

# Tandem MODULATING VALVE (464 Series)

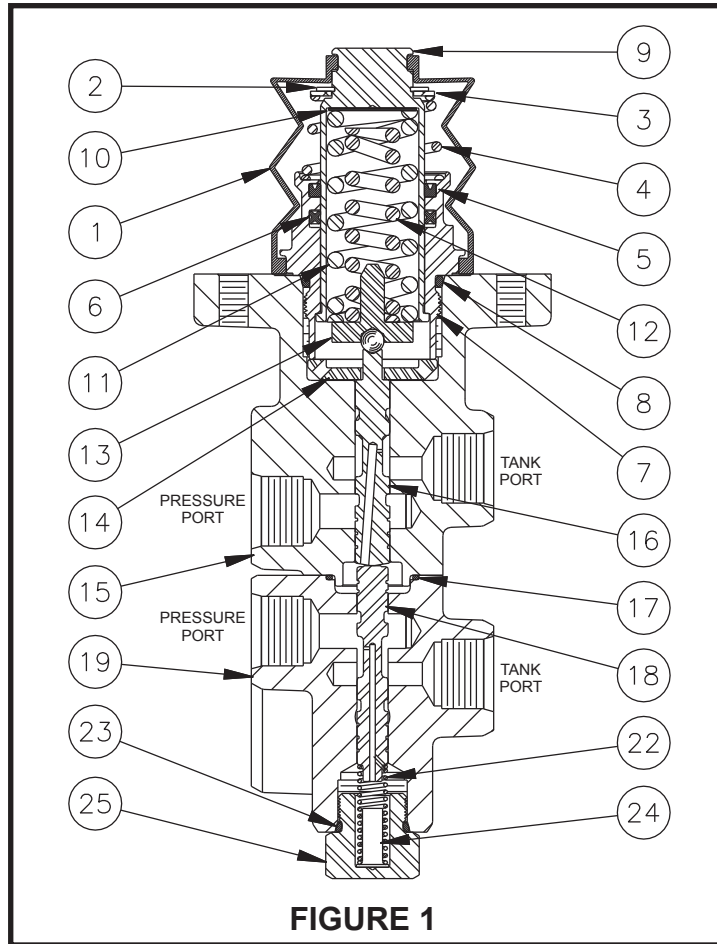


## Service Instructions

**TABLE 1** (Specifications)

Model Number	Repair Kit Number	Brake Pressure Setting	
		bar	(PSI)
06-464-258	06-400-135	172 ± 10	(2500 ± 150)

NOTE: If your product number is not listed, contact ZF Off-Highway Solutions Minnesota Inc. for information



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## DISASSEMBLY

(Refer to Figures 1 and 2)

### NOTE

Housings (15 & 19) and spools (16 & 18) are manufactured as a matched set. This set (housing and spool) should not be intermixed with other parts.

1. Remove boot (1) from retainer (7).
2. Remove retainer (7) and assembly from housing (15).
3. Remove retaining ring (2) from piston (9) and separate washer (3), tapered spring (4), and retainer (7) from piston (9).
4. Remove shim(s) (10) from inside piston (9). **NOTE: Be aware of the number of shim(s) being removed from inside piston.**
5. Carefully remove o-ring (8), seal (5) and quad ring (6) from retainer (7). Note direction of seal (5).
6. Remove springs (11 & 12), retainer assembly (13) and cupped washer (14) from housing (15).
7. Carefully remove spool (16) from housing (15). **NOTE: Be careful not to damage spool or housing bore.**
8. Separate housings (15 & 19) by removing cap screws (21) and washers (20).
9. Carefully remove spool (18), spring (22) and o-ring (17) from housing (19). **NOTE: Be careful not to damage spool or housing bore.**

### CAUTION

Do not intermix spools & housings. Spool (16) and housing (15) are a matched set as are spool (18) and housing (19).

