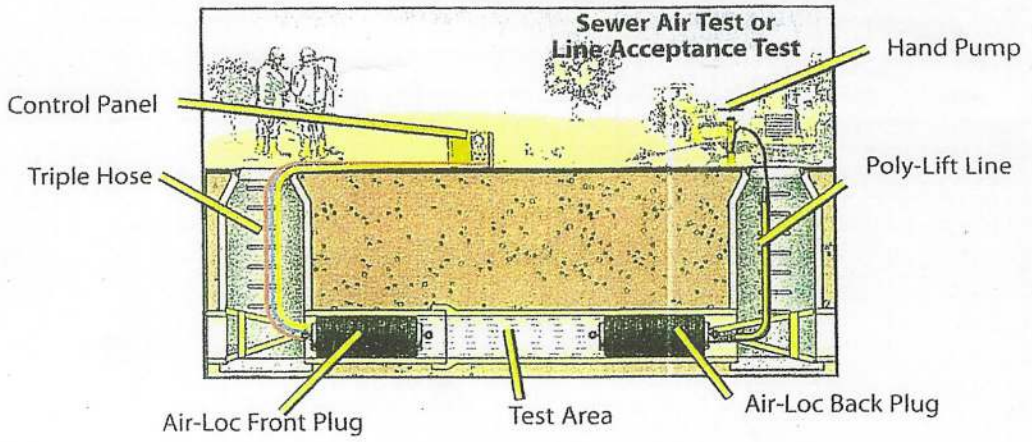
AIR TESTING

Equipment needed: Air test panel, triple line hose, inlet air hose, air-loc front plug (plug to run test thru), air loc back plug (dead end plug), 20ft poly-lift line or extension hose to inflate dead end plug safely from top of manhole. Contractor supplies compressor and air tank to fill dead end plugs.

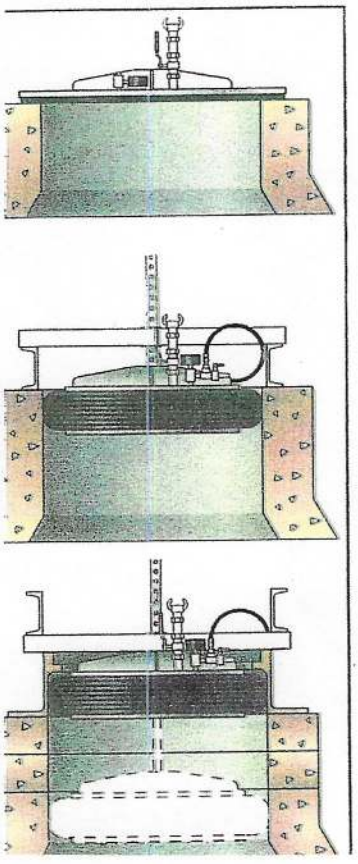
Procedure: Place dead end plug with poly-lift line or extension hose attached into the end of the pipe to be tested (block for safety) and inflate to correct plug pressure. Match triple line hose to correct color-coded fittings on air loc front or testing plug and air test panel. (Make sure that the hose valve switch on panel is set to the proper hose size, (3/4 inch or 3/8 inch). Place testing plug in line and block for safety. **BEFORE** hooking compressor to panel make sure the test valve and ball valve are set to off or exhaust. Inflate plug from above, using panel control valve (ball pressure valve), to correct plug pressure. Turn test valve to inflate to fill line with air to 4 PSI then turn valve off. Set timer (watch) for 5 minutes. You are allowed to lose 1 PSI in time allotted for test. After test is completed, **FIRST** exhaust ALL air in line. DO NOT release plug pressure until ALL air has been released from line. (Death or Damage can occur)
Next, exhaust air pressure from air loc front plug or testing plug, then exhaust air from dead end plug. Remove equipment and move to next line. Clean equipment before returning from rental.



