

L2933 Rev. A 07/09

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 equipment failure and possible personal injury. The manual coupler is designed for a max. pressure of 5,000 psi [350 bar]. Do not connect the coupler 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.



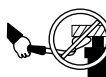
CAUTION: Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.



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.



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.

3.0 DESCRIPTION

Enerpac MC Series manual couplers simplify the process of connecting and disconnecting hydraulic lines to a palletized fixture.

Specifications

Maximum Operating Pressure	5000 psi [350 bar]
Pilot Ratio	2.6:1
Flow Capacity	4 GPM [15.1 L/min]
Porting	#4 SAE O-Ring

The following MC Series manual coupler components are covered in this document:

Manual Coupler Receivers (fixture side)

Model	Description	Circuits
MCRC21	Pallet Mounted Receiver (with check valve)	2 Hydraulic
MCR21	Pallet Mounted Receiver (without check valve)	2 Hydraulic

Additional Manual Coupler Components

Model	Description	Circuits
MCRA11	Auxiliary Air Receiver	1 Air
MCH21	Operator Handle	2 Hydraulic
MCH31	Operator Handle	2 Hydraulic, 1 Air
MCSB21	Storage Block	- - -

Pallet mounted receiver MCRC21 is a complete unitized coupler receiver equipped with an integral check valve. It can be set-up to operate either single-acting or double-acting circuits on palletized fixtures.

MCR21 is similar to MCRC21, but contains no check valve. This model is designed for use with a remote-mounted pilot operated check valve.

Auxiliary air receiver MCRA11 is used to add an air circuit for applications that include a part present sensing system. It can be mounted on either side of MCRC21 or MCR21. The three-coupler operator handle MCH31 is required for use with MCRA11.

