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Form No. 102830

Operating Instructions for:

100882 110139  
100883 110140  
110123

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**FLUID ADVANCE  
HYDRAULIC WORK SUPPORT  
4,000 Lbs. Load Capacity at 5,000 PSI**

**SAFETY PRECAUTIONS**

 **WARNING**

To help avoid personal injury:

- The buyer of this product must be responsible for safety. This product is only a component of a larger system that is designed, purchased, or manufactured by the buyer. The buyer is responsible for the design of structurally adequate hydraulic fluid passages and connections.
- All hardware must be tightened using the proper tools and procedures before applying hydraulic pressure.
- Do not exceed the rated capacity of the work support.

**GENERAL INFORMATION**

Hytec's threaded body work supports are available in three versions: spring advance, air advanced, and fluid advanced. All feature fully corrosion resistant construction. This instruction sheet will refer only to the fluid advanced version.

The work support operates through the use of a spring loaded plunger which extends to contact the workpiece. To support any externally applied loads, the sleeve surrounding the plunger grips the plunger and holds it, regardless of where it is in its stroke.

This fluid advanced work support allows the plunger to be retracted out of the way during workpiece load/unload operations. With no hydraulic pressure applied, a spring retracts the plunger into the work support body. The work support provides its own internal sequencing of a piston which raises the plunger until it contacts the workpiece. A spring between the piston and the plunger limits the workpiece contact force. The full force generated by this piston cannot be transmitted to the plunger.

As pressure builds, the automatic sequencing action causes the sleeve to grip the plunger and provide the locking action.

Work supports must be vented to the atmosphere. Two styles are available; one has a filtered button, and the other is vented from the bottom of the work support. Venting must provide clean, dry air for proper operation.

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Sheet No. 1 of 3

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Rev. 5 Date: 19 Jan. 2001

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## TYPICAL APPLICATION

In a typical application, the workpiece would be loaded into the fixture while the work support is retracted. Hydraulic pressure would then be applied to some or all of the positioning cylinders and clamps in the system. A separate sequence valve would then open to actuate the work support. The plunger would extend until it contacted the workpiece and then, automatically lock into place. After locking, the support will resist the applied force from the cutting tool. See Figure 1.

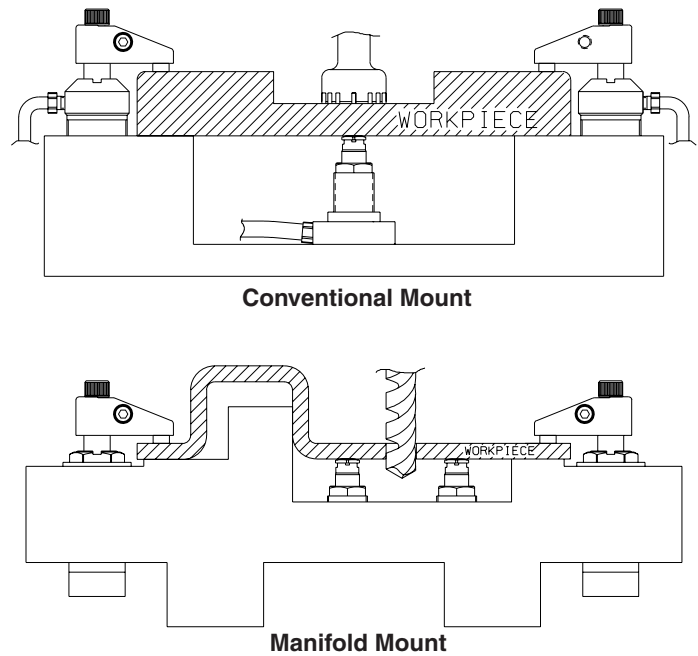


Figure 1

## ELASTIC DEFLECTION

Extremely close manufacturing tolerances hold the plunger perpendicular to the workpiece and eliminate inaccuracies due to plunger movement during lock-up. After lock-up, the plunger is absolutely rigid and limits elastic deflection to 0.000075" per 100 lbs. of load. See Figure 2.