VACUUM TESTING

Equipment needed: Vacuum pump, 25ft clear PVC vacuum hose, 32inch plate testing head (bladder style optional) and dead end pipe plugs

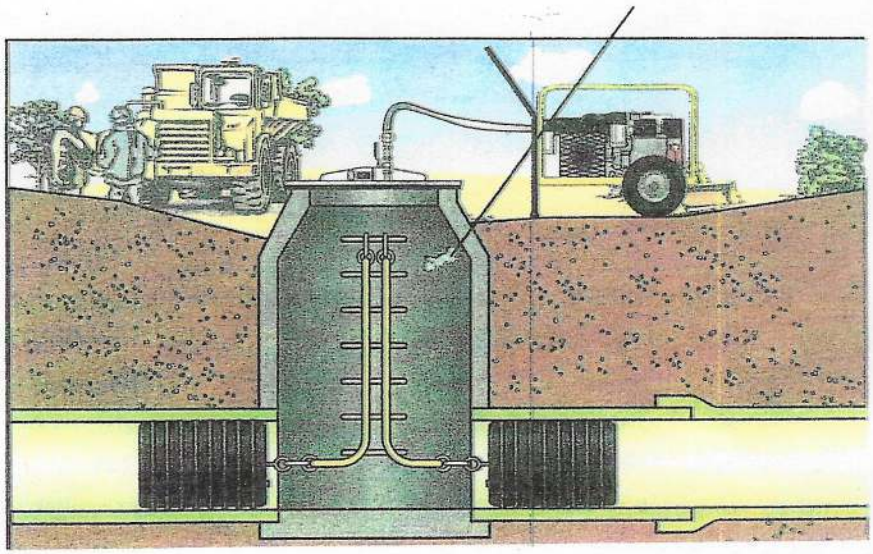
Procedure: Dead end plugs will be needed to plug off each pipe opening coming into the manhole. Use only poly-lift lines or extension hoses to inflate plugs from the top. Place the plate on top of the manhole. Attach the clear vacuum hose to the plate and vacuum pump, open valve and start engine. Pull a vacuum of 10 inches of mercury then close valve and shut off engine. Test should be for 1 minute with up to 1 inch of mercury drop allowed to pass. After test, remove hose from plate, open valve to release vacuum from manhole, then pull plate off. DO NOT ENTER MANHOLE! Deflate plugs from top of manhole and pull out.
(CAUTION: DEEP HOLES MAY TAKE LONGER TO REPLENISH BREATHEABLE AIR, DO NOT RUSH INTO A MANHOLE AFTER A VACUUM TEST)
If test fails, use Hudson sprayer with 2 and a half gallons of dishwashing soap and water mixture to spray manhole with soapy water and re-test. When you pull plate off at the end of this test leaks will be where bubbles have formed.



• Plate Style - Seals frame or top of cone. Works great if manhole is exposed or before backfilled.

• Bladder Style - Seals inside the frame and above or below grading rings. Works well on both existing and newly installed manholes.

Bubbles - Location of Leak



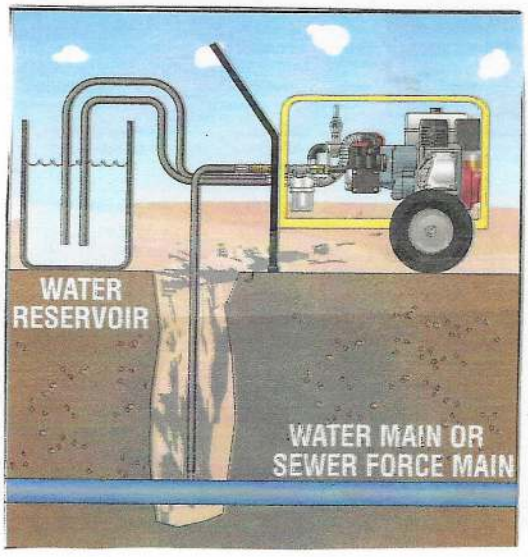
HYDROSTATIC TESTING

Purpose: Mainly used to pressure test a water main for leaks at 150 PSI or force main lines at a high PSI rating.

Equipment: Hydrostatic test pump, suction hose, pressure hose, 32 gallon clean container (plastic trash can new), and clean water.

Important: Make sure diaphragm has minim 65psi. If line being tested has pressure on it, start unit first than open pressure side valve or you will blow hockey puck and lose pressure in diaphragm.

