

## Service Tools

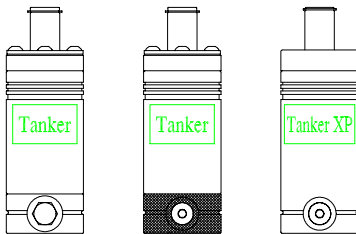
Model	Seal Kit P/N	Spanner Wrench	Socket Wrench	Valve Tool*	Service Gauge Assembly*	Service Fitting*	Rod Assembly Tool	Adapter Block	Torque Fixture
TNK 1	57-100-7000	FS-422	SW-100	T2TK-IN	MGA-3000	T2-770-4	56-100-2001	56-100-2006	56-TNK-5000

\*Not valid for original Tanker with silver base. Use SGA-2000 gauge assembly that includes SF-2000 service fitting.

## Warnings

- Failure to exhaust all gas pressure prior to disassembly could result in serious injury.
- Maximum charging pressure is 138 bar (500 psi).
- Never clamp the tank directly in a vise. Clamp only on the adapter block or torque fixture.

## Identifying Tanker/ Tanker XP models



**Silver base   Black base   Tanker XP**

## Discharging self-contained springs

1. Remove the charge port plug (22).
2. **For the black base TNK and TNK XP:** Close the bleed down valve on the MGA-3000 service gauge assembly. Thread the T2-770-4 service fitting into the charge port. Attach the MGA-3000 to the T2-770-4 to depress the valve.  
*Alternative method: Thread the T2TK-IN inlet valve tool into the charge port to depress the valve.*  
**For the original silver base TNK:** Close the bleed down valve on the SGA-2000 service gauge assembly. Connect

the SF-2000 service fitting to the SGA-2000. Thread the SF-2000 into the charge port to depress the valve.

3. To verify all pressure has been exhausted, manually depress the piston rod into the tank by striking the top of the rod with a rubber mallet.

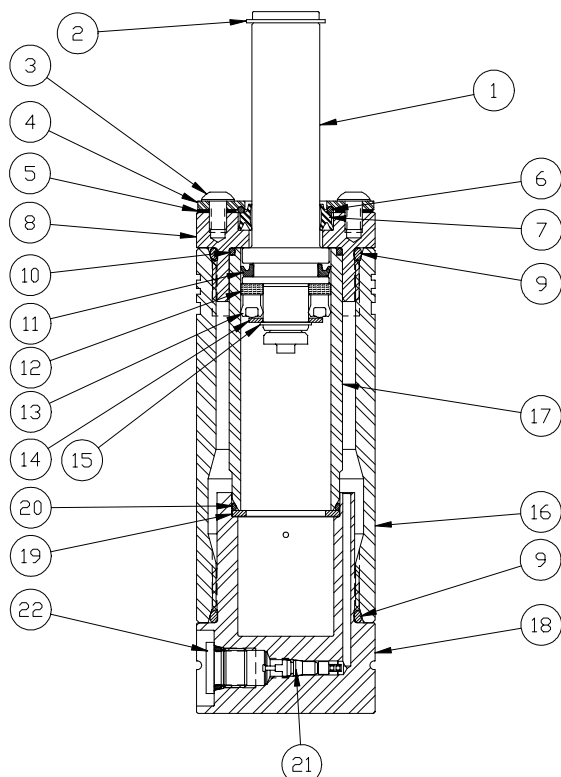
## Charging self-contained springs

1. **For the black base TNK and TNK XP:** Close the bleed down valve on the MGA-3000 service gauge assembly. Thread the T2-770-4 service fitting into the charge port. Attach the MGA-3000 to the T2-770-4.  
**For the original silver base TNK:** Close the bleed down valve on the SGA-2000 service gauge assembly. Connect the SF-2000 service fitting to the SGA-2000. Thread the SF-2000 into the charge port.
2. Open the valve on the nitrogen bottle and slowly charge the spring to the desired pressure.
3. Close the valve to the nitrogen bottle. Disconnect the service gauge assembly and unscrew the service fitting from the spring.
4. Thread the charge port plug (22) into the port.

## Verification of assembly (Leak test)

1. Charge the gas spring to at least 35 bar (500 psi). Refer to charging instructions.
2. Slip the test o-ring supplied in the seal kit over the piston rod and position it against the bottom of the rod retainer (2).
3. Pour lightweight oil on the test o-ring and the rod scraper. If bubbles appear, nitrogen is leaking past the seal (13).  
**Note:** It may take several minutes for a small leak to be seen. If a leak is found, the spring would need to be discharged, disassembled, and inspected. A scratch on the cylinder tube surface or seal could be the cause.

