



Multihead Hydraulic Swaging Unit (MHSU) Setup and Operating Instructions



Up to 1 in./25 mm MHSU with base



1 in./25 mm and over MHSU with base
(also for use with 5/8 and 3/4 in.
SAF 2507™ super duplex fittings)

Definitions

Statements and symbols are used in this document to identify safety concerns. Read the definitions below before setting up and operating the MHSU.

Caution: Statements that identify conditions or practices that could result in damage to the equipment or other property.



CAUTION!

Indicates cautionary information.

Warning: Statements that identify conditions or practices that could result in personal injury or loss of life.



WARNING!

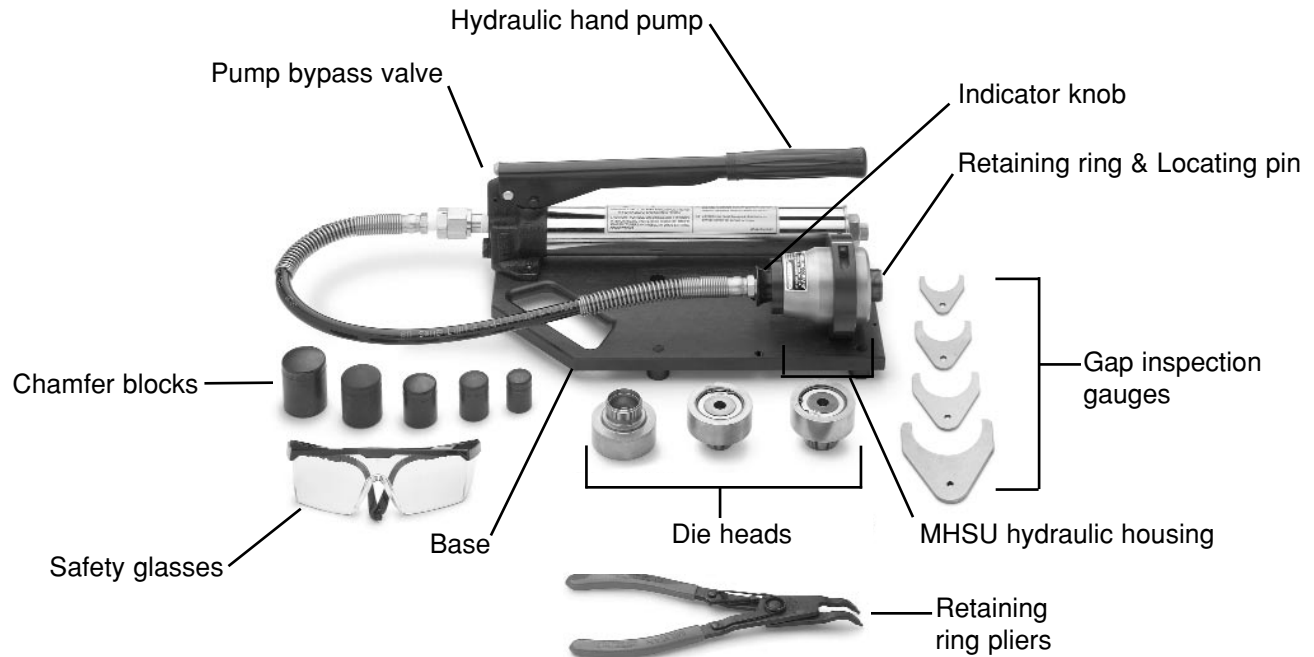
EYE PROTECTION

Eye protection must be worn while operating or working near the MHSU.

READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE USING THE MHSU.



Components (Unit with Body Die Heads and Base)



Safety Precautions



Use safety glasses when setting up and operating the MHSU.



Do not tamper with or alter any components of the MHSU.



Return the MHSU to your independent Swagelok sales and service representative if any signs of hydraulic fluid leakage or malfunction occur.



Pumping after the indicator knob releases may cause over-swaging, which causes the tube to stick and may affect gaugeability.

Setup

1. Remove the retaining ring from the hydraulic housing of the MHSU body by using the retaining ring pliers.



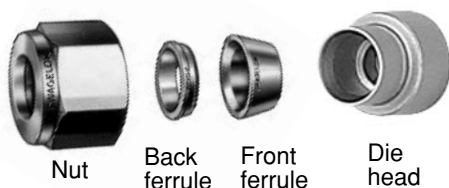
Use caution when releasing the retaining ring from the pliers.

2. Remove the previously installed die head from the hydraulic housing.
3. Select the appropriate size die head.
4. Check the die head piston for movement by depressing the piston before inserting the die head into the hydraulic housing.
5. Insert the selected die head into the hydraulic housing and align the notch on the die head with the corresponding locating pin on the hydraulic housing.
6. Reinstall the retaining ring into the hydraulic housing using the retaining ring pliers.
7. The MHSU is now ready for operation.

8. Refer to the **Recommended Minimum Wall Thickness of Tubing for use with the MHSU** table in the **Troubleshooting** section for information on recommended tubing size.

Operation

1. Open the pump bypass valve by turning the handle counterclockwise at least 1/2 to 1 turn. It may be necessary to first close the valve completely by turning the handle clockwise until it stops.
2. Install the Swagelok nut and ferrules onto the die head in the order and orientation shown until finger-tight and all die threads are covered by the nut.



