

L2108 Rev. A 12/99

1.0 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is **not** covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY FIRST

2.0 SAFETY ISSUES



Read all instructions, warnings, and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. Enerpac cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact Enerpac when in doubt as to the safety precautions and operations. If you have never been trained on high-pressure hydraulic safety, consult your distribution or service center for a free Enerpac Hydraulic safety course.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury.

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



WARNING: Wear proper personal protective gear when operating hydraulic equipment.



WARNING: Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be blocked mechanically.



WARNING: USE ONLY RIGID PIECES TO HOLD LOADS. Carefully select steel or wood blocks that are capable of supporting the load. Never use a hydraulic cylinder as a shim or spacer in any lifting or pressing application.



DANGER: To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



WARNING: Do not exceed equipment ratings. Never attempt to lift a load weighing more than the capacity of the cylinder. Overloading causes

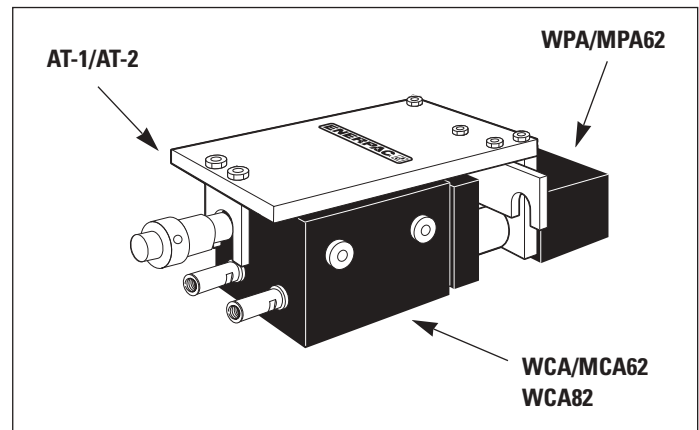


Figure 1

equipment failure and possible personal injury. The cylinders are designed for a max. pressure of 350 bar. Do not connect a jack or cylinder to a pump with a higher pressure rating.



Never set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury.



WARNING: The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system.



CAUTION: Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.



Do not drop heavy objects on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.



IMPORTANT: Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or other means of safe transport.



CAUTION: Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance **do not** expose equipment to temperatures of 65°C [150°F] or higher. Protect hoses and cylinders from weld spatter.



DANGER: Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.



WARNING: Only use hydraulic cylinders in a coupled system. Never use a cylinder with unconnected couplers. If the cylinder becomes extremely overloaded, components can fail catastrophically causing severe personal injury.



WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.

Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.



Avoid situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinders and plungers. In addition, the load may slip or fall, causing potentially dangerous results.



Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.



IMPORTANT: Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Authorized ENERPAC Service Center in your area. To protect your warranty, use only ENERPAC oil.



WARNING: Immediately replace worn or damaged parts by genuine ENERPAC parts. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.



WARNING: Couple and uncouple only when couplers are not pressurized or damage to the automatic coupler will occur.



WARNING: Make sure the line to the advance port is devoid of pressure before pressurizing the lines for workholding functions on the pallet.



WARNING: Keep hands away from moving coupler parts.



CAUTION: Keep connection area clean to avoid entrance of contaminants into the system. Air blowoff fittings available upon request.



WARNING: Observe maximum flow rates for advancing the coupler head. The standard stroke units should not couple in less than 1 second. The long stroke WCA82 should not couple in less than 2 seconds when using the full stroke.

3.0 INSTALLATION

3.1 Mounting with single pallet receiver

1. Remove protection plate "G" (see Figure 2).
2. Mount base station on base unit using ASTM class A-564 (12.9 quality) bolts. Torque bolts to 21 ft-lbs. (28 Nm).
3. Make sure base station is completely retracted.
4. Position pallet receivers and pallet stations so that coupler plate and pallet receiver are at a distance of 1.81 in. (46 mm) for WCA/MCA62 and WCA/MCA64 and 3.70 in. (mm) for WCA82. Secure hand tight with ASTM class A-564 (12.9 quality) bolts.
5. Align pallet receiver and base station.

Using Alignment Tool (Recommended)

- a) Align base station and pallet receiver. Lock pallet at loading station into position.
- b) Place alignment tool on top of base station. Center the tool over the extended plunger (H) at the rear of the base station and over one of the two extended guiding pins at the front of the station. See Figure 3.

