	L	M	N *
3.593-4.312	2 3/8 EU 8RD	3.062	2.500	2.000	.750	1.320	1.320	1.218	1.062	1.218	8.281	11.421	28.500
5.375-12.00	2 7/8 EU 8RD	3.668	3.625	2.900	1.250	1.990	1.990	1.750	1.562	1.750	10.125	13.109	33.109

* measured when latch is moved as close as possible to the stiffer sub

Parts List

Item	Qty.	Description	3.593-4.312	5.375-12.00
		Assy. Complete "B" Snap Latch Seal Nipple	017-3593-080	017-5687-080
1	1	Top Coupling	016-3500-082	017-5687-082
2	1	O-Ring	100-2222-090N	100-2226-090N
3	1	Mandrel	017-3593-083	017-5687-083
4	1	Adapter Sub	017-3593-084	017-5687-084
5	4	Socket Head Set Screw	3/16 - 18 x 3/8	
6	1	Latch	017-3593-031	017-5687-031
7	1	O-Ring	100-2023-090N	100-2130-090N
8	1	Seal Sub	017-3593-032	017-5687-032
9	1	Molded Seal	016-3500-033	016-5610-033
10	1	O-Ring	100-2024-090N	100-2156-090N
11	1	Stiffer Sub	017-3593-034	017-5687-034



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AWM 000606

MEGCO Ex. 1007

Model A Mechanical Setting Tool

For "A" Sleeve Valve Cement Retainers

The Model A Mechanical Setting Tool is designed to run and set Alpha's Model A Sleeve Valve Cement Retainer. Easy to operate and low maintenance are evident in the design. The tool incorporates both a stinger seal and built-in snap latch allowing the tool to be latched into the retainer with set down weight and released with up-strain or right-hand rotation. This tool can be run time after time by simply moving the drive housing (slip nut on smaller sizes) into place and installing new shear screws. Disassembly is not required between runs on the same location, but is recommended upon returning to the shop. Tool sizes are available from 4 1/2 to 13 3/8 casing. Fewer moving parts and ease of operation make this tool a good addition to your line. The Model A-1 Mechanical Set Bridge Plug can be run with this tool as well by removing items 21 through 25 and replacing item 1 with item 28.

INSTALLATION OF RETAINER OR BRIDGE PLUG ON THE MODEL A MECHANICAL SETTING TOOL

1. Place the top cone of the retainer or bridge plug in the vise and tighten.
2. Apply grease to the stinger section of the setting tool.
3. Stab the stinger section of the setting tool into the retainer or plug using a quick motion. If necessary place a block of wood across the end of setting tool and strike with a sledge hammer. The stinger needs to go in until the latch threads snap into the retainer threads.
4. Place a pipe wrench on the drive housing (slip nut on smaller sizes) and turn to the left screwing the latch further into the retainer. Stop when the holes in the latch align with the holes in the body of retainer.
5. Install torque screws furnished with the retainer.
6. Align the holes in the drive housing (slip nut in smaller sizes) with the groove in the lower mandrel.
7. Install shear screws in setting tool.
8. Place the mechanical slips over the slip nut. With the drag housing butted against the stop ring, rotate the slip retaining sleeve down over the mechanical slips. Tighten the set screw in slip retaining sleeve.

RUNNING INSTRUCTIONS

1. The tool should be run at a moderate speed avoiding sudden stops.
2. Avoid right-hand rotation transmitted to the setting tool. As a precaution, after every 10 stands the tubing or drill pipe can be rotated to the left by hand until torque is felt.
3. At desired setting depth, rotate tubing to the right a minimum of seven turns, releasing the slips onto the cone.
4. Pull into the tubing in one continuous pull. See chart below to view the recommended tension. It is important to calculate this tension through tubing stretch. Do not rely on weight indicators.
5. After desired pull is reached, lock down the brake on rig to allow setting force to reach retainer. Hold the tension approximately five minutes, then slack off pipe and set approximately five to ten thousand pounds weight down insuring retainer or plug is securely set.

Retainer Size	Minimum Tension	Maximum Tension
3.593-4.75	22,000 lbs.	30,000 lbs.
5.34-6.09	30,000 lbs.	45,000 lbs.
6.96-17.25	35,000 lbs.	48,000 lbs.

TEST OPTIONS

1. The tubing or drill pipe can be pressure tested by simply pulling up five thousand pounds at the tool and applying pump pressure to the tubing.
2. The retainer can now be tested for seal-off by applying pressure down the annulus or by slacking off five thousand pounds weight on retainer and applying pump pressure down the tubing and pumping into formation.

- These tests are performed before the setting tool is released from the retainer.
- If seal-off has not been accomplished, up-strain on the tubing can again be applied and the tools can be retested until seal-off is accomplished.

RELEASING RETAINER

1. Hold an up-strain of approximately one thousand pounds on the tubing.
2. Apply torque to the right until torque screws are sheared. Each screw requires 200 - 400 foot-pounds.
3. Continue right-hand rotation for ten turns or until latch is felt releasing.

- After releasing from retainer, the setting tool can be relatched into the retainer with three to five thousand pounds set-down weight. This stabilizes at two thousand five hundred pounds with repetition.
- The valve will open when the stinger is fully engaged into the retainer and will close with a 2 inch upstroke at the tool. The stinger will remain sealed in the bore as long as snap-out force is not exceeded.

AWM 000607

MEGCO Ex. 1007

ASSEMBLY INSTRUCTIONS (note: grease all threaded connections and o-ring surfaces)

1. Slide the Upper Mandrel (item 2) through the Drag Housing (item 4), entering at the end of drag housing with external threads.
2. Screw the Top Coupling (item 1) onto the Upper Mandrel (item 2). Place the Top Coupling in the vise and tighten with wrench placed in the groove on the Upper Mandrel.
3. Slide on the Stop Ring (item 9). Screw on the Lock Nut (item 12). Install the Set Screw (item 11).
4. Screw the Drag Housing (item 4) toward the Stop Ring (item 9). Turn the Stop Ring with the Drag Housing until maximum butting surface is obtained. Make certain it will not jam by backing off the Drag Housing one round. If holes in the Stop Ring and the Upper Mandrel are not aligned at this point, turn the Stop Ring to the right until alignment is obtained. Install the Set Screws (item 10).
5. *for 7" and Larger Sizes only*
   Slide the Upper Drag Bushing (item 3) over the Drag Housing (item 4) to the far end and insert the Set Screws (item 29). Repeat with the Lower Drag Bushing (item 6).
6. Screw the Slip Retaining Sleeve (item 16) onto the Drag Housing (item 4) as far as it can go and slide it up. Start the Set Screw (item 8), but do not tighten.
7. *for 4 1/2 and 5 1/2 Sizes only*
   Place the O-Ring (item 13) on outside of the Crossover (item 26). Place another O-Ring (item 27) on inside of the Crossover. Slide the Slip Nut (item 17) over the Lower Mandrel (item 20) and screw the Lower Mandrel into Crossover. Screw the Crossover into the Upper Mandrel and tighten.
   For 7" and Larger Sizes only
   Screw the Slip Nut (item 17) onto the Drive Housing (item 14). Slide the Drive Housing over the Lower Mandrel (item 20). Install the O-Ring (item 15) on the Lower Mandrel and then screw the Lower Mandrel into the Upper Mandrel and tighten.
8. Screw the Latch (item 19) into the Slip Nut or Drive Housing, depending on size, and install Set Screws (item 18).
9. Place the O-Ring (item 21) in the Seal Sub (item 22) and screw onto the Lower Mandrel.
10. Place the O-Ring (item 24) in the Molded Seal (item 23) and slide onto Seal Sub.
11. Screw the Shifter Sub (item 25) onto Seal Sub and tighten. Pipe wrench placement for shifter sub is just above groove.
12. Shear Screws (item 13) are installed after the setting tool is stabbed into retainer or plug.
13. Slide the Drag Spring (item 5) under the cover on the Upper Drag Bushing (item 3) and then align holes in the Drag Spring and the Lower Drag Bushing (item 6). Install Screws (item 7).

DIMENSIONAL DATA

Callout	3.593/ 3.937	4.240/ 4.750	5.340/ 5.610	6.09	6.96	7.71	8.71	9.50 (10 ¾)	9.50 (11 ¾)	12.00	14.25	17.25
A	3.062		3.672									
B	2.250											
C	2.375											
D	3.500		5.000		5.875	7.218	7.812	8.656	9.593	11.156	13.406	16.875
E	6.250	6.959	8.374		9.260	10.600	11.194	12.038	12.960	14.535	16.788	20.257
F	1.500											
G	3.375		4.875		5.750	7.093	7.687	8.531	9.468	11.031	13.281	16.750
H	3.125											
J	3.745	4.240	5.340	6.090	6.960	7.710	8.710	9.50		12.000	14.250	17.250
K	2.500	2.750	3.687	4.325	4.625	5.125	5.687	6.750		9.000	11.500	14.000
L	1.656		2.531									
M	1.062		1.812									
N	1.320		1.990									
P	1.250		1.875									
Q	1.320		1.990									
R	1.320		1.990									
S	1.320		1.990									
T	1.250		1.875									
V	1.062		1.593									
W	1.156		1.687									
X	.750		1.250									
Y	46.140		48.171									
Z	58.672		63.640		68.765							

AWM 000608

MEGCO Ex. 1007

Parts List

Item	Qty.	Description	3.593-3.937	4.24-4.75	5.34-5.61	6.09	6.96	7.71
		Assy. Complete - "A" Mechanical Setting Tool	016-3593-000	016-4240-000	016-5610-000	016-6090-000	016-6960-000	016-7710-000
1	1	Top Coupling	016-2590-013		016-5610-015			
2	1	Upper Mandrel	016-3500-015					
3	1	Upper Drag Bushing	Not Required		016-5610-019		016-6960-019	016-7710-019
4	1	Drag Housing	016-3500-017					
5	*	Drag Spring	016-3500-021 (3)	016-4240-021 (3)		016-4240-021 (6)		
6	1	Lower Drag Bushing	Not Required		016-5610-023		016-6960-023	016-7710-023
7	*	Button Head Cap Screw	5/16 - 18 x 5/16 (6)		5/16 - 18 x 5/16 (9)	5/16 - 18 x 5/16 (12)		
8	1	Socket Head Set Screw	5/16 - 18 x 5/16	5/16 - 18 x 3/8	5/16 - 18 x 5/8			
9	1	Stop Ring	016-3500-025					
10	4	Socket Head Set Screw	5/16 - 18 x 3/8					
11	1	Socket Head Set Screw	5/16 - 18 x 3/8					
12	1	Lock Nut	016-3500-026					
13	1	O Ring	100-2234-000N					
14	1	Drive Housing	Not Required		016-5610-037			
15	2	Shear Screw	016-3500-040					
16	1	Slip Retaining Sleeve	016-3500-024	016-4240-024	016-5610-024	016-6090-024	016-6960-024	016-7710-024
17	1	Slip Nut	016-3500-029	016-4240-029	016-5610-029	016-6090-029	016-6960-029	016-7710-029
18	4	Socket Head Set Screw	5/16 - 18 x 3/8		5/16 - 18 x 5/8			
19	1	Latch	016-3500-031		016-5610-031			
20	1	Lower Mandrel	016-3500-028		016-5610-028			
21	1	O-Ring	100-2025-000N		100-2130-090N			
22	1	Seal Sub	016-3500-032		016-5610-032	016-6090-032		
23	1	Molded Seal	016-3500-033		016-5610-033			
24	1	O-Ring	100-2061-090N		100-2150-090N			
25	1	Shifter Sub	016-3500-034		016-5610-034			
26 **	1	Cross Over	016-3500-035		Not Required			
27 **	1	O-Ring	100-2122-090N		Not Required			
28 ***	1	Protect Coupling (Option) ***	016-3500-024		016-5610-014			
29 **	*	Set Screws for Drag Bushings	Not Required		1/2 - 20 x 1"		1/2 - 20 x 1 3/8	Not Required
30 **	*	Cap Screws for Drag Housings	Not Required		Not Required		Not Required	1/2 - 20 x 1 1/2

* Quantity for this part is listed beside the part number ** - Not shown on illustration *** - Used for tubing filling when running ... bridge plugs. Replaces item 1.

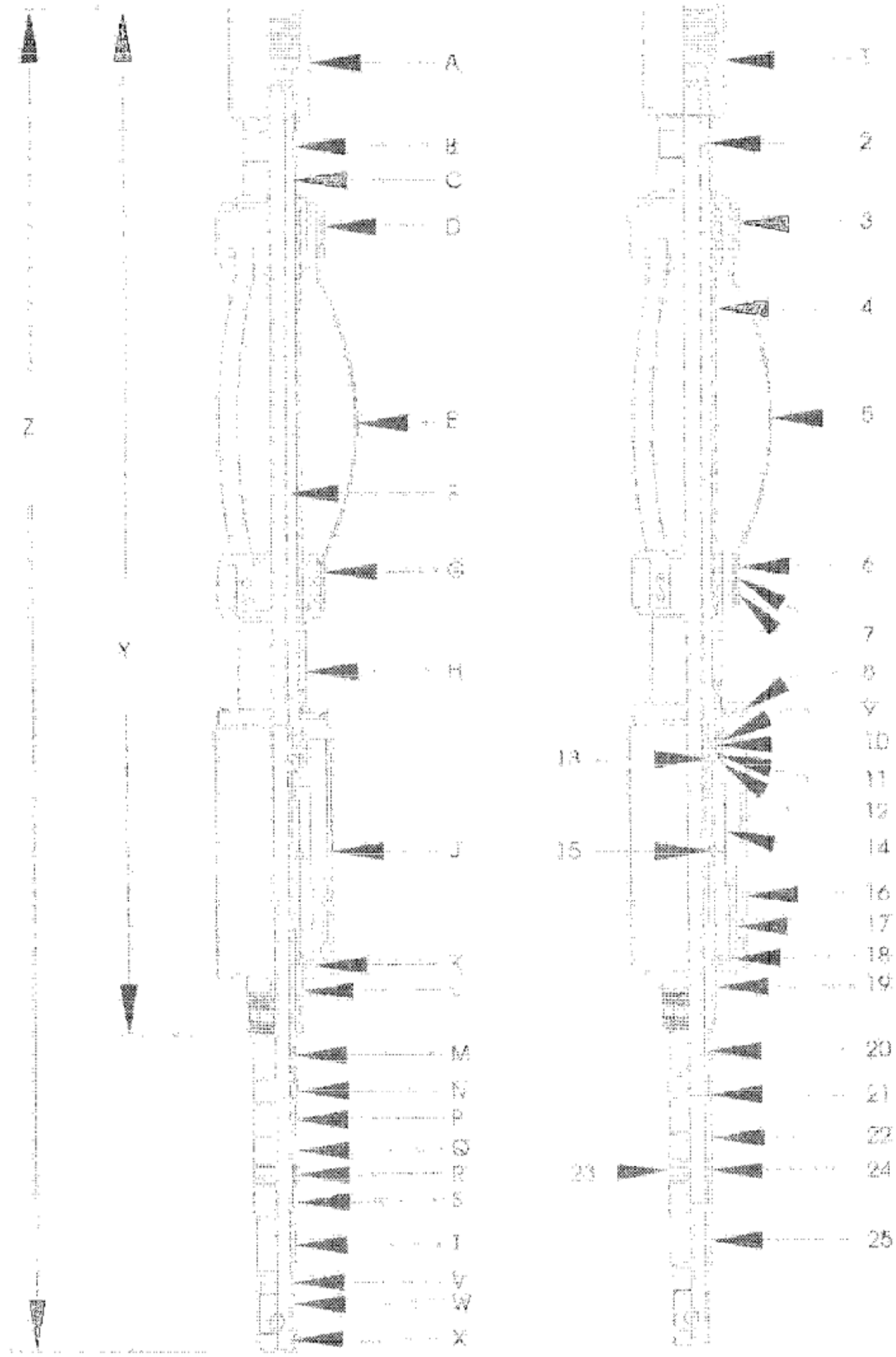
Parts List (Continued)

Item	Qty.	Description	8.71	9.50 (10 3/4 csg.)	9.50 (11 3/4 csg.)	12.00	14.25	17.25
		Assy. Complete - "A" Mechanical Setting Tool	016-8710-000	016-9500-000	016-9500-002	016-1200-000	016-1425-000	016-1725-000
1	1	Top Coupling	016-5610-015					
2	1	Upper Mandrel	016-3500-016					
3	1	Upper Drag Bushing	016-8710-019	016-9500-019	016-9500-020	016-1200-019	016-1425-019	016-1725-019
4	1	Drag Housing	016-3500-017					
5	8	Drag Spring	016-4240-021 (8)					
6	1	Lower Drag Bushing	016-8710-023	016-9500-023	016-9500-022	016-1200-023	016-1425-023	016-1725-023
7	*	Button Head Cap Screw	5/16 - 18 x 5/16 (12)					
8	1	Socket Head Set Screw	5/16 - 18 x 3/8					
9	1	Stop Ring	016-3500-025					
10	4	Socket Head Set Screw	5/16 - 18 x 3/8					
11	1	Socket Head Set Screw	5/16 - 18 x 3/8					
12	1	Lock Nut	016-3500-026					
13	1	O-Ring	100-2234-000N					
14	1	Drive Housing	016-5610-037					
15	2	Shear Screw	016-3500-040					
16	1	Slip Retaining Sleeve	016-8710-024	016-9500-024		016-1200-024	016-1425-024	016-1725-024
17	1	Slip Nut	016-8710-029	016-9500-029		016-1200-029	016-1425-029	016-1725-029
18	4	Socket Head Set Screw	5/16 - 18 x 5/8					
19	1	Latch	016-5610-031					
20	1	Lower Mandrel	016-5610-028					
21	1	O-Ring	100-2130-090N					
22	1	Seal Sub	016-6090-032					
23	1	Molded Seal	016-5610-033					
24	1	O-Ring	100-2150-090N					
25	1	Shifter Sub	016-5610-034					
26 **	1	Cross Over	Not Required					
27 **	1	O-Ring	Not Required					
28 ***	1	Protect Coupling (Option) ***	016-5610-014					
29 **	*	Cap Screws for Drag Housings	1/2 - 20 x 1 7/8	1/2 - 20 x 2 1/4	1/2 - 20 x 2 3/4	1/2 - 20 x 3 1/2	1/2 - 20 x 3 1/2	1/2 - 20 x 3 1/2

* Quantity for this part is listed beside the part number ** - Not shown on illustration *** - Used for tubing filling when running ... bridge plugs. Replaces item 1.

AWM 000609

MEGCO Ex. 1007



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Alpha Oil Tools

Model B Mechanical Setting Tool

For "B" Sleeve Valve Cement Retainers

The Model B Mechanical Setting Tool is designed to run and set Alpha's Model B Sleeve Valve Cement Retainer. Easy to operate and low maintenance are evident in the design. The tool incorporates both a stinger seal and built-in snap latch allowing the tool to be latched into the retainer with set down weight and released with up-strain or right-hand rotation. This tool can be run time after time by simply moving the drive housing (slip nut on smaller sizes) into place and installing new shear screws. Disassembly is not required between runs on the same location, but is recommended upon returning to the shop. Tool sizes are available from 4 1/2 to 13 3/8 casing. Fewer moving parts and ease of operation make this tool a good addition to your line. The Model B-1 Mechanical Set Bridge Plug can be run with this tool as well by removing items 23 through 27 and replacing item 1 with item 30.

INSTALLATION OF RETAINER OR BRIDGE PLUG ON THE MODEL B MECHANICAL SETTING TOOL

1. Place the top cone of the retainer or bridge plug in the vise and tighten.
2. Apply grease to the stinger section of the setting tool.
3. Stab the stinger section of the setting tool into the retainer or plug using a quick motion. If necessary place a block of wood across the end of setting tool and strike with a sledge hammer. The stinger needs to go in until the latch threads snap into the retainer threads.
4. Place a pipe wrench on the drive housing (slip nut on smaller sizes) and turn to the left screwing the latch farther into the retainer. Stop when the holes in the latch align with the holes in the body of retainer.
5. Install torque screws furnished with the retainer.
6. Align the holes in the drive housing (slip nut in smaller sizes) with the groove in the lower mandrel.
7. Install shear screws in setting tool.
8. Place the mechanical slips over the slip nut. With the drag housing butted against the stop ring, rotate the slip retaining sleeve down over the mechanical slips. Tighten the set screw in slip retaining sleeve.

RUNNING INSTRUCTIONS

1. The tool should be run at a moderate speed avoiding sudden stops.
2. Avoid right-hand rotation transmitted to the setting tool. As a precaution, after every 10 stands the tubing or drill pipe can be rotated to the left by hand until torque is felt.
3. At desired setting depth, rotate tubing to the right a minimum of seven turns, releasing the slips onto the cone.
4. Pull into the tubing in one continuous pull. See chart below to view the recommended tension. It is important to calculate this tension through tubing stretch. Do not rely on weight indicators.
5. After desired pull is reached, lock down the break on rig to allow setting force to reach retainer. Hold the tension approximately five minutes, then slack off pipe and set approximately five to ten thousand pounds weight down insuring retainer or plug is securely set.

Retainer Size	Minimum Tension	Maximum Tension
3.593-4.312	22,000 lbs.	30,000 lbs.
5.375-6.312	30,000 lbs.	45,000 lbs.
7.125-12.00	35,000 lbs.	48,000 lbs.

TEST OPTIONS

1. The tubing or drill pipe can be pressure tested by simply pulling up five thousand pounds at the tool and applying pump pressure to the tubing.
2. The retainer can now be tested for seal-off by applying pressure down the annulus or by slacking off five thousand pounds weight on retainer and applying pump pressure down the tubing and pumping into formation.

- These tests are performed before the setting tool is released from the retainer.
- If seal-off has not been accomplished, up-strain on the tubing can again be applied and the tools can be retested until seal-off is accomplished.

RELEASING RETAINER

1. Hold an up-strain of approximately one thousand pounds on the tubing.
2. Apply torque to the right until torque screws are sheared. Each screw requires 200 - 400 foot-pounds.
3. Continue right-hand rotation for ten turns or until latch is felt releasing.

- After releasing from retainer, the setting tool can be relatched into the retainer with three to five thousand pounds set-down weight. This stabilizes at two thousand five hundred pounds with repetition.
- The valve will open when the stinger is fully engaged into the retainer and will close with a 2 inch upstroke at the tool. The stinger will remain sealed in the bore as long as snap-out force is not exceeded.

AWM 000611

MEGCO Ex. 1007

ASSEMBLY INSTRUCTIONS (NOTE: grease all threaded connections and o-ring surfaces)

1. Slide the Upper Mandrel (item 2) through the Drag Housing (item 4), entering at the end of drag housing with external threads.
2. Screw the Top Coupling (item 1) onto the Upper Mandrel (item 2). Place the Top Coupling in the vise and tighten with wrench placed in the groove on the Upper Mandrel.
3. Slide on the Stop Ring (item 11). Screw on the Lock Nut (item 14). Install the Set Screw (item 13).
4. Screw the Drag Housing (item 4) toward the Stop Ring (item 11). Turn the Stop Ring with the Drag Housing until maximum butting surface is obtained. Make certain it will not jam by backing off the Drag Housing one round. If holes in the Stop Ring and the Upper Mandrel are not aligned at this point, turn the Stop Ring to the right until alignment is obtained. Install the Set Screws (item 12).
5. *for 7" and Larger Sizes only*
   Slide the Upper Drag Bushing (item 3) over the Drag Housing (item 4) to the far end and insert the Set Screws (item 31). Repeat with the Lower Drag Bushing (item 6).
6. Screw the Adjuster Sleeve (item 8) onto the Drag Housing (item 4) as far as it can go. Start the Set Screw (item 9)and tighten.
7. Screw the Slip Retaining Sleeve (item 18) onto the Adjuster Sleeve (item 8) as far as it can go. Start the Set Screw (item 10), but do not tighten.
8. *for 4 1/2 and 5 1/2 Sizes only*
   Place the O-Ring (item 15) on outside of the Crossover (item 28). Place another O-Ring (item 29) on inside of the Crossover. Slide the Slip Nut (item 19) over the Lower Mandrel (item 22) and screw the Lower Mandrel into Crossover. Screw the Crossover into the Upper Mandrel and tighten.
   For 7" and Larger Sizes only
   Screw the Slip Nut (item 19) onto the Drive Housing (item 16). Slide the Drive Housing over the Lower Mandrel (item 22). Install the O-Ring (item 15) on the Lower Mandrel and then screw the Lower Mandrel into the Upper Mandrel and tighten.
9. Screw the Latch (item 21) into the Slip Nut or Drive Housing, depending on size, and install Set Screws (item 20).
10. Place the O-Ring (item 23) in the Seal Sub (item 24) and screw onto the Lower Mandrel.
11. Place the O-Ring (item 26) in the Molded Seal (item 25) and slide onto Seal Sub.
12. Screw the Shifter Sub (item 27) onto Seal Sub and tighten. Pipe wrench placement for shifter sub is just above groove.
13. Shear Screws (item 17) are installed after the setting tool is stabbed into retainer or plug.
14. Slide the Drag Spring (item 5) under the cover on the Upper Drag Bushing (item 3) and then align holes in the Drag Spring and the Lower Drag Bushing (item 6). Install Screws (item 7).

DIMENSIONAL DATA

Callout	3.593/ 3.937	4.312	5.375/ 5.687	6.312	7.125	8.125	9.000	9.437	10.437	12.00
A	3.062		3.672							
B	2.250									
C	2.375									
D	3.500		5.009		5.875	7.218	7.812	8.656	9.593	11.156
E	6.250	6.959	8.374		9.260	10.600	11.194	12.038	12.960	14.535
F	1.500									
G	3.375		4.875		5.750	7.093	7.687	8.531	9.468	11.031
H	3.125		4.375							
J	3.745	4.312	5.375	6.312	7.125	8.125	9.000	9.437	10.437	12.000
K	2.750		4.125	4.593	5.593	6.593	7.593			10.093
L	2.000		2.900							
M	1.320		1.990							
N	1.250		1.875							
P	1.320		1.990							
Q	1.320		1.990							
R	1.250		1.875							
S	1.062		1.562							
T	1.218		1.750							
W	1.156		1.687							
X	.750		1.250							
Y	45.031		47.640							
Z	58.250		61.062							

AWM 000612

MEGCO Ex. 1007

Parts List

Item	Qty.	Description	3.593-3.937	4.312	5.375-5.687	6.312	7.125	8.125
		Assy: Complete - "B" Mechanical Setting Tool	017-3593-000	017-4312-000	017-5687-000	017-6312-000	017-7125-000	017-8125-000
1	1	Top Coupling	016-3500-015		016-5610-015			
2	1	Upper Mandrel	016-3500-016					
3	1	Upper Drag Bushing	Not Required		016-5610-019		016-6960-019	016-7710-019
4	1	Drag Housing	017-3593-017					
5	*	Drag Spring	016-3500-021 (3)	016-4240-021 (3)		016-4240-021 (6)		
6	1	Lower Drag Bushing	Not Required		016-5610-023		016-6960-023	016-7710-023
7	*	Button Head Cap Screw	5/16 - 18 x 3/16 (6)		5/16 - 18 x 1/2 (6)	5/16 - 18 x 1/2 (12)		
8	1	Adjuster Sleeve	Not Required		017-5687-022			
9	1	Socket Head Set Screw	Not Required		5/16 - 18 x 3/8			
10	1	Socket Head Set Screw	5/16 - 18 x 3/16	5/16 - 18 x 3/8	5/16 - 18 x 3/8			
11	1	Snap Ring	016-3500-025					
12	4	Socket Head Set Screw	5/16 - 18 x 3/8					
13	1	Socket Head Set Screw	5/16 - 18 x 3/8					
14	1	Lock Nut	016-3500-026					
15	1	O-Ring	105-2234-090N					
16	1	Drive Housing	Not Required		017-5687-037			
17	3	Shear Screw	016-3500-040					
18	1	Slip Retaining Sleeve	017-3593-024	017-4312-024	017-5687-024	017-6312-024	017-7125-024	017-8125-024
19	1	Slip Nut	017-3593-029		017-5687-029	017-6312-029	017-7125-029	017-8125-029
20	4	Socket Head Set Screw	5/16 - 18 x 3/8		5/16 - 18 x 3/8			
21	1	Latch	017-3593-031		017-5687-031			
22	1	Lower Mandrel	017-3593-028		017-5687-028			
23	1	O-Ring	105-2123-090N		105-2136-090N			
24	1	Seal Sub	017-3593-032		017-5687-032			
25	1	Molded Seal	016-3500-033		016-5610-033			
26	1	O-Ring	105-2034-090N		105-2130-090N			
27	1	Shifter Sub	017-3593-034		017-5687-034			
28 **	1	Cross Over	016-3500-035		Not Required			
29 **	1	O-Ring	105-2122-090N		Not Required			
30 **	1	Ported Coupling (Option) ***	016-3500-014		016-5610-014			
31 **	*	Cap Screws for Drag Bushings	Not Required		1/2 - 20 x 1"		1/2 - 20 x 1 3/8	Not Required
31 **	*	Set Screws for Drag Bushings	Not Required		Not Required		Not Required	1/2 - 20 x 1 1/2

* - Quantity for this item is noted beside the part number. ** - Not shown in illustration. *** - Used for tubing filling / when running mechanical set bridge plugs. It replaces item 1.

