



## 20 - Test Ball & Plug Accessories

Q – What size plugs would you use a Polly Lift Line on?

- Cherne offers two poly lift lines. The poly lift line with inflator (Schrader) valve fittings can be used on any plug that has an eyebolt, and also has a inflator valve. The poly lift lines with gauge can be used with any plug that has an eyebolt, and also has a removable inflator valve fitting.

Q – Where can you find the material safety data sheets for smoke bombs and liquid smoke?

- Material Safety Data Sheets for smoke bombs and liquid smoke can be found in the technical information section of the Cherne website at [www.cherneind.com/Data/](http://www.cherneind.com/Data/) or [www.oatey.com](http://www.oatey.com)

Q – Is there an updated list of products that can be field scrapped?

- No. Field Scrapping products should only be defined by plumbing product manager.

Q – What is the difference between a piston style pump and a Diaphragm test pump?

- All of Cherne's hydrostatic test pumps are designed to pressure test new potable water lines. Piston style pumps can be pressure fed or suction fed.
  - *Piston pumps cannot be run dry nor should they be used in conjunction with chlorine. (Chlorine is frequently used when new potable water lines are being tested to avoid contamination).*
  - Diaphragm test pumps cannot be pressure fed. However they can be used with an optional gravity feed water tank sold by Cherne, or with a large container (like a garbage can) filled with water into which the intake hose can be placed.
- Diaphragm pumps can be used with up to a 10% chlorine solution in the test water.

Q – What type of oil / lubricant is used on the hydrostatic test pumps?

- Diaphragm Hydrostatic test pumps use oil in the engine, in the gear reduction unit, and in the pump itself. 30 weight motor oil is used for the engine and pump. The gear reduction unit uses 90 weight gear lube.
  - **\*\*Piston Pumps only use oil in the engine. (30 weight motor oil.)**

Q – What is the shelf life of smoke bombs and liquid smoke?

- Smoke bombs have a one year shelf life from the date of manufacture. The shelf life on the mineral oil used in liquid smoke is indefinite.

Q – How much vacuum (inches of mercury) do manholes need to be tested to?

- 10 inches

**Q – What is the definition of feet of head, and the formula to calculate the back pressure?**

- **Backpressure is measured either in terms of feet of head or psi.**
  - A. **Feet of Head.** Simply stated “feet of head” is the height of water above the centerline of a plug. For vertical pipe the calculation is easy. Simply measure the height of the pipe and that is the footage of head pressure. For horizontal pipe, feet of head is still simply the height of water above the plug. There are various ways to determine this height base on knowledge of the actual application. For example, if you have a 300’ long section of pipe at a 1 degree slope, the feet of head is 3’. (300\*.01)
  - B. **PSI -** This measurement is typically done with a pressure gauge.
  - C. **#’s (pounds) of Force.** This is the calculation to determine how much force is being held back by a plug. It is useful information when trying to design a plug blocking system for a specific job.
    - a. **Calculating pounds of force for air pressure tests.**
      - i. **PSI \*square inches of pipe opening = #’s of force**
        - 1. . Example: 8” and 5 psi test. Pipe area =  $\text{Pi R}^2$  \* (3.14\*4<sup>2</sup>=50.24”).  
50.24” \* 5 PSI = 251.2 #’s of force.
    - b. **Calculating pounds of force for head pressure applications.**
      - i. **Convert Feet of Head to PSI and then do calculation above.**
        - 1. **PSI = Feet of Head \*.434.**
        - 2. **Example: 8” pipe at 30’ of head. Pipe area =  $\text{Pi R}^2$  \* (3.14\*4<sup>2</sup>=50.24”) 30 Feet of Head \*.434 = 13.02 13.02 \* 50.24 = 654 lbs. of force.**

One foot of head to psi conversion chart is attached for your reference. Feet of head psi ratings for each Cherne plug can be found in the Cherne catalog.

## Feet Head of Water to PSI

Feet Head	Pounds Per Square Inch		Feet Head	Pounds Per Square Inch
1	0.43		100	43.31
2	0.87		110	47.64
3	1.30		120	51.97
4	1.73		130	56.3
5	2.17		140	60.63
6	2.60		150	64.96
7	3.03		160	69.29
8	3.46		170	73.63
9	3.90		180	77.96
10	4.33		200	86.62
15	6.50		250	108.27
20	8.66		300	129.93
25	10.83		350	151.58
30	12.99		400	173.24
40	17.32		500	216.55
50	21.65		600	259.85
60	25.99		700	303.16
70	30.32		800	346.47
80	34.65		900	389.78
90	38.98		1000	433.00

**NOTE: One foot of water at 62 degrees F = 0.433 PSI. To find the PSI for any feet head not listed, multiply the feet head by 0.433.**

**Q – Why is it important to know pounds of force calculation?**

- **This calculation is important to the end user and helps them understand the forces behind the plug so that they can decide the proper way block the plug.**

**Q - Can I get help with a joint tester?**

- **Yes. There is a video on the Cherne page on YouTube that demonstrates how a joint tester works. Owner’s Manuals with specific instructions on assembling and using Cherne Joint Testers can be found in technical section of the Cherne website.**

**Q – What is the test pressure called out in ASTM C1103 for joint testing?**

- **3.5”**

**Q – Can I order specific parts for a Honda test pump?**

- **Owner’s Manuals and parts lists on all Cherne equipment can be located in the technical section of the Cherne website. <http://www.cherneind.com/Data/> “pieces parts” – replacement parts for the hydrostatic test pumps and joint testers. We do not stock engine parts.**

**Q – Why is the testing time longer for plastic pipe than concrete pipe with comparable lengths and diameters?**

- **Concrete pipe is porous and the ASTM guidelines give allowances for this porosity.**

**Q – What is the length of time needed to test a joint with no more than 1 PSI drop?**

- **5 seconds**

**Q – What is the test pressure for ASTM C924 (concrete pipe)?**

- **3.5 PSI with less than a 1 PSI pressure loss over the time period called out in the tables.**