	Model No.	Base Stations			Pallet Receivers	
		WCA/MCA62	WCA/MCA64	WCA82	WPA/MPA62	WPA/MPA64
General	Total Weight	15.4 (7,) kg)	27.56 lb. (12,5 kg)	28.0 lb. (12,7 kg)	5.5 lb. (2,5 kg)	7.7 lb. (3,5 kg)
	Temp. Range	41° - 140° F (*5° - 60° C)			41° - 140° F (*5° - 60° C)	
	Viscosity	150 - 65 S.U.S. (15 - 250 CST)			150 - 65 S.U.S. (15 - 250 CST)	
	Max. Misalignment	±0.02 in. (±0,5 mm)			±0.02 in. (±0,5 mm)	
Coupler Element	Max. Flow	4.49 GPM (17,0 l/min)			4.49 GPM (17, 1/min)	
	Max. Pressure	5000 psi (350 bar)			5000 psi (700 bar)	
	Waste Oil	0.61 in ³ (10,00 cm ³) per 10,000 stroke/element			0.61 in ³ (10,00 cm ³) per 10,000 stroke/element	
Actuator	Min. Pressure	580 psi (40,0 bar)			N/A	
	Max. Pressure	1000 psi (70 bar) advance			N/A	
	Max. Flow	30 in ³ /M (.5 L/min)		60 in ³ /min (1 L/min)	N/A	
	Max. Stroke	1.38 in. (35,0 mm)		4.50 in. (114,3 mm)	N/A	
	Effective Area	0.47 in ² (3,0 cm ²)			N/A	

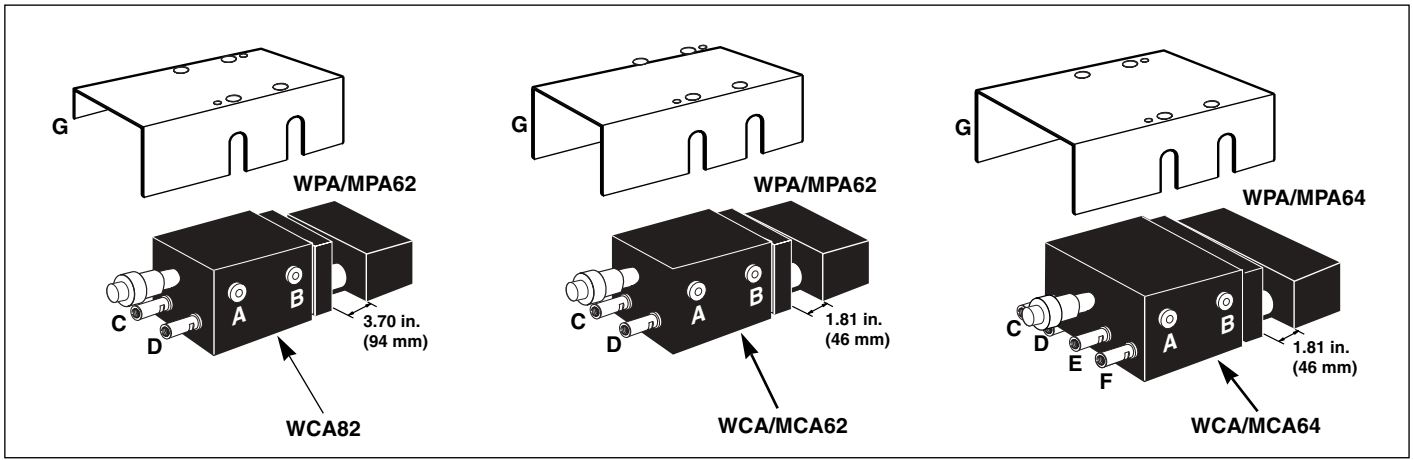


Figure 2, Set-up and Mounting of Auto Coupler without Alignment Tool

A	Advance Port
B	Retract Port
C	Workholding Functions on Base Station
D	
E	
F	
G	Cover Plate