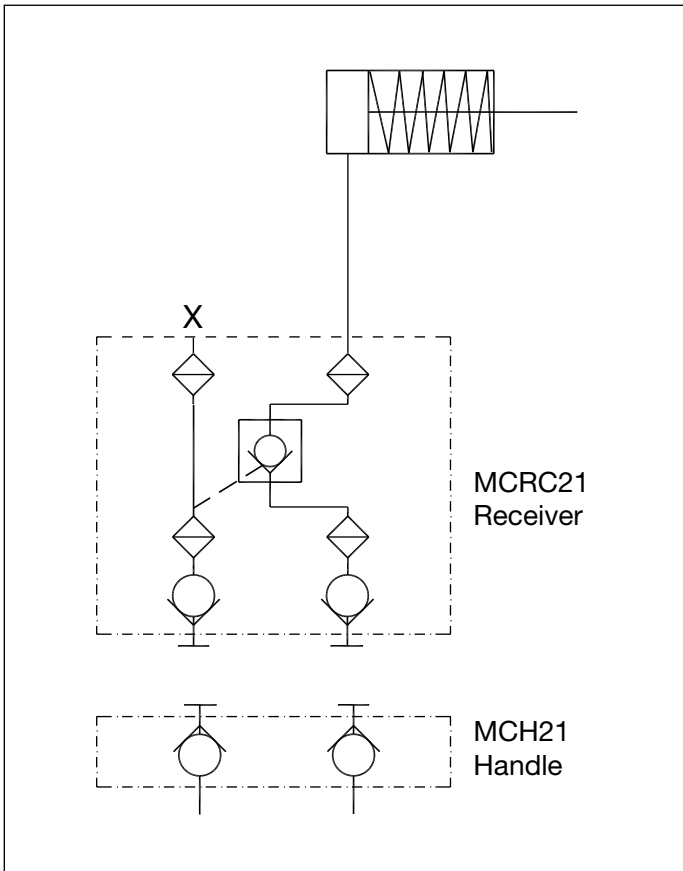


Figure 1, MCRC21 and MCH21 in Single Acting Circuit

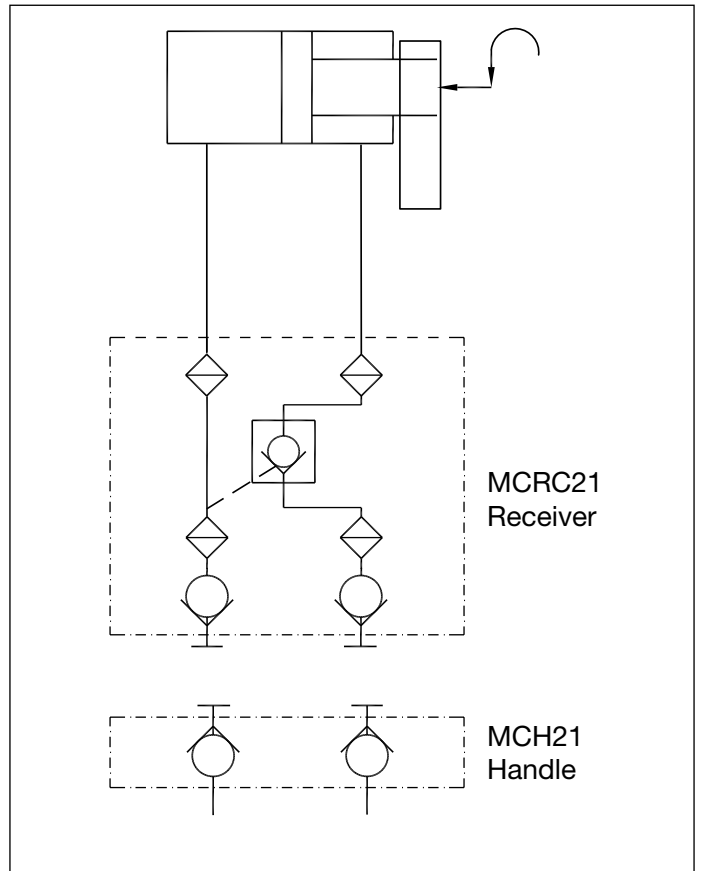


Figure 2, MCRC21 and MCH21 in Double Acting Circuit

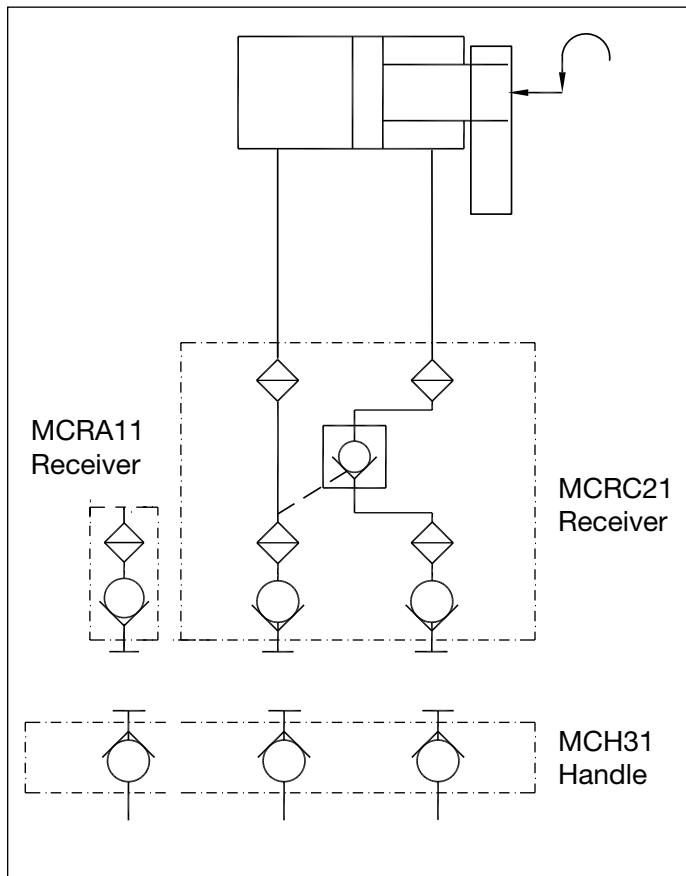


Figure 3, MCR21 and MCH31 in Double Acting Circuit with Air Part Present Sensing

On fixtures where the check function will be remote mounted, the MCR21 can be used with either single-acting or double-acting circuits. For these circuits, a remote mounted V72 or MVM72 pilot operated check valve, and a WA502, ACL21A or ACL201A hydraulic accumulator (sold separately) are required.

Refer to Figures 1 through 5 for examples of typical circuits.

4.0 INSTALLATION

Note: Refer to Figures 7 through 11 in Section 8.0 for mounting hole patterns. Refer to Figure 12 in Section 9.0 for manifold and port dimensions.

4.1 Pallet Mounting the MCR21 or MCR21 Receiver

Mount the MCR21 using the three supplied 5/16"-18 socket head capscrews. Torque to 22-25 ft-lbs.

Mount the MCR21 using one supplied 5/16"-18 socket head cap screw. Torque to 22-25 ft-lbs. A 3/16" diameter roll pin is used to prevent the receiver from rotating.

Note: When mounting the receiver, be sure to allow sufficient clearance for the male couplers to avoid interference if the pallet is rotated.

