

TANDEM MODULATING VALVE (split pressure)



Service Instructions

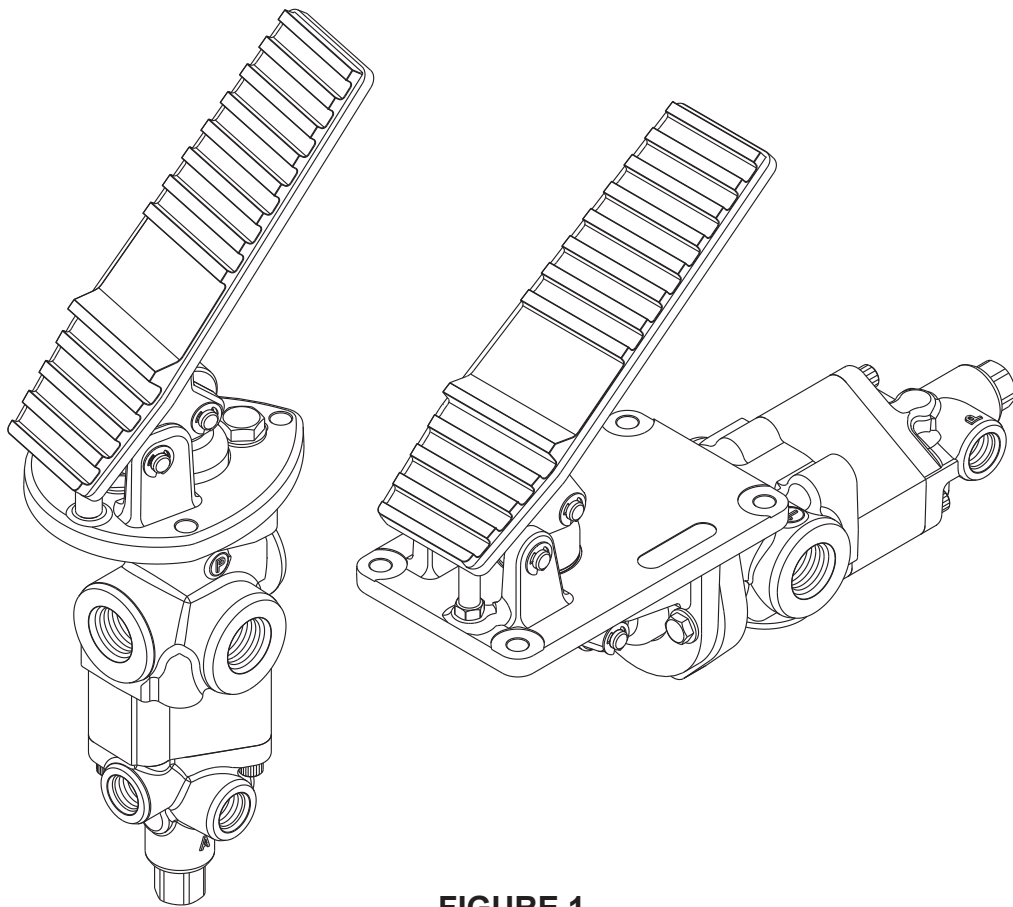


FIGURE 1
(complete units)

