



Document #	TU-HM-BP
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GUIDELINES FOR RUNNING H-M BRIDGE PLUG

***DISCLAIMER*:** These are **guidelines only** recommended by Alpha Oil Tools. The service company is responsible for evaluating all job specific variables, such as fluid properties, temperature, total depth, casing grade and friction pressure losses to develop the appropriate procedure for each application. Surface pressure required to achieve a target differential pressure at the tool will vary and must be calculated for each job; it should not be assumed as a fixed value.

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 ensure 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.
3. Do not rest string weight on plug during or after 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 right-hand rotation of tubing string.
3. Use slow starts and stops when moving tubing string - no jerking.

SETTING PROCEDURE H-M PLUG:

1. Run tubing to desired setting point. Use the following parameters to determine optimum setting depth.
 - 1.a. Never set within 3 feet of a casing collar.
 - 1.b. Never set where milling has occurred (ie. "Shoe track").
 - 1.c. Always set in static conditions (no fluid or gas movement).
 - 1.d. Never set in a casing joint that has been perforated.
 - 1.e. Never perforate within 200 feet unless the plug is covered by at least 10 feet of hardened cement. Under no conditions should perforations be made within 50 feet of the plug.
2. Drop ball down tubing string. The ball should be 1-1/4" diameter for HM-P/HM-E. The ball should be 1-3/4" diameter for MagnaBore™. Allow approximately 5 minutes per 1,000 feet for ball to travel in water. More time is needed in mud or viscous fluids.
3. Slowly apply pump pressure to tubing string until 2,000 psi is reached **at the tool**. This pressure will stroke the Hydro-Sleeve down onto slip. The slip will break into segments and make contact with casing.

NOTE: If you lose pressure before reaching 2,000 psi **at the tool**, 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 2,000 psi and proceed to the next step.

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CAUTION: DO NOT EXCEED 2,500 psi at the tool. If it is believed that the slips have not broken with a maximum of 2,500 psi **at the tool**, then POOH and evaluate the condition of the tools and well. **Continued high pressure pumping can render the tool inoperable.**

- Bleed off all pressure** and pull recommended tension above the pipe weight at the tool, to complete setting the plug. See Table 1. Hold tension for at least 5 minutes to complete the set. It is recommended to calculate tubing stretch versus using weight indicator for true pull.
- If experiencing difficulties getting the upper slips to bite into the casing, increase the pressure to 200 psi in the tubing.
- With 200 psi in the tubing, pick up 1,000-2,000lbs to assist in engaging the upper slips with casing I.D.
- Once confirmed upper slips are engaged, then return to Step 4. ***IMPORTANT* - DO NOT EXCEED 200 psi AND 2,000lbs TENSION.** This causes a cumulative tensile load to the shear stud. Premature shearing of the stud can occur if these values are exceeded.

Table 1: Recommended Tension to Set H-M Bridge Plug and MagnaBore™

Plug Size OD	SETTING FORCES	
	Minimum Tension	Maximum Tension
2.750"	9,000 lbs	12,500 lbs
3.120"	20,000 lbs	23,500 lbs
3.500" - 4.750"	22,000 lbs	24,000 lbs
5.340" – 6.090"	30,000 lbs	44,000 lbs
6.960" – 7.710"	35,000 lbs	44,000 lbs
8.690" – 9.500"	35,000 lbs	44,000 lbs
11.560" – 12.000"	35,000 lbs	44,000 lbs
14.250" – 18.000"	40,000 lbs	44,000 lbs

- Once the tool is packed off, apply slack off weight (equivalent to tension applied) to ensure the bottom slips are properly engaged.

RELEASING FROM H-M PLUG:

- The primary tubing release method from the H-M Plug may be achieved by pulling 500 lbs tension at the tool and rotating the work string 9 turns to the right at the tool.
- The secondary tubing release method from the H-M Plug may be achieved by overcoming the tensile value of the shear stud by pulling tension in the work string to values shown in Table 2.

Table 2: Tensile Force to Shear Stud for HM-P Bridge Plugs

Plug Size OD	TENSILE SHEAR FORCES	
	Minimum Tension	Maximum Tension
2.750"	15,500 lbs	22,500 lbs
3.120"	29,500 lbs	34,500 lbs
3.500" - 4.750"	30,000 lbs	40,000 lbs
5.340" – 6.090"	55,000 lbs	60,000 lbs
6.960" – 7.710"	55,000 lbs	60,000 lbs
8.690" – 9.500"	55,000 lbs	60,000 lbs
11.560" – 12.000"	55,000 lbs	60,000 lbs
14.250" – 17.250"	55,000 lbs	60,000 lbs
18.000"	70,000 lbs	80,000 lbs

Table 3: Tensile Force to Shear Stud for MagnaBore™

Plug Size OD	TENSILE SHEAR FORCES*	
	Minimum Tension	Maximum Tension
5.610" – 18.000"	70,000 lbs	80,000 lbs