If using external tubing, SAE #4 ports for both the *clamp* and *unclamp* circuits are located on the back, side and top of the rear block. The "A" circuit is used for *clamp*. The "B" circuit is used for *unclamp*. If the block will not be manifold mounted, the 1/16"-27 NPTF pipe plugs should remain installed in the ports on the underside of the block.

4.2 Manifold Mounting the MCR21 or MCR21 Receiver

If desired, the MCR21 and MCR21 can be manifold mounted, using the manifold ports on the underside of the rear block. For single acting circuits, use only the manifold port "A". For double acting circuits, both manifold port "A" and manifold port "B" must be used.

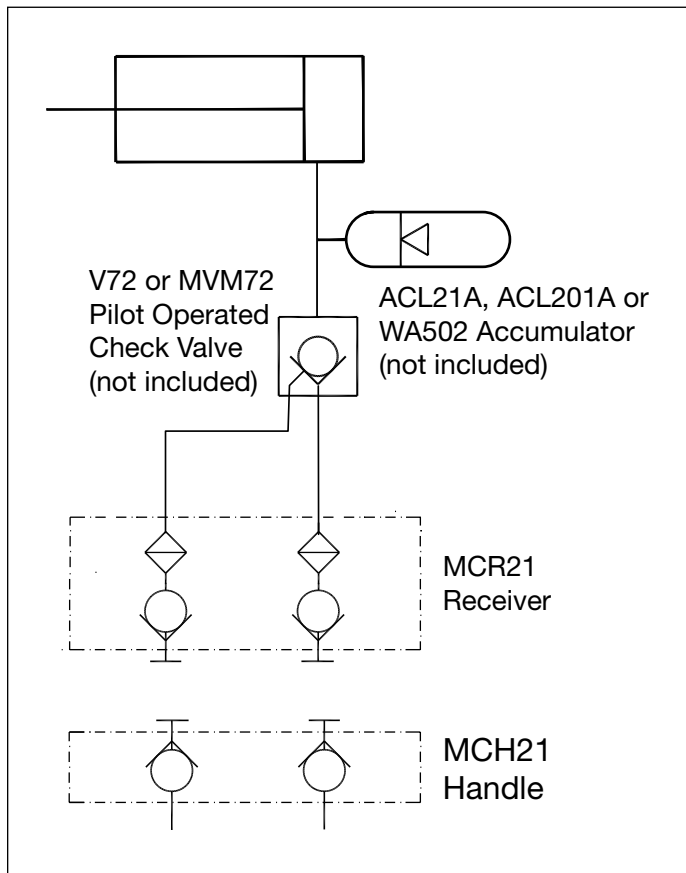


Figure 4, MCR21 and MCH21 in Single-Acting Circuit

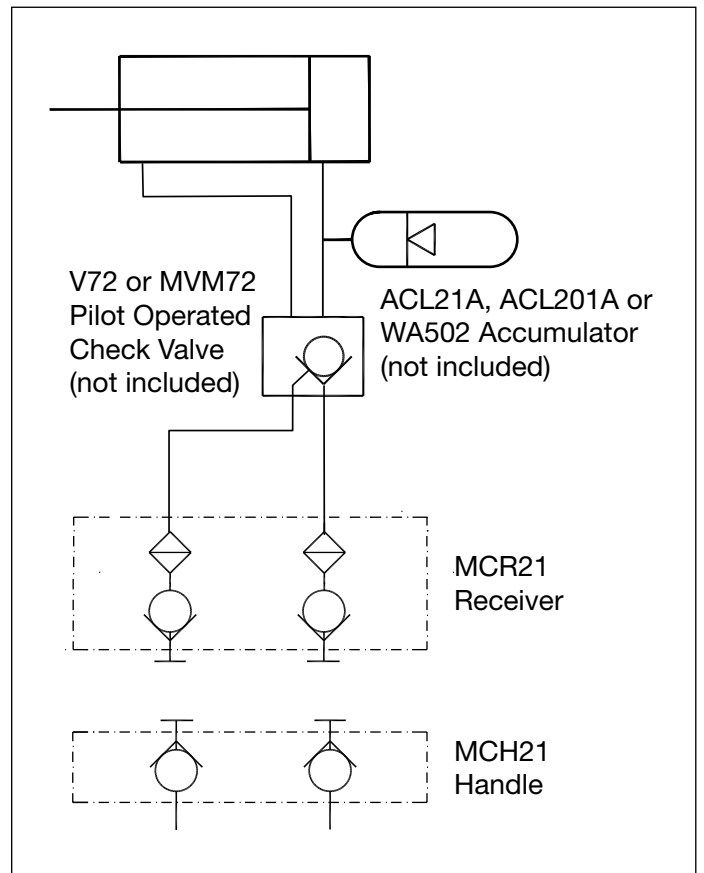


Figure 5, MCR21 and MCH21 in Double-Acting Circuit

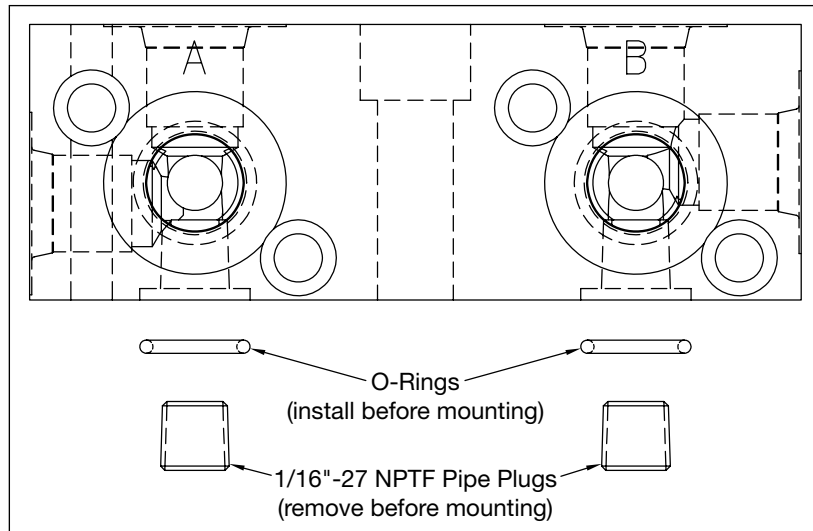


Figure 6, Manifold Mounting the MCRC21 or MCR21 Receiver

To prepare the receiver for manifold mounting (refer to Figure 6):

1. On the underside of the block, remove the 1/16"-27 NPTF pipe plug from each port to be used.
2. For each port to be used, lubricate the O-Ring (supplied with receiver) and install it in the counter-bore around the port passage prior to mounting the block. Be sure that the O-ring is not pinched or damaged during mounting as leakage could result.

IMPORTANT: To prevent leakage from the manifold mounting, provide a fixture mounting surface roughness average not to exceed 63 RMS. Manifold hole should not exceed 0.25" when port is used.

Mount the MCRC21 using the three supplied 5/16"-18 socket head capscrews. Torque to 22-25 ft-lbs.

Mount the MCR21 using one supplied 5/16"-18 socket head cap screw. Torque to 22-25 ft-lbs. A 3/16" diameter roll pin is used to prevent the receiver from rotating.

4.3 Making Connections Using External Tubing