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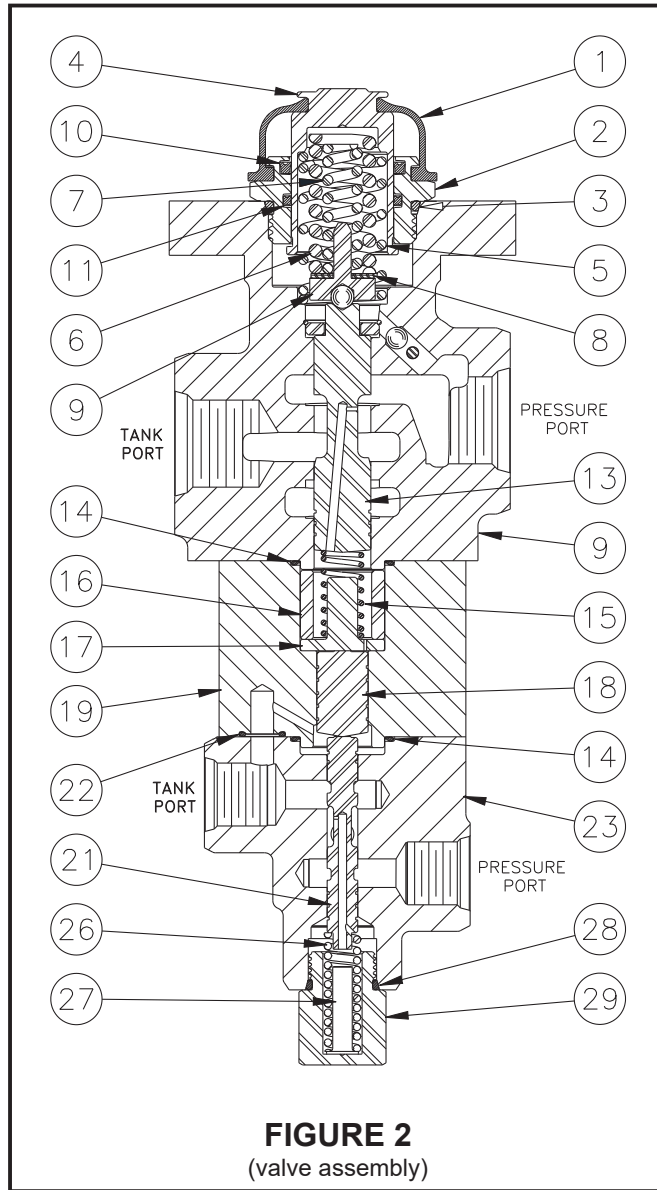


TABLE 1 (Specifications)

Complete Unit Part Number (Figure 1)	Valve Assembly Part Number	Repair Kit Number	Top Brake Port Pressure Setting		* Lower Brake Port Pressure Setting	
			bar	(PSI)	bar	(PSI)
06-466-401	20-100-988	06-400-300	36.7 ± 2.4	(535 ± 35)	124.1 ± 10.3	(1800 ± 150)
06-466-413	20-200-016	06-400-300	36.7 ± 2.4	(535 ± 35)	184.4 ± 10.3	(2675 ± 150)
06-466-604	20-200-299	06-400-300	33.1 ± 2.4	(480 ± 35)	113.8 ± 10.3	(1650 ± 150)
06-466-610	20-200-300	06-400-300	33.1 ± 2.4	(480 ± 35)	165.5 ± 10.3	(2400 ± 150)
06-466-953	20-100-891	06-400-300	56.5 ± 3.5	(820 ± 50)	124.1 ± 10.3	(1800 ± 150)

* The brake pressure will be limited to the input pressure for instances when the input pressure is below the brake pressure setting.

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



NOTE

Housings (12 & 23) and spools (13 & 21), spacer (19), and spool (18) are manufactured as matched sets. These sets must not be intermixed with other parts.

DISASSEMBLY

(Refer to Figures 2 and 3)

1. Remove boot (1) from piston (4) and retainer (2).
2. Remove retainer (2), piston (4), springs (5, 6, & 7), shim(s) (8), and retainer assembly (9) from housing (12).
NOTE: Be aware of the number of shim(s) (8) being removed from housing (12).
3. Remove o-ring (3) from retainer (2). Carefully remove cup (10) and quad ring (11) from retainer (2) bore. Note direction and order of cup and quad ring.
NOTE: Be careful not to scratch or mar retainer bore.
4. Remove end plug (29), retainer (27), and spring (26) from housing (23). Remove o-ring (28) from end plug (29).
5. Separate housings (12 & 23) and spacer (19) by removing cap screws (25) and washers (24).
6. Remove o-ring (14), spring (15), spacer (16), retainer (17), and spool (18) from spacer (19). **NOTE: Be careful not to damage spool or spacer bore.**
7. Remove o-rings (20 & 22) from housing (23).
8. Carefully remove spools (13 & 21) from housings (12 & 23). **NOTE: Be careful not to damage spools or housing bores.**

CAUTION

Do not intermix spools and housings. Spool (13) and housing (12) are a matched set, as are spool (21) and housing (23), and spool (18) and spacer (19).