Procedure: Set unit up on level ground and check pressure on pump head (65psi min.). Hook pressure hose to pressure side of pump and attaché to corp stop on water line. Hook suction hose up to unit on suction side and place the other end into clean container filled with clean water. Set regulator to desired PSI setting (150PSI) standard. (see important before next step) Open corp stop and start unit, let run until correct pressure is built up on line, than close pressure valve on unit and shut unit off. Wait for allotted time to pass test. When test is completed turn valve to corp stop off and release pressure on unit. Unhook and move to next line.

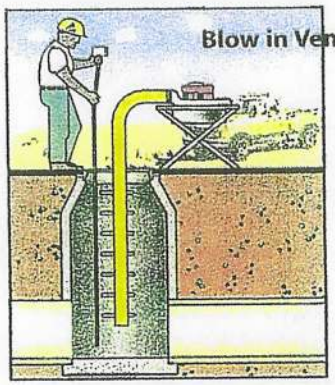


LINE STRINGER / VENTILATOR

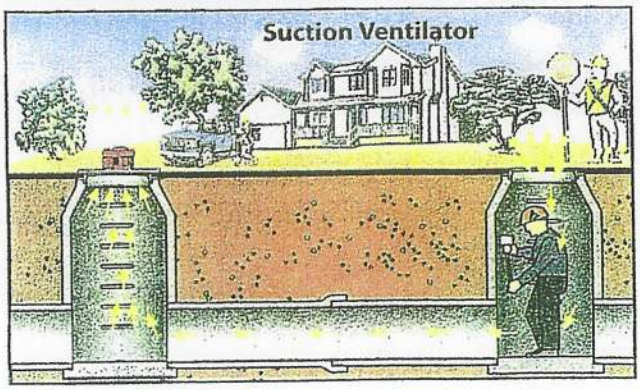
USES: 1) to pull a tag line through the pipe for mandrel testing
2) to pull a tag line through the pipe for TV camera winch system
3) to ventilate manhole

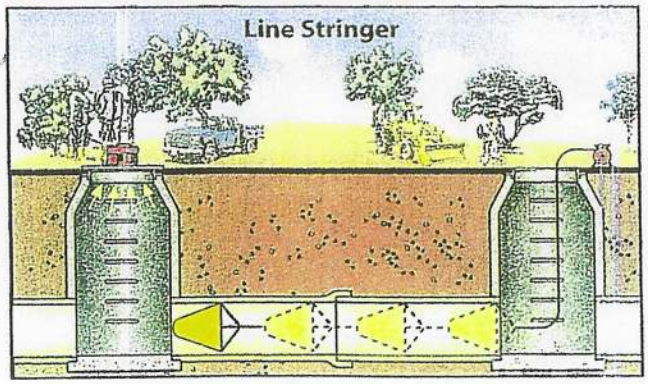
Equipment: line stringer (Hurco or Cherne), rope reel with 1,000' of line, and a parachute to match line size.

Procedure for tag line: place line stringer on manhole, can be up or downstream, depends on application. Next, attach parachute to line from rope reel and place in the pipe at the next manhole from where you are working. Have a person start the line stringer. From up top of the manhole, with parachute in line, apply light pressure to reel when line is coming off, so as not to incur a backlash on the rope reel. On a 350' run it will take approximately 35 seconds for parachute to reach manhole where line stringer is set up.



Procedure for Ventilation: Place unit on upstream manhole. Start unit and let it run. Fresh air will be drawn into manhole you are working in and exhausted out through ventilation unit. If in street set cones or barricades around unit.