If using external tubing, SAE #4 ports for both the *clamp* ("A") and *unclamp* ("B") circuits are located on the back, side and top of the rear block. The 1/16"-27 NPTF pipe plugs should remain installed in the bottom ports if the block will not be manifold mounted.

4.4 Mounting the MCRA11 Auxiliary Air Receiver

The MCRA11 is used to add an air circuit for part present sensing systems.

If the MCRA11 will be manifold mounted, remove the 1/16"-27 NPTF pipe plug from the underside of the block and install an O-Ring in the port counter-bore. Refer to steps 1 and 2 of Section 4.2 for additional installation instructions.

Mount the MCRA11 using the 2 supplied #10-24 socket head capscrews. Torque to 22-25 in-lbs.

5.0 OPERATION

- To connect, grip the operator handle (MCH21 or MCH31) and connect it to the MCRC21 or MCR21 receiver by pushing the female couplers onto the male couplers.
- To disconnect, pull back on the operator handle.
- To clamp, hold pressure from the pump on the "A" port.
- To unclamp, hold pressure on the "B" port until the clamps have retracted.

Notes:

MCRC21 has a built-in pilot operated check valve that will lock the pressure into the fixture circuit.

MCR21 does not contain a built-in pilot operated check valve. This model must be used with a remote pilot operated check valve. Operation is the same as for MCRC21.

6.0 MAINTENANCE

The pilot operated check valve in the MCRC21 is protected from contamination by filters, which are accessible for replacement by removing the front and rear plates. The filters are not cleanable and must be replaced. The MCRC21 pilot operated check valve cartridge can also be removed for inspection, cleaning or replacement by removing the front plate.

When reinstalling the front plate, torque the M5 x 8 socket head capscrews to 60-65 in-lbs. Torque the pilot operated check valve cartridge to 65 ft-lbs. Lubricate the seal on the pilot operated check valve cartridge before installation.