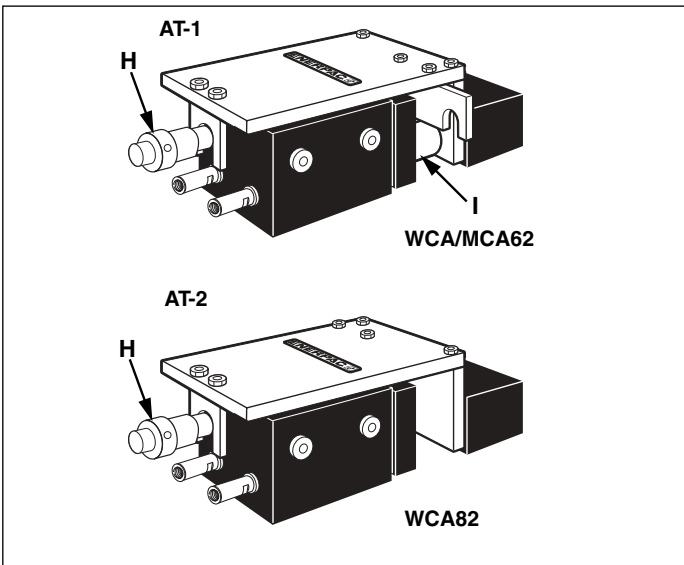


Figure 3, Set-up and Mounting of Auto Coupler Using Alignment Tool

- c) Move the tool in the direction of the pallet receiver, keeping it parallel and in contact with the top of the base station.
- d) Adjust the pallet receiver so that the circular section of the tool fits smoothly into the coupler hole (I) when the tool is moving in the direction of the pallet receiver.
- e) Make sure that the pallet receiver is parallel to the vertical end of the alignment tool. The maximum tolerance is .008 in. (0,2 mm).

6. Torque pallet receiver mounting bolts to 21 ft-lbs. (28 Nm).
7. Drill through the pallet receiver into the mounting surface for dowel locating pins. The receiver mounting holes can also be modified for socket shoulder screws.

3.2 Mounting with multiple pallet receivers

When two or more pallet receivers are used with one base station, it is important that each of the receivers is accurately located to a repeatable position on each fixture. The mounting surface for all receiver blocks and the base station should be parallel and at the same height. This will insure a smooth coupling to all receiver units.

In this type of application, the WPA/MPA receiver block is mounted first and the base station aligned to. Note the spacing between the base station and receiver as shown in Figure 2.

1. The AT1/AT2 alignment tool is recommended for location of the base station. See Figure 3.
2. The pallet receivers should be mounted as detailed in step 7 (see §3.1).
3. The alignment tool is placed on the actuator and the circular bushing of the alignment tool inserted into the receiver block. (The actuator must be in the fully retracted position.) The alignment tool will need to be altered to allow access to the two rear mounting holes of the actuator. The upper plate of the tool should be modified as shown in Figure 4.
4. With the location of the actuator set by the alignment tool, transfer punches can be used to mark the two rear mounting holes of the unit.
5. The alignment tool and the actuator can be removed and the two mounting holes drilled and tapped. The actuator can be lightly remounted and the alignment position checked. Tighten the two mounting screws, remove the alignment tools and locate the front two mounting positions.

3.3 Hydraulic Connections

1. Use flexible hoses for lines leading to base station workholding functions. (See Figure 2, C, D, E, and F.)
2. Install pressure gauges to monitor system pressure.

3.4 Check Electric and Hydraulic Circuits

1. All lines leading to the base station (A, B, C, D, E, F) must be free of pressure before coupling or uncoupling.
2. Set timers as shown in Figure 9.
3. Check flow control valves according to automatic coupler specifications.

3.5 Setting Operation Sequence

1. Make sure that your circuit is equivalent to proposed plan in Figure 5.
2. Loosen sensor bushing. The face of the sensor bushing must be in line with the plunger end on the base station.