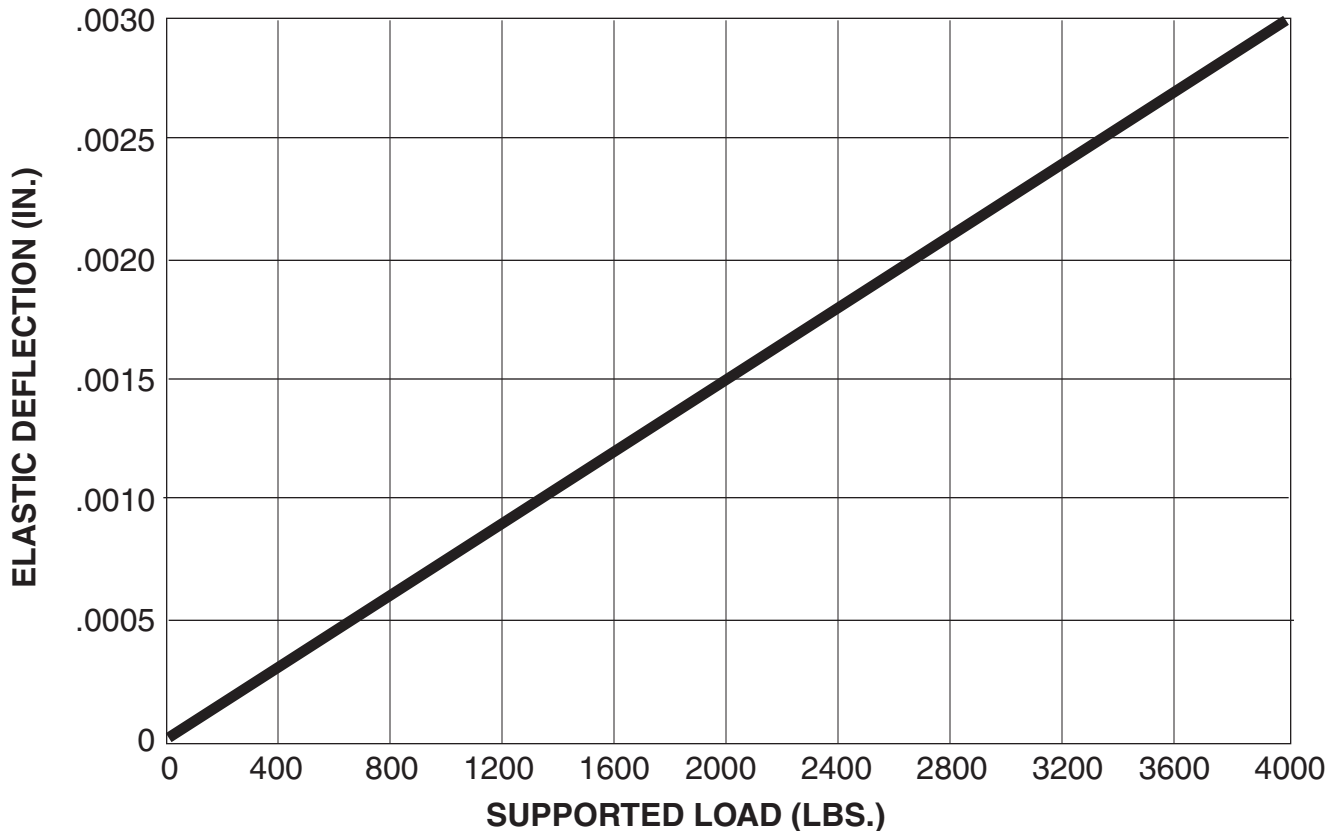


Figure 2

### MOUNTING THE WORK SUPPORT

This fluid advanced, 4,000 pound capacity work support is available in three different styles. Each style utilizes the same work support but provides for differing mounting configurations.

**#110139 & #110140 Installation Procedure**

Parts must be clean and free of any contamination. When installing the work support, first locate the plunger assembly into the base/fixture with spring pins and o-rings in the proper cavities. Then thread body into base and torque to 380/400 ft. lbs.

**IMPORTANT: Failure to follow this installation procedure may result in damage to the work support.**

**Conventional Mounting**

The 100883 work support, supplied with a mounting base, is designed for conventional mounting with fittings and tubing. Refer to Figure 3A for mounting and bolt pattern information. If the work support is removed from its base and must be reinstated, torque the assembly to 380/400 ft. lbs. for maximum cycle life.

