

# DBH-68-E Squeeze Tool

DBH-68-E Operators Manual



## MODEL DBH-68-E

Since 1995, the Mustang DBH-68-E hydraulic squeeze tool has been available for PE pipe up to 8". This design uses two 3 3/4" bore double-acting cylinders producing 123,000 lbs. combined squeeze-off force. Hydraulic cylinder locking is accomplished with a Mustang locking valve-manifold assembly identified as a red rectangular manifold block with the quick disconnects and pressure gauge as an assembly. The cylinders are identifiable having a black cylinder barrel and red head and rod caps. The cylinders are coupled to the upper jaw using a unique rod clevis connector links. The lower jaw is a quad bar design using heat-treated alloy tubing for strength.

The tool has cylinder clevis pin mounts on both ends permitting a hinged or floating action of the cylinder and upper jaw. Pipe out-of-roundness or non-centered positioning with the tool is compensated for by the floating feature of the upper jaw. On DBH-68-E series tools, the cylinders (two) are positioned at the maximum squeeze-off resistant corner folds of the compressed PE pipe.

## Hydraulic System

The heart of any hydraulic system is the hand pump. The DBH model Mustang tools use a two piston pump including an oil reservoir, 4-way directional control valve, sensitive pressure-relief valve factory set at 3750 psig. maximum and squeeze-off (DOWN) cycle pressure gauge. The oil reservoir is filled with ISO 32 SUS 159 viscosity hydraulic oil.



Model 25 Hyd. Hand Pump

## Hydraulic System-Continued

Mustang hand pumps have an automatic venting and reservoir pressure relief cap that eliminates the need of a loose plug for breathing. On the Model 25 pump, the red fill knob serves as a means to check the oil level and make add small amounts. To fill the reservoir, remove the plug located at the rear of the reservoir just above the hex nut. A 1/2 Allen wrench will be required. Do not loosen the 7/8" hex nut at the center of the cap. This nut is attached to the stay bolt securing the reservoir to the pump body.

Two non-conductive 5000 psig working pressure hoses and hi-flow pressurized quick disconnect couplings complete the circuit between the squeeze tool and pump.

The cylinders are double acting and require pumping for squeeze-off (DOWN) and retraction (UP). A cylinder locking valve holds the cylinders in the squeeze-off position and will not release until hydraulic pressure is applied in the retract (UP) mode.

### OPERATION

#### Check out pump-hose assembly

Inspect the 20 ft. hose assembly for surface damage such as cuts, crimps and evidence of abuse. Both hoses are rated for 5,000 psig working pressure and are non-conductive, identified by orange covering.

Operation of the pump/hose assembly can be checked before attempting a squeeze-off by pressurizing as follows:

1. Couple the hoses together and pump the large and small pump plungers several strokes to purge air from the system.
2. Un-couple the hoses and screw the dust cap and plug onto their respective coupling. **DO NOT** pressurize the couplings without covering the disconnects openings. If the check ball became dislodged from the coupling body, the results could be fatal. Always direct the hose ends away from personnel.
3. Place the 4-way directional control valve in the "DOWN" position and pump until the gauge needle is in the green arc up to 3750 psig. Maximum. A constant, firm force should be required on the pump handle throughout pressurization. If a spongy or intermittent pumping force is experienced, check oil level.

#### Check out Pump & Tool

Inspect the squeeze tool for damage to the locking valve manifold assembly, frame structure and confirm that the lower jaw has gap stops for the PE pipe to be squeezed-off. Clean both quick disconnects and inspect the manifold pressure gauge for damage. Proceed with the check-out as follows:

1. Couple the hoses to the squeeze tool manifold block making sure the threaded sleeves are securely coupled and have been screwed-on up to the shoulder. Failure to properly couple the quick disconnects will result in tool operation failure due to blocked oil flow.



## Check out pump & tool– Continued

2. **REMOVE THE LOWER JAW:** Do Not Pressurize With Lower and Upper Jaws In Contact With The Gap Stops. Failure to remove the lower jaw could result in a bent upper jaw and possible damage to gap stop.
3. With the 4-way directional control valve in the “**DOWN**” position, pump the tool through it’s complete stroke. Pressurize until the gauge needle is in the green arc (3000 to 3750 psig maximum). Release the pressure by moving the 4-way valve handle to “**UP**” and observe the pressure gauge on the squeeze tool manifold. It should read the original pressure while the pump gauge shows zero. Continue pumping in the “**UP**” or retract mode until the locking valve opens and the upper jaw is completely retracted. Any air in the system will be purged upon completion of both cycles.
4. A unique feature of the Mustang Hydraulic Squeeze Tool is the pilot operated cylinder locking valve. This locking check valve prevents any loss of hydraulic cylinder pressure on the “**DOWN**” cycle due to a ruptured hose, accidental opening of the 4-way valve or any loss of pressure during the squeeze-off.  
After a squeeze-off has been accomplished, the cylinders remain locked until a retraction or “**UP**” pressure of 1000-1200 psig. opens the check valve. A definite release or opening of the valve will be observed and normal pumping will retract the upper jaw to the full open position.
5. The squeeze tool and pump assemblies are ready for the squeeze-off procedure.