Parts List (Continued)

Item	Qty.	Description	9.000	9.437	10.437	12.00		
		Assy: Complete - "B" Mechanical Setting Tool	017-9000-000	017-9437-000	017-1043-000	017-1200-000		
1	1	Top Coupling	016-5610-015					
2	1	Upper Mandrel	016-3500-016					
3	1	Upper Drag Bushing	016-8710-019	016-9500-019	016-8500-020	016-1200-019		
4	1	Drag Housing	017-3593-017					
5	*	Drag Spring	016-4240-021 (6)					
6	1	Lower Drag Bushing	016-8710-023	016-9500-023	016-5610-023	016-1200-023		
7	*	Button Head Cap Screw	5/16 - 18 x 1/2 (12)					
8	1	Adjuster Sleeve	017-5687-022					
9	1	Socket Head Set Screw	5/16 - 18 x 3/8					
10	1	Socket Head Set Screw	5/16 - 18 x 3/8					
11	1	Snap Ring	016-3500-025					
12	4	Socket Head Set Screw	5/16 - 18 x 3/8					
13	1	Socket Head Set Screw	5/16 - 18 x 3/8					
14	1	Lock Nut	016-3500-026					
15	1	O-Ring	105-2224-090N					
16	1	Drive Housing	017-5687-037					
17	3	Shear Screw	016-3500-040					
18	1	Slip Retaining Sleeve	017-9000-024	017-9437-024	017-1043-024	017-1200-024		
19	1	Slip Nut	017-9000-029	017-9437-029	017-1043-029	017-1200-029		
20	4	Socket Head Set Screw	5/16 - 18 x 3/8					
21	1	Latch	017-5687-031					
22	1	Lower Mandrel	017-5687-028					
23	1	O-Ring	105-2136-090N					
24	1	Seal Sub	017-5687-032					
25	1	Molded Seal	016-5610-033					
26	1	O-Ring	105-2130-090N					
27	1	Shifter Sub	017-5687-034					
28 **	1	Cross Over	Not Required					
29 **	1	O-Ring	Not Required					
30 **	1	Ported Coupling (Option) ***	016-5610-014					
31 **	*	Cap Screws for Drag Bushings	1/2 - 20 x 1 7/8	1/2 - 20 x 2 1/4	1/2 - 20 x 2 3/4	1/2 - 20 x 3 1/2		

* - Quantity for this item is noted beside the part number. ** - Not shown in illustration. *** - Used for tubing filling when running mechanical set bridge plugs. It replaces item 1.

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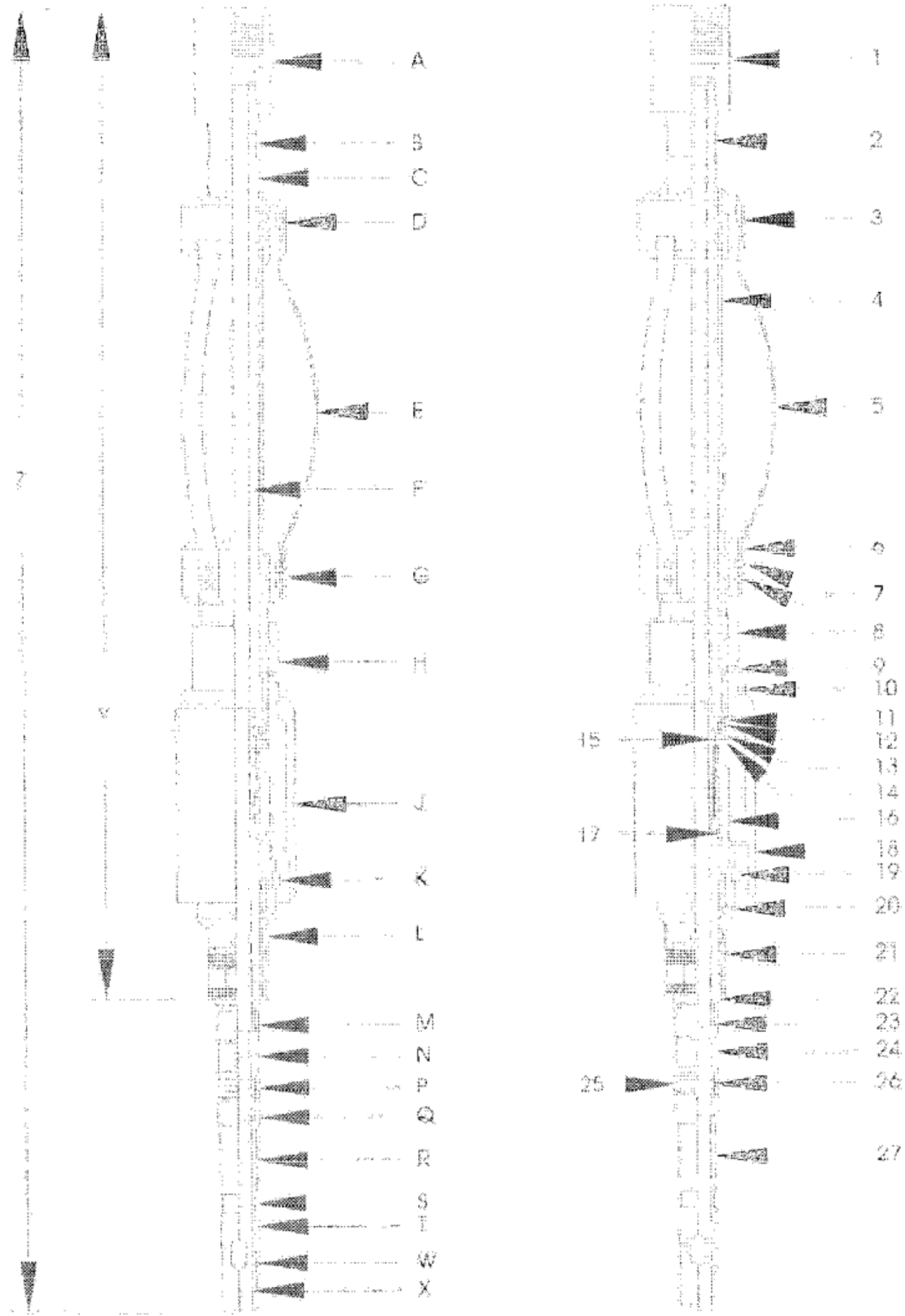

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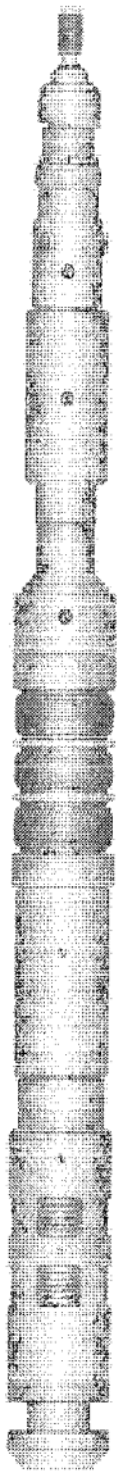
Model D Retrievable Bridge Plug

Description:

Alpha's Model D Bridge Plug is a wireline set, tubing or wireline retrievable, packer type bridge plug capable of holding differential pressure from above or below.



Applications:

Temporary bridge plug for acidizing, fracturing, casing pressure tests, well head replacement, zone isolation and cementing.

Features:

- Electric line set
- Balanced equalizing system
- Overshot will wash to gage ring
- Straight pull release
- Three piece packing system
- Compact design
- Retrievable on wireline, tubing or coil tubing
- Emergency release mechanism
- By-pass valve opens before plug is released
- Caged bi-directional slips
- Rated to 8,000 psi above or below @ 225 deg. F

Availability:

Casing				Packer	
O.D.	Wt.	Minimum	Maximum	Size	Maximum O.D.
4 1/2	9.5-13.5	3.910	4.090	43A	3.771

Alpha Oil Tools Guidelines for Running Wireline Set Bridge Plugs:

1. Use casing scraper before running any equipment in the well to remove scale and other materials from the casing wall. Any tool that is expected to grip the casing wall has to first reach the casing wall. Follow scraper with gage ring and junk basket.
2. Always follow cleaning, redressing and operational procedures on the setting tool. Make certain oil levels in pressure setting tool are correct for the well environment involved. Take into consideration the heat expansion of the oil in your manufacturers guidelines that should be supplied with your pressure setting tool.
3. Use the correct bridge plug for the temperature, pressure, casing size, casing weight and environment.
4. Casing should have 100% cement bond before running plug in the well
5. Do not overtighten bridge plug onto setting tool. Snug tight is sufficient for a bridge plug. The lock spring or nut, depending on make of setting tool, must accompany the tension mandrel to prevent plug from backing off.
6. Do not allow the setting tool weight to rest on the bridge plug after making up.
7. Help guide the setting tool and bridge plug through lubricators, wellhead and blowout preventer. When running under pressure raise tools to the top of lubricator before equalizing the pressure into lubricator.

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8. Running speed should not exceed 500 feet per minute to avoid fluid displacement cutting on elastomer. Should setting tool misfire, retrieve equipment no faster than it went in. Slow down for liners and other restrictions.
9. Never set plug in casing collar or where milling has occurred.
10. Always set plugs in static well conditions (no fluid or gas movement).
11. Shock to the plug can result in failure. Warn service companies of the plug depth to avoid high impact collisions. When using the plug for locating purposes, be gentle and ease tools onto plug. Never place tubing weight on plug.
12. Pressure setting tool failure can result from several causes (ex: out of date power charge or bad o-ring). In the event that a pressure setting tool does not shear off of the bridge plug and you have to pull out of the rope socket, the shear stud will still part in a normal manner when the setting tool is fished out. This happens most commonly because the power charge did not put up sufficient pressure to shear the stud in the plug. The Alpha studs are made to shear correctly and are held to high standards of accuracy. When the fishing tool goes in to retrieve the setting tool, you can watch the accuracy of the shear stud when it shears, assuming that the weight indicator is not out of calibration. The shear values are listed as follows:

Size of Plug	Shear Stud Value
4 ½ thru 5 1/2	30,000 lbs.
6 5/8 and larger	50,000 lbs.

13. When perforating, bridge plug should be protected with a minimum of ten feet of sand dumped directly on top of plug. Sand should be given sufficient time to settle onto plug before perforating.
14. Perforating should not be done closer than fifty feet of bridge plug.

These recommendations are made by Alpha Oil Tools for the benefit of all parties knowledge and understanding of the proper way to use this product and achieve the best performance. The ratings listed herein shall supersede all ratings, advertising, literature, posters or publications of any kind from Alpha Oil Tools published before date listed above.

Note: any of the retrieving tools can be run on coiled tubing, but only the wireline retrieving tool would have a means of emergency release since it is the only one that does not require rotation.

Assembly Instructions:

1. Slide the Gage Ring (item 18) over the packing mandrel (item 16) until it meets shoulder. Slide on the End Rubber (item 19), then the Element Spacer (item 21, then the Center Rubber (item 20), then another Element Spacer (item 21), and then another End Rubber (item 19).
2. Screw the other Gage Ring (item 18) onto the Setting Sleeve Adapter (item 14). Place O-ring (item 15) in ID of the Packing Mandrel (item 16). Screw the Setting Sleeve Adapter (item 14) onto the Packing Mandrel (item 16) hand tight.
3. Screw the Lock Ring (item 23) into the Packing Mandrel (item 16) paying close attention to the threads. The OD threads should be pointing toward the packing mandrel before it is started. Screw in until end of both parts are flush. Later on when inserting the Setting Mandrel (item 17), if the Lock Ring will not ratchet down the Setting Mandrel, you did not install lock ring correctly. Set this packing sub-assembly aside for now.
4. Place the Cone Sleeve (item 22) in the vise (the vise will be holding the tool here until you are finished with assembly). Slide the Upper Cone (item 24) through the Slip Housing (item 25). Then screw the Upper Cone into the Cone Sleeve. Wrench tight this connection.
5. Install the two Shear Screws (item 5) in the Slip Housing (item 25) making sure to align the holes in the Upper Cone (item 24).
6. Place the Slip Return Spring (item 27) into the indention in the Slip Segment (item 26) and slide into place inside the Slip Housing (item 25) making sure that the Spring fits into indention in the ID of the Slip Housing. Insert an 8-32 x 3/4" cap screw through the hole in Slip Housing and screw into the Slip Segment. Repeat until all the Slip Segments are in place. These screws will be removed when assembly is finished.
7. Slide the Packing Mandrel (item 16) into the Cone Sleeve (item 22) until the threads on the Gage Ring (item 18) can screw onto the Cone Sleeve. Wrench tight this connection.
8. Install the four Shear Screws (item 5) into the Cone Sleeve (item 22) making sure to align the holes in the packing mandrel (item 16).
9. Slide the Bottom Cone (item 28) over the Setting Mandrel (item 17). Rotationally align holes in the Setting Mandrel and the Upper Cone (item 24), then begin sliding the Setting Mandrel through everything assembled to this point starting at the Slip Housing (item 25). When the Lock Ring threads on the Setting Mandrel meet the Lock Ring, sliding will become difficult. Take a pipe or bar and insert through collet end of the Setting Mandrel to the shoulder. Strike the bar

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gently until the holes in the Upper Cone and the Setting Mandrel align. Insert the Wrench Back-up (item 34) provided with the tool through the holes.

10. Install the O-ring (item 13) in the By-Pass Sleeve (item 6). Screw the By-Pass Sleeve (item 6) onto the Setting Mandrel (item 17). Wrench tight this connection making certain wrench is placed in the wrench groove at the bottom of 45 degree angle on the By-Pass Sleeve.
11. Inspect the key on the largest OD of the Lower Release Rod (item 7). If it appears OK, start sliding the threaded end of the Rod through everything assembled to this point beginning at the Slip Housing end of the tool. The Wrench Back-up (item 34) will have to be backed out enough to make way for the Rod. Align the key on the largest OD of the Rod with the widest and longest slot in the Setting Mandrel and guide it in. Slide the rod as far as it can go.
12. Place O-ring (item 10) on the Upper Release Rod (item 2). Screw the Upper Release Rod onto the Lower Release Rod.
13. Place a 12" wrench on the Upper Release Rod (item 2) and wrench tight. Install the Set Screw (item 12) in the Upper Release Rod (item 2).
14. Start the Upper Release Rod (item 2) into the collet on the By-Pass Sleeve. Take block of wood and hammer (so threads cannot be damaged) and tap the Upper Release Rod into place (when the collet fingers snap into groove). Please be careful not hold collet while fingers are expanded or pinching may occur when they collapse again.
15. Install the two O-rings (item 11) in the Equalizing Sleeve (item 8). Rotationally align shear screw hole in the Equalizing Sleeve with the hole in the By-Pass Sleeve. Slide the Equalizing Sleeve into place. It might require some tapping. Install the one Shear Screw (item 5).
16. Install the two Shear Screws (item 5) in the Setting Sleeve Adapter (item 14) making sure to align the holes in the By-Pass Sleeve (item 6). The Setting Sleeve Adaptor might have to be backed off the Packing Mandrel for alignment.
17. If retrieving will be done with the Wireline or Auto J Retrieving Tools move to step 18. If Retrieving will be done with the Collet Retrieving Tool move to step 19.
18. Slide the Auto J Retrieving Neck (item 33) into place over the Upper Release Rod (item 2) aligning holes. Install the one Shear Screw (item 5). Move to step 20.
19. Slide the Fishing Neck (item 4) into place over the Upper Release Rod (item 2) aligning holes. Install the one Shear Screw (item 5).
20. Screw the Safety Release (item 3) onto the Upper Release Rod (item 2) and tighten with two 12-18" pipe wrenches, one of the wrenches holding a backup on the Upper Release Rod (this is a left hand thread). Holding a backup is necessary to keep from backing the Upper Release Rod (item 2) off of the Lower Release Rod (item 7), since that connection is a right hand thread. You don't want the Safety Release to accidentally come loose, but on the other hand you want it to break loose if necessary for emergency release purposes.
21. Install the Shear Stud (item 1) in the Upper Release Rod (item 2) starting the short end of stud first.
22. Moving to bottom end, screw the Guide Extension (item 30) into the Bottom Cone (item 28). Snug tight by placing the Wrench Back-up (item 34) in the holes of the Slip Housing (item 25) and the Bottom Cone, then placing a wrench on the Guide Extension.
23. Screw the Cone Retainer (item 29) into the Slip Housing (item 25). If set screw hole in the Cone Retainer is not aligned with hole in the Slip Housing, back off threads until they are. Install the Set Screw (item 9).
24. Screw the Guide Bottom (item 31) onto the Guide Extension (item 30). Install the Set Screw (item 32).
25. Remove screws from the Slip Segments. Remove Wrench Back-up.

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Parts List

Item	Qty.	Description	4 1/2	5 1/2	7
		Complete Assembly - Model D Bridge Plug	035-3771-000		
		Redress Kit - consisted item numbers 1, 5, 9, 10, 11, 12, 13, 15, 19, 20, 27 & 32	035-3771-010		
1	3	Shear Stud	006-3800-020		
2	1	Upper Release Rod	035-3771-022		
3	3	Safety Release	035-3771-026		
4	9	Fishing Neck	035-3771-021		
5	10	Shear Screw, brass - 2000 lb.	002-4500-122		
6	3	By-Pass Sleeve	035-3771-024		
7	3	Lower Release Rod	035-3771-037		
8	1	Equalizing Sleeve	035-3771-023		
9	2	10 - 20 x 3/8 Socket Head Set Screw	-		
10	1	O-ring 90 Duro Nitrile	100-2218-090N		
11	2	O-ring 90 Duro Nitrile	100-2228-090N		
12	1	5/16 - 18 x ¼ Socket Head Set Screw	-		
13	1	O-ring 90 Duro Nitrile	100-2228-090N		
14	1	Setting Sleeve Adapter	035-3771-025		
15	1	O-ring 90 Duro Nitrile	100-2227-090N		
16	1	Packing Mandrel	035-3771-034		
17	1	Setting Mandrel	035-3771-036		
18	2	Gage Ring	035-3771-027		
19	2	End Rubber	035-3771-030		
20	1	Center Rubber	035-3771-031		
21	2	Element Spacer	035-3771-028		
22	1	Cone Sleeve	035-3771-033		
23	1	Lock Ring	035-3771-035		
24	1	Upper Cone	035-3771-038		
25	1	Slip Housing	035-3771-042		
26	4	Slip Segment	035-3771-043		
27	4	Slip Return Spring	035-3771-044		
28	1	Bottom Cone	035-3771-041		
29	1	Core Retainer	035-3771-048		
30	1	Guide Extension	035-3771-040		
31	1	Guide Bottom	035-3771-039		
32	1	5/16 - 18 x ½ Socket Head Set Screw	-		
33	1	Auto J Retrieving Neck	035-3771-047		
34	1	Wrench Back-up	035-3771-050		

* Optional part; if retrieving with the collet type tool, this part needs to replace item 33

Dimensional Data

Callout	4 1/2	5 1/2	7
A	5.281		
B	17.9x9		
C	36.250		
D	48.000		
E	1.875		
F	2.937		
G	3.771		
H	3.771		
J	3.250		
K	5.594		

** See Availability chart

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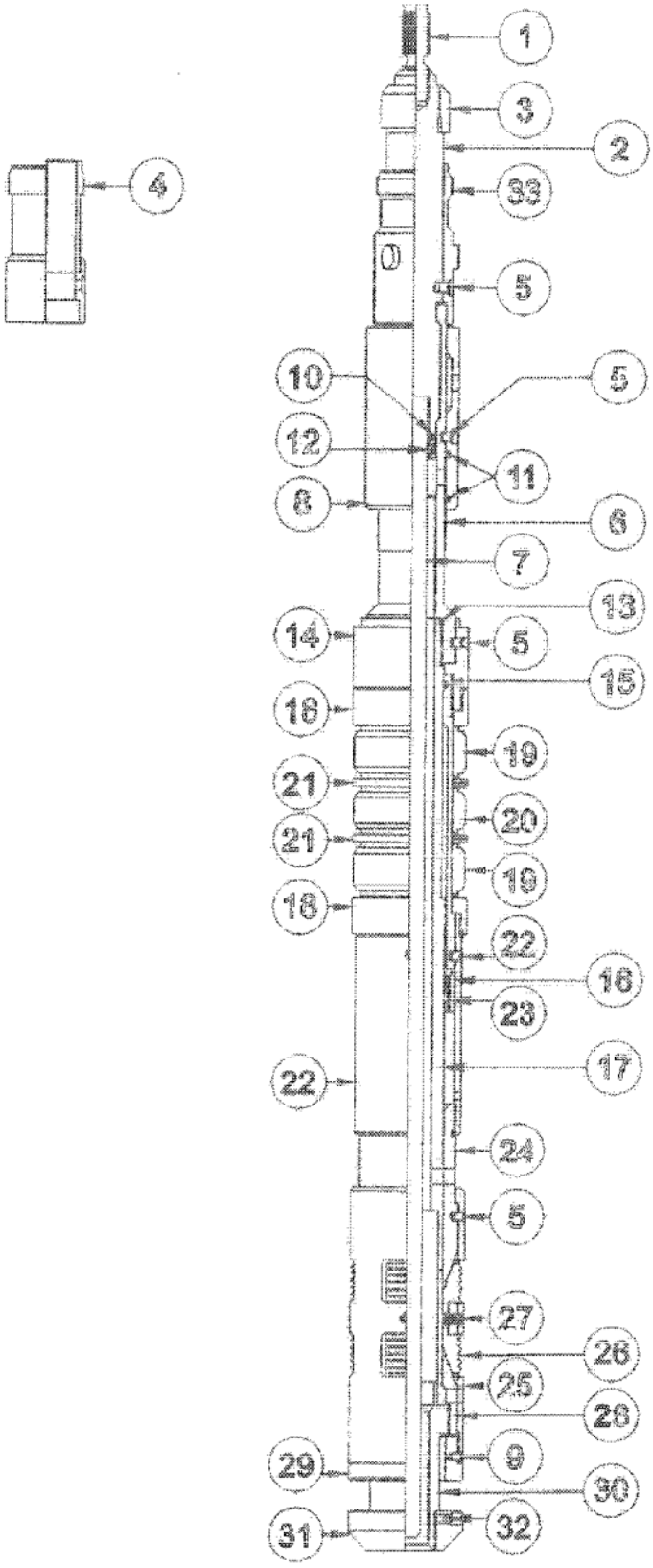

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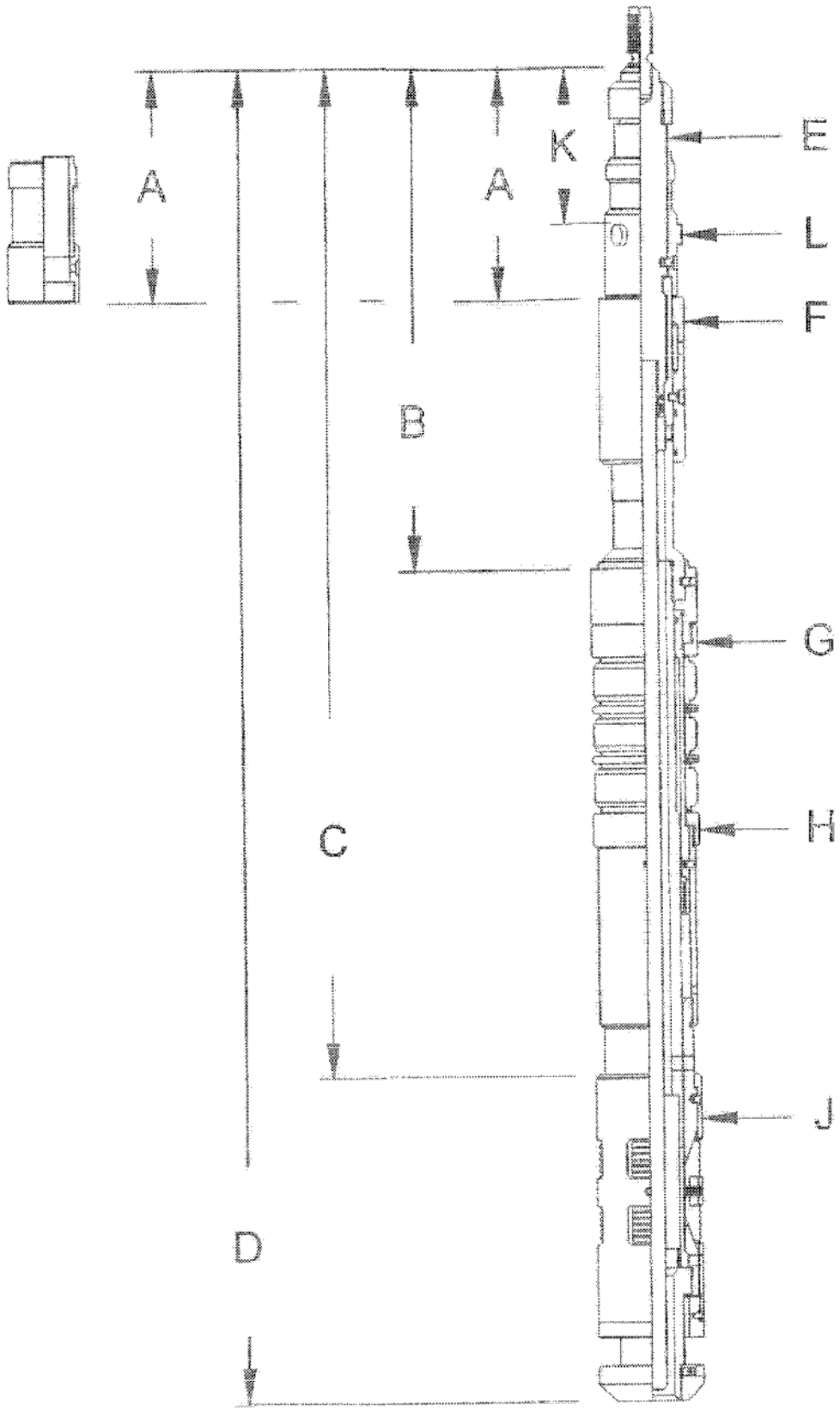

AWM 000620

MEGCO Ex. 1007

Wireline Adapter for Baker

Recommended Running Procedure:

The Model D Retrievable Bridge Plug is set on a wireline pressure setting tool and wireline adapter kit. It is retrieved using the selection of retrieving tools provided by Alpha.

