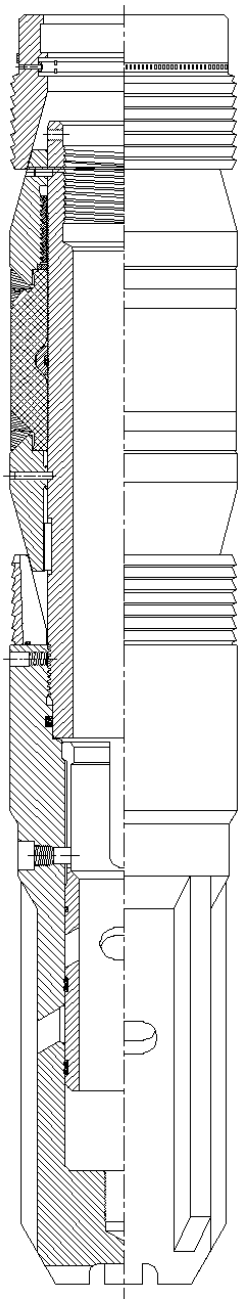
Features

• Large flow area for fluid dumping as in a disposal, or large cement squeeze where large amount of media is needed.
• The bypass ports are aligned for maximum fluid movement with minimum turbulence.
• When the valve is open, the seals are protected from fluid erosion.
•The valve sleeve is pressure balanced to prevent sudden opening from creep.



Operating Instructions

The setting tool is designed for use in varied hole conditions and employs several features to prevent premature setting of the retainer or bridge plug or damage to the tool. It is suggested that the tool be run at a moderate speed while avoiding sudden stops. Note: While running in, care must be taken to prevent right-hand rotation from being transmitted to the setting tool. Under no circumstance must there be allowed more than four turns of the tubing to the right while running in. As a precaution, after every 10 to 15 stands, at least one or more left hand turns should be placed in the work string to assure the control nut is "bumped up". When the desired setting depth has been reached, the tools should be picked up two (2) feet above the desired setting point. This movement is necessary to provide the required tool stroke to release the upper slips and allow the Control Nut to move freely. Rotate the work string to the right sufficiently to transmit 10 turns to the tool. This right-hand rotation will thread the Control Nut off its matching thread on the Mechanical Setting Tool mandrel and release the Control Sleeve from the running in position. Lower the tools back down to the desired setting depth. The Drag Blocks will support the Control Sleeve and Setting Sleeve. The downward motion will push the upper slips from under the Setting Sleeve. The upper slip segments are then forced out against the casing by the leaf springs attached to the inside of each slip segment. When the upper slips are released, the Retaining Sleeve is pulled from over the Dog allowing it to move out and release the Control Latch from the Stinger Sub Body. Refer to the following chart and pull tension over pipe weight at the tool to set the slips and affect packoff.

Tension Requirements		
Tool Size	Min. Tension	Max. Tension
7"	45,000 lb.	50,000 lb.

It is recommended that the maximum tension shown above be pulled when possible. However, to assure sufficient packoff and slip breakage, the minimum tension shown must be pulled. Set down weight equal to the calculated weight required to prevent the slide valve from closing during pumping operations. Do not apply tension after setting weight on retainer other than that required to release setting tool or close valve. Pull a slight strain on work string and pressure the work string to insure that the slide valve is closed.

Contd...