The filters in the MCR21 and MCRA11 are also serviced by removing the front plate. Torque the M5 x 9 socket head cap screws to 60-65 in-lbs.

Note: For replacement parts information, please refer to the *Replacement Parts Chart* in Section 10.0.

7.0 OPTIONAL ACCESSORIES

The MCSB21 storage block can be used to conveniently store either the MCH21 or MCH31 operator handle when not in use.

The optional proximity switch (part no. DW1029384) and cable (part no. DW1030930) are required if interlocking to the machine control is required to verify that the operator handle is safely stored.

An SAE #4 port for mounting either a pressure gauge or accumulator is located on the top center of the manifold. This circuit is located after the check valve. The G2517SL 0-6000 psi pressure gauge or the ACL21A hydraulic accumulator (optional equipment - sold separately) can be installed directly into this port.

8.0 MOUNTING HOLE PATTERNS

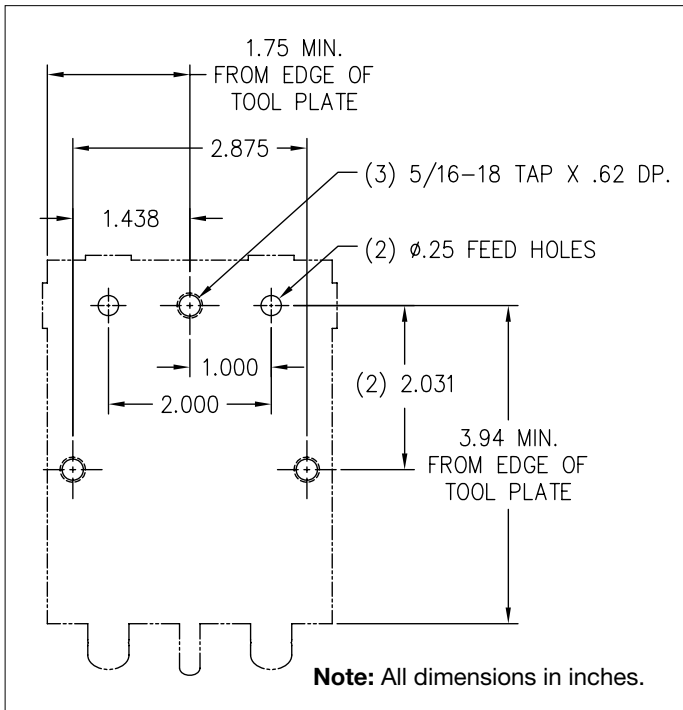


Figure 7, Mounting Hole Pattern, MCRC21 Receiver with Pilot Operated Check Valve

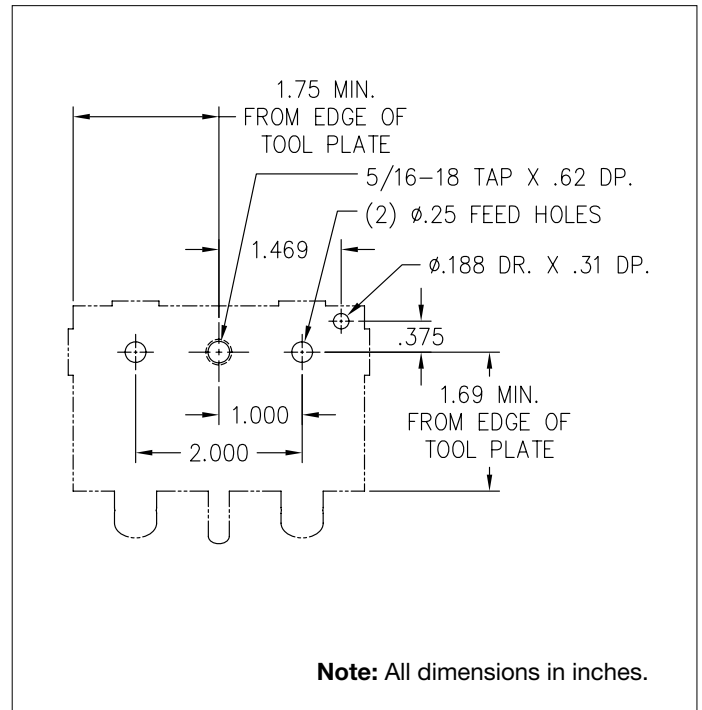


Figure 8, Mounting Hole Pattern, MCR21 Receiver without Pilot Operated Check Valve