Baker # 10 Setting Tool:

1. Make up the Setting Sleeve on the setting tool wrench tight.
2. Place the Lock Spring on the starting threads of the tension mandrel. Leave the first couple of threads exposed to allow starting the make-up
3. Make up the Tension Mandrel on the shear stud of the bridge plug snug tight.
4. Slide the tension mandrel and plug through the setting sleeve and make up until the setting sleeve is snug against the setting sleeve adapter of the plug (do not overtighten).
5. Make up the firing head on the setting tool and run the assembly to depth.

Parts List

Item	Qty.	Description	4 1/2	5 1/2	7
		Complete Assembly - Wireline Adapter for Baker			
1	1	Setting Sleeve Bushing	Not Required		
2	1	Set Screw 5/16 - 18 x	Not Required		
3	1	Set Screw ¼ - 20 x	Not Required		
4	1	Adapter Nut	Not Required		
5	1	Setting Sleeve	038-3771-200		
6	1	Tension Mandrel	000-3500-206		

Note: Always use a lock spring for the tension mandrel.

Dimensional Data

Callout	4 1/2	5 1/2	7
A	1.350		
B	3.750		
C	4.625		
D	30.187		

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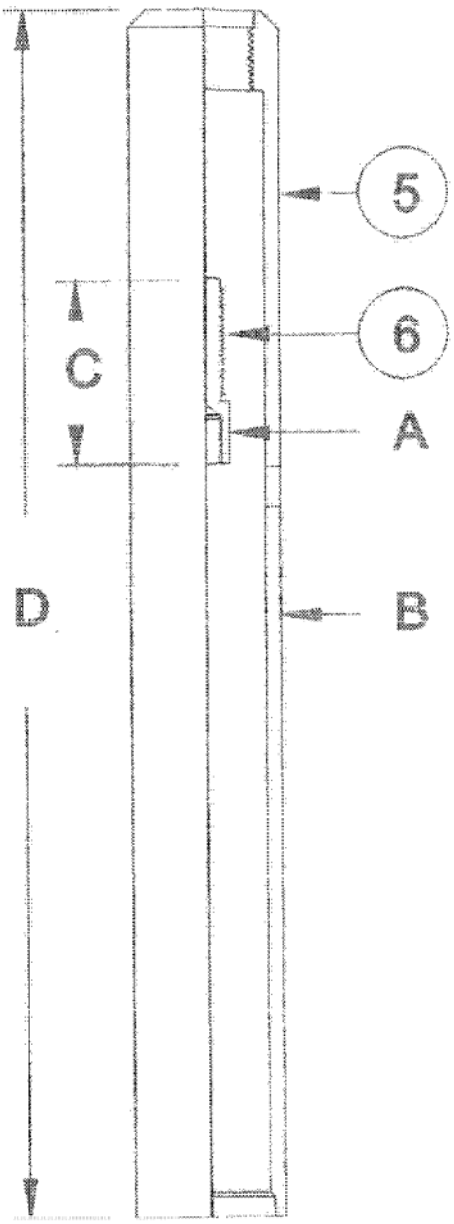
MEGCO Ex. 1007

Wireline Adapter for Baker



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MEGCO Ex. 1007

Wireline Adapter for GO

Recommended Running Procedure:

The Model D Retrievable Bridge Plug is set on a wireline pressure setting tool and wireline adapter kit. It is retrieved using the selection of retrieving tools provided by Alpha.

3 ⅜ GO Setting Tool:

1. Make up Lock Nut on the adapter rod all the way by hand.
2. Make up the Adapter Rod in the setting tool all the way.
3. Jam the Lock Nut on the adapter rod against the setting tool with a wrench.
4. Make up the Setting Sleeve on the setting tool by hand only
5. With the Shear Stud made up in the plug, slide the plug through the setting sleeve and make up stud in to adapter rod and snug tight with a small wrench (do not overtighten).
6. Back off Setting Sleeve until it sits on the plug and then jam the Lock Nut against the setting sleeve with a wrench.
7. Make up the firing head on the setting tool and run the assembly to depth.

Parts List

Item	Qty.	Description	4 1/2	5 1/2	7
		Complete Assembly - Wireline Adapter for GO			
1	1	Setting Sleeve Bushing	Not Required		
2	1	Set Screw 5/16 - 18 x	Not Required		
3	1	Adapter Nut	Not Required		
4	1	Setting Sleeve	035-3771-100		
5	1	Adapter Rod	000-5500-106		

Note: Always use a lock nut for the adapter rod and lock nut for the setting sleeve.

Dimensional Data

Callout	4 1/2	5 1/2	7
A	1.500		
B	3.750		
C	6.562		
D	27.968		

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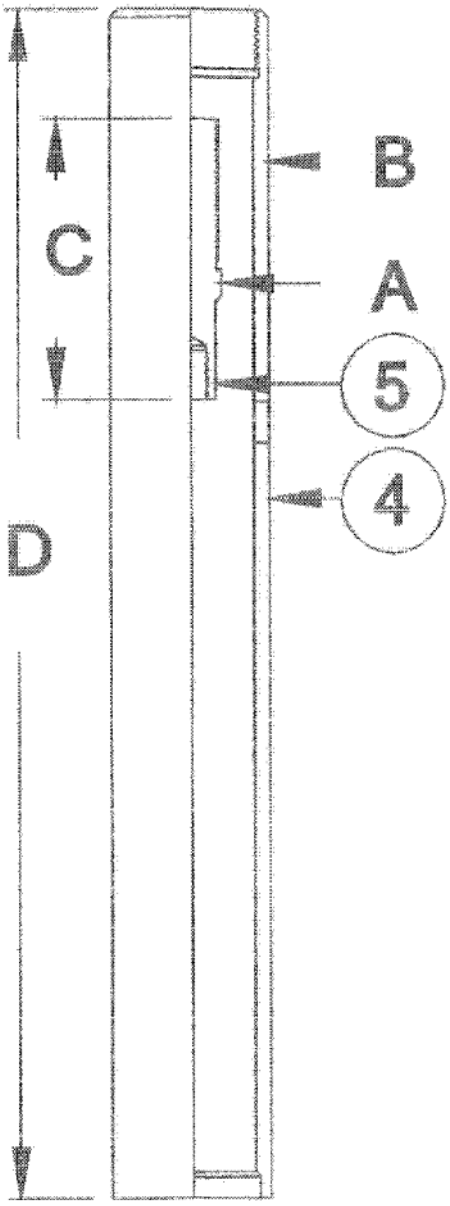
MEGCO Ex. 1007

Wireline Adapter for GO



Collet Type Retrieving Tool - for Model D RBP

Assembly Instructions:

1. Place the Housing (item 3) in the vise and slide in the Equalizing Sleeve (item 5) until it shoulders. Install four Set Screws (item 4).
2. Slide the Collet (item 2) into Housing (item 3) fingers first.
3. Screw the Top Sub (item 1) into the Housing (item 3) wrench tight. Install one Set Screw (item 8).
4. Moving to the other end, screw the Guide (item 7) into the Housing (item 3) wrench tight. Install one Set Screw (item 6).

Recommended Running Procedure For Tubing Retrieval:

1. Make up the retrieving tool on the tubing string. Run in to the setting depth.
2. In the event that sand or other debris are present on the top of plug, they can be removed by back-washing while lowering the tubing string. Washing should continue after the retrieving tool is latched on to the plug until the well is cleaned.
3. Set down approximately 5,000 lbs. of tubing weight on the plug, which will open the by-pass equalizing differential pressure across the plug. This step will also hook the plug in the collet of the retrieving tool.
4. Allow the necessary time for equalization to pass.
5. Release the plug by applying 10,000 to 15,000 lbs. force upward. Move the tool up the hole 10 feet allowing it to stretch out and retract the slips.
6. Move down below where the plug was set.
7. Remove tool from the well at a moderate speed.

Emergency Release:

An emergency release is provided in the event the tool will not release or becomes stuck while retrieving.

1. Raise the tubing to cause an upstrain of 10,000 lbs. at the tool.
2. Rotate the tubing to the right approximately nine turns. This will release the fishing neck from the plug and free up the retrieving tool to be removed from the well.
3. The plug may then be removed from the well using standard fishing operations utilizing an overshot and tubing jars.
4. During retrieval a calculated force of 80,000 lbs. may be pulled on the 4 ½ plug and 100,000 lbs. on the 5 ½ and larger plugs to free them from obstructions.

Removing From Plug After Retrieval:

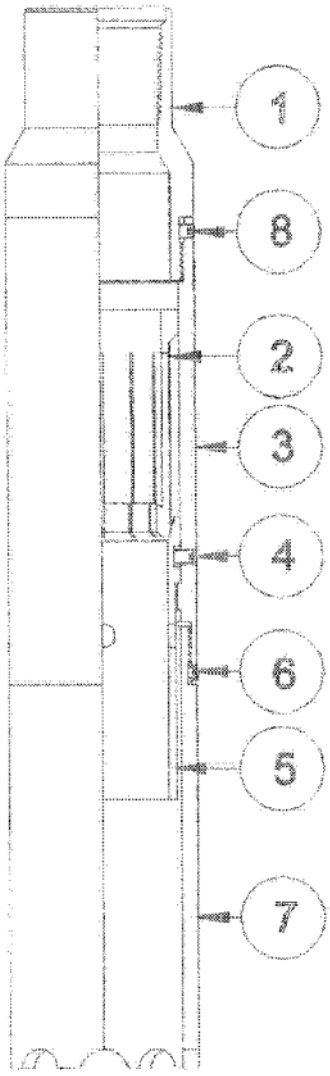
1. Place the retrieving tool Housing (item 3) in the vise.
2. Remove the Set Screw (item 8).
3. Unscrew the Top Sub (item 1).
4. Move the plug as far into the retrieving tool as it will go.
5. Remove the bridge plug Safety Release (item 3) from the plug. It is a left hand thread.
6. Slide the plug out the bottom end of retrieving tool.
7. Remove the collet (item 2) from the retrieving tool.
8. Unscrew the bridge plug fishing neck (item 4) into two pieces and slide the top section out of collet.

AWM 000625

MEGCO Ex. 1007

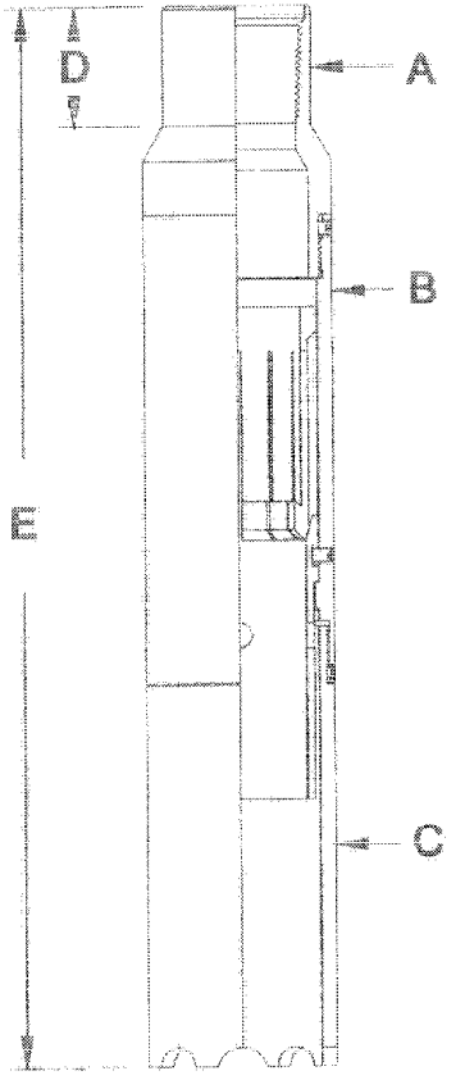
Parts List

Item	Qty.	Description	2 3/8	2 7/8
		Complete Assy. - Collet Type Retrieving Tool	038-3771-070	
1	1	Top Sub	025-3771-075	
2	1	Collet	035-3771-077	
3	1	Housing	035-3771-074	
4	4	5/16-18 x 3/8 Socket Head Set Screw	-	
5	1	Equalizing Sleeve	035-3771-076	
6	1	1/4-20 x 3/16 Socket Head Set Screw	-	
7	1	Guide	035-3771-073	
8	1	5/16-18 x 1/4 Socket Head Set Screw	-	



Dimensional Data

Callout	2 3/8	2 7/8
A	3.062	
B	3.750	
C	3.750	
D	2.375	
E	21.187	



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MEGCO Ex. 1007

Auto - J Type Retrieving Tool - for Model D RBP

Assembly Instructions:

1. Place the J Housing (item 3) in the vise and slide the Spring Sleeve (item 5), large end first, into the J Housing.
2. Insert the Spring (item 2) into the J Housing (item 3). It will travel over the Spring Sleeve (item 5).
3. Screw the Top Sub (item 1) into the J Housing (item 3) wrench tight. The Spring will have to be compressed a little to get the threads started. Install one Set Screw (item 4).

Recommended Running Procedure For Tubing Retrieval:

1. Make up the retrieving tool on the tubing string. Run in to the setting depth.
2. In the event that sand or other debris are present on the top of plug, they can be removed by back-washing while lowering the tubing string. Washing should continue after the retrieving tool is latched on to the plug until the well is cleaned.
3. Set down approximately 5,000 lbs. of tubing weight on the plug, which will open the by-pass equalizing differential pressure across the plug. This step will also hook the plug in the J of the retrieving tool.
4. Allow the necessary time for equalization to pass.
5. Release the plug by applying 10,000 to 15,000 lbs. force upward. Move the tool up the hole 10 feet allowing it to stretch out and retract the slips.
6. Move down below where the plug was set.
7. Remove tool from the well at a moderate speed.

Emergency Release:

An emergency release is provided in the event the tool will not release or becomes stuck while retrieving.

1. Raise the tubing to cause an upstrain of 10,000 lbs. at the tool.
2. Rotate the tubing to the right approximately nine turns. This will release the fishing neck from the plug and free up the retrieving tool to be removed from the well.
3. The plug may then be removed from the well using standard fishing operations utilizing an overshot and tubing jars.
4. During retrieval a calculated force of 80,000 lbs. may be pulled on the 4 ½ plug and 100,000 lbs. on the 5 ½ and larger plugs to free them from obstructions.

Removing From Plug After Retrieval:

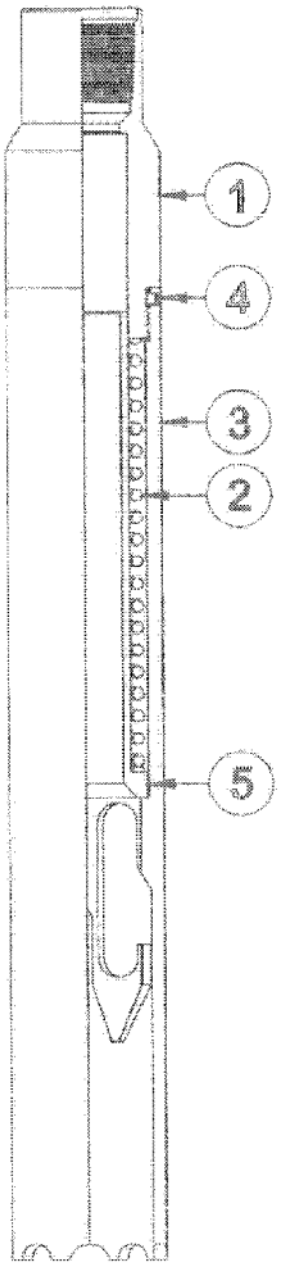
1. Place the retrieving tool Housing (item 3) in the vise.
2. Remove the Set Screw (item 4).
3. Unscrew the Top Sub (item 1).
4. Un-J the plug from retrieving tool and pull free.

AWM 000627

MEGCO Ex. 1007

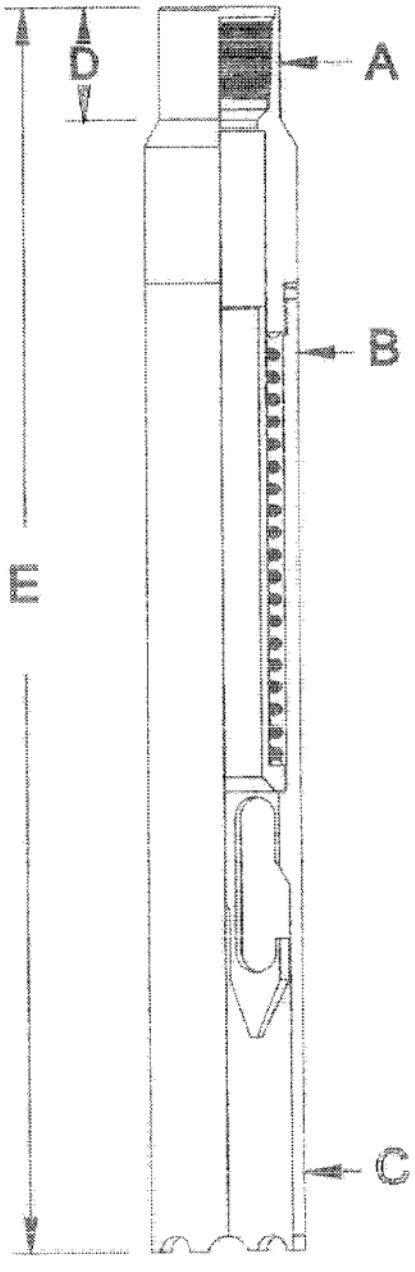
Parts List

Item	Qty.	Description	2 3/8	2 7/8
		Complete Assy. - Auto J Type Retrieving Tool	035-3771-080	
1	1	Top Sub	035-3771-088	
2	1	Sprung	035-3771-089	
3	1	J Housing	035-3771-086	
4	4	5/16-18 x 1/4 Socket Head Set Screw	-	
5	1	Spring Sleeve	035-3771-087	



Dimensional Data

Callout	2 3/8	2 7/8
A	3.062	
B	3.750	
C	3.750	
D	2.812	
E	34.062	



MEGCO Ex. 1007

Wireline Type Retrieving Tool - for Model D RBP

Assembly Instructions:

1. Slide the Latch (item 10) fingers first over the Spring Mandrel (item 4) small end first. When the fingers meet the shoulder bump them over largest diameter on the Spring Mandrel. Please be careful not to hold the Latch fingers while they are expanded due to pinching when they collapse. Slide the Latch Spring (item 9)(it is the lighter of the two springs) over the Spring Mandrel.
2. Place the Shear Sub (item 7) in the vise. Slide the Spring Mandrel (item 4) through the Shear Sub starting at the end with large unthreaded holes. Once the Spring Mandrel appears at the other end of the Shear Sub, pull it out until large holes in both parts are aligned. Insert Wrench Back-up (item 34) provided with the Retrievable Bridge Plug.
3. Move the Shear Sub (item 7) in the vise until screw holes are exposed. Install four Shear Screws (item 6).
4. Slide the Release Spring (item 5) onto the Spring Mandrel (item 4). With the Shear Sub (item 7) tight in the vise, screw the Spring Retainer (item 3) onto the Spring Mandrel (item 4) snug tight. Remove the Wrench Back-up.
5. Place the Spring Housing (item 2) in the vise. Slide the previously assembled parts (starting with the last part added - Spring Retainer) through the Spring Housing starting at the opposite end of large holes. Screw these together.
6. On the same end, screw on the Latch Housing (item 8).
7. On the opposite end, screw in the Top Sub (item 1).
8. Wrench tight both end parts against the Spring Housing while it is still in the vise.
9. Install the Set Screws (item 11) in each of the connections.

Recommended Running Procedure for Wireline:

1. Make up the retrieving tool with shaker bars (75-lb. minimum) and jars positioned immediately above retrieving tool.
2. **IMPORTANT** - On this type retrieval it is imperative that the bridge plug you are retrieving has as much pressure above as it has below. If this is not followed, when the bypass is opened for true equalization of pressure, the retrieving tool could be thrust upward releasing the bridge plug and causing possible danger to equipment and personnel.
3. Lower retrieving tool in the well until the plug is tagged.
4. Jar down to open the by-pass sleeve and equalize pressure around plug.
5. Allow sufficient time for equalization to occur.
6. Jar upward to create 8,000 lbs. of pull on the plug.
7. Slowly retrieve plug for approximately 400 feet and allow the packing elements and slips to fully retract.
8. Continue out of hole at moderate speed.

Recommended Running Procedure for Sandline:

1. Make up the retrieving tool with stem or joint of tubing and jars.
2. **IMPORTANT** - On this type retrieval it is imperative that the bridge plug you are retrieving has as much pressure above as it has below. If this is not followed, when the bypass is opened for true equalization of pressure, the retrieving tool could be thrust upward releasing the bridge plug and causing possible danger to equipment and personnel.
3. Flag line and run to proper depth tagging the plug.
4. Jar down to open the by-pass sleeve and equalize pressure around plug.
5. Allow sufficient time for equalization to occur.
6. Pull 8,000 lbs. or jar upward to release the plug.
7. Slowly retrieve plug for approximately 100 feet and allow the packing elements and slips to fully retract.
8. Continue out of hole at moderate speed.

Emergency Release:

An emergency release is provided in the event the tool will not release or becomes stuck while retrieving.

1. Jarring down will shear the retrieving tool loose.
2. Retrieving tool will be free to come out of hole leaving the plug for a fishing job.

Removing From Plug After Retrieval:

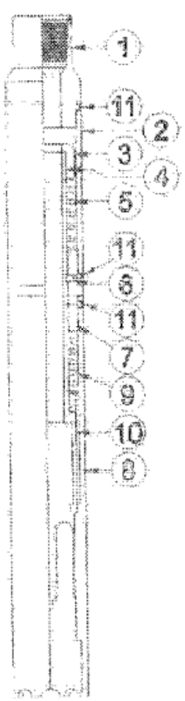
1. Place the retrieving tool Latch Housing (item 8) in the vise.
2. Remove the Set Screw (item 11) from the bottom connection of the retrieving tool.
3. Unscrew the connection, this is the Shear Sub (item 7) and Latch Housing (item 8), and set aside the top section.
4. Pull the plug free.

AWM 000629

MEGCO Ex. 1007

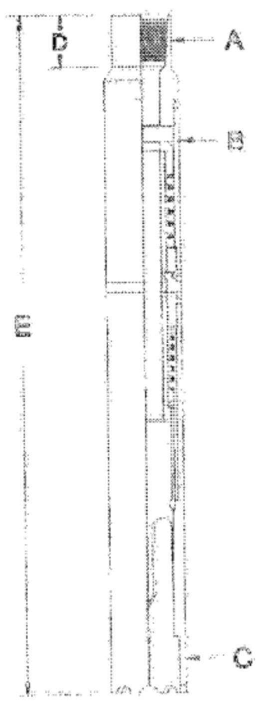
Parts List

Item	Qty.	Description	2 3/8	2 7/8
		Complete Assy. - Wireline Type Retrieving Tool	035-3771-090	
1	1	Top Sub	035-3771-098	
2	1	Spring Housing	035-3771-092	
3	1	Spring Retainer	035-3771-091	
4	1	Spring Mandrel	035-3771-093	
5	1	Release Spring	035-3771-099	
6	4	Shear Screw	003-3500-039	
7	1	Shear Sub	035-3771-097	
8	1	Latch Housing	035-3771-096	
9	1	Latch Spring	035-3771-094	
10	1	Latch	035-3771-095	
11	3	5/16-18 x 1/4 Socket Head Set Screw	-	



Dimensional Data

Callout	2 3/8	2 7/8
A	3.062	
B	3.750	
C	3.750	
D	2.562	
E	31.875	



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AWM 000630

MEGCO Ex. 1007

Model "J" & "L" Production Packers (R22)

The Alpha Oil Tools Model "J" & "L" Production Packers are available to fit your needs and provide the versatility of our excellent pack-off system for a positive secure set in the well bore.

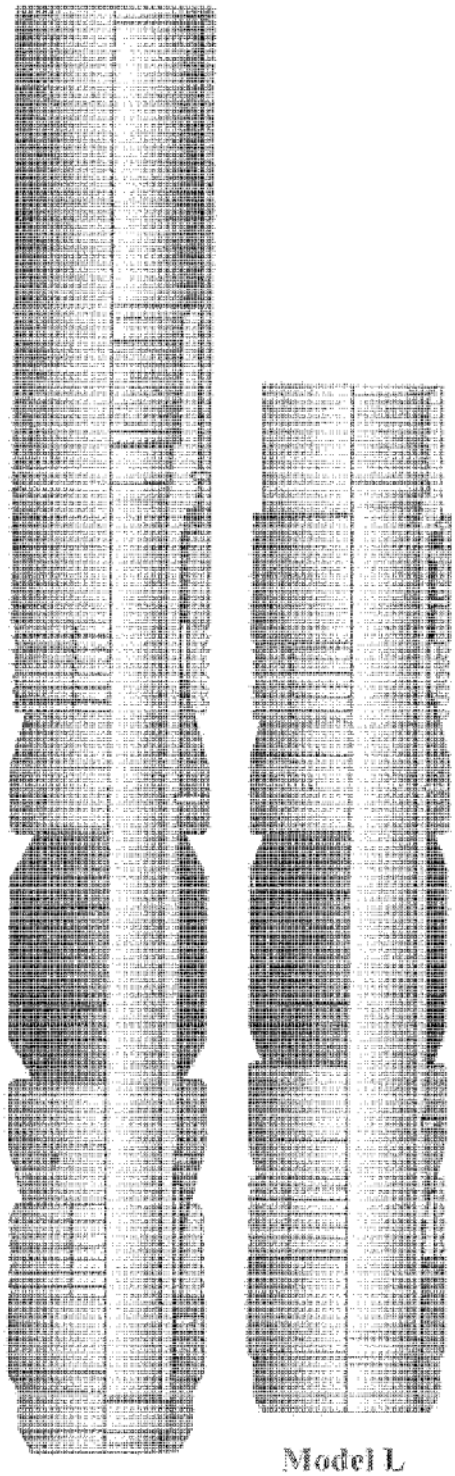
These packers assist in the economical operation of a variety of completion and production jobs. They are designed to accommodate seal bore extensions used in deep wells requiring a longer seal bore interval. Seal Nipples are available with either automatic square-thread latch or locating shoulder. These packers can be used as test tools. Full opening bores allow the passage of perforating guns used to perforate a zone below for testing. If the zone proves to be non-productive, the packer can be used as a squeeze tool.

The packers are designed to provide high-impact resistance and a dependable seal. The high quality packing system will conform to the casing and close off any extrusion of rubber, as the packer is set, even at high temperatures and pressures.