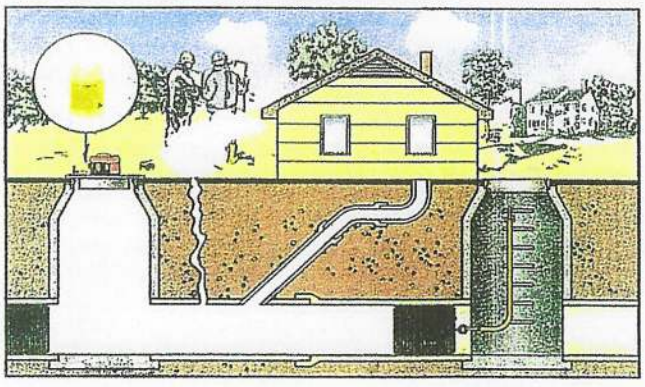
SMOKE TESTING

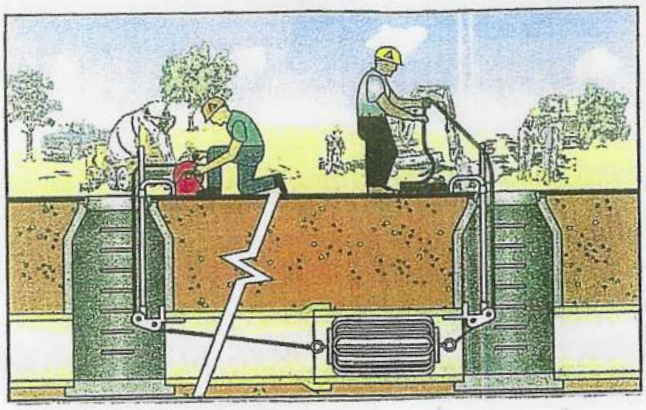
Purpose: used to find leaks in sewer lines or illegal connections to main

Equipment: smoker (Hurco or Cherne), pump up tank with metering device, liquid smoke or smoke bombs. Sometimes dead end plugs are used to isolate a section of line.

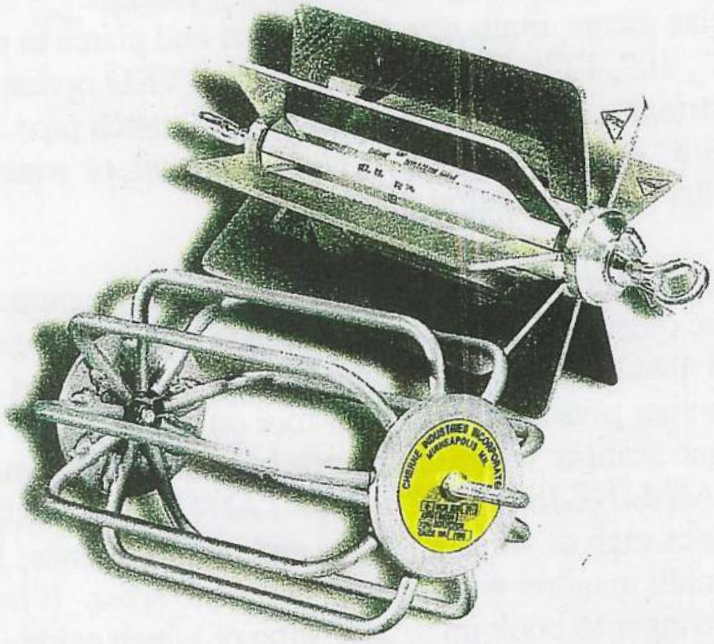
Procedure: Place smoker on top of manhole on line you wish to test. Next, pour around half a gallon of liquid smoke into tank, put top back on pump and connect hose to smoker. Pump up tank to build pressure around 10 to 15 strokes. Start smoker and let it warm up for about a minute. Slowly turn the valve on a little till line is flooded with smoke. Then turn valve off then crack it a little to keep the line flooded. Look for the smoke coming out of the ground and mark it (wire flags or paint). When finished turn unit off and release pressure on tank and move to the next job.

New "Liquid Smoke" Blower





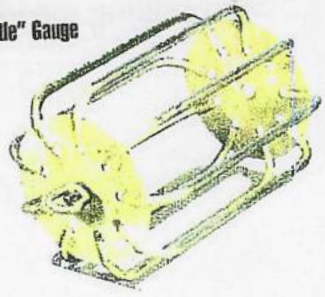
DEFLECTION GAUGES



Multi-Size Deflection Test Gauges

Stationary Deflection Test Gauges

"Whistle" Gauge



DEFLECTION TESTING

This type testing is used to check the roundness of the pipe, which ensures proper laying of the pipe.

Questions to ask: What size of pipe? (8", 10", and so on)
What type of pipe? (SDR26, SDR35, HOBOS, ETC.)
Is the deflection 5% (standard) or different?
(Example: 8" SDR35 5% deflection)

Equipment needed: deflection gauge (mandrel), examples = Hurco whistle gauge, single size gauge, multi size (change out end plates to match pipe size example, 6", 8", 10", 12"), aluminum gauges and TKO option to single gauges. Line stringer, rope reel, and parachute to match pipe size. Alternate rope reels are 3/8" poly rope set up on carts, tiger tail, or winch cable system with bottom roller to pull mandrel through.