3. Start power pump in neutral or open position to prevent uncontrolled movement of hydraulic components.

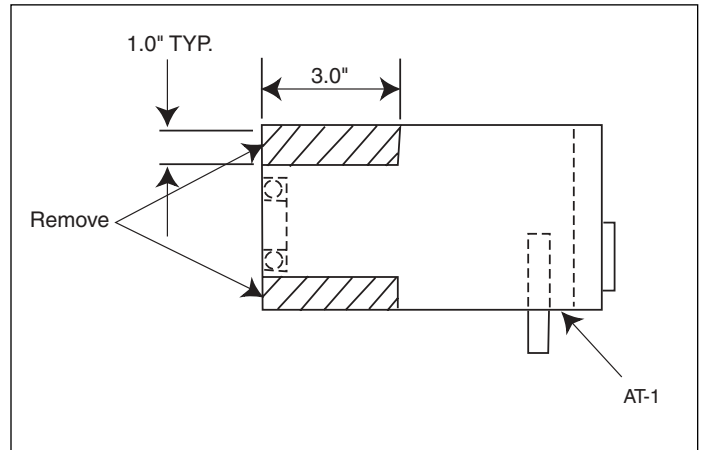


Figure 4

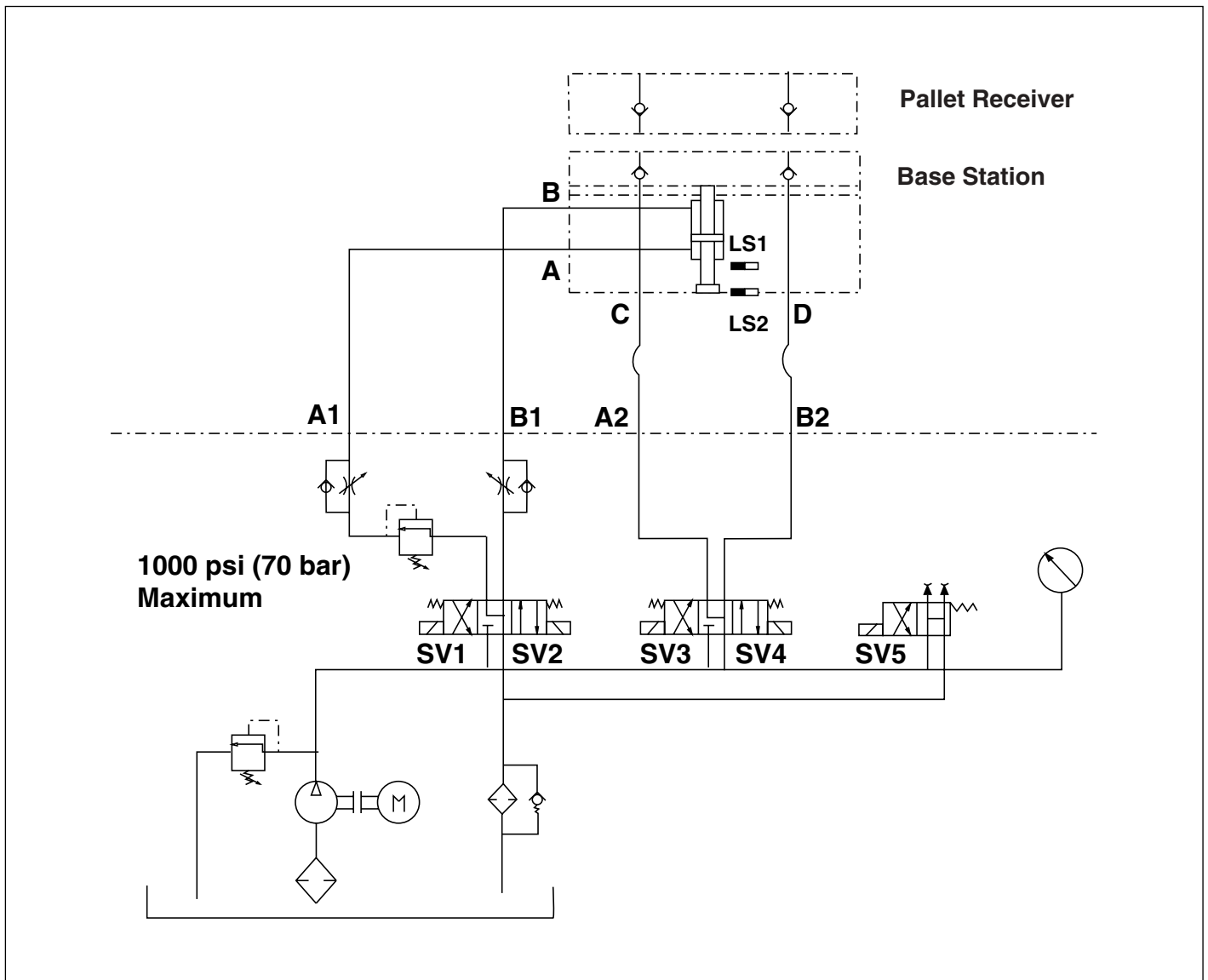


Figure 5, System Schematic

4. Check pressure.



CAUTION: Hydraulic lines leading to pallet must be free of pressure.

5. Pressurize advance port of base station to a maximum of 1000 psi (70 bar). Couplers will move forward and engage the pallet receiver.

NOTE: Oil flow from base station to pallet receiver is possible when the distance between the coverplate and the pallet receiver is 0.39-0.41 inches (10,0-10,5 mm).



CAUTION: Be aware of docking forces when coupling. At 1000 psi (70 bar), docking force is 450 lbs. (2 kN). Keep hands away from docking area during coupling to prevent serious injury.

