Tandem MODULATING VALVE (464 Series)

Service Instructions

TABLE 1 (Specifications)

Model Number	Repair Kit Number	Brake Pressure Setting	
		bar	(PSI)
06-464-908	06-400-132	103.4 ± 5.2	(1500 ± 75)
06-464-910	06-400-132	137.9 ± 6.9	(2000 ± 100)

NOTE: If your product number is not listed, please call MICO, Inc. for information.

DISASSEMBLY

NOTE

Spool (7)/sleeve (9) and spool (10)/sleeve (12) are matched sets and should not be intermixed with other parts.

1. Remove boot (24) from piston assembly (23).
2. Remove piston assembly (23), washer (22), springs (19, 20 & 21) and shim(s) (18) from housing (14). **NOTE: Record number of shim(s) being removed from housing. Not all models use spring (19).**
3. Remove retainer assembly (17) from housing bore. **NOTE: Ball is pressed into retainer.**
4. Carefully remove wiper seal (16) and rubber seal (15) from housing bore. **NOTE: Be careful not to scratch or mar housing bore.**
5. Loosen nut (1) and remove end plug (4) from housing. Remove spring (6), retainer (5), nut (1), washer (2), and o-ring (3) from end plug (4).
6. Remove spacer (13), sleeves (9 & 12) and spools (7 & 10) from housing bore. This assembly must be taken out by way of end plug (4) end of housing (14). **NOTE: Be careful not to scratch housing bore. A wooden dowel will help in this procedure.**
7. Separate spacer (13) and spools (7 & 10) from sleeves (9 & 12). **NOTE: Excessive wear on either spools (7 & 10) or sleeves (9 & 12) may require replacement.**
8. Remove o-rings (11) from sleeve (12) and o-rings (8) from sleeve (9). **NOTE: Be careful not to damage o-ring grooves in sleeve (9).**

ASSEMBLY

LUBRICATE ALL RUBBER COMPONENTS FROM REPAIR KIT, SPOOLS (7 & 10) AND SLEEVES (9 & 12) WITH CLEAN TYPE FLUID USED IN THE SYSTEM.

1. Clean all parts thoroughly before assembling.
2. Install new o-rings (11) on sleeve (12) and new o-rings (8) on sleeve (9).
3. Carefully insert spool (10) into sleeve (12). Note direction of spool.
4. Insert spacer (13) into housing bore through end plug (4) end. Note direction of spacer.
5. Carefully insert sleeve (12) and spool (10) assembly into housing bore using a wooden dowel. Note direction of assembly.
6. Carefully insert sleeve (9) into housing until it rests against sleeve (12). Gently insert spool (7) into sleeve (9). Note direction of spool and sleeve.
7. Install spring (6) and retainer (5) into housing bore.
8. Install end plug (4) and torque to 10.9-20.3 N·m (96-180 lb·in) to seat sleeves. Then turn back end plug 1/4 turn and torque to 1.1-6.8 N·m (10-60 lb·in). Install new o-ring (3), washer (2) and nut (1). Hold end plug and torque nut 67.8-81.4 N·m (50-60 lb·ft).
9. Carefully install new rubber seal (15) and then new wiper seal (16) into housing bore. Note direction of wiper seal.
10. Install retainer assembly (17) in housing. **NOTE: Depress retainer (17) until it bottoms on spacer (13). Retainer (17) and spool (10) should return when released. If the spool and retainer do not return when released, the bore of sleeves (9 & 12) were possibly damaged when installed.**
11. Install shim(s) (18) and springs (19 & 20) in housing bore. **NOTE: For proper brake pressure setting, install the same number of shims that were removed during disassembly. If spools (7 & 10), sleeves (9 & 12), or springs (19 & 21) were replaced, shim adjustment may be required. Not all models use spring (19).**
12. Assemble washer (22) and tapered spring (21) with piston assembly (23) and carefully install in housing bore.
13. Install new boot (24) on piston assembly (23).

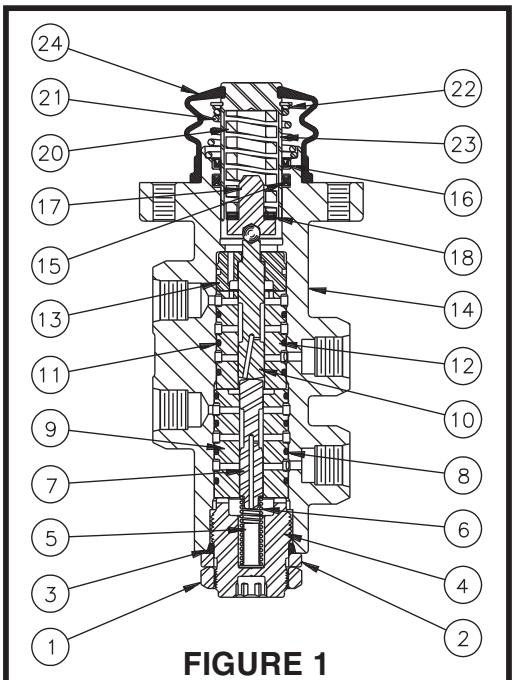

FIGURE 1

● Items included in Repair Kit

✻ Not used in all models

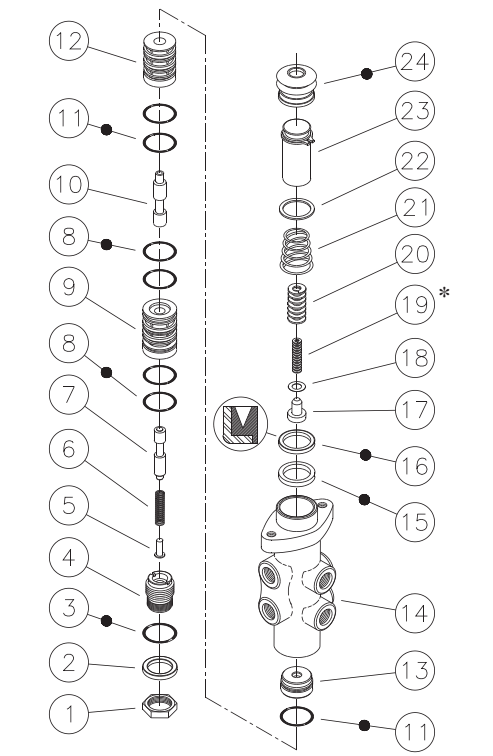

FIGURE 2

BLEEDING

Brake lines should be bled very carefully as soon as the valve is installed in the machine. Air in the system will not allow the brakes to release properly and may severely damage them.