Alpha's Model J Production Packers provide excellent clearance for run-in while the Alpha Model "L" Production Packers offer a larger seal bore. The two models carry different pressure ratings noted later in this document.

R22 is the designation for standard service that Alpha Oil Tools puts on the equipment listed below. Equipment for service other than standard can be specified upon request from the customer.

For additional information, please contact Alpha Oil Tools or an authorized representative.



Model J

Model L

Features:

- E.C.N.F.R. Array packing element system
- One piece slips hardened to depth of wicker only
- Sets in any grade casing including P-110
- Choice of bottom to fit your application
  - specified when ordering
- Ratcheting lock ring holds setting force

AWM 000631

MEGCO Ex. 1007

Model "J" 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
4½	9.5-13.5	3.920	4.090	3.750	3.250	2.687	007-3750-100 *	37-26	40-26	1.937
5	15-21	4.125	4.436	3.968	3.250	2.687	007-3968-100 *	39-26	40-26	1.937
5½	20-23	4.625	4.811	4.328	3.250	2.687	007-4328-000	43-26	40-26	1.937
5½	13-17	4.812	5.044	4.500	3.250	2.687	007-4500-000	45-26	40-26	1.937
6	14-26	5.140	5.552	4.937	3.500	3.000	007-4937-100 **	49-30	42/62-30	2.375
6 5/8	17-20	6.049	6.366	5.687	4.000	3.250	007-5687-000	56-32	80-32	2.375
7	23-32	6.049	6.366	5.687	4.000	3.250	007-5687-000	56-32	80-32	2.375
7	17-20	6.456	6.765	6.187*	4.000	3.250	007-6187-000	61-32	80-32	2.375
7 5/8	33.7-39	6.456	6.765	6.187	4.000	3.250	007-6187-000	61-32	80-32	2.375
8 5/8	36-49	7.500	7.835	7.125	4.500	4.000	007-7125-000 **	71-40	80-40	3.000
9 5/8	29.3-53.5	8.438	9.063	8.125	4.000	3.250	007-8125-000	81-32	100-32	2.375
9 5/8	29.3-53.5	8.438	9.063	8.125	4.500	4.000	007-8125-000	81-40	80-40	3.000

* - Rated 7,500 psi @ 300 degrees with HRC 18-22 Seal Body (Standard)
- Rated 10,000 psi @ 300 degrees with HRC 28-32 Seal Body (Optional) Specify when ordering
** - Currently does not use the ECNBR Arrow as the standard packing element system

The shoe type must be specified upon placing sales order
The figures contained herein are subject to change without notice.

Model "L" Specification Guide

Rated 7,500 psi @ 300 degrees F

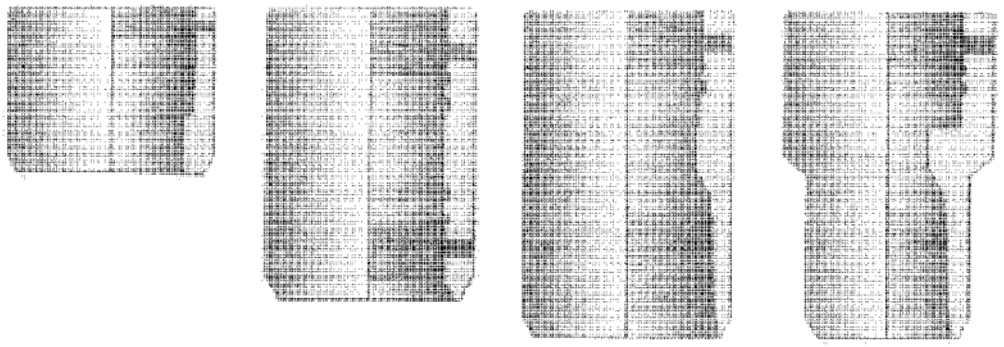
Casing		Setting Range		Packer Data					Seal Assy.	
OD	Wt./ft.	Min.	Max.	Max. OD	Thd. Dia.	Seal Bore	Part No.	Size	Size	ID Thru
4½	20-23	4.625	4.811	4.437	3.500	3.000	008-4437-100	44-30	42/62-30	2.375
5½	14-17	4.812	5.083	4.562	3.500	3.000	008-4562-100	45-30	42/62-30	2.375
5½	13-14	4.978	5.190	4.750	3.500	3.000	008-4750-100	47-30	42/62-30	2.375
6 5/8	20-24	5.875	6.094	5.687	4.500	4.000	008-5687-100	56-40	80-40	3.000
7	32-38	6.875	6.094	5.687	4.500	4.000	008-5687-100	56-40	80-40	3.000
6 5/8	17	6.095	6.275	5.875	4.500	4.000	008-5875-000	58-40	80-40	3.000
7	26-29	6.095	6.276	5.875	4.500	4.000	008-5875-000	58-40	80-40	3.000
7	20-23	6.277	6.456	6.062	4.500	4.000	008-6062-000	60-40	80-40	3.000
7	17-20	6.456	6.765	6.250	4.500	4.000	008-6250-000	62-40	80-40	3.000
7 5/8	33.7-42.8	6.456	6.765	6.250	4.500	4.000	008-6250-000	62-40	80-40	3.000

The shoe type must be specified upon placing sales order
The figures contained herein are subject to change without notice.

AWM 000632

MEGCO Ex. 1007

Shoe Selection for Alpha Production Packers



Plain Bottom | Seal Bore Extension | Mill-out Extension | Tailpipe

Shoe Selection for Alpha Production Packers

Packer Size & Model		Plain Bottom	Seal Bore Extension	Mill-Out Extension	Tailpipe
3.750 x 2.687 J	37-26	007-3750-025	007-3750-126	007-3750-127	007-3750-128
3.968 x 2.687 J	39-26	007-3968-025	007-3968-126	007-3968-127	007-3968-128
4.328 x 2.687 J	43-26	007-4328-025	007-4328-126	007-4328-127	007-4328-128
4.500 x 2.687 J	45-26	007-4500-025	007-4500-126	007-4500-127	007-4500-128
4.937 x 3.000 J	49-30	007-4937-025	007-4937-126	007-4937-127	007-4937-128
5.687 x 3.250 J	56-32	007-5687-025	007-5687-126	007-5687-127	007-5687-128
6.187 x 3.250 J	61-32	007-6187-025	007-6187-126	007-6187-127	007-6187-128
7.125 x 4.000 J	71-40	007-7125-025	007-7125-126	007-7125-127	007-7125-128
8.125 x 3.250 J	81-32	007-8125-025	007-8125-126	007-8125-127	007-8125-128
8.125 x 4.000 J	81-40	007-8125-069	007-8125-166	007-8125-167	007-8125-168
4.437 x 3.000 L	44-30	008-4437-025	008-4437-126	008-4437-127	008-4437-128
4.562 x 3.000 L	45-30	008-4562-025	008-4562-126	008-4562-127	008-4562-128
4.750 x 3.000 L	47-30	008-4750-025	008-4750-126	008-4750-127	008-4750-128
5.687 x 4.000 L	56-40	008-5687-025	008-5687-126	008-5687-127	008-5687-128
5.875 x 4.000 L	58-40	008-5875-025	008-5875-126	008-5875-127	008-5875-128
6.000 x 4.000 L	60-40	008-6000-025	008-6000-126	008-6000-127	008-6000-128
6.250 x 4.000 L	62-40	008-6250-025	008-6250-126	008-6250-127	008-6250-128

O-Rings and Screws for Shoe

Packer Size & Model		O-Ring	Set Screw
3.750 x 2.687 J	37-26	100-2234-090N	5/16 - 18 x 3/8 long
3.968 x 2.687 J	39-26	100-2234-090N	5/16 - 18 x 3/8 long
4.328 x 2.687 J	43-26	100-2340-090N	3/8 - 16 x 3/8 long
4.500 x 2.687 J	45-26	100-2340-090N	3/8 - 16 x 3/8 long
4.937 x 3.000 J	49-30	100-2340-090N	3/8 - 16 x 3/8 long
5.687 x 3.250 J	56-32	100-2344-090N	1/2 - 13 x 1/2 long
6.187 x 3.250 J	61-32	100-2344-090N	1/2 - 13 x 1/2 long
7.125 x 4.000 J	71-40	100-2350-090N	1/2 - 13 x 1/2 long
8.125 x 3.250 J	81-32	100-2359-090N	1/2 - 13 x 1/2 long
8.125 x 4.000 J	81-40	100-2359-090N	1/2 - 13 x 1/2 long
4.437 x 3.000 L	44-30	100-2340-090N	3/8 - 16 x 3/8 long
4.562 x 3.000 L	45-30	100-2340-090N	3/8 - 16 x 3/8 long
4.750 x 3.000 L	47-30	100-2340-090N	3/8 - 16 x 3/8 long
5.687 x 4.000 L	56-40	100-2340-090N	1/2 - 13 x 1/2 long
5.875 x 4.000 L	58-40	100-2350-090N	1/2 - 13 x 1/2 long
6.000 x 4.000 L	60-40	100-2350-090N	1/2 - 13 x 1/2 long
6.250 x 4.000 L	62-40	100-2350-090N	1/2 - 13 x 1/2 long

* - O-ring Back-ups available if necessary

Note: the O-ring listed is for standard service and should be substituted if application other than standard service. An Alpha representative can assist upon request.

AWM 000633

MEGCO Ex. 1007

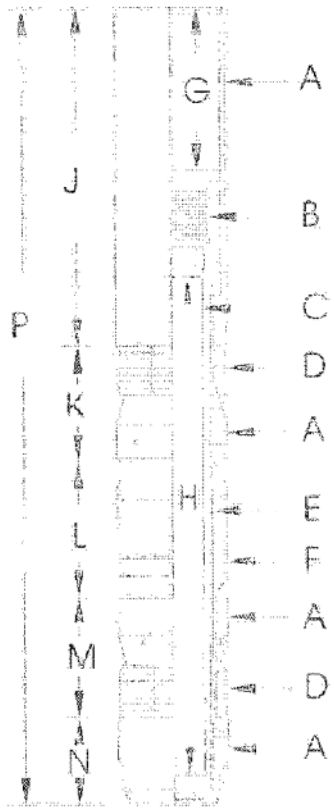
DIMENSIONAL DATA

"J" Packer Size	A	B	C	D	E	F	G	H	J	K	L	M	N *	P *
3.750 x 2.687	3.750	3.250	2.687	3.718	3.125	2.718	7.000	20.825	15.281	4.770	4.000	4.770	3.500	32.321
3.968 x 2.687	3.968	3.250	2.687	3.937	3.125	2.937	7.000	20.825	15.281	4.770	4.000	4.770	3.500	32.321
4.328 x 2.687	4.328	3.250	2.687	4.280	3.500	4.270	8.000	21.887	14.937	5.683	4.710	5.683	3.625	34.627
4.500 x 2.687	4.500	3.250	2.687	4.452	3.500	4.437	8.000	21.887	14.937	5.683	4.710	5.683	3.625	34.627
4.937 x 3.000	4.937	3.500	3.000	4.815	3.500	4.875	8.000	22.258	14.937	5.058	3.960	4.958	3.625	34.640
5.687 x 3.250	5.687	4.000	3.250	5.640	4.125	5.625	8.500	30.954	17.592	6.864	5.462	6.864	4.500	41.282
6.187 x 3.250	6.187	4.000	3.250	6.000	4.125	6.062	8.500	30.954	17.592	6.864	5.462	6.864	4.500	41.282
7.125 x 4.000	7.125	4.500	4.000	7.000	4.812	7.000	8.500	24.570	16.687	5.168	7.812	5.168	4.250	39.086
8.125 x 3.250	8.125	4.000	3.250	8.062	6.000	8.000	8.500	31.000	17.812	5.918	8.625	5.918	5.000	43.772
8.125 x 4.000	8.125	4.500	4.000	8.062	6.000	8.000	8.500	27.632	17.562	5.918	8.625	5.918	5.000	42.772

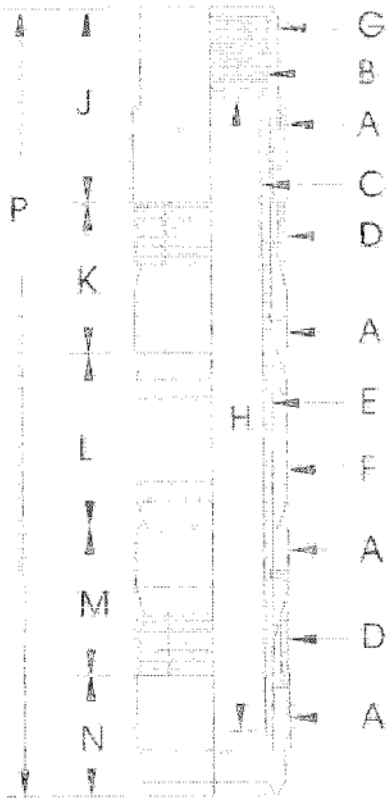
* - Representative of the packer with a plain bottom shoe as shown below.

"L" Packer Size	A	B	C	D	E	F	G	H	J	K	L	M	N *	P *
4.437 x 3.000	4.437	3.500	3.000	4.280	3.500	4.270	4.093	22.338	6.925	5.683	4.710	5.683	3.625	26.025
4.502 x 3.000	4.502	3.500	3.000	4.452	3.500	4.437	4.093	22.338	6.925	5.683	4.710	5.683	3.625	26.025
4.750 x 3.000	4.750	3.500	3.000	4.656	3.500	4.437	4.093	22.338	6.925	5.683	4.710	5.683	3.625	26.025
5.687 x 4.000	5.687	4.500	4.000	5.640	4.625	5.625	5.344	24.570	7.687	6.175	6.000	6.175	4.000	30.046
5.875 x 4.000	5.875	4.500	4.000	5.859	4.812	5.812	5.344	24.570	7.895	6.075	6.000	6.075	4.000	30.046
6.000 x 4.000	6.000	4.500	4.000	5.859	4.812	5.812	5.344	24.570	7.895	6.075	6.000	6.075	4.000	30.046
6.250 x 4.000	6.250	4.500	4.000	6.125	4.813	6.125	5.344	24.570	7.861	6.077	6.000	6.077	4.000	30.046

* - Representative of the packer with a plain bottom shoe as shown below.



Model J



Model L

RECOMMENDED PROCEDURE BEFORE RUN-IN:

1. Run a casing scraper (if necessary) to clean inner wall of casing and free any debris or obstructions.
2. Circulate well to clean well of debris and junk.
3. Drift casing i.d. 80-100 feet below setting depth with full o.d. gage ring and junk basket to insure no restrictions or debris exist.
4. Casing should have 100% cement bond before installing packer in well.

PACKER OPTIONS:

Alpha Model J & L packer bodies and bottom shoes are manufactured from several materials to ensure compatibility with most well environments. Accessories run below the packer including millout extensions, seal bore extensions, connector subs, tandem subs and crossover subs should be manufactured from similar materials to ensure pressure ratings and integrity of packer hook up are maintained. Packer bodies are normally manufactured from ductile iron or low alloy steel heat treated to a maximum hardness of 22 Rockwell "C" and conform to NACE standard MR-01-75-94 for H_2S service. Low carbon steels for non H_2S applications requiring higher strength levels are available and chrome alloys containing 9% or 13% chrome are available for applications requiring resistance to CO_2 corrosion. Packing elements are also available upon request in several compounds such as HNBR, Viton and Aflas to ensure compatibility with most well environments.

Alpha Model J permanent packers manufactured for "standard service" are normally rated for 300 degrees F @ 10,000 psi differential pressure. Some sizes are rated less than 10,000 psi. Alpha Model L permanent packers manufactured for "standard service" are rated for 300 degrees F @ 7,500 psi differential pressure. Contact your Alpha Oil Tool representative for more information.

ALPHA MODEL B WIRELINE SETTING EQUIPMENT - ASSEMBLY INSTRUCTIONS:

1. Lubricate all threads and sliding surfaces. Wrench only were indicated and file away wrench marks.
2. Screw release stud (item 13) into stud bushing (item 11) until it bottoms on dowel pin. Place mandrel (item 15) in vise below shoulder then screw release stud into mandrel until it bottoms on dowel pin. Tighten on upper end of stud bushing with pliers to insure parts are properly made up (caution: do not over tighten release stud).
3. Place body (item 14) in vise then slide release stud assembly (step 2) through top end of body until stud bushing bottoms on shoulder inside body. Align slot on stud bushing with tapped hole in body then install socket head set screw (item 12). Screw adjuster bushing (item 10) in body until it bottoms to aid in assembly. Note: left hand threads.
4. Slide split ring retainer (item 16) over upper end of release sleeve (item 18) in direction shown. Slide release sleeve into lower end of body until shoulder on release sleeve is flush with end of body. Apply grease around shoulder area then place split rings (item 17) on release sleeve. Slide split ring retainer over split rings then make up to lower end of body wrench tight. Push release sleeve into body until it bottoms then rotate until slots align with pins in body.
5. Place gage ring (item 22) over release sleeve square threads. Screw mandrel guide (item 19) on mandrel and expand release sleeve until square threads are tight against gage ring. Back off on mandrel guide far enough to slide gage ring off threads. Screw lock bushing (item 20) against mandrel guide then install socket head set screw (item 21).
6. An optional stinger sub for holding the flapper valve in the open position is available upon request.

MAKE-UP PROCEDURE FOR MODEL B WIRELINE SETTING EQUIPMENT AND PACKER ON A BAKER No.10 W.L.P.S.A.

1. Screw adjusting nut (item 6) on lower end of a Baker no.10 wireline setting tool then install socket head set screw (item 5). Screw adapter sleeve (item 4) over adjusting nut then push sleeve back to view lower end of setting tool.
2. Remove adjuster bushing (item 10) from body (item 14). Note: left hand threads.
3. Screw mandrel adapter (item 8) into adjuster bushing (item 10) then install socket head set screw (item 9).
4. Screw adjuster bushing into body until it bottoms then install socket head set screw (item 9).
5. Screw tension mandrel spring (item 7) on the first few threads of the mandrel adapter then screw release sleeve assembly into the lower end of baker no.10 wireline setting tool.
6. Slide gage ring over threads of release sleeve for final check.
7. Grease left hand threads of release sleeve then screw packer on hand tight.
8. Screw adapter sleeve down against packer then install socket head set screw (item 5).

AWM 000635

MEGCO Ex. 1007

MAKE-UP PROCEDURE
FOR MODEL B WIRELINE SETTING EQUIPMENT AND PACKER ON A BAKER No.20 W.L.P.S.A

1. Slide adapter sleeve bushing (item 2) and adapter sleeve (item 4) over lower end of baker no.20 wireline setting tool.
2. Screw adjusting nut (item 6) on setting tool then install socket head set screw (item 5).
3. Remove adjuster bushing (item 10) from body (item 14). Note: left hand threads. Screw adjuster bushing (item 10) on lower end of baker no.20 wireline setting tool then install socket head set screw (item 5).
4. Screw release sleeve assembly on adjuster bushing then install socket head set screw (item 9).
5. Slide gage ring over threads of release sleeve for final check.
6. Grease left hand threads of release sleeve then screw packer on hand tight.
7. Screw adapter sleeve down against packer then align hole in adapter sleeve bushing with tapped hole in adapter sleeve install socket head set screw (item 3).

INSTALLING PACKER ON ELECTRIC WIRELINE:

Alpha Model J & L permanent production packers may be run on electric wireline utilizing a Baker model e-4 wireline pressure setting assembly (or equivalent) and Alpha Model B wireline setting equipment. A casing collar locator (CCL), Baker wireline pressure setting tool, rust mut, and an electric line unit with single conductor cable will be needed to install the packer. The mast unit will require a sufficient height to suspend the lubricator system while the packer is hoisted up into the lubricator. Measurements should be recorded from the center of the CCL to the top sealing element and from the cable head to the bottom of the packer hook-up. Also, record the igniter and power charge for numbers. Check zero and run packer in hole at a speed no higher than 150 feet per minute, being careful to slow down when approaching tight spots in the casing, continue running packer several feet below setting depth. Pick up slowly to setting depth, correlate log, fire igniter and allow 2-3 minutes for packer to set. The electric line should then be slacked off several feet and weight indicator drop which indicates the packer has been set. Pick-up slowly until setting equipment clears packer. Continue out of the well at a moderate speed. Do not tag packer.

INSTALLING PACKER ON TUBING:

Alpha Model J & L permanent production packers may be run on tubing utilizing a Baker Model J hydraulic setting assembly (or equivalent) and Alpha Model B wireline setting equipment. Setting the packer on tubing can be particularly useful in high-angle, deviated wells such as those drilled offshore. The packer is run at a moderate running speed until the setting depth is reached (no faster than 30 seconds per 90 foot stand). Be certain tubing is free of debris and excessive scale. All tubing should be rabbited to insure that the tripping ball will pass through it. Use slow starts and stops when moving tubing string "no jerking" and avoid unnecessary right-hand rotation of the tubing string. Carefully add the tubing tally to confirm desired setting depth. Mark tubing with chalk. Hook up pump and establish circulation slowly (not more than 1-1/2 bbl per minute or 500 psig differential pressure). This action will clear unwanted scale and debris from the tubing bore and assure that the tripping ball will be able to travel to the ball seat. Stop circulation and drop the tripping ball. The ball should fall at about 200 feet per minute. If the tripping ball is to be circulated down, calculate the tubing capacity and stop displacement 5 bbl short and let ball gravitate to the ball seat. Apply pump pressure to produce necessary setting force required to set packer (4-1/2 through 5-1/2 packers shear at 33,000 pounds and 7" and larger shear at 55,000 pounds). Pick-up slowly until setting equipment clears packer. Continue out of well at a moderate speed. Do not tag packer.

REMOVING PACKER FROM WELL BORE:

Alpha Model J & L permanent production packers may be removed from the well bore by utilizing a Baker Model "CJ" packer milling tool (or equivalent) which is designed to mill over and retrieve the packer. This tool contains an inner mandrel, with a catch sleeve on the lower end, which extends through and below the packer body during the milling operation. After the slips and packing element have been milled up, the catch sleeve will catch the packer body and it will be removed with the milling tool. If a hook-up requires that the seal bore extension be run directly below the packer in order to retain a continuous seal bore, the Baker Model "CJ" packer milling tool may not be used to mill up and recover the packer. Also, it is not a good practice to run a millout extension below a seal bore extension because special long stingers are required on the packer milling tool. This can lead to stuck or twisted-off stingers. In these situations it is recommended to use a packer milling tool that latches into the upper end of the packer bore and has a catch mandrel that telescopes upward within the milling tool to mill over and retrieve this type of packer hook-up. A baker model "CC" packer milling tool can be used to mill over a permanent packer and push it to the bottom of the well.

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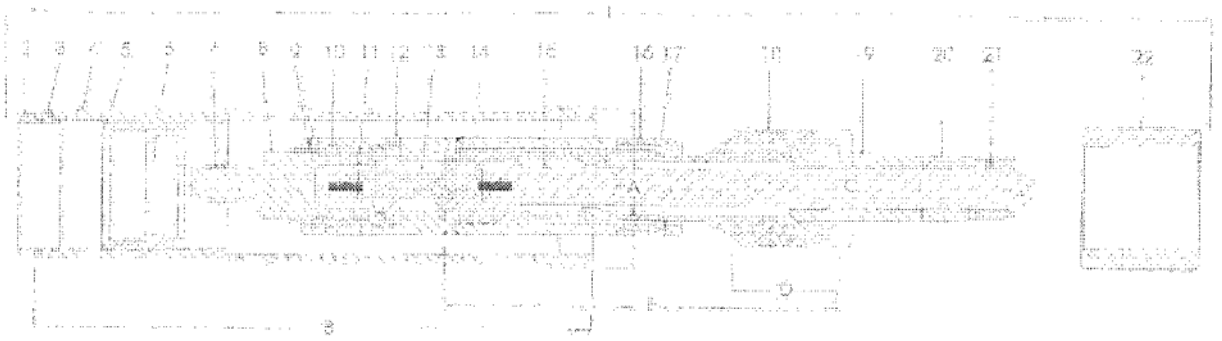

Model B Wireline Setting Equipment for Model J Packers

Model B Wireline Setting Equipment for Model J Packers - Parts List

Item No.	Description	No. Req'd	Packer Size				
			3.750 x 2.687	3.968 x 2.687	4.328 x 2.687	4.500 x 2.687	4.937 x 3.000
1	Assy - "B" Wireline Setting Equip.	1	007-3750-230	007-3968-231 / 007-3968-239	007-4328-230	007-4500-230	007-4937-230
2	Adapter Sleeve Bushing	1	Not Required		007-4328-205		
3	Socket Head Set Screw	2	3/8 - 24 x ⅜ long		7/16 - 18 x ½ long		
4	Adapter Sleeve	1	007-3750-230	007-3968-231 / 007-3968-239	007-4328-230	007-4500-230	007-4937-230
5	Socket Head Set Screw	3	10 - 32 x ⅜ long				
6	Adjusting Nut	1	007-3750-210	007-3968-210	007-4328-210		
7	Tension Mandrel Spring (No. 10)	1	000-3500-203		Not Required		
8	Mandrel Adapter (No. 10)	1	007-4500-238		Not Required		
9	Socket Head Set Screw	2	5/16 - 18 x ½ long				
10	Adjustor Bushing	1	007-4500-237				
11	Stud Bushing	1	007-4500-232				
12	Socket Head Set Screw	1	5/16 - 18 x ½ long				
13	Release Stud	2	005-359-032				
14	Body	1	007-4500-236				
15	Mandrel	1	007-4500-204				
16	Split Ring Retainer	1	007-3500-235				
17	Split Ring	1	007-4500-241				
18	Release Sleeve	1	007-4500-245				008-4562-245
19	Mandrel Guide	1	007-4500-239				
20	Lock Bushing	1	007-4500-240				
21	Socket Head Set Screw	1	5/16 - 18 x 5/16 long				
22	Guide Ring	1	007-4500-250				008-4562-250
Baker Wireline Pressure Setting Tool Size			Baker # 10		Baker # 20		

Dimensional Data

A	3.750"	3.875	3.875	4.328	4.500	4.937
B	16 1/4		8 5/8	12 15/16		13 1/16
C	3 1/8					3 1/2
D	3 1/16					3 1/8
E	11 ⅞					12 15/16

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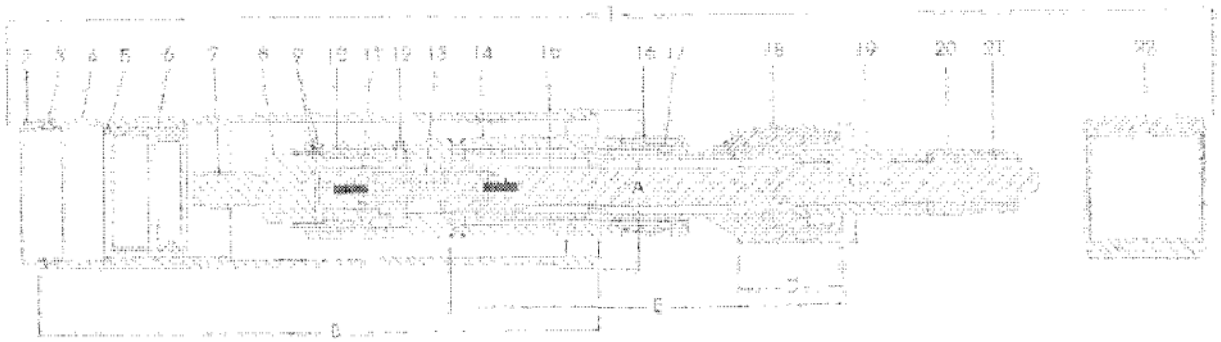