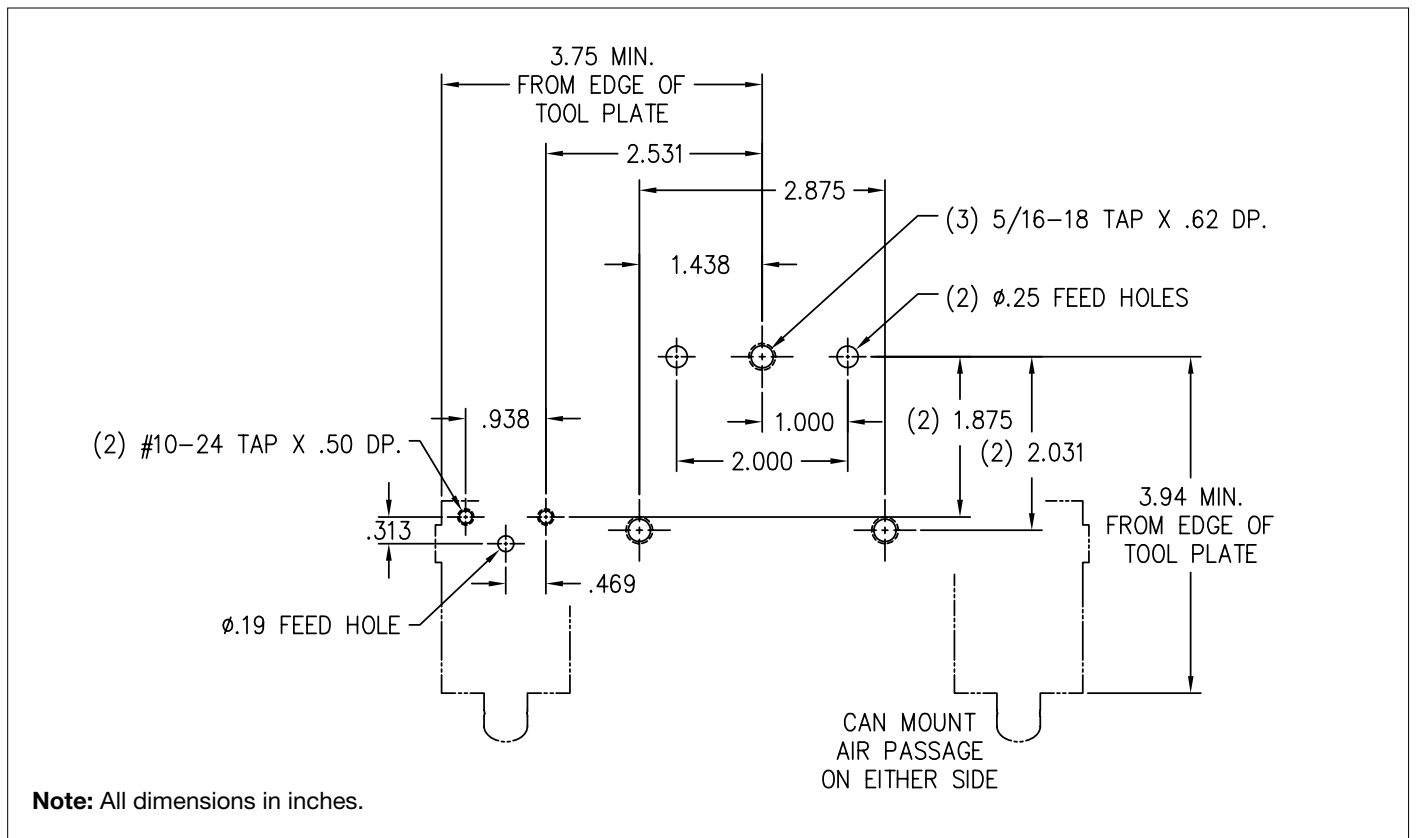


Figure 9, Mounting Hole Pattern, MCRC21 Receiver with Pilot Operated Check Valve and MCRA11 Auxiliary Air Receiver