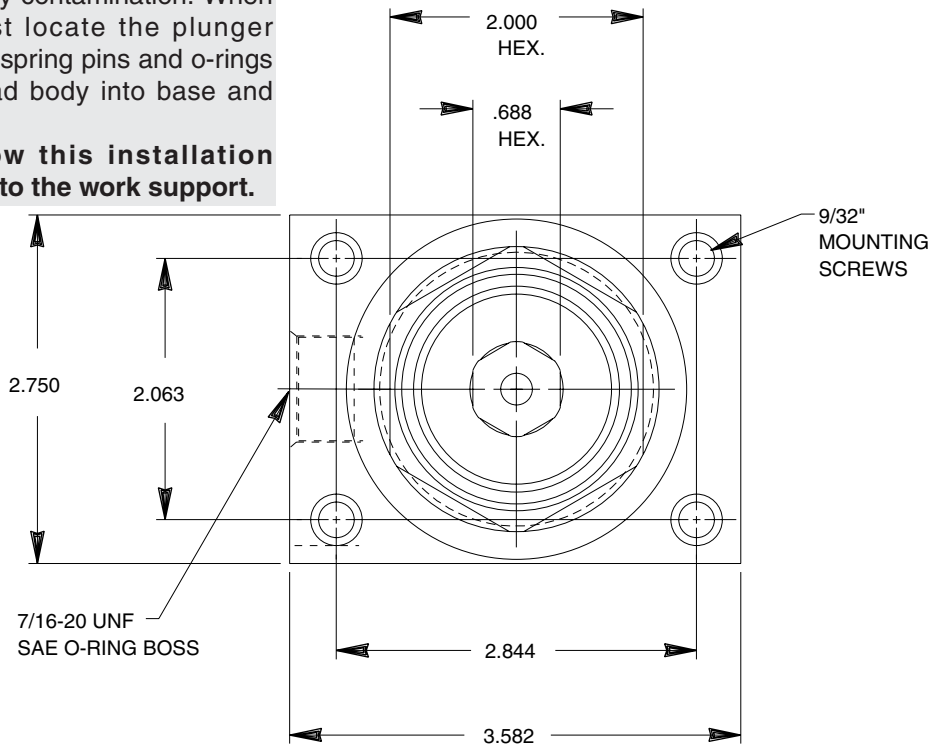


Figure 3

**Manifold Mounting**

The 110123 work support is provided with a mounting base that contains an o-ring face seal for manifold mounting on a flat surface. Refer to Figures 3B and 3C for mounting and bolt pattern information. Refer to Figure 3A for overall dimensions. If the work support is removed from its base and must be reinstated, torque the assembly to 380/400 ft. lbs. for maximum cycle life.

**WARNING:**  
 The buyer is responsible for the design of structurally adequate hydraulic fluid passages and connections. All mechanical joints must be designed with proper safety requirements.

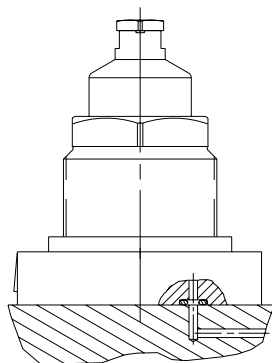
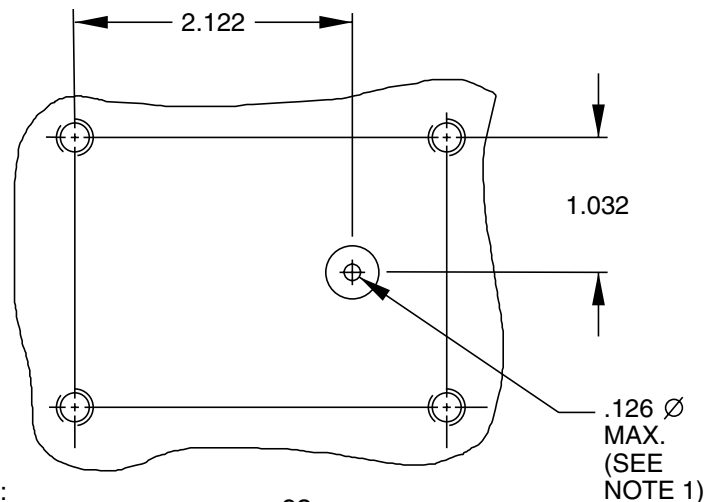


Figure 3B



NOTE:  
 1. SURFACE FINISH TO BE  $63\sqrt{\text{ }}$ . CONCENTRIC TOOL MARKS ONLY. .483  $\varnothing$  MIN. CENTERED ON .126  $\varnothing$  MAX. HOLE.