Model B Wireline Setting Equipment for Model J Packers

Model B Wireline Setting Equipment for Model J Packers - Parts List (Continued)

Item No.	Description	No. Req'd	Packer Size					
			5.687 x 3.250	6.187 x 3.250	7.125 x 4.000	8.125 x 3.250	8.125 x 4.000	8.125 x 4.250
1	Assy. - "B" Wireline Setting Equip.	1	007-5687-220	007-6187-220	007-8125-220	007-8125-220	007-8125-221	007-8125-222
2	Adapter Sleeve Bushing	1	007-569-5205					
3	Socket Head Set Screw	2	5/16 - 18 x 7/8 long					
4	Adapter Sleeve	1	007-5687-230	007-6187-230	007-8125-230	007-8125-230		
5	Socket Head Set Screw	2	5/16 - 18 x 3/8 long					
6	Adjusting Nut	1	007-5687-210					
7	Tension Mandrel Spring (S-o. 10)	1	Not Required					
8	Mandrel Adapter (No. 10)	1	Not Required					
9	Socket Head Set Screw	2	5/16 - 18 x 3/4 long					
10	Adjuster Bushing	1	007-4500-237					
11	Stop Bushing	1	007-4500-241					
12	Socket Head Set Screw	1	5/16 - 18 x ½ long					
13	Release Stud	1	005-5687-014					
14	Body	1	007-4500-250					
15	Mandrel	1	007-4500-240					
16	Split Ring Retainer	1	007-4500-238					
17	Split Ring	3	007-4500-242					
18	Release Sleeve	1	007-5687-245	008-5687-245	007-5687-245	008-5687-245	007-8125-245	
19	Mandrel Guide	1	007-4500-230					
20	Lock Bushing	1	007-4500-240					
21	Socket Head Set Screw	1	5/16 - 18 x 5/16 long					
22	Gage Ring	1	007-5687-250	008-5687-250	007-5687-250	008-5687-250	007-8125-250	
Baker Wireline Pressure Setting Tool Size			Baker # 20					

Dimensional Data (Continued)

A	5.687	6.187	7.125	8.125		
B	14 13/16		15	14 3/32		
C	4		4 1/2	4	4 1/2	5 ½
D	3 1/8		3 1/8	3 1/8		3 ½
E	11 13/16		12 13/16	11 13/16	12 13/16	11 13/16

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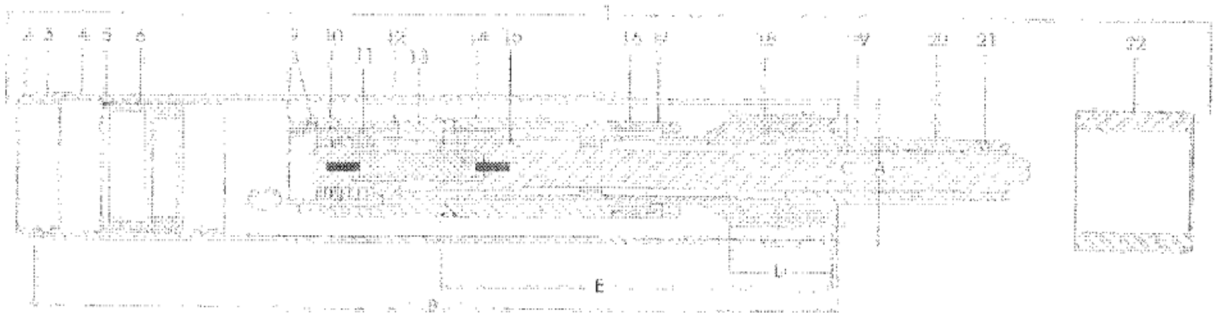

Model B Wireline Setting Equipment for Model L Packers

Item No.	Description	No. Req'd	Packer Size 4.437 x 3.000	4.562 x 3.000	4.750 x 3.000	5.687 x 4.000	5.875 x 4.000	6.000 x 4.000	6.250 x 4.000
	Model B Wireline Setting Equipment for Model L Packers - Parts List								
1	Assy - "B" Wireline Setting Equip.	1	008-4437-231			008-5687-230			
2	Adapter Sleeve Bushing	1	007-4328-205			007-5687-262			
3	Socket Head Set Screw	2	5/16 - 18 x ½ long			5/16 - 18 x 7/8 long			
4	Adapter Sleeve	1	008-4437-226			008-5687-230			
5	Socket Head Set screw	2	10 - 32 x ½ long			5/16 - 18 x 3/8 long			
6	Adjusting Nut	1	007-4328-210			007-5687-210			
9	Socket Head Set Screw	2	5/16 - 18 x ½ long						
10	Adjuster Bushing	1	007-4503-237						
11	Stud Bushing	1	007-4503-241			007-4503-241			
12	Socket Head Set Screw	1	5/16 - 18 x ½ long						
13	Release Stud	1	008-5553-022			008-5687-010			
14	Body	1	007-4503-238						
15	Mandrel	1	007-4503-244			007-4503-245			
16	Split Ring, Retainer	1	007-4503-[illegible]						
17	Split Ring	1	007-4503-243						
18	Release Sleeve	1	008-4562-245			008-5687-245			
19	Mandrel Guide	1	007-4503-239						
20	Lock Bushing	1	007-4503-240						
21	Socket Head Set Screw	1	5/16 - 18 x 5/16 long						
22	Single Ram	1	008-4562-250			008-5687-250			
Baker Wireline Pressure Setting Tool Size			Baker # 20						

Dimensional Data

A		4.437	5.687
B		24 5/16	28 ¾
C		3 ¼	4 ½
D		3 1/8	3 1/2
E		22 13/32	22 13/16

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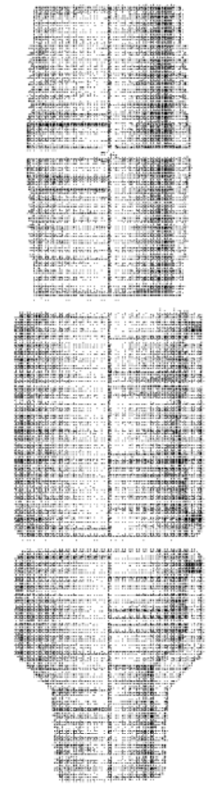
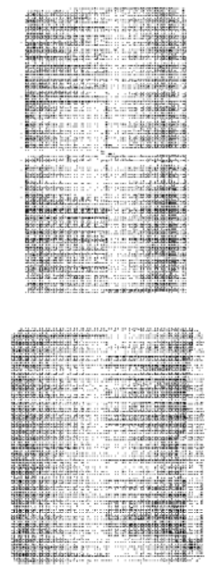
R22 Packer Accessories

for hook-ups below the Model "J" & "L" Production Packers

Seal Bore Extensions are available in 5 foot and 10 foot lengths, providing extra long seal bores for the Model "J" and Model "L" Packers. The extensions maintain the same bore as in the packers. The extension can be attached directly to a box-down stub acme thread in the bottom of the packer. A tandem sub is available for connecting two extensions. A crossover sub allows tailpipe to be run below the packer.



Mill-Out Extensions in both 6 foot and 10 foot lengths are available for use with the Model "F" and Model "L" Packers that will eventually be milled out. The extensions have the necessary lengths and inside diameters to accommodate the mandrel and catch sleeve of a milling tool. The extension can be directly attached to a box down pipe thread in the bottom of the packer. A connector sub connects the seal bore extension below the mill-out extension.



Mill-Out Extension

Seal Bore Extension

Model "B" Expendable Plug is used for temporarily converting a Model J or Model L Permanent Production Packer into a bridge plug for acidizing, frac and/or testing work above the packer. Upon completion of this work above, the plug may be pushed out the bottom with a production tube

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AWM 000640

MEGCO Ex. 1007

Mill-Out Extension

Parts List

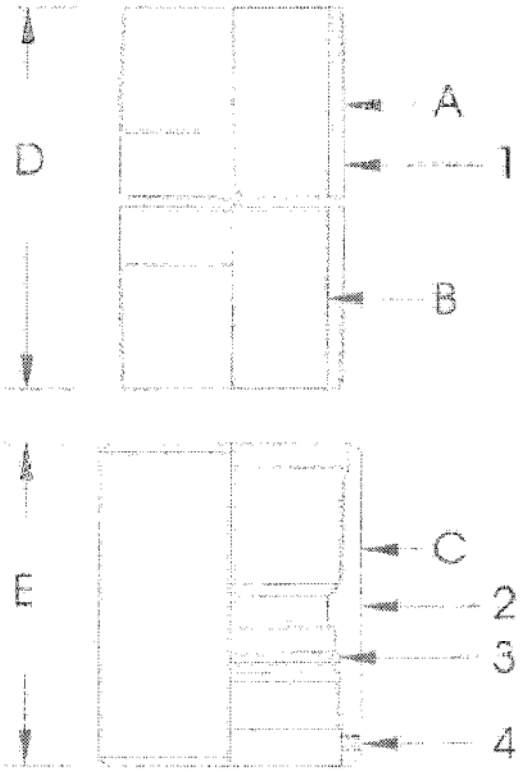
Item	Description	Packer Bore Size						
		2.687 (4 ½ & 5 csg.)	2.687 (5 ½ & DP csg.)	3.000	3.250 (7 - 7 5/8 csg.)	3.250 (9 5/8 csg.)	4.000 (6 5/8 - 7 5/8)	4.000 (9 5/8 csg.)
1	To B. Mill-out Ext.	006-2687-191	006-2687-191	006-3000-191	006-3250-191	006-3250-196	006-4000-191	006-4000-196
2	Connector Sub	006-2687-192	006-2687-192	006-3000-192	006-3250-192	006-3250-197	006-4000-192	006-4000-197
3	O-Ring *	100-2344-090N	100-2344-090N	100-2344-090N	100-2344-090N	100-2344-090N	100-2350-090N	100-2350-090N
4	Socket Head Set Screw	5/16 - 18 x 3/8	5/16 - 18 x 3/8	5/8 - 18 x 3/8	1/2 - 13 x 1/2	1/2 - 13 x 1/2	1/2 - 13 x 1/2	1/2 - 13 x 1/2

Dimensional Data

A		3.500	3.500	4.000	4.500	7.000	5.000	7.000
B		2.992	2.992	3.476	3.820	5.920	4.276	5.920
C		3.750	4.328	4.437	5.468	8.125	5.687	8.125
D		72	72	72	72	72	72	72
E		79.32	7.03	8 1/16	9 15/32	11 13/16	9 43/16	11 13/16

* - O-Ring Back-ups available if necessary

Note: The O-Ring listed is for standard service, and should be substituted if application is other than standard service. An Alpha representative can assist.



Mill-Out Extension

MEGCO Ex. 1007

Seal Bore Extension

Parts List

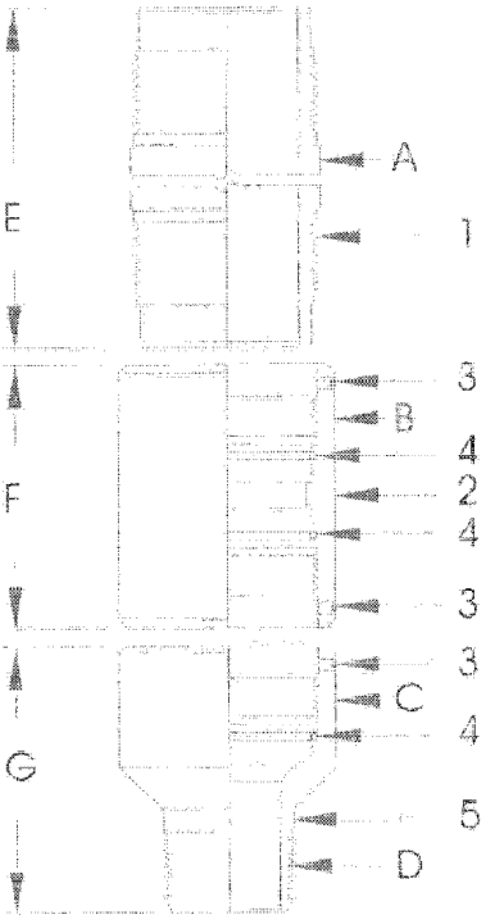
Item	Description	Packer Bore Size 2.687 (4 ½ & 5)	2.687 (5 ½ & Up)	3.000	3.250	4.000
5	10 ft. Seal Bore Extension	006-2687-158	006-2687-159	006-3000-158	006-3250-158	006-4000-158
3	5 ft. Seal Bore Extension	006-2687-156	006-2687-151	006-3000-151	006-3250-151	006-4000-151
2	Tandem Sub	006-2687-152	006-2687-152	006-3000-152	006-3250-152	006-4000-152
3	Socket Head Set Screw	5/16 - 18 x 3/8	3/8 - 16 x 3/8	3/8 - 16 x 3/8	1/2 - 13 x 1/2	1/2 - 13 x 1/2
4	O-Ring	106-2334-70DN	106-2340-90DN	106-2340-90DN	106-2340-90DN	106-2340-90DN
5	Cross Over Sub - Pin Down	006-2687-158	006-2687-158	006-3000-158	006-3250-158	006-4000-158

Dimensional Data

A		3.625	3.625	3.781	4.125	5
B		3.750	4.528	4.437	5.468	5.687
C		3.750	4.328	4.437	5.468	5.687
D		2 3/8 - 8RD EUE	2 3/8 - 8RD EUE	2 7/8 - 8RD EUE	2 7/8 - 8RD EUE	3 1/2 - 8RD EUE
E		120" or 60"	120" or 60"	120" or 60"	120" or 60"	120" or 60"
F		5.24	6.016	6.726	7.95	7.04
G		8	8	8 1/2	9 1/2	9

* = O-Ring Back-ups available if necessary

Note: the O-Ring listed is for standard service and should be substituted if application is other than standard service. Our Alpha representative can assist.



Seal Bore Extension

Model B Expendable Plug

Parts List

Item	Description	Qty.	Packer Bore Size 2.687	3.000	3.250	4.000
-	Assy. Complete - Model B Expendable Plug	-	006-2687-400	006-3000-400	006-3250-400	006-4000-400
1	Latch Release	1	006-2687-415	006-3000-415	006-3250-415	006-4000-415
2	Latch Support	1	006-2687-317	006-3000-317	006-3250-317	006-4000-317
3	Split Retaining Ring - 3 Piece	1	006-2687-416	006-3000-416	006-3250-416	006-4000-416
4	Brass Shear Screw - 2,000 lb.	2	003-3500-019	003-3500-019	003-3500-019	003-3500-019
5	Latch Mandrel	1	006-2687-418	006-3000-418	006-3250-418	006-4000-418
6	O-Ring	1	100-2331-090N	100-2334-090N	100-2336-090N	100-2342-090N
7	O-Ring	1	100-2214-090N	100-2216-090N	100-2221-090N	100-2328-090N

Dimensional Data for use with Model J Packer

Item	Packer Size 37-26	39-26	43-26	45-26	49-30	56-32	61-32	81-32	81-40
A	12.625	12.625	13.875	13.875	13.875	19.656	19.656	20.625	20.344
B	16.218	16.218	16.218	16.218	16.218	16.218	16.218	16.218	16.218

Dimensional Data for use with Model L Packer

Item	Packer Size 44-30	45-30	47-30	56-40	58-40	60-40	62-40		
A	13.875	13.875	13.875	16.468	16.468	16.468	16.468		
B	16.218	16.218	16.218	16.750	16.750	16.750	16.750		

Installation:

Model B Expendable Plug Installed in Model J Packer

Model B Expendable Plug Installed in Model L Packer

1. To prevent mud or trash particles from becoming trapped between packer bore and the plug, grease the top end of plug liberally.
2. If packer shoe is not removed from the packer, do so.
3. Insert the expendable plug into packer bore until it bottoms.
4. Re-install the packer shoe.

Caution:

The maximum pressure differential that can be placed across the expendable plug is 7,500 psi.

Operation:

The expendable plug can normally be pushed from the plug with approximately 3,000 to 4,000 lbs. of set down weight. If possible the well should be circulated while the production tube is being lowered into the packer bore to prevent interference from foreign matter.

AWM 000643

MEGCO Ex. 1007

R22 Packer Accessories - Tubing String

for Model J & L Production Packers

In this unit all of the Alpha Oil Tools accessories that make up with the tubing string for the Model J & L Production Packers are displayed and technical information is provided. The metal goods herein are for standard service (R22) hook-ups. Seal assemblies manufactured from R22 material standards are normally rated for 10,000 psi differential pressure. Some sizes (such as 5 000") and models are rated for less (such as 7,500 psi). See your Alpha Oil Tools representative for more details. This equipment meets strict standards of quality and will serve your production requirements with dependability and savings.

Model B Anchor Latch Type Tubing Seal Unit- Designed for latching the tubing string to the packer. Used where well conditions require the tubing to be landed in tension or where insufficient tubing weight is available to prevent seal movement. Production tubes, tailpipe and other accessories can be added below.

Model C Locator Type Tubing Seal Unit- Designed for limiting downward movement of the seals in the packer bore. Normally landed with the tubing in compression sufficient to prevent seal movement upward. Any number of seal units can be added for increased length. Production tubes, tailpipe and other accessories can be added below.

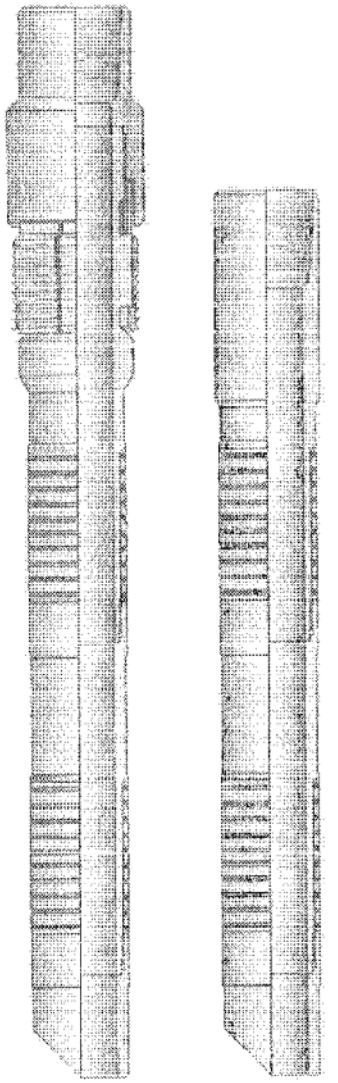
Model B Non-Locating Tubing Seal Unit- Intended for use as the lower seal assembly in multiple packer installations. With sufficient seal units mis-measurement or tubing movement can be accommodated. Production tubes, tailpipe and other accessories can be added below.

Spacer Sub Seal Units are used to add length and additional seal stacks to Model "C" Locator Tubing Seal Units or Model "B" Tubing Seal Units. These units allow for assembly of long seal lengths without building up excessive seal friction. With these, one set of seals will always be in the packer seal bore.

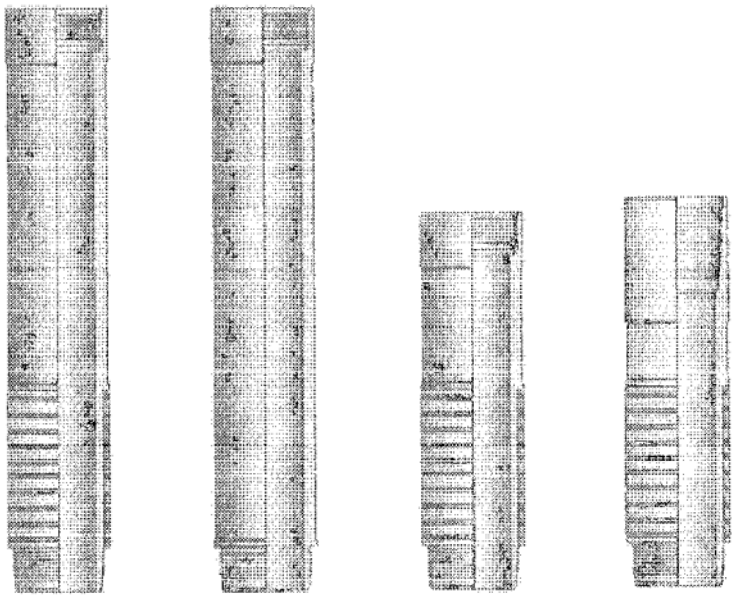
Spacer Tubes are used for spacing out seal units when seal bore extensions are in use. Available in lengths of two, four, six, eight and ten foot. Other lengths made upon request.

Add-on Seal Units are used to add additional seal stacks to Model "C" Locator Tubing Seal Units and Model "B" Tubing Seal Units. Any number may be used to accommodate expected tubing movement. With these two sets of seals will always be in the packer seal bore.

Seal Unit Types



Seal Spacers



Spacer Seal Unit | Spacer Tube | Add-On Seal Unit | Non-Locating | Anchor Latch | Locating

AWM 000644

MEGCO Ex. 1007

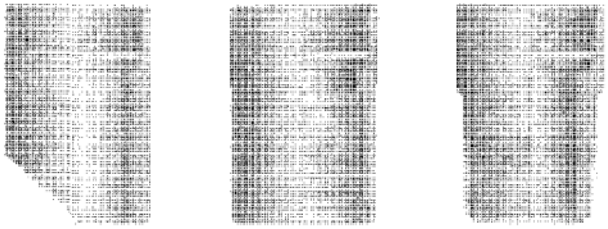
The bottom connectors are used at the bottom end of the lowest seal unit.

Half Muleshoe- For easy entry on the bottom of the seal units when not using a production tube

Box Down- Threaded box connection down for accessories that need to go below the seal units.

Pin Down- Threaded box connection down for accessories that need to go below the seal units.

Seal Unit Bottom Connectors



Half Muleshoe | Box Down | Pin Down

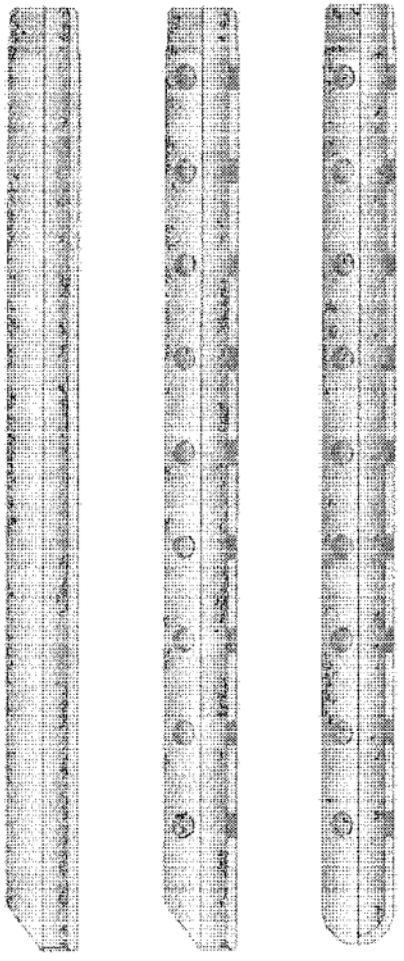
Production Tubes

Type A Production Tubes - are used at the end of tubing string to provide an extended inlet. The bottom end has a half muleshoe for easy entry to packer seal bore. Available in five and ten foot lengths. Not standard in some seal bore sizes.

Type B Production Tubes - are used at the end of tubing string to provide alternative flow path in cases where wireline measuring devices are used. The bottom end has a half muleshoe for easy entry to packer seal bore. Available in five and ten foot lengths. Not standard in some seal bore sizes.

Type C Production Tubes - are used at the end of tubing string to provide multiple inlets for flow. The bottom end is closed. Available in five and ten foot lengths. Not standard in some seal bore sizes.

Special Clearance Couplings - are used for connecting production tubes and / or other accessories below the production tubes. These couplings have a reduced outer diameter for clearance through the seal bore. These are not illustrated.



TYPE A | TYPE B | TYPE C

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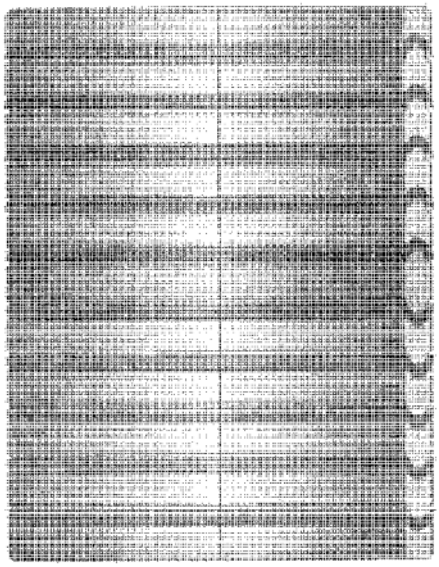
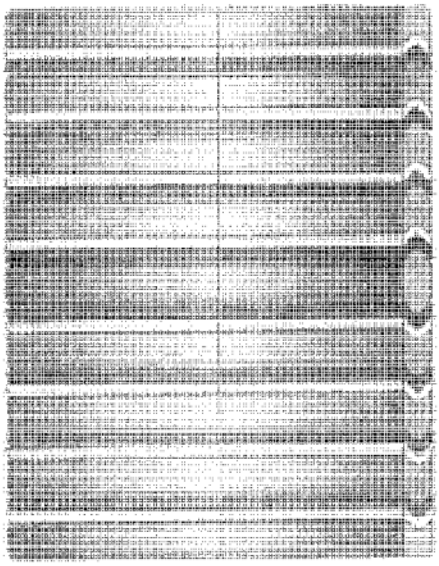
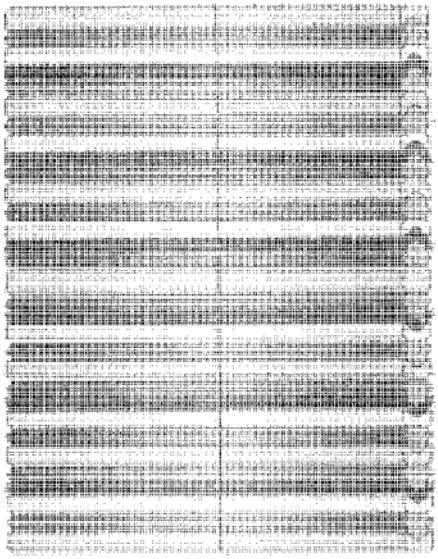
Seal Types



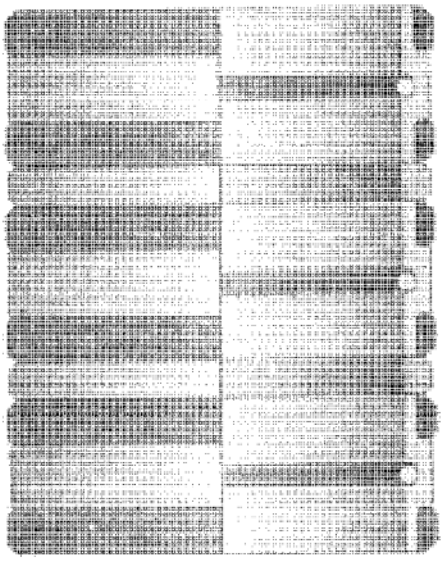
STANDARD PACKING



SUPREME 1, 2 & 3 PACKING



R1, R2 & R3 PACKING



BONDED SEAL PACKING

Standard Packing:
Composed of ten Nitrile chevron seals backed up by low alloy steel metal spacers. Suitable for non H2S environments not exceeding 300 degrees F @ 10,000 psi differential pressure. Some sizes and models are rated less 10,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

Supreme I Packing:
Composed of eight Teflon and HNBR chevron seals backed up by stainless steel back up rings. This seal system is suitable for most environments. Recommended maximum operating temperature 300 degrees F @ 10,000 psi differential pressure (depending on size and environment). Some sizes and models are rated less than 10,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

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Supreme 2 Packing:
Composed of eight Teflon and Viton chevron seals backed up by stainless steel back up rings. This seal system is suitable for most environments, except exposure to amine based fluids and steam. Recommended maximum operating temperature 400 degrees F @ 10,000 psi differential pressure (depending on size and environment). Some sizes and models are rated less than 10,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

Supreme 3 Packing:
Composed of eight Teflon and Aflas chevron seals backed up by stainless steel back up rings. This seal system is suitable for most environments. Recommended maximum operating temperature 450 degrees F @ 10,000 psi differential pressure (depending on size and environment). Some sizes and models are rated less than 10,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

Rite 1 Packing:
Composed of Ryton, Teflon and HNBR chevron seals backed up by stainless steel back up rings. This seal system is suitable for most environments. Recommended maximum operating temperature 300 degrees F @ 15,000 psi differential pressure (depending on size and environment). Some sizes and models are rated less than 15,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

Rite 2 Packing:
Composed of Ryton, Teflon and Viton chevron seals backed up by stainless steel back up rings. This seal system is suitable for most environments, except exposure to amine based fluids and steam. Recommended maximum operating temperature 400 degrees F @ 15,000 psi differential pressure (depending on size and environment). Some sizes and models are rated less than 15,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

Rite 3 Packing:
Composed of Ryton, Teflon and Aflas chevron seals backed up by stainless steel back up rings. This seal system is suitable for most environments. Recommended maximum operating temperature 450 degrees F @ 15,000 psi differential pressure (depending on size and environment). Some sizes and models are rated less than 15,000 psi. See your Alpha Oil Tools representative for these exceptions. Should not leave seal bore in service.