8.0 MOUNTING HOLE PATTERNS (Continued)

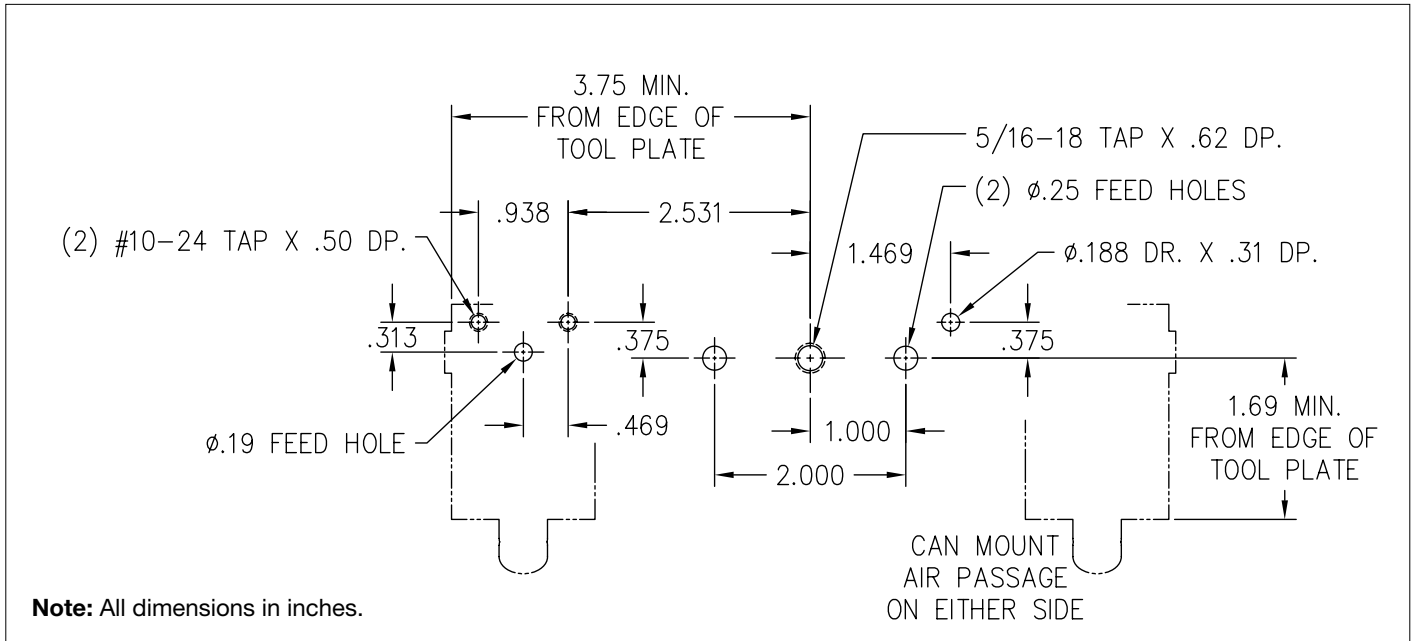


Figure 10, Mounting Hole Pattern, MCR21 Receiver with MCRA11 Auxiliary Air Receiver and no Pilot Operated Check Valve