3. Push the indicator knob forward until it snaps into place. The knob shoulder should be flush with the hydraulic housing.

Note: If the indicator knob does not snap into place or is not flush with the housing the piston may not be fully retracted. This problem may be caused by the bypass valve being closed or by the piston binding. Do not proceed until unit is functioning properly. Contact your independent Swagelok sales and service representative for further assistance.

4. Prepare tube ends by deburring or using the Swagelok chamfer block (as follows and as shown on the instruction decal in the MHSU case). The chamfer block procedure should be followed when using the up to and including one inch tubing on the MHSU.
 - A. Cut tubing squarely. Use of a Swagelok tube saw guide is recommended.
 - B. For up to and including one inch MHSU, use the chamfer blocks provided. Insert cut end of tubing in to the chamfer block and while firmly holding the tubing, strike the chamfer block with a hammer to coin the end (as shown on the instruction decal).
 - C. If a file is used on the OD, make a 10° x 0.06 in. (1.5 mm) chamfer.
 - D. Remove any burrs. Use of Swagelok tube deburring tools is recommended.

NOTE: Deburring is important for proper fitting function as well as for clean, leak-free systems. If burrs are not removed from the OD of the tube, it could prevent the tube from being fully inserted through the nut, ferrules or against the shoulder of the fitting body. ID burrs could also break off

and cause damage in other parts of the system by lodging in small holes or vents, or by scratching valve seats or soft seals.

5. Insert tubing into the nut until it rests firmly against the piston shoulder. Refer to the **Recommended Minimum Wall Thickness of Tubing for Use with the MHSU** table on page 4. Use of tubing below the recommended minimum wall may result in the tube sticking in the die head.
6. Close the pump bypass valve to the finger-tight position by rotating valve handle clockwise until it stops.
7. While holding the tubing against the piston shoulder, increase the hydraulic pressure by using the hand pump until the indicator knob is released.

⚠ Do not keep pumping after the indicator knob releases. Stop pumping immediately after the indicator knob pops.

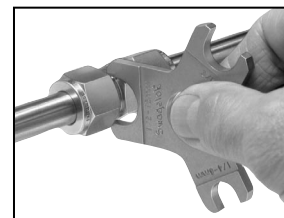
8. Open the pump bypass valve by turning the handle 1/2 to 1 turn counterclockwise.
9. Unthread the Swagelok nut, and remove the preswaged assembly from the housing.
10. Inspect the tube end for a radial indentation bottom marking (see decal in MHSU case). This indentation indicates the tubing was properly bottomed in the MHSU. If there is not a visible indentation, the preswaged assembly should not be used.
11. Install the preswaged assembly into the fitting body. Turn the nut onto the fitting body until it is finger-tight. Hold the fitting body stable and tighten the nut 1/2 turn with a wrench.

⚠ Use the Swagelok MHSU gap inspection gauge to assure the installer or inspector that the fitting has been sufficiently tightened.

Gauging Instructions

Position the Swagelok MHSU gap inspection gauge adjacent to the gap between the nut and body hex.

- If the gauge **will not** enter the gap, the **fitting is sufficiently tightened.**
- If the gauge **will** enter the gap, **additional tightening is required.**



Troubleshooting

1. If tubing is difficult to remove from the MHSU after preswaging, rock the tubing back and forth to remove it. Refer to the **Recommended Minimum Wall Thickness** table—swaging tubing below the recommended minimum wall may result in tube sticking.

⚠ Do not rotate the tubing.

2. If the indicator knob does not release or oil is leaking, return the unit to your independent Swagelok sales and service representative.
3. If the die head piston is binding, contact your independent Swagelok sales and service representative.
4. If the Swagelok nut does not cover all of the die head threads, verify that the bypass valve is open and the piston is not binding in the body die.
5. If the pump fails to build pressure, check the oil level in the pump by removing the dipstick and checking for a proper amount of oil. Too much or too little oil will prevent the pump from operating properly.
6. The pump manufacturer specifies using 10W, AW-46 grade hydraulic oil or equivalent with an antifoaming additive.

Recommended Minimum Wall Thickness of Tubing for use with the MHSU

Fractional Tubing		
MHSU Size in.	Steel in.	Stainless Steel in.
1/2	0.049	0.065
5/8	0.065	
3/4		
7/8		
1		0.083
1 1/4	0.083	0.095
1 1/2		
2	0.095	0.109

Metric Tubing		
MHSU Size mm	Steel mm	Stainless Steel mm
12	1.5	1.5
14		
15		1.8
16		
18	2.0	2.0
20		
22		2.2
25		
28	2.2	2.2
30		
32		2.5
38		
50		

SAF 2507 Super Duplex Fittings
1/4 through 1/2 in. fittings—not approved for use with the MHSU
5/8 and 3/4 in. fittings—use 1 in./25 mm and over MHSU with appropriate 5/8 and 3/4 in. super duplex dies

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The Swagelok Limited Lifetime Warranty

Swagelok hereby warrants to the purchaser of this Product that the nonelectrical components of the Product shall be free from defects in material and workmanship for the life of the Product. All electrical components installed in or on the Product are warranted to be free from defects in material and workmanship for twelve months from the date of purchase. Manufacturer shall be liable only if the Product is used as specified in the current catalogs and written instructions.

The purchaser's remedies shall be limited to replacement and installation of any parts that fail through a defect in material or workmanship.

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