

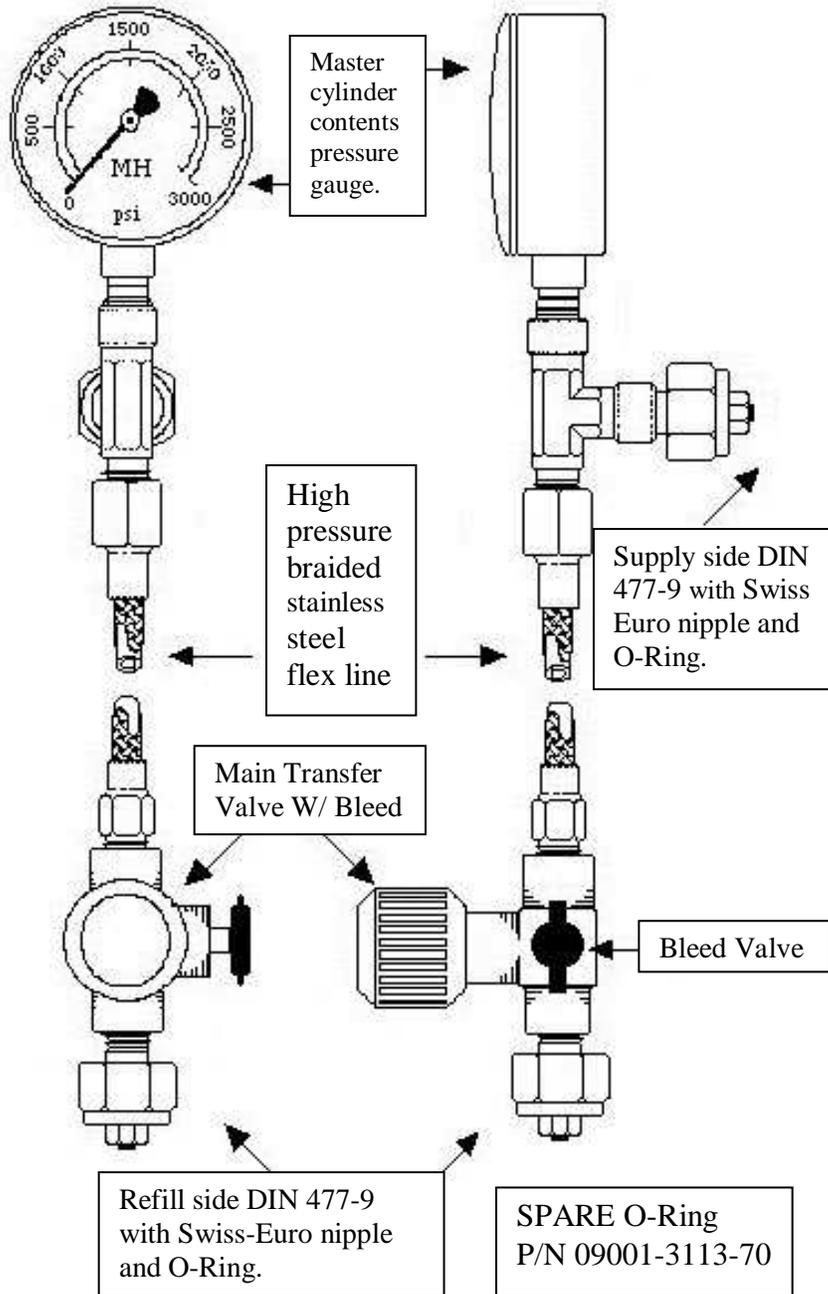
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TR-95b (DIN 477-9, DIN 477-9)

Instruction & Safety Manual

SEE REVERSE SIDE FOR SAFETY PRECAUTIONS

The purpose of this device is intended to allow the transfilling (transfer) of compressed oxygen from one cylinder to another with the DIN-477 type connections.
Cylinders at pressure up to 3,00psig(207bar).