Bonded Seals:
Composed of three bonded seals separated by metal spacers. Available in 70 and 90 Duro Nitrile, 90 Duro HNBR, 95 Duro Viton and 90 Duro Aflas. This seal system is used where seal movement cannot be prevented.

70 Duro Nitrile:
Recommended operating temperature 200 degrees F @ 5,000 psi (non-unload). This seal system is suitable for non non-H_2S environments.

90 Duro Nitrile:
Recommended operating temperature 200 degrees F @ 10,000 psi (non-unload) and 5,000 psi (unload) depending on size and environment. This seal system is used for non-H_2S environments. Some sizes and models are rated less than 10,000 psi differential pressure. See your Alpha Oil Tools representative for these exceptions.

90 Duro HNBR:
Recommended operating temperature 250 degrees F @ 10,000 psi (non-unload) and 5,000 psi (unload) depending on size and environment. This seal system is suitable for most environments. Some sizes and models are rated less than 10,000 psi differential pressure. See your Alpha Oil Tools representative for these exceptions.

90 Duro Viton:
Recommended operating temperature 250 degrees F @ 10,000 psi (non-unload) and 5,000 psi (unload) depending on size and environment. Some sizes and models are rated less than 10,000 psi differential pressure. See your Alpha Oil Tools representative for these exceptions.

95 Duro Aflas:
Recommended operating temperature 300 degrees F @ 10,000 psi (non-unload) and 5,000 psi (unload) depending on size and environment. This seal system is suitable for most environments. Some sizes and models are rated less than 10,000 psi differential pressure. See your Alpha Oil Tools representative for these exceptions.

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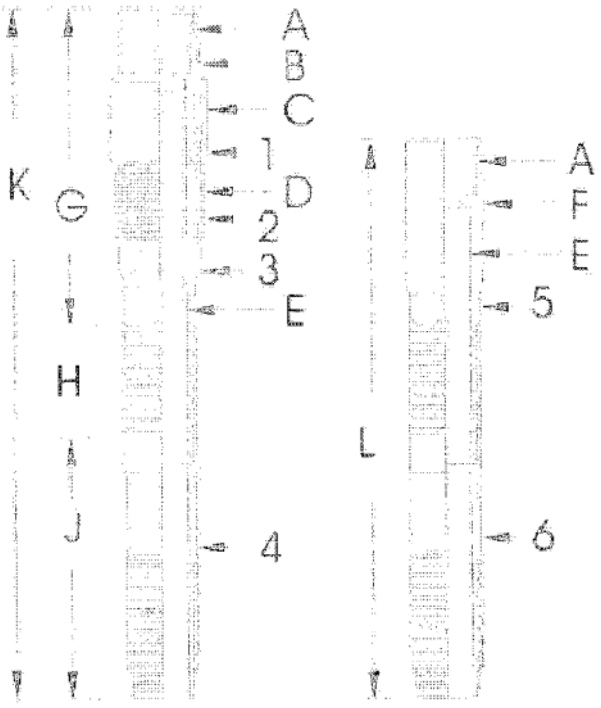
R22 Seal Unit Types (Figure 1)



Dimensional Data

for R-22 Seal Units Refer to Figure 1

ITEM	SIZE			
	2.687	3.000	3.250	4.000
A	2.378 - 8RD EUE	2.778 - 8RD EUE	2.778 - 8RD EUE	3.128 - 8RD EUE
B	3.000	3.687	3.687	4.530
C	3.375	4.000	3.937	4.940
D	3.250	3.500	3.000	4.500
E	1.952	2.375	2.375	3.000
F	3.085	3.682	3.468	4.218
G	10.391	13.000	13.875	12.625
H	3.750	4.312	5.000	5.375
J	21.250	25.312	25.750	32.250
K	34.281	38.938	41.625	50.250
L	35.187	39.687	42.500	50.562
Draft Bar Diameter	1.901	2.347	2.347	2.945
Draft Bar Length	18"	18"	18"	18"

The metal parts herein are for standard service (H2S) hook-ups. Seal assemblies manufactured from API material standards are normally rated for 10,000 psi differential pressure. Some sizes (such as 3.000" and smaller) are rated for less (such as 7,500 psi). See your Aiplex Oil Tools representative for more details.

Parts List

for R-22 Seal Units Refer to figure 1

ITEM	DESCRIPTION	SIZE			
		2.687	3.000	3.250	4.000
	Assy. Complete - Model D Anchor Latch Seal Unit (Incl. items 1, 2, 3 & 4) Seals & O-ring ordered separately	006-2687-102	006-3000-102	006-3250-102	006-4000-102
1	Latch Top Sub	006-2687-165	006-3000-165	006-3250-165	006-4000-165
2	Latch	006-2687-170	006-3000-170	006-3250-170	006-4000-170
3	Latch Mandrel	006-2687-171	006-3000-171	006-3250-171	006-4000-171
4	Add On Sub	006-2687-175	006-3000-175	006-3250-175	006-4000-175
	Assy. Complete - Model C Locator Seal Unit (Includes Items 5 & 6) Seals & O-ring ordered separately	006-2687-106	006-3000-106	006-3250-106	006-4000-106
5	Locator Sub	006-2687-160	006-3000-160	006-3250-160	006-4000-160
6	Add-On Sub	006-2687-175	006-3000-175	006-3250-175	006-4000-175

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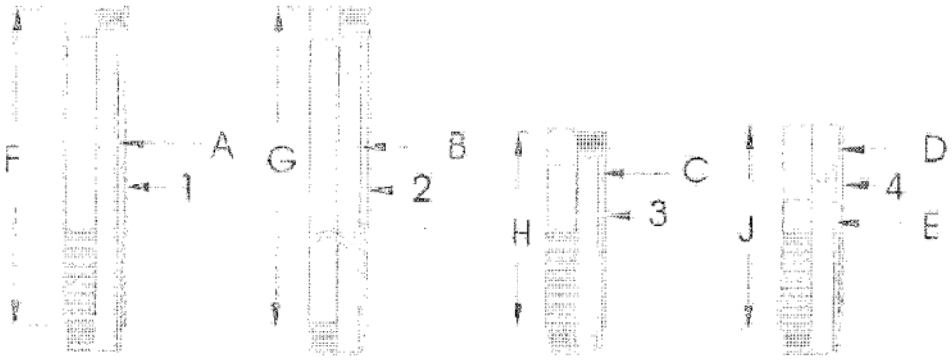
R22 Seal Spacers (Figure 2)



SPACER SUB | SPACER TUBE | ADD-ON SUB | NON-LOCATOR

Dimensional Data for R-22 Seal Spacers Refer to Figure 2

ITEM	SIZE 2.687	3.000	3.250	4.000
A	1.937	2.375	2.375	3.000
B	1.937	2.375	2.375	3.000
C	1.937	2.375	2.375	3.000
D	2 3/8 - 10RD NU	Special or Blank	2 7/8 - 10RD NU	3 1/2 - 10RD NU
E	1.937	2.375	2.375	3.000
F	34.250	18.312	23.750	22.250
G 10 ft.	120.00	120.00	120.00	120.00
G 8 ft.	96.000	96.000	96.000	96.000
G 6 ft.	72.000	72.000	72.000	72.000
G 4 ft.	48.000	48.000	48.000	48.000
G 2 ft.	24.000	24.000	24.000	24.000
H	10.000	9.000	12.688	9.375
J	9.375	11.000	10.687	11.937

Parts List for R-22 Seal Spacers Refer to figure 2

ITEM	DESCRIPTION	SIZE 2.687	3.000	3.250	4.000
1	Spacer Sub *	006-2687-176	006-3000-176	006-3250-176	006-4000-176
2	Spacer Tube - 10 ft. **	006-2687-184	006-3000-184	006-3250-184	006-4000-184
2	Spacer Tube - 8 ft. **	006-2687-185	006-3000-185	006-3250-185	006-4000-185
2	Spacer Tube - 6 ft. **	006-2687-186	006-3000-186	006-3250-186	006-4000-186
2	Spacer Tube - 4 ft. **	006-2687-187	006-3000-187	006-3250-187	006-4000-187
2	Spacer Tube - 2 ft. **	006-2687-188	006-3000-188	006-3250-188	006-4000-188
3	Add-On Sub *	006-2687-175	006-3000-175	006-3250-175	006-4000-175
4	Non-Locator Sub *	006-2687-177	006-3000-177	006-3250-177	006-4000-177

* - Seals and O-Ring ordered separately
** - O-Ring ordered separately

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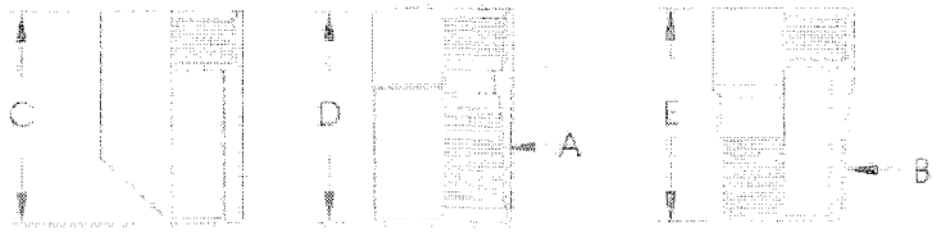
R22 Bottom Connectors (Figure 3)



Dimensional Data

for R-22 Bottom Connectors Refer to Figure 3

	SIZE			
ITEM	2.687	3.000	3.250	4.000
A	2 3/8 10RD NU	Special or Blank	2 7/8 - 10RD NU	3 1/2 - 10RD NU
B	2 3/8 10RD NU	Special or Blank	2 7/8 - 10RD NU	3 1/2 - 10RD NU
C	6.000	6.000	6.000	6.000
D	8.000	8.000	8.000	8.000
E	8.000	8.000	8.000	8.000

Parts List

for R-22 Bottom Connectors Refer to figure 3

		SIZE			
ITEM	DESCRIPTION	2.687	3.000	3.250	4.000
1	Bottom Conn. - Half Muleshoe	006-2687-180	006-3000-180	006-3250-180	006-4000-180
2	Bottom Conn. - Box Down	006-2687-182	006-3000-182	006-3250-182	006-4000-182
3	Bottom Conn. - Pin Down	006-2687-181	006-3000-181	006-3250-181	006-4000-181

Parts List

for R-22 Production Tubes No Illustration

	SIZE			
DESCRIPTION	2.687	3.000	3.250	4.000
Type A Production Tube - 5 ft.	006-2687-130	006-3000-130	006-3250-130	006-4000-130
Type B Production Tube - 5 ft.	006-2687-131	006-3000-131	006-3250-131	006-4000-131
Type C Production Tube - 5 ft.	006-2687-132	006-3000-132	006-3250-132	006-4000-132

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Packing Selection
with accompanying O-rings for subs

DESCRIPTION	SIZE			
	2.687	3.000	3.250	4.000
Standard Packing	006-2687-050	006-3000-050	006-3250-050	006-4000-050
O-ring for Top Sub in Anchor Latch Unit	100-2332-090N	100-2335-090N	100-2234-090N	100-2239-090N
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090N	100-2145-090N	100-2148-090N	100-2238-090N
Supreme 1 Packing	006-2687-051	006-3000-051	006-3250-051	006-4000-051
O-ring for Top Sub in Anchor Latch Unit	100-2332-090H	100-2335-090H	100-2234-090H	100-2239-090H
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090H	100-2145-090H	100-2148-090H	100-2238-090H
Supreme 2 Packing	006-2687-052	006-3000-052	006-3250-052	006-4000-052
O-ring for Top Sub in Anchor Latch Unit	100-2332-090V	100-2335-090V	100-2234-090V	100-2239-090V
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090V	100-2145-090V	100-2148-090V	100-2238-090V
Supreme 3 Packing	006-2687-053	006-3000-053	006-3250-053	006-4000-053
O-ring for Top Sub in Anchor Latch Unit	100-2332-090A	100-2335-090A	100-2234-090A	100-2239-090A
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090A	100-2145-090A	100-2148-090A	100-2238-090A
R-1 Packing	006-2687-054	006-3000-054	006-3250-054	006-4000-054
O-ring for Top Sub in Anchor Latch Unit	100-2332-090H	100-2335-090H	100-2234-090H	100-2239-090H
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090H	100-2145-090H	100-2148-090H	100-2238-090H
R-2 Packing	006-2687-055	006-3000-055	006-3250-055	006-4000-055
O-ring for Top Sub in Anchor Latch Unit	100-2332-090V	100-2335-090V	100-2234-090V	100-2239-090V
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090V	100-2145-090V	100-2148-090V	100-2238-090V
R-3 Packing	006-2687-056	006-3000-056	006-3250-056	006-4000-056
O-ring for Top Sub in Anchor Latch Unit	100-2332-090A	100-2335-090A	100-2234-090A	100-2239-090A
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090A	100-2145-090A	100-2148-090A	100-2238-090A
Bonded Seal Packing - 70D Nitrile	006-2687-020	006-3000-020	006-3250-020	006-4000-020
O-ring for Top Sub in Anchor Latch Unit	100-2332-090N	100-2335-090N	100-2234-090N	100-2239-090N
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090N	100-2145-090N	100-2148-090N	100-2238-090N
Bonded Seal Packing - 90D Nitrile	006-2687-021	006-3000-021	006-3250-021	006-4000-021
O-ring for Top Sub in Anchor Latch Unit	100-2332-090N	100-2335-090N	100-2234-090N	100-2239-090N
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090N	100-2145-090N	100-2148-090N	100-2238-090N
Bonded Seal Packing - 90D HNBR	006-2687-022	006-3000-022	006-3250-022	006-4000-022
O-ring for Top Sub in Anchor Latch Unit	100-2332-090H	100-2335-090H	100-2234-090H	100-2239-090H
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090H	100-2145-090H	100-2148-090H	100-2238-090H
Bonded Seal Packing - 95D Viton	006-2687-023	006-3000-023	006-3250-023	006-4000-023
O-ring for Top Sub in Anchor Latch Unit	100-2332-090V	100-2335-090V	100-2234-090V	100-2239-090V
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090V	100-2145-090V	100-2148-090V	100-2238-090V
Bonded Seal Packing - 90D Aflas	006-2687-024	006-3000-024	006-3250-024	006-4000-024
O-ring for Top Sub in Anchor Latch Unit	100-2332-090A	100-2335-090A	100-2234-090A	100-2239-090A
O-ring for Spacer Subs, Add-On Subs & Spacer Tubes	100-2228-090A	100-2145-090A	100-2148-090A	100-2238-090A

AWM 000651

MEGCO Ex. 1007

Alpha Oil Tools Guidelines for Running Wireline Set Bridge Plugs:
includes Big Boy, Midget 1 , Midget 2, A-1, & B-1

1. Use casing scraper before running any equipment in the well to remove scale and other materials from the casing wall. Any tool that is expected to grip the casing wall has to first reach the casing wall. Follow scraper with gage ring and junk basket.
2. Always follow cleaning, redressing and operational procedures on the setting tool. Make certain oil levels in pressure setting tool are correct for the well environment involved. Take into consideration the heat expansion of the oil in your manufacturers guidelines that should be supplied with your pressure setting tool.
3. Use the correct bridge plug for the temperature, pressure, casing size, casing weight and environment.
4. Casing should have 100% cement bond before running plug in the well.
5. Do not overtighten bridge plug onto setting tool. This action causes the slips to crack which leads to premature setting. Snug tight is sufficient for a bridge plug. The lock spring or nut, depending on make of setting tool, must accompany the tension mandrel to prevent plug from from backing off.
6. Do not allow the setting tool weight to rest on the bridge plug after making up. This can cause the slips to crack.
7. Help guide the setting tool and bridge plug through lubricators, wellhead and blowout preventer. When running under pressure raise tools to the top of lubricator before equalizing the pressure into lubricator.
8. Running speed should not exceed 300 feet per minute to avoid fluid displacement cutting on elastomer. Should setting tool misfire, retrieve equipment no faster than it went in. Slow down for liners and other restrictions.
9. Never set plug in casing collar or where milling has occurred.
10. Always set plugs in static well conditions (no fluid or gas movement).
11. Shock to the plug can result in failure. Warn service companies of the plug depth to avoid high impact collisions. When using the plug for locating purposes, be gentle and ease tools onto plug. Never place tubing weight on plug.
12. Pressure setting tool failure can result from several causes (ex: out of date power charge or bad o-ring). In the event that a pressure setting tool does not shear off of the bridge plug and you have to pull out of the rope socket, the shear stud will still part in a normal manner when the setting tool is fished out. This happens most commonly because the power charge did not put up sufficient pressure to shear the stud in the plug. The Alpha studs are made to shear correctly and are held to high standards of accuracy. When the fishing tool goes in to retrieve the setting tool, you can watch the accuracy of the shear stud when it shears, assuming that the weight indicator is not out of calibration. The shear values are listed as follows:

Size of Plug (O.D.)	Shear Stud Value
1.710 thru 2.750	12,000 lbs.
3.120	25,000 lbs.
3.500 thru 4.750	30,000 lbs.
5.340 thru 12.000	50,000 lbs.

13. When perforating, bridge plug should be protected with a minimum of ten feet of cement dumped directly on top of plug. Cement should be given sufficient time to set up before perforating.
14. Perforating should not be done closer than fifty feet of bridge plug.

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Alpha plugs will not be guaranteed against failure from damage resulting from perforating above a plug which has not had cement dumped on it. This includes any other means of shock that will directly transfer to the plug.

These recommendations are made by Alpha Oil Tools for the benefit of all parties knowledge and understanding of the proper way to use this product and achieve the best performance.

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AWM 000652

MEGCO Ex. 1007

Alpha Oil Tools Guidelines for Running Wireline Set Cement Retainers:

1. Use casing scraper before running any equipment in the well to remove scale and other materials from the casing wall. Any tool that is expected to grip the casing wall has to first reach the casing wall. Follow scraper with gage ring and junk basket.
2. Always follow cleaning, redressing and operational procedures on the setting tool. Make certain oil levels in pressure setting tool are correct for the well environment involved. Take into consideration the heat expansion of the oil in your manufacturers guidelines that should be supplied with your pressure setting tool.
3. Use the correct cement retainer for the temperature, pressure, casing size, casing weight and environment.
4. Casing should have 100% cement bond before running cement retainer in the well.
5. Do not overtighten cement retainer onto setting tool. This action causes the slips to crack which leads to premature setting. Snug tight is sufficient for a cement retainer. The lock spring or nut, depending on make of setting tool, must accompany the tension mandrel to prevent plug from backing off.
6. Do not allow the setting tool weight to rest on the cement retainer after making up. This can cause the slips to crack.
7. Help guide the setting tool and cement retainer through lubricators, wellhead and blowout preventer. When running under pressure raise tools to the top of lubricator before equalizing the pressure into lubricator.
8. Running speed should not exceed 300 feet per minute to avoid fluid displacement cutting on elastomer. Should setting tool misfire, retrieve equipment no faster than it went in. Slow down for liners and other restrictions.
9. Never set retainer in casing collar or where milling has occurred.
10. Always set retainer in static well conditions (no fluid or gas movement).
11. Shock to the retainer can result in failure. Warn service companies of the retainer depth to avoid high impact collisions. Never use a cement retainer for a reference point (tagging) before cement job is completed.
12. Pressure setting tool failure can result from several causes (ex: out of date power charge or bad o-ring). In the event that a pressure setting tool does not shear off of the cement retainer and you have to pull out of the rope socket, the shear stud will still part in a normal manner when the setting tool is fished out. This happens most commonly because the power charge did not put up sufficient pressure to shear the stud in the retainer. The Alpha studs are made to shear correctly and are held to high standards of accuracy. When the fishing tool goes in to retrieve the setting tool, you can watch the accuracy of the shear stud when it shears, assuming that the weight indicator is not out of calibration. The shear values are listed as follows:

Size of Retainer (O.D.)	Shear Stud Value
1.710 thru 2.750	12,000 lbs.
3.120	25,000 lbs.
3.500 thru 4.750 Model A; 3.593 thru 4.312 Model B	30,000 lbs.
5.340 thru 12.000 Model A; 5.375 thru 12.000 Model B	50,000 lbs.

13. When perforating, cement retainer should be protected with a minimum of ten feet of cement dumped directly on top of the retainer. Cement should be given sufficient time to harden before perforating.
14. Perforating should not be done closer than fifty feet of cement retainer without putting a minimum of 10 ft. of hard cement on top of retainer.
15. Make seal nipple up on a 4 ft. tubing sub (if available); if not, use stop collar to prevent centralizer from moving up the full length of tubing joint. Centralizer should not be more than 10 ft. from top of seal nipple. Go in hole at normal speed. Be sure and strap the tubing and keep accurate measurements. When the seal nipple assembly has been lowered to approximately 200 ft. above cement retainer, slow down and ease tubing in the hole, being careful not to run into cement retainer. After top of cement retainer has been tagged with seal nipple assembly, lower seal nipple into retainer until 10,000 lbs. down force has been applied. To test tubing, raise tubing until all tubing weight is picked up and a slight pull on tubing is encountered. Pressure can be applied to tubing for tubing test. After test is completed release pressure.

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These recommendations are made by Alpha Oil Tools for the benefit of all parties knowledge and understanding of the proper way to use this product and achieve the best performance.

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AWM 000653

MEGCO Ex. 1007

Alpha Oil Tools Guidelines for Running Wireline Set Frac Plugs:
includes Standard and Big Bore

1. Use casing scraper before running any equipment in the well to remove scale and other materials from the casing wall. Any tool that is expected to grip the casing wall has to first reach the casing wall. Follow scraper with gage ring and junk basket.
2. Always follow cleaning, redressing and operational procedures on the setting tool. Make certain oil levels in pressure setting tool are correct for the well environment involved. Take into consideration the heat expansion of the oil in your manufacturers guidelines that should be supplied with your pressure setting tool.
3. Use the correct frac plug for the temperature, pressure, casing size, casing weight and environment.
4. Casing should have 100% cement bond before running plug in the well.
5. Do not overtighten frac plug onto setting tool. This action causes the slips to crack which leads to premature setting. Snug tight is sufficient for a frac plug. The lock spring or nut, depending on make of setting tool, must accompany the tension mandrel to prevent plug from backing off.
6. Do not allow the setting tool weight to rest on the frac plug after making up. This can cause the slips to crack.
7. Help guide the setting tool and frac plug through lubricators, wellhead and blowout preventer. When running under pressure raise tools to the top of lubricator before equalizing the pressure into lubricator.
8. Running speed should not exceed 300 feet per minute to avoid fluid displacement cutting on elastomer. Should setting tool misfire, retrieve equipment no faster than it went in. Slow down for liners and other restrictions.
9. Never set plug in casing collar or where milling has occurred.
10. Always set plugs in static well conditions (no fluid or gas movement).
11. Shock to the plug can result in failure. Warn service companies of the plug depth to avoid high impact collisions. When using the plug for locating purposes, be gentle and ease tools onto plug. Never place tubing weight on plug.
12. Pressure setting tool failure can result from several causes (ex: out of date power charge or bad o-ring). In the event that a pressure setting tool does not shear off of the frac plug and you have to pull out of the rope socket, the shear stud will still part in a normal manner when the setting tool is fished out. This happens most commonly because the power charge did not put up sufficient pressure to shear the stud in the plug. The Alpha studs are made to shear correctly and are held to high standards of accuracy. When the fishing tool goes in to retrieve the setting tool, you can watch the accuracy of the shear stud when it shears, assuming that the weight indicator is not out of calibration. The shear values are listed as follows:

Size of Plug (O.D.)	Shear Stud Value
3.500 thru 4.500	30,000 lbs.
5.610 thru 5.687	50,000 lbs.

13. Never drop frac ball in dry casing. There must be no less than 200 ft. of fluid above frac plug.
14. Never drill into frac ball and attach any retrieving or setting mechanism. Modification of manufacturer's design is forbidden.

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These recommendations are made by Alpha Oil Tools for the benefit of all parties knowledge and understanding of the proper way to use this product and achieve the best performance.