### Squeeze-Off Procedure

1. Before placing the squeeze tool on the PE pipe, we recommend a static grounding rod to be used prior to the tool contacting the pipe surface. *Observe your company policy concerning static electric discharge at this phase of the procedure.*
2. With the upper jaw fully retracted and the hoses properly connected to the tool, center and square the tool on the pipe and insert the lower jaw under the pipe. Be sure the proper gap stops are between the upper and lower jaws. The lower jaw cross handle should be contacting the frame thus assuring correct positioning of the stops in relation to the upper jaw.
3. Use the hi-volume (Orange– Figure 1) pump piston until the pressure gauge reads at the top of the orange arc (Fig. 2) (approx. 1000 psi). Move the pump handle to the hi-pressure (green) pump plunger and pump until the upper jaw has compressed the pipe about 10-15%. The upper and lower jaws should be parallel within 3/8” to 1/2” of slope. If the parallelism is beyond this range, retract the jaw and reposition the tool to compensate and re-squeeze. All pipe has a certain amount of ovality and variation of wall thickness. The hydraulic pressure senses these non-conformities and takes the path of least resistance.



Figure 1



Figure 2



## Squeeze-Off Procedure Continued

4. Continue pumping until obtaining a satisfactory squeeze-off or the relief pressure of 3750 psig. maximum has been obtained. Squeeze-off usually is accomplished before the upper jaw contacts the gap stops. Allow one minute per pipe diameter-inch for cold flow to stabilize. Double this time factor for below freezing temperatures. Usually a pressure drop will accompany the cold flow process. Re-pump to obtain satisfactory squeeze-off or 3750 psig maximum and maintain.
5. Upon completion of the squeeze-off, the saddle clamps should be installed. The clamps are two piece, the bottom part has two threaded hi-strength bolts and a "window" permitting access for the gap stops on the under side of the lower jaw. Insert the bottom half horizontally under the lower jaw and lift up to vertical once in place. The bottom halves should be positioned near the lower jaw support blocks thus not interfering with the pipe. Place the clamp upper half over the bolts. Each bolt has a thrust bearing-washer and 1 1/8" hex nut assembly.
6. The thrust-bearing surface with the retainer ring showing is the top area that is acted upon by the shoulder relief of the hex nut. Torque the four bolts evenly and with a circular pattern.
7. The saddle clamp bolts should be tightened until a drop in hydraulic pressure is observed on the gauge. It is possible to exert a greater squeeze-off force with the clamps that can be achieved hydraulically. A pressure drop of 150-200 psig. indicates the clamps have taken over!! Remove the clamps before releasing the hydraulic pressure.

## Supplementary Operations

PE pipe squeeze-off procedures vary considerably from user to user. Our recommended procedure is a guideline that is often modified by the user; the bottom line is follow your company procedure and maintain safety at all times. Several supplemental operation hints are listed as an optional reference.

1. It is not recommended using one hydraulic pump to operate two squeeze tools although this practice exists either by choice or chance. The reasons a single pump is not recommended include:
  - \* The volume of oil to squeeze pipe using two squeeze tools (dual feed gas system) is often greater than the oil available in a single pump reservoir. An incomplete squeeze-off using the second tool would result due to oil depletion.
  - \* Removing a pump from a squeeze tool basically makes the tool inoperative.
  - \* Two pumps with two squeeze tools is good insurance that you have a back-up if a pump failure occurs from damage or accident.
2. If it is necessary to use one pump on two tools the hoses should not be removed until the saddle clamps have been installed and torqued. Move the pump 4-way directional control valve to the "UP" position releasing pressure in the hose. The cylinder locking valve and saddle clamps will maintain the squeeze-off. Remove both hoses and attach the dust cap and plug to the tool quick disconnects.

Couple the pump-hose assembly to the second tool and determine the oil level visually. If the oil level is below the reservoir stay bolt centerline a good chance exist that insufficient oil will be available to Complete the second squeeze-off. Any oil added will be lost upon retraction of both tools.

## **Supplementary Operations-Continued**

Pumps having the automatic venting and reservoir pressure relief cap will exhaust any excess returning oil. Either system will result in an oil spill that must be dealt with in accordance with ecological law.

3. An optional squeeze release control valve can be provided that permits slow, controlled release of the squeeze. The metering valve can be installed on the retract circuit at the tool or on the pump.

Operation is the same at either location. Several steps to follow include:

- \* Open the release control valve prior to making the squeeze-off. Upon completing the squeeze-off, close the release control valve completely.
- \* On squeeze release mode, move the 4-way directional control valve to "UP" and pump several strokes to open the cylinder locking valve. The saddle clamps should be removed at this point.
- \* Slowly open the release control valve and observe the rate of retraction. A release rate of 1/2" for the first minute is often used. Once the retraction rate has stabilized, open the valve and pump the upper jaw to the full retract position.

4. If controlled purging of the pipe is desired, this can be accomplished effectively as follows:

- \* Move the 4-way directional control valve to the "UP" or retract position. The saddle clamps should be left in position, torqued for complete squeeze-off.
- \* Pump-retract the upper jaw until the cylinder locking valve releases-about 6 or 8 strokes using the low-volume, hi-pressure pump plunger
- \* Completely remove the saddle clamps before retracting the upper jaw to the full open position.

## **ABOVE ALL, SAFETY FIRST**

### **Disclaimer:**

Due to the hazard potential of working on pipe under pressure the operator should be certified in company and industry training procedures. The end user of any squeeze tool is responsible for the manner in which the tool is used. This includes but not limited to knowledge of the pipe being squeezed, static electric discharge and maintenance of the equipment.

Negligence or disregard of safety and training can lead to pipe failure, property damage, personal injury or death.

Any concerns or questions regarding Mustang Squeeze Tools should be directed to your local distributor or call Mustang at (775) 883-0732

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