6. Turn off pressure to advance port.

7. Check for complete coupling of all coupler elements by manually moving hoses leading to the pallet. If connected correctly, coupler elements are able to move in axial direction.

8. If coupler elements cannot move axially, check that the distance between the base station and the pallet receiver is 0.39-0.41 inches (10,0-10,5 mm). Use the sensor bushing to adjust the stroke.

9. Adjust bushing (J) against the base station by turning bushing counterclockwise on plunger until the plunger contacts the body of the base station. See Figure 6.

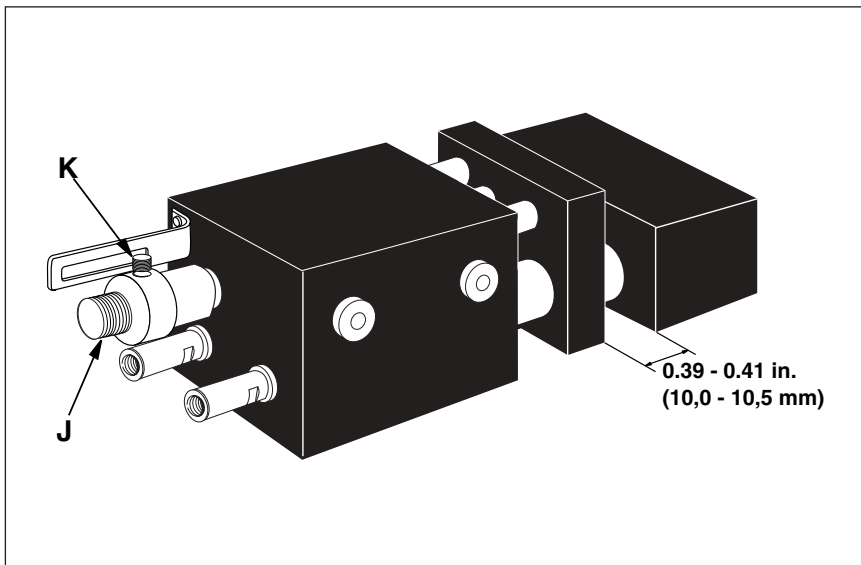


Figure 6, Alignment of Auto Coupler

10. Attach sensor LS1 at a distance of 0.012-0.027 inches (0,3-0,7 mm) from the bushing. The LED on LS1 will light up.

11. Make sure there is no pressure in the lines leading to the pallet before separating the base station body from the pallet receiver.

12. Activate the retract stroke of the base station by pressurizing the retract port until coupler plate is fully retracted.

13. Attach sensor LS2 at a distance of 0.012-0.027 inches (0,3-0,7 mm) from the bushing. With the signal of LS1 off, the LED will not light. When the signal of LS2 is on, the LED will light.

14. Turn bushing 1/4 to 1/2 revolution clockwise toward the base station and fix bushing with two set screws (K).

15. Check the operation by making several couple-uncouple sequences with the automatic coupler. Make sure that the cylinder lines leading to the pallet are free of pressure and that sensors indicate plunger positions.

16. Mount the protection plate on the automatic coupler.

4.0 MAINTENANCE

1. Keep work area clean and free of debris.

2. In applications where machining chips, cutting fluids and coolant are present, it is recommended to use the optional air blowoff fittings. The FZ2050 fittings attach to the end of the female auto coupler nozzle as shown in Figure 7. After assembly, the nozzle sleeves should be rotated so that the air fittings engage into the clearance notch on the MPA/WPA receiver. A flexible .125 ID. air line can be inserted over the barbed portion of the air fittings. The air lines should be routed inline with the coupler motion. An air manifold or fixed connection fittings can be mounted near the face of the auto coupler actuator. Be certain to leave enough air line length to allow full travel of the coupler nozzles. The location of the air manifold or fittings should be positioned to help prevent the nozzle sleeves from rotation out of position into the receiver.

The mounting surface of the receiver will need to have additional clearance for the air fittings. Two machined slots (the same width as the existing relief's on the receiver) provide the necessary clearance as well as allow an exit path for machining chips and coolant. If it is not possible to provide the needed clearance on the fixture surface, the FZ2050 fittings can be relieved .06 in. as shown in Figure 8.

A minimum of 30-psi air pressure to the fittings is recommended to properly purge the nozzle surfaces before coupling. The air

supply can be left on continuously (even while coupling) during the machine cycle.

For extreme contamination a mixture of compressed air and coolant will work as a pressure washer just prior to coupling.