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AWM 000654

MEGCO Ex. 1007

Area of Circles

Diameter		INCHES																		Diameter	
Dec.	Frac.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Dec.	Frac.
0	0	-	.7854	3.1416	7.0686	12.566	19.635	28.274	38.485	50.266	63.617	78.540	95.033	113.10	132.73	153.94	176.71	201.06	226.98	0	0
[illegible]	[illegible]	.000192	.8161	3.1909	7.1424	12.665	19.735	28.422	38.656	50.462	63.836	78.785	95.303	113.39	133.34	154.36	177.06	201.45	227.40	[illegible]	[illegible]
[illegible]	[illegible]	.000767	.8352	3.2405	7.2100	12.752	19.835	28.570	38.829	50.659	64.060	79.030	95.574	113.69	133.57	154.83	177.45	201.85	227.82	[illegible]	[illegible]
[illegible]	[illegible]	.001726	.8607	3.2906	7.2912	12.863	20.005	28.718	39.002	50.856	64.282	79.278	95.845	113.98	133.69	154.77	177.82	202.24	228.23	[illegible]	[illegible]
[illegible]	[illegible]	.003068	.8866	3.3410	7.3662	12.962	20.129	28.866	39.175	51.054	64.504	79.525	96.116	114.29	134.01	155.32	178.19	202.64	228.65	[illegible]	[illegible]
[illegible]	[illegible]	.004794	.9129	3.3918	7.4415	13.062	20.253	29.015	39.348	51.252	64.727	79.772	96.388	114.57	134.33	155.66	178.56	203.04	229.07	[illegible]	[illegible]
[illegible]	[illegible]	.006903	.9396	3.4430	7.5175	13.162	20.378	29.165	39.522	51.450	64.950	80.019	96.660	114.87	134.65	156.01	178.93	203.43	229.49	[illegible]	[illegible]
[illegible]	[illegible]	.009396	.9666	3.4946	7.5940	13.263	20.503	29.315	39.696	51.649	65.173	80.267	96.932	115.17	134.98	156.35	179.30	203.83	229.91	[illegible]	[illegible]
[illegible]	[illegible]	.01227	.9940	3.5466	7.6699	13.364	20.629	29.465	39.871	51.849	65.397	80.516	97.205	115.47	135.30	156.70	179.67	204.22	230.33	[illegible]	[illegible]
[illegible]	[illegible]	.01553	1.0218	3.5989	7.7468	13.465	20.755	29.615	40.045	52.048	65.621	80.764	97.479	115.78	135.62	157.05	180.04	204.61	230.75	[illegible]	[illegible]
[illegible]	[illegible]	.01917	1.0500	3.6516	7.8241	13.567	20.881	29.766	40.222	52.248	65.845	81.013	97.752	116.09	135.95	157.39	180.42	205.01	231.17	[illegible]	[illegible]
[illegible]	[illegible]	.02320	1.0786	3.7048	7.9017	13.669	21.008	29.917	40.398	52.448	66.070	81.263	98.026	116.39	136.27	157.74	180.79	205.40	231.59	[illegible]	[illegible]
[illegible]	[illegible]	.02761	1.1075	3.7583	7.9798	13.772	21.135	30.068	40.574	52.649	66.296	81.513	98.301	116.69	136.60	158.09	181.16	205.80	232.01	[illegible]	[illegible]
[illegible]	[illegible]	.03240	1.1369	3.8121	8.0582	13.875	21.261	30.220	40.750	52.850	66.521	81.763	98.575	116.99	136.92	158.44	181.53	206.20	232.44	[illegible]	[illegible]
[illegible]	[illegible]	.03758	1.1666	3.8664	8.1370	13.978	21.391	30.372	40.927	53.052	66.747	82.014	98.850	117.29	137.24	158.79	181.91	206.60	232.86	[illegible]	[illegible]
[illegible]	[illegible]	.04314	1.1967	3.9211	8.2162	14.082	21.519	30.524	41.105	53.254	66.974	82.265	99.126	117.59	137.57	159.14	182.28	206.99	233.28	[illegible]	[illegible]
[illegible]	[illegible]	.04909	1.2272	3.9761	8.2958	14.186	21.648	30.680	41.282	53.456	67.201	82.516	99.402	117.89	137.90	159.48	182.65	207.39	233.71	[illegible]	[illegible]
[illegible]	[illegible]	.05542	1.2577	4.0315	8.3757	14.290	21.777	30.829	41.461	53.659	67.429	82.768	99.678	118.19	138.22	159.84	183.03	207.79	234.13	[illegible]	[illegible]
[illegible]	[illegible]	.06213	1.2885	4.0873	8.4561	14.395	21.906	30.983	41.639	53.862	67.656	83.020	99.955	118.49	138.55	160.19	183.40	208.19	234.55	[illegible]	[illegible]
[illegible]	[illegible]	.06922	1.3196	4.1435	8.5368	14.501	22.035	31.137	41.818	54.065	67.884	83.272	100.23	118.79	138.88	160.54	183.78	208.59	234.98	[illegible]	[illegible]
[illegible]	[illegible]	.07670	1.3530	4.2000	8.6179	14.607	22.166	31.296	41.997	54.269	68.112	83.525	100.51	119.09	139.21	160.89	184.15	208.99	235.40	[illegible]	[illegible]
[illegible]	[illegible]	.08456	1.3854	4.2570	8.6994	14.713	22.297	31.451	42.177	54.473	68.341	83.779	100.79	119.37	139.54	161.24	184.53	209.39	235.83	[illegible]	[illegible]
[illegible]	[illegible]	.09281	1.4180	4.3143	8.7814	14.819	22.428	31.607	42.357	54.678	68.570	84.032	101.07	119.67	139.87	161.59	184.91	209.79	236.25	[illegible]	[illegible]
[illegible]	[illegible]	.1014	1.4513	4.3720	8.8636	14.926	22.559	31.763	42.537	54.883	68.799	84.286	101.34	119.97	140.17	161.94	185.28	210.20	236.68	[illegible]	[illegible]
[illegible]	[illegible]	.1104	1.4849	4.4301	8.9462	15.033	22.691	31.919	42.718	55.088	69.029	84.541	101.62	120.28	140.50	162.30	185.66	210.60	237.11	[illegible]	[illegible]
[illegible]	[illegible]	.1198	1.5188	4.4886	9.0292	15.141	22.823	32.076	42.899	55.294	69.259	84.796	101.90	120.58	140.83	162.65	186.04	211.00	237.53	[illegible]	[illegible]
[illegible]	[illegible]	.1296	1.5530	4.5475	9.1126	15.249	22.955	32.233	43.081	55.500	69.490	85.051	102.18	120.88	141.16	163.00	186.42	211.40	237.96	[illegible]	[illegible]
[illegible]	[illegible]	.1398	1.5875	4.6067	9.1964	15.357	23.088	32.390	43.263	55.707	69.721	85.306	102.46	121.19	141.49	163.36	186.79	211.80	238.39	[illegible]	[illegible]
[illegible]	[illegible]	.1503	1.6230	4.6664	9.2806	15.466	23.221	32.548	43.445	55.914	69.953	85.562	102.74	121.49	141.82	163.71	187.17	212.21	238.81	[illegible]	[illegible]
[illegible]	[illegible]	.1613	1.6584	4.7264	9.3652	15.575	23.355	32.706	43.628	56.121	70.184	85.819	103.02	121.80	142.15	164.06	187.55	212.61	239.24	[illegible]	[illegible]
[illegible]	[illegible]	.1726	1.6943	4.7868	9.4501	15.684	23.489	32.865	43.811	56.329	70.417	86.075	103.30	122.11	142.48	164.42	187.93	213.02	239.67	[illegible]	[illegible]
[illegible]	[illegible]	.1843	1.7305	4.8476	9.5354	15.794	23.623	33.024	43.995	56.537	70.649	86.333	103.59	122.41	142.81	164.77	188.31	213.42	240.10	[illegible]	[illegible]
[illegible]	[illegible]	.1963	1.7671	4.9087	9.6211	15.904	23.758	33.183	44.179	56.745	70.882	86.590	103.87	122.72	143.14	165.13	188.69	213.83	240.53	[illegible]	[illegible]
[illegible]	[illegible]	.2088	1.8042	4.9703	9.7072	16.015	23.893	33.343	44.363	56.954	71.116	86.848	104.15	123.03	143.47	165.48	189.07	214.23	240.96	[illegible]	[illegible]
[illegible]	[illegible]	.2217	1.8415	5.0322	9.7937	16.126	24.029	33.503	44.548	57.163	71.349	87.106	104.43	123.33	143.80	165.84	189.45	214.64	241.39	[illegible]	[illegible]
[illegible]	[illegible]	.2349	1.8793	5.0946	9.8806	16.237	24.165	33.663	44.733	57.373	71.583	87.365	104.72	123.64	144.13	166.20	189.83	215.04	241.82	[illegible]	[illegible]
[illegible]	[illegible]	.2485	1.9175	5.1572	9.9678	16.349	24.301	33.824	44.918	57.583	71.818	87.624	105.00	123.95	144.47	166.55	190.22	215.45	242.25	[illegible]	[illegible]
[illegible]	[illegible]	.2625	1.9560	5.2203	10.055	16.461	24.438	33.985	45.104	57.793	72.053	87.883	105.29	124.26	144.80	166.91	190.60	215.85	242.68	[illegible]	[illegible]
[illegible]	[illegible]	.2769	1.9948	5.2838	10.143	16.574	24.575	34.147	45.290	58.004	72.288	88.143	105.57	124.57	145.13	167.27	190.98	216.26	243.11	[illegible]	[illegible]
[illegible]	[illegible]	.2916	2.0342	5.3477	10.232	16.687	24.713	34.309	45.477	58.215	72.524	88.404	105.86	124.88	145.47	167.63	191.36	216.67	243.54	[illegible]	[illegible]
[illegible]	[illegible]	.3068	2.0739	5.4119	10.321	16.800	24.850	34.472	45.664	58.426	72.760	88.664	106.14	125.19	145.80	167.99	191.75	217.08	243.98	[illegible]	[illegible]
[illegible]	[illegible]	.3223	2.1140	5.4765	10.410	16.914	24.989	34.634	45.851	58.638	72.996	88.925	106.43	125.50	146.14	168.35	192.13	217.48	244.41	[illegible]	[illegible]
[illegible]	[illegible]	.3382	2.1545	5.5415	10.499	17.028	25.127	34.793	46.039	58.850	73.233	89.186	106.71	125.81	146.47	168.71	192.52	217.89	244.84	[illegible]	[illegible]
[illegible]	[illegible]	.3545	2.1953	5.6069	10.589	17.142	25.266	34.961	46.227	59.063	73.470	89.448	107.00	126.12	146.81	169.07	192.90	218.30	245.28	[illegible]	[illegible]
[illegible]	[illegible]	.3712	2.2365	5.6727	10.679	17.257	25.406	35.125	46.415	59.276	73.708	89.710	107.28	126.43	147.14	169.43	193.29	218.71	245.71	[illegible]	[illegible]
[illegible]	[illegible]	.3883	2.2782	5.7388	10.770	17.372	25.546	35.289	46.604	59.489	73.946	89.973	107.57	126.74	147.48	169.79	193.67	219.12	246.14	[illegible]	[illegible]
[illegible]	[illegible]	.4057	2.3201	5.8054	10.861	17.488	25.686	35.454	46.793	59.703	74.184	90.236	107.86	127.05	147.82	170.15	194.06	219.53	246.58	[illegible]	[illegible]
[illegible]	[illegible]	.4236	2.3623	5.8723	10.953	17.604	25.826	35.619	46.983	59.917	74.423	90.499	108.15	127.36	148.15	170.51	194.44	219.94	247.01	[illegible]	[illegible]
[illegible]	[illegible]	.4418	2.4053	5.9396	11.045	17.721	25.967	35.785	47.173	60.132	74.662	90.763	108.43	127.68	148.49	170.87	194.83	220.35	247.45	[illegible]	[illegible]
[illegible]	[illegible]	.4604	2.4484	6.0073	11.137	17.837	26.108	35.951	47.363	60.347	74.901	91.027	108.72	127.99	148.83	171.24	195.21	220.76	247.89	[illegible]	[illegible]
[illegible]	[illegible]	.4794	2.4920	6.0755	11.229	17.954	26.250	36.117	47.554	60.562	75.141	91.291	109.01	128.30	149.17	171.60	195.60	221.18	248.32	[illegible]	[illegible]
[illegible]	[illegible]	.4987	2.5359	6.1440	11.321	18.072	26.392	36.283	47.745	60.778	75.382	91.556	109.30	128.62	149.50	171.96	195.99	221.59	248.76	[illegible]	[illegible]
[illegible]	[illegible]	.5185	2.5802	6.2126	11.416	18.190	26.535	36.450	47.937	60.994	75.622	91.821	109.59	128.93	149.84	172.32	196.38	222.00	249.20	[illegible]	[illegible]
[illegible]	[illegible]	.5386	2.6248	6.2819	11.509	18.308	26.678	36.618	48.129	61.211	75.863	92.087	109.88	129.25	150.18	172.69	196.77	222.41	249.63	[illegible]	[illegible]
[illegible]	[illegible]	.5591	2.6699	6.3515	11.604	18.427	26.821	36.787	48.321	61.427	76.105	92.353	110.17	129.56	150.52	173.05	197.16	222.83	250.07	[illegible]	[illegible]
[illegible]	[illegible]	.5800	2.7153	6.4215	11.698	18.546	26.964	36.954	48.514	61.645	76.346	92.619	110.46	129.88	150.86	173.42	197.54	223.24	250.51	[illegible]	[illegible]
[illegible]	[illegible]	.6013	2.7612	6.4918	11.793	18.665	27.108	37.122	48.707	61.862	76.589	92.886	110.75	130.19	151.20	173.78	197.93	223.65	250.95	[illegible]	[illegible]
[illegible]	[illegible]	.6230	2.8074	6.5626	11.888	18.785	27.252	37.291	48.900	62.080	76.831	93.153	111.04	130.51	151.54	174.15	198.32	224.07	251.39	[illegible]	[illegible]
[illegible]	[illegible]	.6450	2.8540	6.6337	11.984	18.906	27.396	37.461	49.094	62.299	77.074	93.420	111.34	130.82	151.88	174.51	198.71	224.48	251.83	[illegible]	[illegible]
[illegible]	[illegible]	.6673	2.9010	6.7052	12.080	19.026	27.541	37.630	49.288	62.518	77.317	93.688	111.63	131.14	152.22	174.88	199.10	224.90	252.27	[illegible]	[illegible]
[illegible]	[illegible]	.6903	2.9483	6.7771	12.176	19.147	27.686	37.800	49.483	62.737	77.561	93.956	111.92	131.46	152.57	175.25	199.49	225.31	252.71	[illegible]	[illegible]
[illegible]	[illegible]	.7135	2.9961	6.8494	12.272	19.268	27.832	37.971	49.678	62.956	77.805	94.225	112.22	131.78	152.91	175.61	199.89	225.73	253.15	[illegible]	[illegible]
[illegible]	[illegible]	.7371	3.0442	6.9221	12.370	19.390	27.980	38.142	49.874	63.176	78.050	94.494	112.51	132.09	153.25	175.98	200.28	226.15	253.59	[illegible]	[illegible]
[illegible]	[illegible]	.7610	3.0927	6.9952	12.468	19.512	28.129	38.313	50.069	63.306	78.294	94.764	112.81	132.41	153.59	176.35	200.67	226.56	254.05	[illegible]	[illegible]

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AWM 000655

MEGCO Ex. 1007

ALPHA OIL TOOLS

Casing Composite List

Casing OD	Weight (lbs./ft.) T & C (Nom.)	Weight (lbs./ft.) Plain End	ID Decimal	ID Fraction to 32nd	ID Spang Bore
4	12.60	12.51	3.396	3-3/8	
4	11.60	11.34	3.428	3-7/16	
4		10.46	3.476	3-15/32	
3-3/4	5.10	4.98	3.492	3-1/2	
[illegible]	9.50	9.11	3.548	3-9/16	
4-1/4		11.08	3.750	3-23/32	
4	5.65	5.52	3.752	3-23/32	
4-1/2	16.60	14.98	3.826	3-13/16	
4-3/4	21.00	20.66	3.850	3-27/32	
4-1/2	15.10	14.98	3.826	3-27/32	
4-3/4	20.00	19.40	3.910	3-29/32	
4-1/2	13.50	13.09	3.920	3-29/32	3.823
4-1/2	12.60	12.24	3.958	3-31/32	
4-1/4	6.30	6.00	3.974	3-31/32	
4-3/4		11.77	3.980	3-31/32	
4-1/2	11.60	11.35	4.000	4	3.875
4-3/4	18.00	17.52	4.000	4	3.990
4-1/2	11.00	10.79	4.026	4-1/32	
4-1/2	10.50	10.23	4.052	4-1/16	3.950
4-3/4	16.00	15.75	4.082	4-3/32	
4-1/2	9.50	9.40	4.090	4-3/32	
4-1/2		8.64	4.124	4-1/8	
5	21.00	20.67	4.154	4-5/32	4.094
4-1/2	6.75	6.59	4.216	4-7/32	
4-3/4		7.49	4.250	4-7/32	
5	18.00	17.93	4.276	4-9/32	4.199
4-3/4	9.50	9.39	4.364	4-3/8	
5	15.00	14.87	4.408	4-13/32	4.198
4-3/4	7.25	7.11	4.460	4-15/32	
5	13.00	12.83	4.494	4-1/2	
5	12.00	12.53	4.506	4-1/2	
5-1/2	25.00		4.548	4-9/16	4.378
[illegible]	11.15	11.21	4.560	4-9/16	
5-1/2	25.00	24.76	4.580	4-19/32	4.520
5	16.00	15.91	4.646	4-21/32	
5-1/2	23.00	22.54	4.670	4-21/32	4.610
5	8.00	7.89	4.695	4-11/16	
5		13.86	4.750	4-23/32	
5-1/4	13.00	12.89	4.768	4-25/32	
5-1/2	20.00	19.81	4.778	4-25/32	4.701
5		20.78	4.819	4-13/16	
5	10.00	9.85	4.886	4-7/8	
5-1/2	25.20	24.43	4.890	4-7/8	4.785
5-1/2	17.00	16.87	4.892	4-29/32	4.701
5-1/4	8.50	8.32	4.984	4-15/16	
5-1/2	15.50	15.35	4.950	4-15/16	4.736
5-1/2		15.08	4.960	4-31/32	
5-1/2	15.00	14.71	4.974	4-31/32	
5-3/4	22.50	21.79	4.990	5	4.883
5-1/2	14.00	13.70	5.012	5	
5-1/2	13.00	12.54	5.044	5-1/32	
5-1/2	15.00	14.62	5.047	5-1/16	
5-3/4	19.50	19.10	5.090	5-3/32	4.985
6	26.00	25.58	5.140	5-1/8	5.080
5-3/4	17.00	16.45	5.190	5-3/16	
5-1/2	9.00	8.79	5.196	5-3/16	
6	22.50	22.81	5.240	5-1/4	5.180
5-3/4	14.00	13.55	5.290	5-9/32	
6	20.00	19.64	5.352	5-11/32	5.268
6	18.00	17.27	5.424	5-7/16	5.238
6	17.00	16.31	5.420	5-7/16	
6		16.52	5.460	5-15/32	
6	16.00	15.35	5.500	5-1/2	
6	15.00	14.65	5.524	5-17/32	
6	14.00	13.82	5.552	5-9/16	
6-5/8	34.00	33.61	5.595	5-19/32	5.525
6	12.00	11.79	5.620	5-5/8	
6	10.50	10.22	5.672	5-11/16	
6-5/8	32.00	31.25	5.675	5-11/16	5.615
6-5/8	29.00	28.57	5.761	5-3/4	5.701
6-5/8	28.00	27.64	5.791	5-25/32	5.731
7	40.00	38.38	5.836	5-27/32	5.776
6-5/8	26.50	26.22	5.839	5-27/32	
6-5/8	26.00	26.25	5.855	5-27/32	5.781
7	38.00	37.25	5.920	5-29/32	5.860
6-5/8	24.00	23.58	5.921	5-29/32	5.781
6-5/8	25.20	22.18	5.965	5-31/32	
6-5/8	22.00	21.42	5.989	6	
7	35.30	34.71	6.009	6	5.946
7	35.00	34.58	6.004	6	5.940
7	34.00	33.42	6.040	6-1/32	
7	33.70	33.17	6.048	6-1/16	5.988
6-5/8	20.00	19.49	6.049	6-1/16	
6-5/8	19.45	19.07	6.065	6-1/16	
6-5/8		18.23	6.095	6-3/32	

Casing OD	Weight (lbs./ft.) T & C (Nom.)	Weight (lbs./ft.) Plain End	ID Decimal	ID Fraction to 32nd	ID Spang Bore
7	32.00	31.68	6.094	6-3/32	6.032
6-5/8	17.00	16.60	6.135	6-1/8	
7	30.00	29.71	6.154	6-5/32	6.094
7	29.50	29.25	6.168	6-5/32	
7-5/8	29.00	28.72	6.184	6-3/16	6.125
7	28.00	27.73	6.214	6-7/32	6.154
6-5/8	13.00	12.78	6.265	6-1/4	
7	26.00	25.66	6.276	6-9/32	6.171
6-5/8	12.00	11.65	6.287	6-9/32	
[illegible]	24.00	23.64	6.336	6-11/32	6.171
7	23.00	22.63	6.336	6-3/8	6.271
7	22.00	21.54	6.398	6-13/32	
7-3/4	45.00	44.33	6.445	6-7/16	6.385
7	20.00	19.54	6.456	6-15/32	
7		19.41	6.460	6-15/32	
7	17.00	16.70	6.538	6-17/32	
7-5/8	39.00	38.05	6.625	6-5/8	6.565
7	13.00	12.65	6.653	6-21/32	
7-5/8	38.00	36.88	6.665	6-21/32	
7-5/8	36.00	35.20	6.705	6-23/32	6.645
7-5/8	33.70	33.04	6.765	6-3/4	6.705
7-5/8	29.70	29.03	6.875	6-7/8	6.770
7-5/8	26.40	25.56	6.969	6-31/32	6.780
7-5/8	24.00	23.47	7.025	7-1/32	
7-5/8		24.21	7.085	7-3/32	
7-5/8	20.00	19.69	7.125	7-1/8	
8-5/8	41.70	40.71	7.125	7-1/8	
8-5/8	39.50	38.42	7.135	7-3/16	
7-3/4	14.75	14.39	7.262	7-1/4	
8-1/8	36.50	34.56	7.285	7-9/32	
[illegible]	32.00	30.64	7.330	7-3/8	
8	26.00	25.21	7.386	7-3/8	
8		23.09	7.440	7-7/16	
8-1/8	28.00	26.67	7.485	7-1/2	
8-5/8	49.00	48.00	7.511	7-1/2	7.451
8	20.00	19.57	7.528	7-17/32	
8-5/8	48.00	46.95	7.527	7-17/32	7.477
8-5/8	44.00	43.39	7.625	7-5/8	7.565
8	16.00	15.52	7.628	7-5/8	
8-5/8	43.00	41.32	7.651	7-21/32	7.591
8-5/8	40.00	39.29	7.725	7-23/32	7.665
8-5/8	38.00	37.22	7.775	7-25/32	7.715
8-5/8	55.00	53.52	7.812	7-13/16	
8-5/8	36.00	35.13	7.825	7-13/16	7.725
8-5/8	50.20	49.21	7.910	7-29/32	7.850
8-5/8	32.40	31.27	7.917	7-29/32	
8-5/8	32.00	31.10	7.921	7-29/32	7.825
8-5/8	29.35	28.55	7.981	7-31/32	
8-5/8	28.00	27.92	8.017	8-1/32	
9	45.00	44.02	8.032	8-1/32	7.972
8-5/8		24.96	8.065	8-1/16	
8-5/8	25.55	24.70	8.071	8-1/16	
8-5/8	24.00	23.57	8.097	8-3/32	
9	40.00	38.92	8.150	8-5/32	8.091
8-5/8	20.00	19.49	8.191	8-3/16	
9	38.00	36.94	8.196	8-3/16	8.071
8-5/8	17.50	16.94	8.249	8-1/4	
9	34.00	32.78	8.290	8-9/32	8.091
[illegible]		26.98	8.425	8-13/32	
9-5/8	58.00	57.38	8.435	8-7/16	8.375
9-5/8	53.50	52.85	8.535	8-17/32	8.475
9	19.00	18.42	8.608	8-19/32	
9-5/8	47.00	46.14	8.681	8-11/16	8.621
9-5/8	43.50	42.70	8.755	8-3/4	8.665
9-5/8	61.20	60.71	8.780	8-25/32	8.730
9-5/8	42.00	40.67	8.799	8-13/16	
9-5/8	40.00	38.94	8.835	8-27/32	[illegible]
9-5/8	38.00	36.57	8.885	8-7/8	
10	65.00	55.13	8.908	8-29/32	8.848
9-5/8	36.00	34.85	8.921	8-29/32	
9-5/8	32.30	31.03	9.001	9	
10	50.50	49.95	9.016	9-1/32	8.936
9-5/8	29.30	28.04	9.063	9-1/16	
10	45.50	44.93	9.150	9-1/8	9.094
10	41.50	41.02	9.200	9-3/16	9.124
10	35.00	31.88	9.384	9-3/8	
10		30.07	9.420	9-13/32	
10	30.25	29.37	9.434	9-7/16	
10	23.75	21.85	9.582	9-19/32	
10-3/4		34.74	9.750	9-3/4	
10-3/4	55.50	54.21	9.760	9-3/4	9.629
10-3/4	54.00	52.98	9.784	9-25/32	
10-3/4	51.00	49.50	9.850	9-27/32	9.719
10-3/4	48.00	46.76	9.902	9-29/32	
10-3/4	45.50	44.22	9.950	9-15/16	9.839

Casing OD	Weight (lbs./ft.) T & C (Nom.)	Weight (lbs./ft.) Plain End	ID Decimal	ID Fraction to 32nd	ID Spang Bore
10-3/4	45.50	45.68	9.950	9-31/32	
11	41.85	40.48	10.020	10-1/32	
10-3/4	40.50	38.88	10.050	10-1/16	
10-3/4	40.00	38.66	10.054	10-1/16	
10-3/4	35.75	34.24	10.136	10-1/8	
10-3/4	32.75	31.30	10.192	10-3/16	
11		35.39	10.380	10-3/8	
11	26.75	25.78	10.582	10-9/16	
11-3/4	60.00	58.81	10.772	10-25/32	
11-3/4	54.00	52.57	10.880	10-7/8	
11-3/4	47.00	45.56	11.00	11	
11-3/4	42.00	40.60	11.084	11-3/32	
11-3/4		40.25	11.096	11-3/32	
11-3/4	38.50	36.69	11.150	11-5/32	
12		38.70	11.380	11-3/8	
12	40.00	38.46	11.384	11-3/8	
12	31.50	34.51	11.541	11-1/2	
13-3/8		65.42	11.750	11-3/4	
13-3/8	53.00	51.48	11.970	11-31/32	
13-3/8	51.15	49.56	12.000	12	
13-3/8	45.45	43.77	12.099	12-3/32	
13-3/8		41.31	12.125	12-1/8	
13-3/8	43.00	41.19	12.130	12-1/8	
13-3/8	85.00	81.86	12.175	12-3/16	
13-3/8	54.00	50.52	12.220	12-7/32	
13-3/8	30.00	48.47	12.282	12-9/32	
13-3/8		47.29	12.300	12-5/16	
13-3/8	72.00	70.60	12.347	12-11/32	
13	45.00	43.33	12.360	12-3/8	
13-3/8	68.00	66.11	12.415	12-13/32	
13	40.00	38.13	12.438	12-7/16	
13	36.50	35.25	12.482	12-15/32	
13-3/8	61.00	59.55	12.515	12-1/2	
13-3/8	54.50	52.74	12.615	12-5/8	
13-3/8	48.00	45.98	12.715	12-23/32	
14	57.00	54.57	13.250	13-1/4	
13-5/8		51.02	13.300	13-5/16	
14	50.00	47.89	13.344	13-11/32	
14	42.00	40.45	13.448	13-7/16	
15		49.33	14.240	14-1/4	
15	69.15	59.57	14.250	14-1/4	
15	47.50	45.71	14.418	14-13/32	
16	84.00	81.97	15.010	15	
16	75.00	72.75	15.125	15-1/8	
16	70.00	68.10	15.198	15-3/16	
16		65.39	15.240	15-1/4	
16	65.00	62.58	15.250	15-1/4	
16	55.00	52.36	15.375	15-3/8	
16	52.50	50.65	15.396	15-13/32	
17	75.30	69.70	16.234	16-7/32	
18	96.50	94.72	16.986	17	
18	87.50	85.44	17.088	17-3/32	
18	84.96	82.06	17.124	17-1/8	
18		81.97	17.126	17-1/8	
18		81.60	17.130	17-1/8	
18	81.50	76.94	17.182	17-3/16	
18	78.50	73.76	17.194	17-3/16	
18		70.58	17.250	17-1/4	
18-5/8	96.50	93.96	17.655	17-21/32	
18-5/8	87.50	84.51	17.755	17-3/4	
18-5/8	78.00	75.00	17.855	17-27/32	
18-5/8		73.09	17.875	17-7/8	
20		104.10	19.000	19	
20	94.00	91.41	19.124	19-1/8	
20	90.00	87.22	19.165	19-5/32	
20	90.00	85.98	19.182	19-3/16	
20	90.00	84.75	19.190	19-3/16	
21-1/2	114.00	111.08	20.510	20-1/2	
21-1/2	103.00	100.97	20.619	20-5/8	
21-1/2	92.50	89.03	20.710	20-23/32	
22		114.80	21.000	21	
22	114.00	111.63	21.028	21-1/32	
22		101.00	21.126	21-1/8	
22	105.00	100.41	21.128	21-1/8	
22	92.50	89.78	21.222	21-7/32	
24	113.00	110.22		23-1/8	
24	100.50	97.60		23-7/32	
24-1/2	113.00	108.28		23-31/32	
24-1/2	100.50	96.85		23-3/4	

* Indicates API size and weights.