## Instructions for Silver & Black Base Tanker Models Only

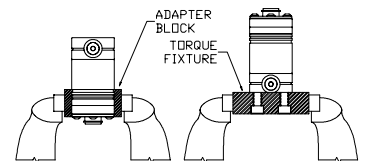


## Disassembly

1. Verify all pressure has been exhausted from the spring by following the discharging instructions above.
2. Unthread the base (18) from the tank (16).

**Method A:** Attach the adapter block to the rod end of the tank. Invert the assembly and install in a vise clamping on the adapter block. Using the spanner wrench, unscrew the base (18) from the tank (16). (Option: If the spring is tapped with bottom mounting threads, thread two bolts into the base and use a leverage bar to unscrew the base.)

**Method B:** (For springs with tapped mounting holes in base.) Screw the torque fixture onto the base. Clamp the torque fixture in a bench vise with the rod facing up. Using a socket wrench, unscrew the base (18) from the tank (16).



Method A      Method B

## Service Instructions for Tanker Gas Springs (TNK 3, 5.5 & 9)

- It is not necessary to unthread the rod cap (8) from the tank (16) but, if required, the SW-100 socket wrench is available.
- Unwrap the rod retaining ring (2) from the piston rod (1).
- Push the piston rod assembly (1) and sleeve (17) out the bottom of the tank (16).
- Remove the seal retainer ring (15). The washer (14), seal (13), and piston bearing (12) can now be removed. **Note:** If using a screwdriver to pry the seal off the piston, be careful not to scratch the piston.
- Remove the bore scraper (11) from the piston.
- Unscrew the button head cap screws (3). Remove the retaining cap (4), gasket (5), o-ring (6), and scraper (7).
- Save the tank (16)/rod cap (8) assembly, sleeve (17), base (18), washer (19), piston rod (1), valve (21), port plug (22), and retainer cap (4). All other parts are included in the seal kit and can be discarded.
- The seal kit contains Nitro-Dyne<sup>®</sup> Tanker Lube XP-33. There is a line drawn on the bottle indicating 25% of the oil volume. The 25% (above the line) is used as assembly oil. The remaining oil is poured into the tank.
- Insert the bore scraper (11) onto the piston rod (1) so the open end faces the rod. (Refer to drawing on previous page) **Note:** The bore scraper is a design upgrade and replaces the felt wiper.
- Liberally lubricate the piston rod and all components you will install on the piston. Insert the piston bearing (12), seal (13), washer (14), and retainer ring (15).
- Lightly oil the inner diameter of the sleeve (17) and the outside diameter of the seal (13). Carefully insert the rod through the bottom end of the sleeve.
- Insert the scraper (7) into rod cap (8) using a flat edge screwdriver. Lubricate the o-ring (6) and place it onto the scraper assembly above the outer edge of the scraper (7). Position the gasket (5) on the top surface of the rod cap (8). Attach the retainer cap (4) using the new nylon patch screws (3).
- Place o-ring (10) inside of the rod cap (8). Place the rod assembly tool on top of the piston rod (1)/ sleeve (17) assembly. Press the tank (16)/ rod cap (8) assembly onto the rod (1)/sleeve (17) assembly. **Note:** The rod assembly tool protects the scraper (7) from damage when the piston rod (1) is pushed passed the scraper.
- Lubricate the upper and lower o-ring (9 & 20). Install o-ring (9) onto the base. Insert washer (19) into the base and insert o-ring (20) in position above the washer. Be careful not to cut the o-rings on the threads.
- Invert the spring and pour the remaining  $\frac{3}{4}$  of XP-33 lubricant into the gas spring.
- Thread the base (18) into the spring. Tighten by hand until the base contacts the tank (16). Using Method A or B (defined in step 2), tighten the base to 150 lb-ft.