1. Start engine and allow accumulator to reach full charge. Shut down engine, then slowly apply and release brakes, waiting one minute between applications until brakes will not apply. Repeat this step three times.
2. Operate engine to maintain accumulator pressure within working limits throughout the bleeding procedure.
3. Open bleeder screw at wheel closest to brake valve and apply brakes cautiously until all air is bled out of line. Then close bleeder screw. Repeat this step at each wheel, moving to the next farthest wheel from the brake valve each time, as follows:
   a. Left front
   b. Right front
   c. Right rear
   d. Left rear
4. Release brake pressure for at least one (1) minute.
5. Apply brakes, holding pedal down ten (10) seconds; then release pressure for one (1) minute. Repeat this step two more times.
6. Repeat step 3.
7. Check for system leaks and be sure of proper brake operation.

SERVICE CHECKS FOR 464 SERIES TANDEM PEDAL VALVES

BRAKES SLOW TO APPLY

1. No or improper gas charge in accumulator
1. **Check gas charge**
2. Brakes not properly adjusted
2. **Adjust brakes**
3. Inoperative brakes
3. **Check brakes**
4. Hydraulic lines or fittings leaking
4. **Check for leaks and repair**
5. Inoperative automatic adjuster (Goodrich Hi-torque Brakes only)
5. **Check adjuster operation**
6. Damaged hydraulic brake lines
6. **Check lines for dents that restrict flow of oil**

BRAKES WON'T RELEASE

1. Pedal angle out of adjustment
1. **Check for proper pedal angle**
2. Inoperative brakes
2. **Check brakes**
3. Inoperative automatic adjusters
3. **Check operation of adjusters**
4. Inoperative brake valve
4. **Replace brake valve**

INSUFFICIENT BRAKES

1. No oil or low oil level in tank
1. **Check oil level in tank**
2. Brakes not properly adjusted
2. **Check brake adjustment**
3. Oil or grease on brake lining
3. **Clean or install new linings**
4. Brake line damaged
4. **Check lines and replace**
5. Inoperative automatic adjusters
5. **Check operation of adjusters**
6. No or improper gas charge in accumulator
6. **Check gas charge**
7. Inoperative brakes
7. **Check brakes**
8. Brake valve inoperative
8. **Replace valve**

EXCESSIVE BRAKING

1. Inoperative brakes
1. **Check brakes**
2. Inoperative brake valve
2. **Replace brake valve**

BRAKES WILL NOT RELEASE COMPLETELY

1. Brakes not properly adjusted
1. **Adjust brakes**
2. Inoperative brakes
2. **Check brakes**
3. Pedal angle out of adjustment
3. **Adjust pedal angle**
4. Inoperative wheel cylinders
4. **Replace wheel cylinders**
5. Inoperative automatic adjuster
5. **Check operation of adjusters**
6. Air in brakes (when automatic adjusters used Goodrich Hi-torque Brakes only)
6. **Bleed brakes**
7. Inoperative brake valve
7. **Replace brake valve**
8. Back pressure on return line too high
8. **Remove restriction**

NO BRAKES

1. No oil in hydraulic system
1. **Check oil level in tank**
2. Broken or damaged brake line
2. **Check lines for breaks or damaged condition**
3. Brakes not properly adjusted
3. **Adjust brakes**
4. Inoperative system relief valve
4. **Check pressure in pressure line to valve**
5. Worn pump
5. **Check pressure in pressure line to valve**
6. Inoperative automatic adjuster
6. **Check brake line pressure**
7. Inoperative or worn brakes
7. **Check brakes**
8. Inoperative brake valve
8. **Replace brake valve**

PEDAL KICKBACK WHEN BRAKES ARE APPLIED

1. Air in brakes
1. **Bleed brakes**

SERVICE DIAGNOSIS

(Refer to Figures 1 & 2)

BRAKES WILL NOT RELEASE COMPLETELY

1. Piston (23) sticking
2. Pedal angle out of adjustment
3. Spring (6) broken

BRAKE WON'T RELEASE

1. Binding spools (7 & 10)
2. Damaged sleeves (9 & 12)
3. Piston (23) binding

NO BRAKES

1. Piston (23) binding
2. Broken spring (20)

EXCESSIVE BRAKING

1. Too many shims (18) installed in valve

EXCESSIVE ACCUMULATOR LEAKAGE WHEN BRAKES ARE APPLIED

1. Damaged spools (7 & 10)
2. Damaged sleeves (9 & 12)
3. O-rings (8 or 11) leaking

EXCESSIVE ACCUMULATOR LEAKAGE WHEN BRAKES ARE NOT BEING USED

1. Damaged spools (7 & 10)
2. Damaged sleeves (9 & 12)
3. O-rings (8 or 11) leaking
4. Spring (6) broken

INSUFFICIENT BRAKES

1. Broken pressure regulating spring (20)
2. Boot cut, allowing dirt to accumulate under piston (23) flange

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