Figure 3C

Note: Shaded areas reflect last revision(s) made to this form.



### PLUNGER CONTACT FORCE

The plunger contacts the workpiece with only spring pressure. Hydraulic operating pressure does not affect contact force. See Figure 6 at right for contact forces.

FLUID ADVANCE WORK SUPPORTS		
Catalog No.	Approximate Forces Required to Depress Plunger (Lbs.)	
	Fully Extended	Fully Depressed
100882 100883 110123 110139 110140	4	8

Figure 6

### MAXIMUM FLOW RATE

Maximum Flow Rate = 10 cubic inches per minute.

**IMPORTANT:** Hydraulic oil flow rates in excess of the work supports rating can cause malfunction. The sleeve may tend to grip the plunger before the plunger contacts the workpiece. (If the plunger is not in contact with the part, it cannot support it!)

In circuits where the flow will exceed the rating, a metering valve (Hytec No. 216437) can be used to control the inlet flow. See Figure 7. Order this metering valve separately. This metering valve installs directly into the 100883 work support's inlet port. It can also be remotely mounted by the fixture builder to control flow to the work support.

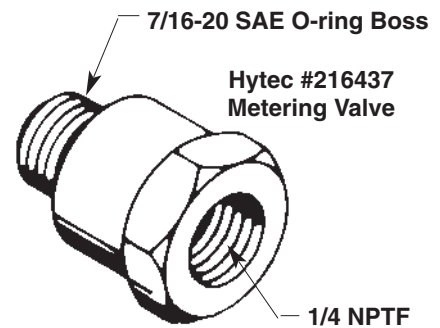


Figure 7

### MINIMUM OPERATING PRESSURE

While the sleeve begins to grip the plunger at lower pressures, a 1000 PSI minimum operating pressure is recommended to insure consistent, repeatable operation. See Figure 8 at right for performance values.

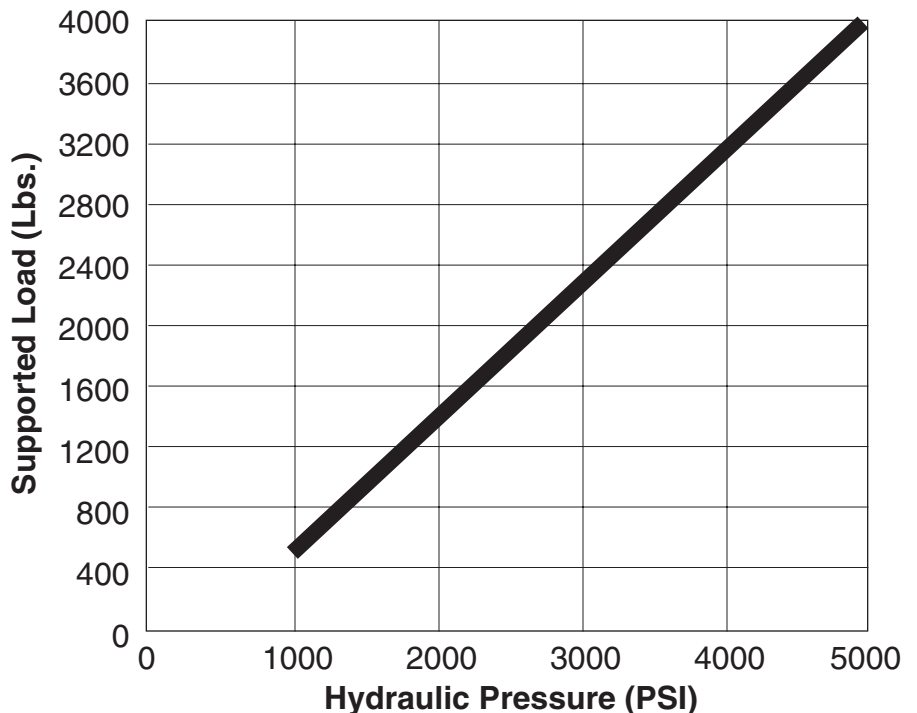


Figure 8