1. Make sure the cylinder fittings are proper DIN477-9 Type, and are in good shape and completely free of any oil, grease or dirt.
2. Verify that the hydro-test date has not expired on the cylinder you are to refill. Also note the DOT-type rating stamped on the cylinder to double check the proper fill pressure.
3. If the cylinder is completely empty and the valve has been left open or is question, check to make sure the cylinder has not been internally contaminated with any combustible materials such as oil, fluids or gases. If you cannot assure the cylinder is safe... **DO NOT FILL IT!**
4. Securely mount the gauge side to the DIN-477 master supply cylinder. Connect (hand tight) the refill end of the TR-95b to the DIN-477 refill cylinder.
5. Once connected to both cylinders and making sure the *bleed and transfer valve is closed*, **SLOWLY** open the valve from the master supply cylinder first. You should hear oxygen pass from the supply cylinder filling the transfiller line. The gauge will read supply cylinder pressure. Next, **SLOWLY** open the valve on the empty cylinder, then **SLOWLY** open the main transfer valve to start filling. *Use the main transfer valve to control the fill rate.*
6. Fill the cylinder at about 50-75 liters/min. For cylinders over 300 liters, you may want to fill them in segments, pausing to let cool between segment transfers. This will help to keep the cylinders cool and help you detect any problems such as leakage.
7. After the cylinder has been filled, first shut off the transfer valve, then the master supply cylinder valve and refill side valve. *In other words close all valves.* Then, **SLOWLY** crack open (counter clock-wise) the bleed valve to bleed the line. **Do NOT attempt to unscrew any of the O-ring nipple ends while the line is under pressure. This will damage the O-ring.** You can now loosen the grip nut and remove the cylinder.

Hazards of high pressure oxygen and Transfilling

Transfilling of gaseous oxygen from one cylinder to another involves hazards associated with the handling of oxygen under pressure. A hazardous condition does exist if high pressure oxygen equipment becomes contaminated with hydrocarbons such as oil, grease or other combustible materials which may include oil from a person's hands or contaminated tools.

A cylinder will heat as it is filled from a high pressure source. The more rapidly the cylinder is filled, the higher the temperature rise in the cylinder resulting from the heat of compression of the gas. Excessive temperature may result in the ignition of any combustible materials that may be present in the system. Refill the cylinder at a flow rate that reduces heating of the cylinder. Use only equipment designed for refilling and transfilling.

Although oxygen itself is nonflammable, materials which burn in air will burn much more vigorously and at higher temperatures in oxygen enriched atmosphere. If ignited, some combustible materials such as oil will burn in oxygen with explosive violence. Many other materials which do not burn in air will burn vigorously in oxygen-enriched atmospheres. Ignition temperatures are reduced in oxygen-enriched atmospheres. Compressed oxygen presents a hazard in the form of stored energy.

Open the cylinder valve slowly. The rapid release of high pressure oxygen through orifices, control valves, etc. in the presence of foreign particles can cause friction or impact resulting in temperatures which may be sufficient to ignite combustible materials present in the system..

Cleaning the adapter, service line and valve of oil and greases

If any part of the system should become contaminated or you suspect so, you can clean it by hot water and detergent. Do not use the system if it has become contaminated with oil or grease. If the contamination is mild a liquid form of automatic dishwasher detergent or the cleaning product "Formula 409" has shown to work best for this purpose. This type of detergent is able to cut and remove almost all types of oils or greases and will rinse off without any detectable residue.

To test for contamination take a clean cotton swab "Q-Tip" and wipe the suspected area with it. Next place the tip of the cotton swab into the surface of a plane of CLEAN water while you are observing a clear reflection of light that shows the water's surface. You should not detect any oil what so ever bleed from the cotton tip fanning out over the water's surface. This is an accepted method for oil contamination detection. An oil clean surface will pass this test without any doubt.

If the service line should become contaminated internally by oil or grease it can be cleaned by soaking the entire line in a vat of hot water and a liquid form of automatic dishwasher detergent. Rinse the line in hot water and inspect. If contaminates are still present repeat soaking. Dry the line by hanging it vertically in a hot air or direct sunlight environment. However, if the contamination is more so or severe you may have to perform the cleaning process several times or use a solvent such as "111 trichloroethane".
Note: Solvent-type cleaning fluids have an adverse effect on plastic and elastomeric materials after prolonged exposure. Components containing such materials should be removed from the system before proceeding with the cleaning operation.