ASSEMBLY

(Refer to Figures 2 and 3)

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

1. Clean all parts thoroughly before assembling.
2. Lubricate spool (13) with clean system fluid and carefully slide into bottom end of housing (12) bore. Note direction of spool (13). **NOTE: Spool must slide freely into bore. If either part is damaged, a new valve assembly may be required.**
3. Install spool (18), retainer (17), spacer (16), and spring (15) in spacer (19). Note direction of spool (18).
NOTE: Spool must slide freely into bore. If either part is damaged, a new valve assembly may be required.
4. Install new o-rings (14, 20, & 22) in proper o-ring pockets on housings (12 & 23) and spacer (16).
5. Reassemble housings (12 & 23) and spacer (19) using cap screws (25) and washers (24). Use Loctite 242 or equivalent 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-rings (14, 20, & 22) remain in the pockets during assembly.**
6. Lubricate spool (21) with clean system fluid and carefully slide into housing (23) bore. Note direction of spool (21).
NOTE: Spool must slide freely into bore. If either part is damaged, a new valve assembly may be required.
7. Install new o-ring (28) on end plug (29).
8. Install spring (26), retainer (27), and end plug (29) into housing (23). Torque end plug (29) 47.5-54.2 N·m (35-40 lb·ft)

Items included in Repair Kit

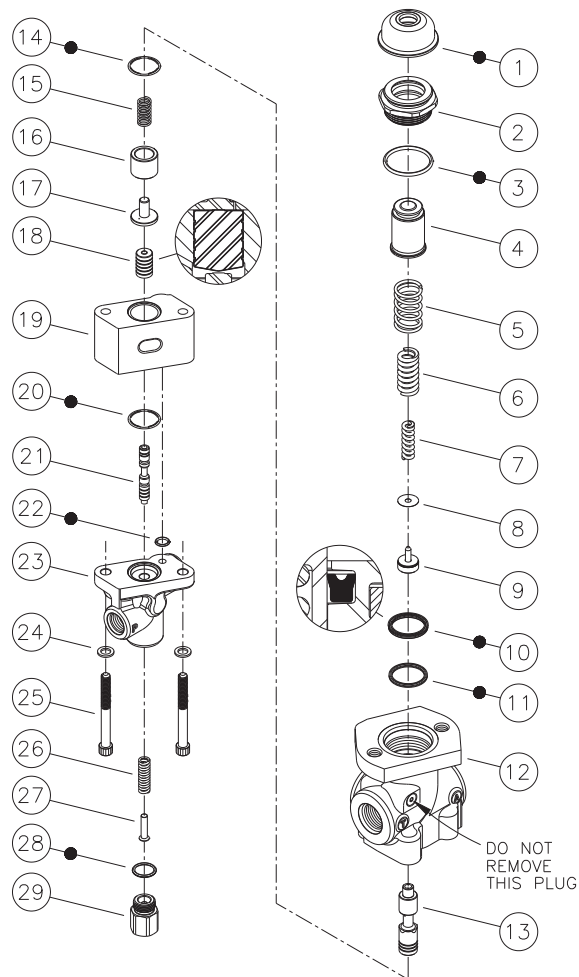


FIGURE 3

9. Carefully install new cup (10) and new quad ring (11) into retainer (2) bore. Note direction and order of cup and quad ring. Install new o-ring (3) on retainer (2).
NOTE: Be careful not to scratch or mar housing bore.
10. Install springs (5, 6, & 7), shim(s) (8), and retainer assembly (9) in piston (4).
11. Carefully install piston (4) assembly and retainer (2) into housing (12) bore. Torque retainer (2) 81.4-94.9 N·m (60-70 lb·ft).
12. Install new boot (1) on retainer (2) and piston (4).

NOTE

After service, the valve must develop the pressure as indicated in the specifications, TABLE 1 on page 2. Shim(s) (8) are used to obtain the correct pressure setting. Contact ZF Off-Highway Solutions Minnesota Inc. if brake pressure setting is not able to be obtained.