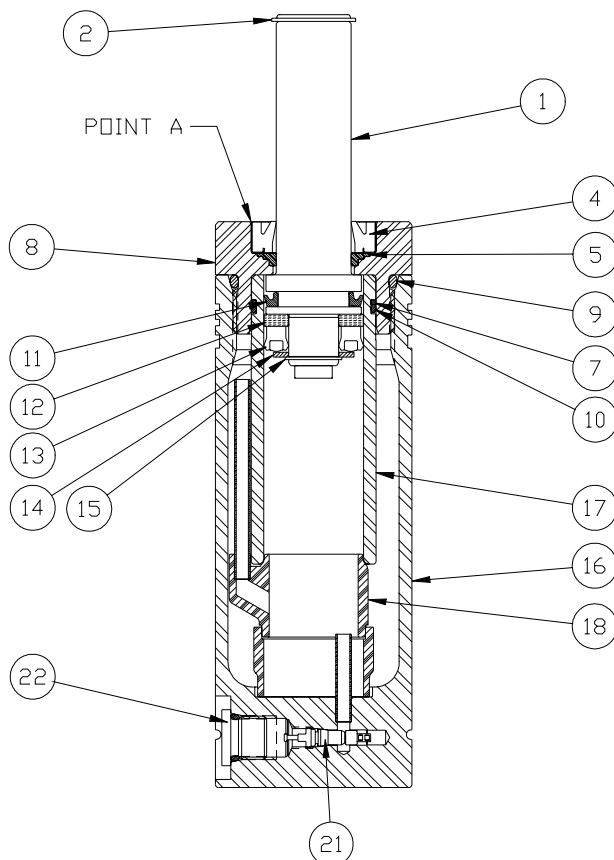
## Inspection

- Clean the tank (16)/rod cap (8) assembly, sleeve (17), base (18), washer (19), piston rod (1), port plug (22), and retainer cap (4).
- Visually inspect all components. The inner diameter of the sleeve and the surface of the piston where the seal rests are critical. Any scratches or dents will lead to premature leakage. If defects exist, replace the parts.

## Assembly

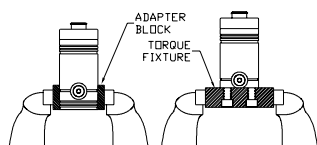
- Unpack the seal kit. The seal kit part number includes components to rebuild the original Tanker and Tanker XP. Therefore some components will not be used.

## Instructions for Tanker XP Models only



## Disassembly

- Verify all pressure has been exhausted from the spring by following the discharging instructions.
- Unthread the rod cap (8) from the tank (16). **Method A:** Attach the adapter blocks to the tank. Using the socket wrench, unscrew the rod cap (8) from the tank (16). **Method B:** (For springs with tapped mounting holes in base.) Screw the torque fixture onto the bottom of the tank. Clamp the torque fixture in a bench vise with the rod facing up. Using a socket wrench, unscrew the rod cap (8) from the tank (16).



- | Method A  | Method B |
|---|----------|
| 3. Remove the o-ring (9) from the rod cap (8).  |          |
| 9. Remove the lubrication pump (18) from the tank (16).   |          |
| 10. Unwrap the rod retaining ring (2) from the piston rod (1). Remove the piston rod from the sleeve (17).  |          |
| 11. Remove the seal retainer ring (15). The washer (14), seal (13), and piston bearing (12) can now be removed. <b>Note:</b> If using a screwdriver to pry the seal off the piston, be careful not to scratch the piston.   |          |
| 12. Remove the bore scraper (11) from the piston.   |          |
| 13. Insert the end of a flat blade screwdriver between the rod cap (8) and the rod scraper (4) at point A. Strike the screwdriver towards the center of the cylinder to deform the rod scraper (4). The scraper can then be pried out. <b>Note:</b> A new scraper will be supplied in the seal kit. |          |
| 14. Save the tank (16), sleeve (17), rod cap (8), lubrication pump (18), valve (21), port plug (22), and piston rod (1). All other parts are included in the seal kit and can be discarded.   |          |

## Inspection

- Clean the tank (16), sleeve (17), rod cap (8), lubrication pump (18), port plug (22) and piston rod (1).
- Visually inspect all components. The inner diameter of the sleeve and the surface of the piston where the seal rests are critical. Any scratches or dents will lead to premature leakage. If defects exist, replace the parts.

## Assembly

- Unpack the seal kit. The seal kit part number includes components to rebuild the original Tanker and Tanker XP. Therefore some components will not be used.
- The seal kit contains Nitro-Dyne Tanker Lube XP-33. There is a line drawn on the bottle indicating 25% of the oil volume. The 25% (above the line) is used as assembly oil. The remaining oil is poured into the tank.
- Install the bearing (5) into the rod cap (8). Press the rod scraper (4) into the rod cap (8).
- Insert the bore scraper (11) onto the piston rod so the open end faces the rod. (Refer to drawing)
- Liberally lubricate the piston rod and all components you will install on the piston. Insert the piston bearing (12), seal (13), washer (14), and retainer ring (15).
- Liberally oil the o-ring (10) and install it onto the sleeve (17). Insert the back-up ring (7) onto the sleeve above the

### **Service Instructions for Tanker Gas Springs (TNK 3, 5.5 & 9)**

o-ring. **Note:** Refer to drawing for o-ring and back-up ring positions.

23. Press the sleeve assembly (17) into the rod cap (8).
24. Liberally oil the inner diameter of the sleeve (17) and the outside diameter of the seal (13). Press the piston rod (1) into the sleeve and rod cap assembly.
25. Attach the rod retainer (2) in the groove located at the top of piston rod (1).
26. Install the o-ring (9) on the rod cap (8).
27. Position the lubrication pump (11) into the tank. The smaller diameter side of the pump should rest in the machined groove at the bottom of the tank.
28. Pour the remaining  $\frac{3}{4}$  of XP-33 lubricant into the tank (16). Thread the rod cap (8) into the tank (16). Tighten by hand until the rod cap contacts the tank. Using Method A or B (defined in step 2), tighten to 200 lb-ft.