10. Remove plug (25) from housing (19).
11. Remove retainer (24) and o-ring (23) from plug (25).

## ASSEMBLY

(Refer to Figures 1 and 2)

LUBRICATE ALL RUBBER COMPONENTS FROM REPAIR KIT WITH CLEAN TYPE FLUID USED IN THE SYSTEM

1. Clean all parts thoroughly before assembling.
2. Install new o-ring (23) on end plug (25).
3. Lubricate spool (18) with clean system fluid and carefully slide into housing (19) bore. Note direction of spool. **NOTE: Spool must slide freely into housing bore. If either part is damaged, a new valve assembly may be required.**
4. Install retainer (24) and spring (22) into end plug (25) and install end plug into housing (19). Be sure spring is over end of spool (18). Torque 47.5-54.2 N·m (35-40 lb·ft).
5. Lubricate spool (16) with clean system fluid and carefully slide into housing (15) bore. Note direction of spool. **NOTE: Spool must slide freely into housing bore. If either part is damaged, a new spool/housing assembly may be required.**
6. Install new o-ring (17) in o-ring pocket on housing (19).
7. Reassemble housings (15 & 19) using cap screws (21) and washers (20). Use Loctite 242 on cap screws and torque 29.8-33.9 N·m (22-25 lb·ft). **NOTE: Make sure housings line up correctly and that o-ring (17) remains in the o-ring pocket during assembly.**
8. Carefully depress spool (16). Spool (16) must depress and return by spring tension easily or possible damage has occurred during assembly.
9. Carefully install new quad ring (6), new seal (5) and new o-ring (8) on retainer (7). Note that groove on seal (5) faces upward.

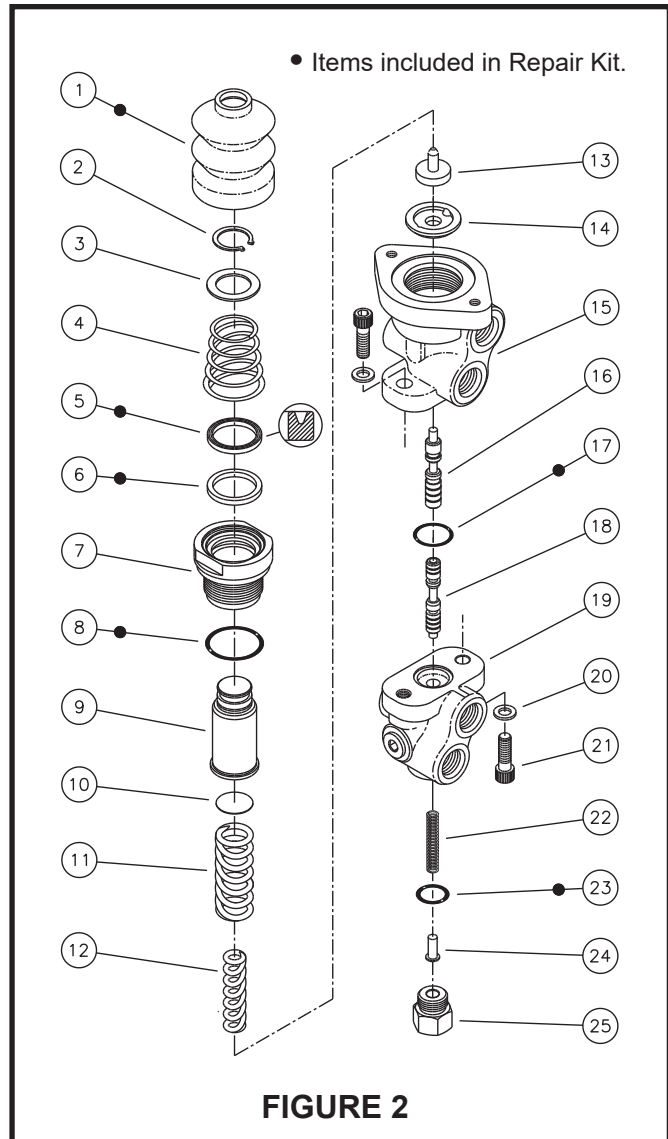


FIGURE 2

10. Assemble retainer (7), piston (9), tapered spring (4), washer (3) and retaining ring (2). Note direction of tapered spring.
11. Install shim(s) (10) into piston (9). **NOTE: Install same number of shims as were removed.**
12. Place cupped washer (14) in housing (15) so it rests on shoulder of spool (16). Note direction of cupped washer.
13. Install retainer assembly (13) and springs (11 & 12) into housing (15), center on spool (16).
14. Carefully install retainer (7) assembly in housing (15). Torque 54.2-67.8 N·m (40-50 lb·ft).
15. Install new boot (1) on retainer (7).

### NOTE

After service, the valve must develop the pressure indicated in the specifications, TABLE 1 on page 1. Shim(s) (10) are used to obtain correct pressure setting. Contact ZF Off-Highway Solutions Minnesota Inc. if brake pressure setting is not able to be obtained.