-Spang EXTREME LINE ID - Bored

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Casing Minimum Performance Properties

DIMENSIONS						MIN. COLLAPSE (PSI)				MIN. INTERNAL YIELD (PSI)				JOINT YIELD STRENGTH (1,000 LBS.) SHORT THREAD				LONG THREAD		
OD	Wt./ft.	Wall	ID	Drift	Coupling	H40	J55	N80	P110	H40	J55	N80	P110	H40	J55	N80	P110	J55	N80	P110
4 1/2	9.50	.203	4.090	3.963	5.000	2770	3310	-	-	3190	4380	-	-	77	101	-	-	-	-	-
4 1/2	11.60	.250	4.000	3.875	5.000	-	4960	6350	7560	-	5350	7780	10690	-	154	-	-	223	279	
4 1/2	13.50	.290	3.920	3.795	5.000	-	-	8540	10670	-	-	9020	12410	-	-	-	-	162	270	338
4 1/2	15.10	.337	3.826	3.701	5.000	-	-	-	14320	-	-	-	14420	-	-	-	-	-	-	406
5	11.50	.220	4.560	4.435	5.563	-	3060	-	-	-	4240	-	-	-	133	-	-	-	-	-
5	13.00	.253	4.494	4.369	5.563	-	3140	-	-	-	4870	-	-	-	169	-	-	-	-	-
5	15.00	.296	4.408	4.283	5.563	-	5550	7250	8630	-	5700	8290	11460	-	207	-	-	182	311	388
5	18.00	.362	4.276	4.151	5.563	-	-	10490	13430	-	-	10140	13940	-	-	-	-	223	306	495
5 1/2	14.00	.244	5.012	4.887	6.050	2630	3120	-	-	3110	4270	-	-	130	172	-	-	-	-	-
5 1/2	15.50	.275	4.950	4.825	6.050	-	4040	-	-	-	4810	-	-	-	202	-	-	-	-	-
5 1/2	17.00	.304	4.892	4.767	6.050	-	4910	6280	7460	-	5320	7740	10640	-	229	-	-	217	348	445
5 1/2	20.00	.361	4.778	4.653	6.050	-	-	8830	11080	-	-	9190	12640	-	-	-	-	247	428	548
5 1/2	23.00	.415	4.670	4.545	6.050	-	-	11160	14520	-	-	9880	13580	-	-	-	-	-	502	643
6 5/8	20.00	.288	6.049	5.924	7.390	2520	2970	-	-	3040	4180	-	-	184	245	-	-	-	-	-
6 5/8	24.00	.352	5.921	5.796	7.390	-	4560	5760	6710	-	5110	7440	10230	-	314	-	-	266	481	641
6 5/8	28.00	.417	5.791	5.666	7.390	-	-	8170	10140	-	-	8810	12120	-	-	-	-	340	586	781
6 5/8	32.00	.475	5.675	5.550	7.390	-	-	10320	13200	-	-	10040	13800	-	-	-	-	-	697	904
7	17.00	.231	6.538	6.413	7.656	1450	-	-	-	2310	-	-	-	122	-	-	-	-	-	-
7	20.00	.272	6.456	6.331	7.656	1980	2270	-	-	2720	3740	-	-	176	234	-	-	-	-	-
7	23.00	.317	6.366	6.241	7.656	-	3270	3830	-	-	4360	6340	-	-	284	-	-	-	442	-
7	26.00	.362	6.276	6.151	7.656	-	4320	5410	6210	-	4980	7240	9960	-	334	-	-	315	519	693
7	29.00	.408	6.184	6.059	7.656	-	-	7020	8530	-	-	8160	11220	-	-	-	-	367	597	797
7	32.00	.453	6.094	5.969	7.656	-	-	8600	10760	-	-	9060	12460	-	-	-	-	-	672	897
7	35.00	.498	6.004	5.879	7.656	-	-	10180	13010	-	-	9240	12700	-	-	-	-	-	746	996
7	38.00	.540	5.920	5.795	7.656	-	-	11390	15110	-	-	9240	12700	-	-	-	-	-	814	1087
7 5/8	24.00	.300	7.025	6.900	8.500	2040	-	-	-	2750	-	-	-	212	-	-	-	-	-	-
7 5/8	26.40	.328	6.969	6.844	8.500	-	2890	3400	-	-	4140	6020	-	-	315	-	-	-	490	-
7 5/8	29.70	.375	6.875	6.750	8.500	-	-	4790	5340	-	-	6890	9470	-	-	-	-	346	575	769
7 5/8	33.70	.430	6.765	6.640	8.500	-	-	6560	7580	-	-	7900	10860	-	-	-	-	-	674	901
7 5/8	39.00	.500	6.625	6.500	8.500	-	-	8810	11060	-	-	9180	12620	-	-	-	-	-	798	1066
8 5/8	24.00	.264	8.097	7.972	9.625	-	1370	-	-	-	2950	-	-	-	244	-	-	-	-	-
8 5/8	28.00	.304	8.017	7.892	9.625	1640	-	-	-	2470	-	-	-	233	-	-	-	-	-	-
8 5/8	32.00	.352	7.921	7.796	9.625	2210	2530	-	-	2860	3930	-	-	279	372	-	-	-	-	-
8 5/8	36.00	.400	7.825	7.700	9.625	-	3450	4109	-	-	4460	6490	-	-	434	-	-	417	688	-
8 5/8	40.00	.450	7.725	7.600	9.625	-	-	5520	6380	-	-	7300	10040	-	-	-	-	486	788	1055
8 5/8	44.00	.500	7.625	7.500	9.625	-	-	6950	8400	-	-	8120	11160	-	-	-	-	-	887	1186
8 5/8	49.00	.557	7.511	7.386	9.625	-	-	8570	10720	-	-	9040	12430	-	-	-	-	-	997	1335
9 5/8	32.30	.312	9.001	8.845	10.625	1400	-	-	-	2270	-	-	-	254	-	-	-	-	-	-
9 5/8	36.00	.352	8.921	8.765	10.625	1740	2020	-	-	2560	3520	-	-	294	394	-	-	-	-	-
9 5/8	40.00	.395	8.835	8.679	10.625	-	2570	3090	-	-	3950	5750	-	-	452	-	-	453	737	-
9 5/8	43.50	.435	8.755	8.599	10.625	-	-	3810	4430	-	-	6330	8700	-	-	-	-	520	825	1106
9 5/8	47.00	.472	8.681	8.525	10.625	-	-	4750	5310	-	-	6870	9440	-	-	-	-	-	905	1213
9 5/8	53.50	.545	8.535	8.379	10.625	-	-	6620	7930	-	-	7930	10900	-	-	-	-	-	1062	1422
10 3/4	32.75	.279	10.192	10.036	11.750	870	-	-	-	1820	-	-	-	205	-	-	-	-	-	-
10 3/4	40.50	.350	10.050	9.894	11.750	1420	1580	-	-	2280	3130	-	-	314	420	-	-	-	-	-
10 3/4	45.50	.400	9.950	9.794	11.750	-	2090	-	-	-	3580	-	-	-	493	-	-	-	-	-
10 3/4	51.00	.450	9.850	9.694	11.750	-	2700	3220	3670	-	4030	5860	8060	-	565	804	1080	-	-	-
10 3/4	55.50	.495	9.760	9.604	11.750	-	-	4020	4630	-	-	6450	8860	-	-	895	1203	-	-	-
10 3/4	60.70	.545	9.660	9.504	11.750	-	-	-	5860	-	-	-	9760	-	-	-	1358	-	-	-
10 3/4	65.70	.595	9.560	9.404	11.750	-	-	-	7490	-	-	-	10650	-	-	-	1472	-	-	-
11 3/4	42.00	.333	11.084	10.928	12.750	1070	-	-	-	1980	-	-	-	307	-	-	-	-	-	-
11 3/4	47.00	.375	11.000	10.844	12.750	-	1510	-	-	-	3070	-	-	-	477	-	-	-	-	-
11 3/4	54.00	.435	10.880	10.724	12.750	-	2070	-	-	-	3560	-	-	-	568	-	-	-	-	-
11 3/4	60.00	.489	10.772	10.616	12.750	-	2660	3180	-	-	4010	5830	-	-	649	924	-	-	-	-
13 3/8	48.00	.330	12.715	12.559	14.375	740	-	-	-	1730	-	-	-	322	-	-	-	-	-	-
13 3/8	54.50	.380	12.615	12.459	14.375	-	1130	-	-	-	2730	-	-	-	514	-	-	-	-	-
13 3/8	61.00	.430	12.515	12.359	14.375	-	1540	-	-	-	3090	-	-	-	595	-	-	-	-	-
13 3/8	68.00	.480	12.415	12.259	14.375	-	1950	-	-	-	3450	-	-	-	675	-	-	-	-	-
13 3/8	72.00	.514	12.347	12.191	14.375	-	-	2670	-	-	-	5380	-	-	-	1040	-	-	-	-
16	65.00	.375	15.250	15.062	17.000	630	-	-	-	1640	-	-	-	439	-	-	-	-	-	-
16	75.00	.438	15.124	14.936	17.000	-	1020	-	-	-	2630	-	-	-	710	-	-	-	-	-
16	84.00	.495	15.010	14.822	17.000	-	1410	-	-	-	2980	-	-	-	817	-	-	-	-	-
18 5/8	87.50	.435	17.755	17.567	19.625	630	630	-	-	1630	2250	-	-	559	754	-	-	-	-	-
20	94.00	.438	19.124	18.936	21.000	520	520	-	-	1530	3110	-	-	581	784	-	-	907	-	-
20	106.50	.500	19.000	18.812	21.000	-	770	-	-	-	2410	-	-	-	913	-	-	1057	-	-
20	133.00	.635	18.730	18.542	21.000	-	1500	-	-	-	3060	-	-	-	1192	-	-	1380	-	-

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AWM 000657

MEGCO Ex. 1007

API Tubing

Tubing Size (in.)		Nominal Wt. (lbs./ft.)			Grade	Wall Thick (in.)	ID (in.)	Threaded and Coupled				Integral Joint		Collapse Resist (psi)	Internal Yield (psi)	Joint Yield Strength (lb.)			Fill-Up Volume (bbl/100 ft.)
									Coupled OD										
Nom.	OD	T & C Non-Up	T & C Upset	Int. Jt.				Drift (in.)	Non-Up	Upset Reg.	Upset Spec.	Drift Dia. (in.)	Box OD (in.)			Non-Up	T & C Upset	Int. Jt.	
3/4	1.050	1.14	1.20		H-40	0.113	824	730	1.313	1.660				7,680	7,530	6,360	13,300		0.066
3/4	1.050	1.14	1.20		J-55	0.113	0.824	0.730	1.313	1.660				10,560	10,360	8,745	18,290		0.066
3/4	1.050	1.14	1.20		C-75	0.113	0.824	0.730	1.313	1.660				14,410	14,120	11,920	24,940		0.066
3/4	1.050	1.14	1.20		N-80	0.113	0.824	0.730	1.313	1.660				15,370	15,070	12,730	26,610		0.066
1	1.315	1.70	1.80	1.72	H-40	0.133	1.049	0.955	1.660	1.900		0.955	1.550	7,220	7,080	10,960	19,760	15,970	0.107
1	1.315	1.70	1.80	1.72	J-55	0.133	1.049	0.955	1.660	1.900		0.955	1.550	10,000	9,730	15,060	27,160	21,960	0.107
1	1.315	1.70	1.80	1.72	C-75	0.133	1.049	0.955	1.660	1.900		0.955	1.550	13,640	13,270	20,540	37,040	29,940	0.107
1	1.315	1.70	1.80	1.72	N-80	0.133	1.049	0.955	1.660	1.900		0.955	1.550	14,550	14,160	21,910	39,510	31,930	0.107
1-1/4	1.660			2.10	H-40	0.125	1.410					1.286	1.880	5,270	5,270			22,180	0.185
1-1/4	1.660	2.30	2.40	2.33	H-40	0.140	1.380	1.286	2.054	2.200		1.286	1.880	6,180	5,900	15,530	26,740	22,180	0.185
1-1/4	1.660			2.10	J-55	0.125	1.410					1.286	1.880	7,660	7,250			30,500	0.193
1-1/4	1.660	2.30	2.40	2.33	J-55	0.140	1.380	1.286	2.054	2.200		1.286	1.880	8,500	8,120	21,960	36,720	30,500	0.185
1-1/4	1.660	2.30	2.40	2.33	C-75	0.140	1.380	1.286	2.054	2.200		1.286	1.880	11,580	11,070	29,120	50,140	41,660	0.185
1-1/4	1.660	2.30	2.40	2.33	N-80	0.140	1.380	1.286	2.054	2.200		1.286	1.880	12,360	11,810	31,060	53,480	44,370	0.185
1-1/2	1.900			2.40	H-40	0.125	1.650					1.516	2.110	4,920	4,610			26,890	0.264
1-1/2	1.900	2.75	2.90	2.76	H-40	0.145	1.610	1.516	2.200	2.500		1.516	2.110	5,640	5,340	10,050	31,050	26,890	0.252
1-1/2	1.900			2.40	J-55	0.125	1.650					1.516	2.110	6,640	6,330			36,970	0.264
1-1/2	1.900	2.75	2.90	2.76	J-55	0.145	1.610	1.516	2.200	2.500		1.516	2.110	7,750	7,250	26,230	43,970	36,970	0.252
1-1/2	1.900	2.75	2.90	2.76	C-75	0.145	1.610	1.516	2.200	2.500		1.516	2.110	10,570	10,020	35,806	59,960	50,420	0.252
1-1/2	1.900	2.75	2.90	2.76	N-80	0.145	1.610	1.516	2.200	2.500		1.516	2.110	11,280	10,690	38,180	63,960	53,780	0.252
2-1/16	2.063			3.25	H-40	0.156	1.751					1.657	2.325	5,590	5,290			35,690	0.298
2-1/16	2.063			3.25	J-55	0.156	1.751					1.657	2.325	7,690	7,280			49,070	0.298
2-1/16	2.063			3.25	C-75	0.156	1.751					1.657	2.325	10,480	9,920			66,910	0.298
2-1/16	2.063			3.25	N-80	0.156	1.751					1.657	2.325	11,180	10,590			71,370	0.298
2-3/8	2.375	4.00			H-40	0.167	2.041	1.947	2.875					5,230	4,920	30,130			0.405
2-3/8	2.375	4.60	4.70		H-40	0.190	1.995	1.901	2.875	3.063	2.910			5,890	5,600	33,960	52,170		0.387
2-3/8	2.375	4.00			J-55	0.167	2.041	1.947	2.875					7,200	6,770	41,450			0.405
2-3/8	2.375	4.60	4.70		J-55	0.190	1.995	1.901	2.875	3.063	2.910			8,100	7,700	49,450	71,730		0.387
2-3/8	2.375	4.00			C-75	0.167	2.041	1.947	2.875					9,520	9,230	56,500			0.405
2-3/8	2.375	4.60	4.70		C-75	0.190	1.995	1.901	2.875	3.063	2.910			11,040	10,500	67,430	97,820		0.387
2-3/8	2.375	5.80	5.95		C-75	0.254	1.867	1.773	2.875	3.063	2.910			14,930	14,000	96,560	126,940		0.339
2-3/8	2.375	4.00			N-80	0.167	2.041	1.947	2.875					9,960	9,840	60,260			0.405
2-3/8	2.375	4.60	4.70		N-80	0.190	1.995	1.901	2.875	3.063	2.910			11,580	11,200	71,930	104,340		0.387
2-3/8	2.375	5.80	5.95		N-80	0.254	1.867	1.773	2.875	3.063	2.910			15,280	14,970	102,890	135,400		0.339
2-3/8	2.375	4.60	4.70		P-105	0.190	1.995	1.901	2.875	3.063	2.910			13,460	14,700	94,410	136,940		0.387
2-3/8	2.375	5.80	5.95		P-105	0.254	1.867	1.773	2.875	3.063	2.910			20,060	19,650	135,180	177,710		0.339
2-7/8	2.875	6.40	6.50		H-40	0.217	2.441	2.347	3.500	3.668	3.460			5,586	5,286	52,780	72,480		0.579
2-7/8	2.875	6.40	6.50		J-55	0.217	2.441	2.347	3.500	3.668	3.460			7,680	7,260	72,580	99,660		0.579
2-7/8	2.875	6.40	6.50		C-75	0.217	2.441	2.347	3.500	3.668	3.460			10,570	9,910	98,970	135,900		0.579
2-7/8	2.875	8.60	8.70		C-75	0.308	2.259	2.165	3.500	3.668	3.460			14,330	14,060	140,360	185,290		0.496
2-7/8	2.875	6.40	6.50		N-80	0.217	2.441	2.347	3.500	3.668	3.460			11,170	10,570	105,570	144,960		0.579
2-7/8	2.875	8.60	8.70		N-80	0.308	2.259	2.165	3.500	3.668	3.460			15,200	15,000	159,510	198,710		0.496
2-7/8	2.875	6.40	6.50		P-105	0.217	2.441	2.347	3.500	3.668	3.460			14,010	13,870	138,560	190,260		0.579
2-7/8	2.875	8.60	8.70		P-105	0.308	2.259	2.165	3.500	3.668	3.460			20,090	19,690	209,780	260,810		0.496
3-1/2	3.500	7.70			H-40	0.216	3.068	2.943	4.250					4,630	4,320	63,020			0.194
3-1/2	3.500	9.20	9.30		H-40	0.254	2.992	2.867	4.250	4.500	4.180			5,380	5,060	79,540	103,610		0.879
3-1/2	3.500	10.20			H-40	0.289	2.992	2.797	4.250					6,060	5,780	92,550			0.829
3-1/2	3.500	7.70			J-55	0.216	3.068	2.943	4.250					5,970	5,240	89,430			0.914
3-1/2	3.500	9.20	9.30		J-55	0.254	2.992	2.867	4.250	4.500	4.180			7,400	6,980	109,370	142,460		0.870
3-1/2	3.500	10.20			J-55	0.289	2.992	2.797	4.250					8,330	7,960	127,230			0.829
3-1/2	3.500	7.70			C-75	0.216	3.068	2.943	4.250					7,540	8,100	122,610			0.914
3-1/2	3.500	9.20	9.30		C-75	0.254	2.992	2.867	4.250	4.500	4.180			10,060	9,520	149,140	194,260		0.870
3-1/2	3.500	10.20			C-75	0.289	2.992	2.797	4.250					11,360	10,840	173,530			0.829
3-1/2	3.500	12.70	12.95		C-75	0.375	2.750	2.625	4.250	4.500	4.180			14,350	14,060	230,090	276,120		0.755
3-1/2	3.500	7.70			N-80	0.216	3.068	2.943	4.250					7,878	8,640	136,140			0.914
3-1/2	3.500	9.20	9.30		N-80	0.254	2.992	2.867	4.250	4.500	4.180			10,630	10,160	159,690	207,220		0.870
3-1/2	3.500	10.20			N-80	0.289	2.992	2.797	4.250					12,120	11,580	185,360			0.829
3-1/2	3.500	12.70	12.95		N-80	0.375	2.750	2.625	4.250	4.500	4.180			15,310	15,000	246,390	294,530		0.755
3-1/2	3.500	9.20	9.30		P-105	0.254	2.992	2.867	4.250	4.500	4.180			13,050	13,330	208,800	271,970		0.870
3-1/2	3.500	12.70	12.95		P-105	0.375	2.750	2.625	4.250	4.500	4.180			20,090	19,690	323,390	386,570		0.755
4	4.000	9.50			H-40	0.226	3.548	3.423	4.750					4,060	3,960	72,000			1.223
4	4.000		11.00		H-40	0.262	3.476	3.351		5.000				4,900	4,580		123,070		1.174
4	4.000	9.50			J-55	0.226	3.548	3.423	4.750					5,110	5,340	99,010			1.223
4	4.000		11.00		J-55	0.262	3.476	3.351		5.000				6,590	6,300		169,220		1.174
4	4.000	9.50			C-75	0.226	3.548	3.423	4.750					6,350	7,420	135,010			1.223
4	4.000		11.00		C-75	0.262	3.476	3.351		5.000				8,410	8,600		230,730		1.174
4	4.000	9.50			N-80	0.226	3.548	3.423	4.750					6,599	7,910	144,010			1.223
4	4.000		11.00		N-80	0.262	3.476	3.351		5.000				8,800	9,170		246,140		1.174
4-1/2	4.500	12.60	12.75		H-40	0.271	3.958	3.833	5.200	5.563				4,500	4,220	104,960	144,020		1.522
4-1/2	4.500	12.60	12.75		J-55	0.271	3.958	3.833	5.200	5.563				5,720	5,690	148,500	198,030		1.522
4-1/2	4.500	12.60	12.75		C-75	0.271	3.958	3.833	5.200	5.563				7,200	7,300	195,680	270,040		1.522
4-1/2	4.500	12.60	12.75		N-80	0.271	3.958	3.833	5.200	5.563				7,500	8,430	208,750	288,040		1.522

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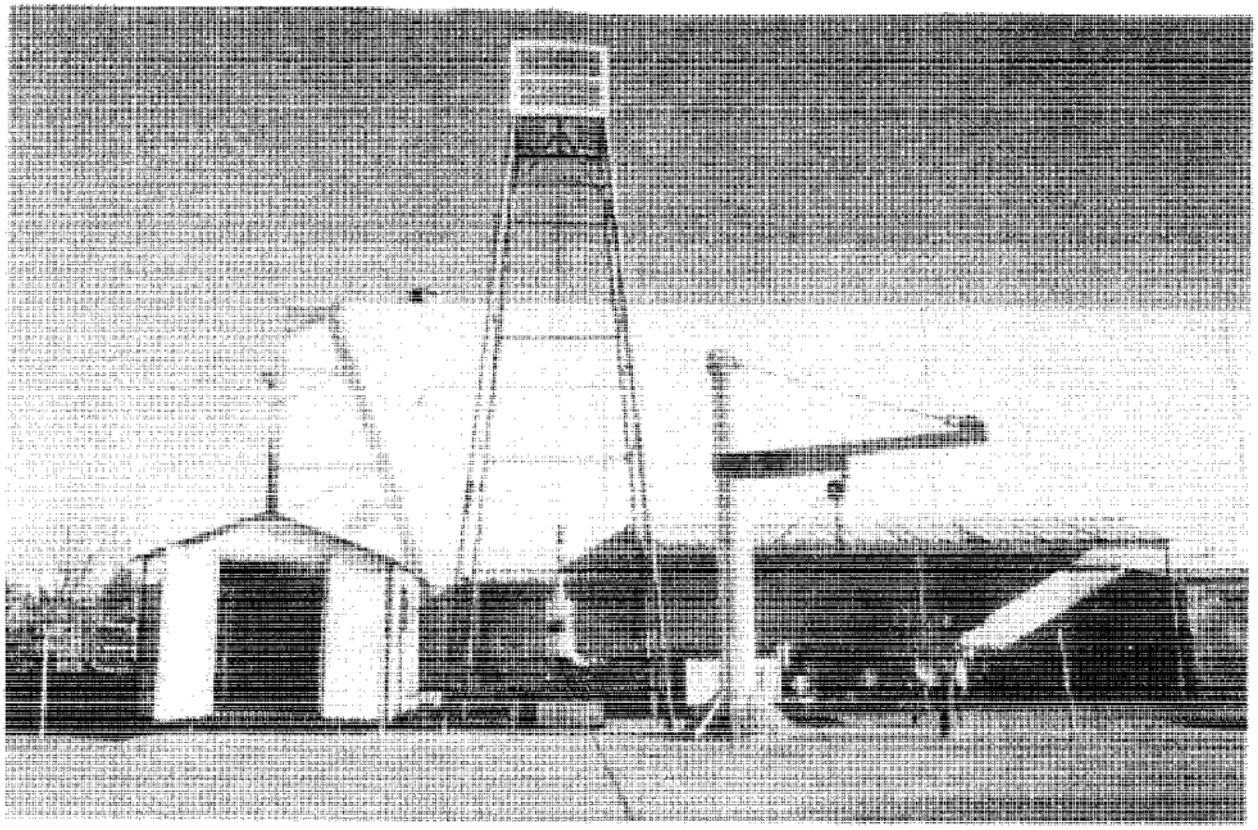
AWM 000658

MEGCO Ex. 1007

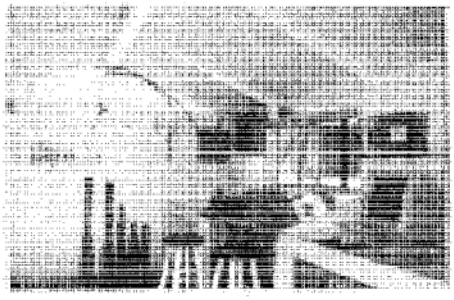
Alpha Oil Tools Test Well



Alpha Oil Tools can test products under conditions more severe than the tools were designed to withstand in this underground high pressure, high temperature test well. A powerful data logging system allows us to accurately track and record test data to evaluate elastomers and tool integrity in downhole well conditions which the tools were intended to be used. Complete setting and retrieving procedures can also be studied in operating conditions. Research and development are integral parts of Alpha Oil Tools and the constant testing and re-testing allows us to maintain the superior quality of our products.

Engineering data:

- 3-separate pressure and temperature lines individually monitored.
- Stainless steel autoclave pressure lines and valves rated to 30,000 psi.
- Temperature control system capable of 500 plus deg f.
- Thermocouplings measure actual fluid temperature.
- Logging system capable of reading test data 6 to 240 times per minute.
- Digital indicators display pressures and temperatures.
- Windows 95 software program records test data on computer.
- Plotted color graphs easily distinguish pressures and temperatures.
- 24 inch diameter bore x 20 foot deep
- 30 foot tall derrick with 2 ton capacity.
- 10 foot tall boom with 2 ton capacity.
- Gardner-Denver air hoist with 2 ton capacity.
- 7.068 square inch hydraulic ram capable of 65,000# push or pull.
- 10.80 square inch hydraulic ram capable of 100,000# push or pull.
- 2-Haskel air driven liquid pumps: high volume-low pressure and low volume-high pressure.



Test well logging system

AWM 000659

MEGCO Ex. 1007

1.250
+.340
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