Procedure: set line stringer up on downside manhole, tie parachute to mandrel. On the other end of the mandrel attach line from rope reel. Next, place chute and mandrel in upstream manhole. Have a person start line stringer with another person placing their foot on the rope reel (lightly). The draft from the line stringer will pull the mandrel through the line if the line is clean. (A CLEAN LINE IS VERY IMPORTANT!!) On small lines use lightweight gauges such as whistle gauges and on larger lines, 12" and up, chute will pull multi mandrel with various end plate sizes. If this does not work, use line stringer to hook up to 3/8" rope or winch cable. Run rope through tiger tail before pulling tag line back to rope reel. Next, attach rope or cable to mandrel, if using cable set roller up in bottom of manhole where pulling winch is located. Attach rope or cable to back of mandrel for safety should mandrel get stuck in line. (TKO option works well in these cases.) Start pulling mandrel back at a steady easy pace.

JET-BALL® PIPELINE CLEANING BALLS

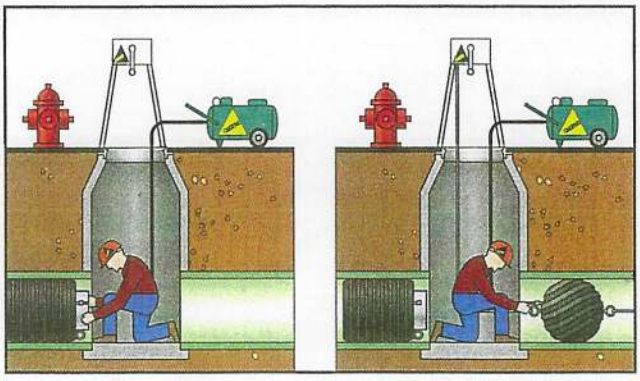
Jet-Ball® Pipeline Cleaning Balls are designed with spiral grooves, which provide a high-power spraying action to clean pipelines. Cherne ***MULTI-SIZE*** Jet-Ball cleaning balls are made of natural rubber and are an ***INEXPENSIVE WAY TO CLEAN NEW LINES*** prior to line acceptance testing as well as ***CLEANING GREASE OUT OF EXISTING LINES.*** The better alternative to an expensive jet truck.

When performing line cleaning, all pipelines coming into the manhole should be blocked except for the line being cleaned. The Jet-Ball is connected to a winch to facilitate the movement down the line. The ball is then placed in the line and inflated to the required pressure. Eyebolts at each end allow for tethering on both sides. The manhole should be filled with water to 5 feet of head and the ball slowly released down the line.

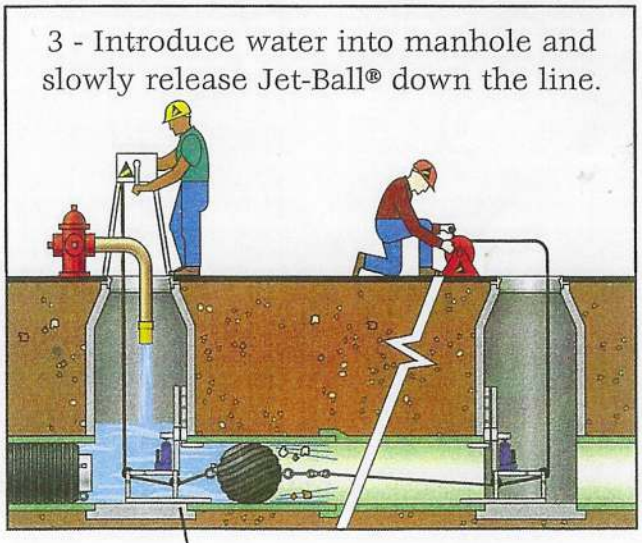
Easy as 1-2-3!

1 - Install plug to isolate manhole.

2 - Attach Jet-Ball® to tag line and inflate.