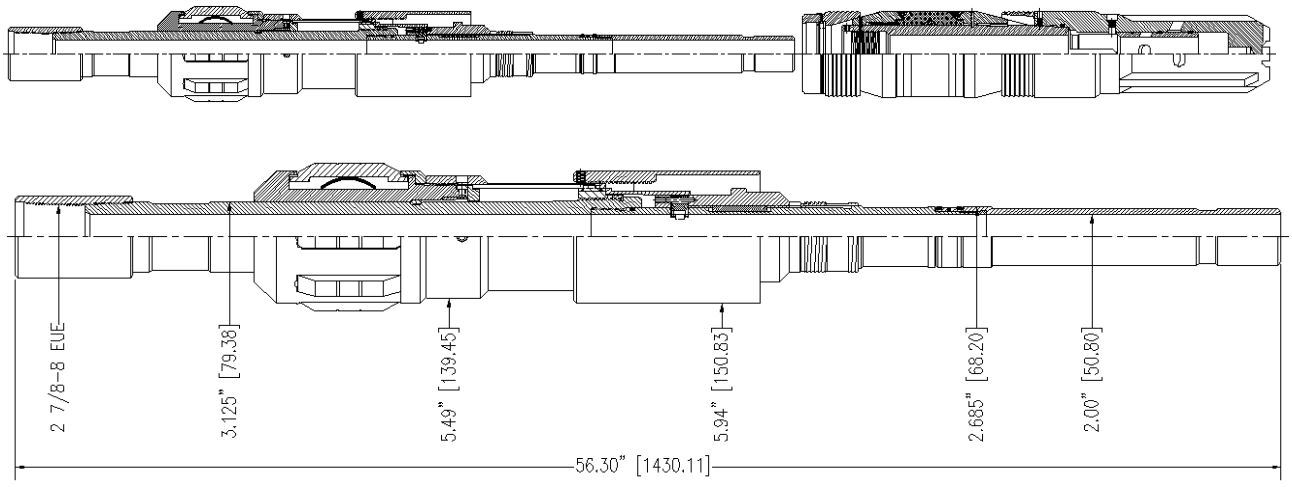
Operating Instructions, continued

SPECIAL NOTE: In wells where paraffin or suspended solids in the well fluids are present, the Dog on the Control Latch may not fully release from the Stinger Sub Body. This is indicated when the Cement Retainer sets properly, as in steps 1 through 5, but the slide valve will not close so that the work string can be pressure tested. In this event the work string should be alternately picked up and slacked off. This movement will assist the Dog to move outward on the inclined edges of the locking groove in the Stinger Sub Body, thus freeing the Sub Body for the required two (2) inches of vertical movement.

The Mechanical Setting tool is released from the Cement Retainer by pulling 500-1000 lbs. tension at the tool and then rotating the work string 10 turns to the right at the tool. This will shear the rotational lock screw and unscrew the Control Latch from the Cement Retainer.

After Releasing from a Cement Retainer

The Mechanical Setting Tool can be reattached to the Cement Retainer by setting down 3,000 to 5,000 lbs. of work string weight and snapped out again by pulling 8,000 to 10,000 lbs. tension at the Cement Retainer. The Stinger Seal will remain in the Cement Retainer until the snap-out retaining force is exceeded. Each time the Mechanical Setting Tool is snapped in and snapped out, the snap-in and snap-out value is reduced until they stabilize at about 2,500 pounds snap-in and 5,000 pounds snap-out. Two (2) inches of upward movement at the Cement Retainer will close the slide valve; two (2) inches of downward movement at the Cement Retainer will open the slide valve.



Hydraulic Forces Acting on High Flow Cement Retainer

Force created by applied press to the casing and tubing act upon the stinger sub and tubing during cementing and pressure testing operations. These forces are variable and are affected by the area of the cement retainer seal bore, casing and tubing pressure changes at the Cement Retainer, tubing size and weight and fluid weight. An increase in casing pressure at the cement retainer tends to lift tubing which can cause the slide valve to close. The force generated by a casing pressure increase is calculated by multiplying the casing pressure increase by outside area of the tubing minus the seal bore area of the tool.

A pressure increase in the tubing exerts a listing force at the top of the string which will reduce the effective hook load. A pressure increase in the tubing at the Cement Retainer will tend to hold the stinger sub in the tool and keep the slide valve open. The net of these two forces is upward and is equal to the increase in tubing pressure multiplied by the area of seal bore in cement retainer. When this force is equal to the tubing weight, any additional pressure will lift the tubing and allow the slide valve to close. Therefore, the minimum setting depth will depend on applied pressure changed in the tubing and casing acting to lift the
available tubing weight.

The amounts of tubing and annulus pressure that can be applied are limited for any size and length of tubing. When total of the forces is equal to the weight of the tubing in fluid, an increase in either tubing or casing pressure will raise the tubing and close the slide valve.

Retainer Specifications

Casing		Retainer OD	Setting Range		Seal Bore	Mechanical Setting Equipment
OD	Wt (T&C)	17-20	Min	Max		Part Number
7”	17-23#	6.0	6.366	6.538	2.688	062-0600-105

However the cementing pressure may be increased if the casing pressure is decreased and vice versa. The snap latch feature of the stinger sub has no effect on either opening or closing the side valve. The stinger sub will remain in the cement retainer as long as the snap-out force is not exceeded. If exccess tension is pulled on tubing while pressure testing the snap-out force may be overcome and stiner sub will be pumped out.