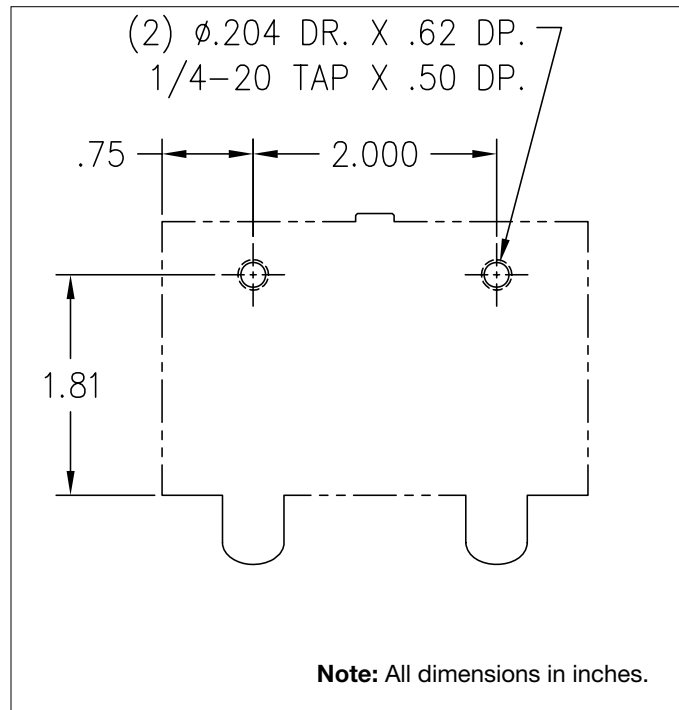


Figure 11, Mounting Hole Pattern, MCSB21 Staging Block

9.0 MANIFOLD AND PORT DIMENSIONS

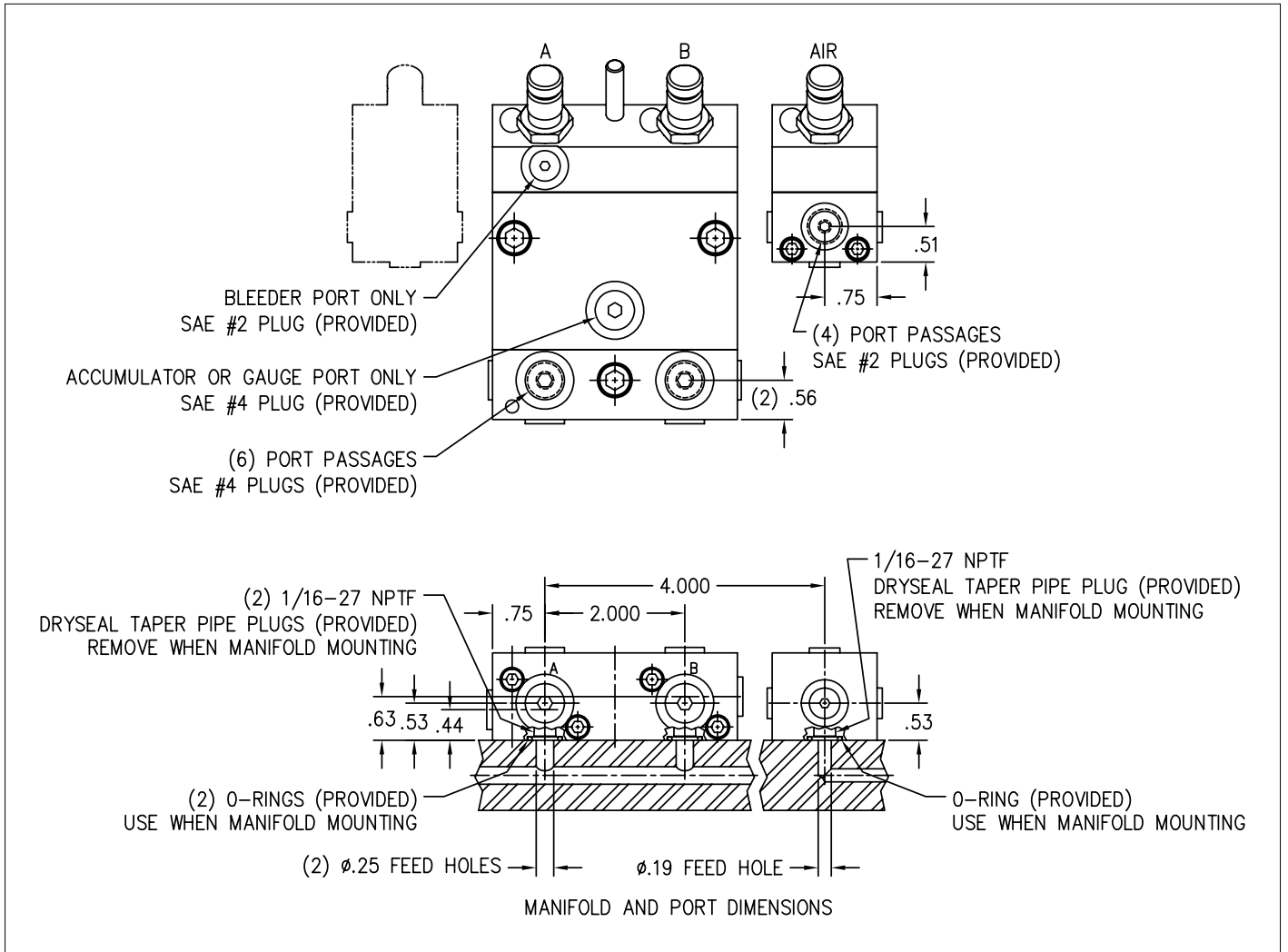


Figure 12, Manifold and Port Dimensions

10.0 REPLACEMENT PARTS CHART

Product Model Number	Available Replacement Parts		
	Part Number	Part Description	Quantity Required
MCH21 Operator Handle	AR650	Coupler, Female	2
MCH31 Operator Handle	AR650	Coupler, Female	3
MCRC21 Pallet Mounted Receiver with Check Valve	AH654	Coupler, Male	2
	FL2201K	Kit, Filter	4
MCR21 Pallet Mounted Receiver without Check Valve	AH654	Coupler, Male	2
	FL2201K	Kit, Filter	2
MCRA11 Auxiliary Air Circuit Receiver	AH654	Coupler, Male	1
	FL2201K	Kit, Filter	1
MCSB21 Storage Block	AH654	Coupler, Male	2

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