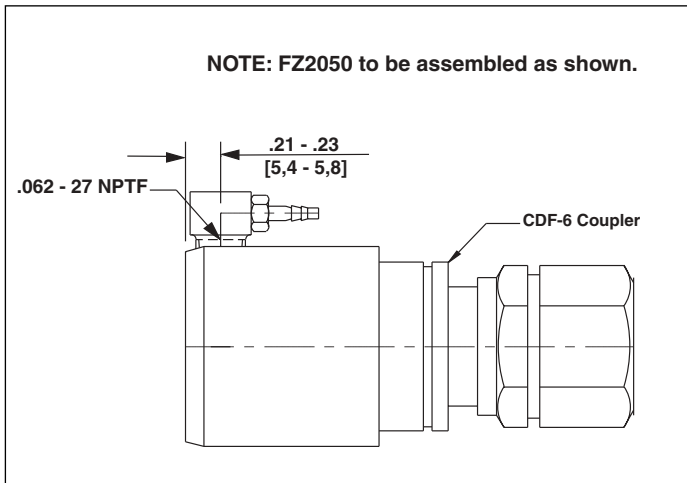


Figure 7

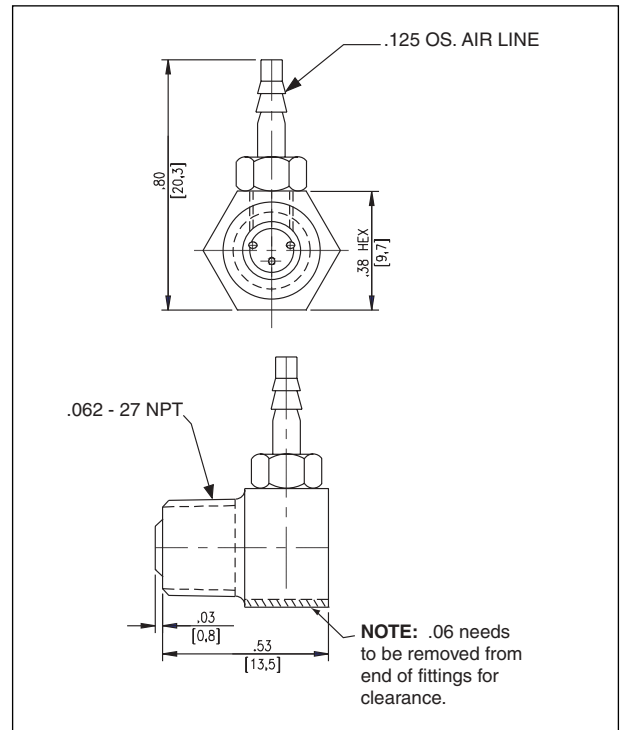


Figure 8

5.0 TROUBLESHOOTING

Problem	Possible Cause	Solution
Base station does not make complete stroke.	Pump release valve open	Make sure the 3-way valve on the pump is in the advanced position.
	No oil in pump reservoir	Check oil level and fill if necessary.
	Sensors need adjustment	See §3.5, page 4.
	Sensor bushing displaced	See §3.5, page 4.
	Radial misalignment	Make sure auto coupler is aligned using proper tool (AT-1).
	Airbound	Bleed hydraulic lines of air.
Base station does not finish its cycle	Blocked hydraulic line	Check all fittings and valves for proper engagement.
	Timer malfunction	Check sequence vs. Figure 9, page 7.
	Sensors not activated or malfunctioning	Check for proper alignment and clearance.
Leaking coupler elements	Pressure Switch not activated	Check setting on Pressure Switch and signal to controller.
	Dirt in hydraulic circuit	Make sure to use clean oil with proper filtration.
	Seal or spring damage in coupler elements	Replace couplers or contact Enerpac for service.
	Coupled or uncoupled when coupler elements were under pressure	Make sure proper hydraulic sequence is followed. There must be no pressure (0 psi) on coupler elements when they are being coupled or uncoupled.
	Cylinder lines were pressurized before port A was depressurized	Make sure proper hydraulic sequence is followed. See Figure 9, page 7.
	Machining chips are caught between moving elements of couplers	Contamination will prevent the spring loaded center section from extending flush with the front of the coupler. The male coupler center element can be depressed by hand, using a small hand-held punch, and contamination can be blown out only when the hydraulic system is at zero pressure
Coupler was advanced well over 1000 psi without the stroke stop adjusted, possibly damaging the female nozzle	Make sure the End of Stroke Sensor is properly positioned.	

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