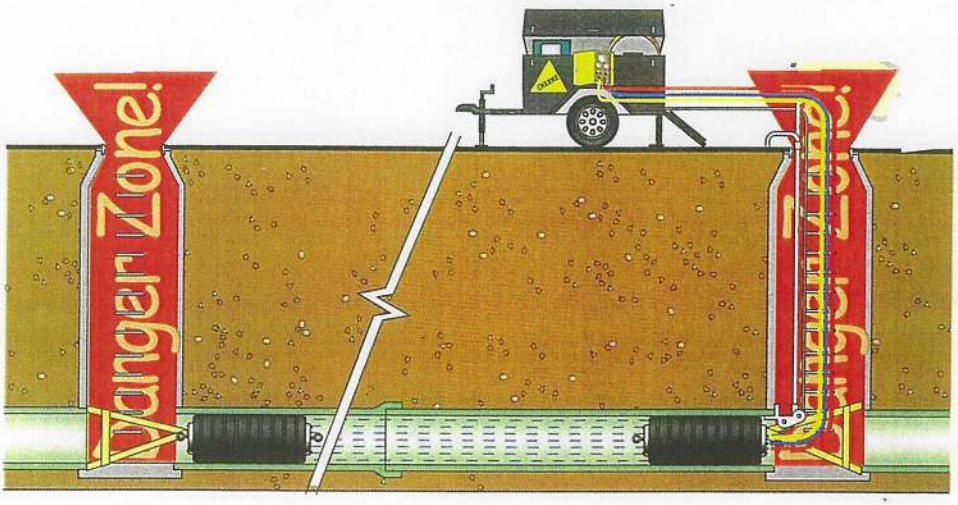


3 - Introduce water into manhole and slowly release Jet-Ball® down the line.



Manhole Jack

ALWAYS BLOCK PLUGS WHEN CONDUCTING AIR TESTS!



HOW TO CALCULATE PIPELINE FORCES AND PRESSURES.

1) Determine the inside diameter of the pipeline in inches.
2) Determine the maximum backpressure.
3) Calculate the pipe area in square inches.
4) Calculate the force the plug must withstand.

Example with 36" pipe: 18" x 18" x 3.14 x 5 psi = **5087 POUNDS OF FORCE!**

Calculating pounds of force aid in building plug blocking systems. It also illustrates the tremendous force generated by a sewer air test.

SPECIAL NOTE:

Pressures being exerted on a plug, regardless of the medium (liquid, water or air) are the same. Ten (10) PSI water is the same as ten (10) PSI air. However, **AIR IS A COMPRESSIBLE MEDIA**. Therefore extreme caution should be observed when air testing.

Air back-pressure ratings reflect absolute back-pressure capabilities. Common engineering standards have been used to convert head pressure to PSI. **IT IS IMPERATIVE TO BLOCK PIPE PLUGS** when performing air-pressure tests and to ensure no one is in the zone of danger when a plug is in use. (Please see our Safety and Instruction Manual for complete details.)

STAND CLEAR OF THE DANGER ZONE!

GENERAL SAFETY & USAGE INSTRUCTIONS

1. DEATH, BODILY INJURY AND/OR PROPERTY DAMAGE MAY RESULT IF PLUG FAILS FOR ANY REASON.
2. READ AND UNDERSTAND SAFETY INSTRUCTION SHEET BEFORE USING PLUG.
3. MUST WEAR SAFETY GLASSES AND A HARD HAT.
4. DO NOT ENTER DANGER ZONE WHEN PLUG IS IN USE.
5. MEASURE PIPE DIAMETER BEFORE SELECTING PLUG.
6. INSPECT PLUG FOR DAMAGE BEFORE AND AFTER USE.
7. NEVER USE A PLUG IN A PIPE SIZE DIFFERENT FROM RECOMMENDED USAGE RANGE
8. ALWAYS ATTACH AN INFLATION EXTENSION HOSE SO PLUG CAN BE INFLATED AND DEFLATED FROM OUTSIDE THE DANGER ZONE.
9. NEVER REMOVE THE INFLATION HOSE UNTIL ALL BACKPRESSURE IS RELEASED AND THE PLUG IS DEFLATED.
10. MUST INFLATE PLUG TO THE PRESSURE SHOWN ON PLUG.
11. ALWAYS USE PROPERLY CALIBRATED PRESSURE GAUGES.
12. DO NOT EXCEED RECOMMENDED MAXIMUM ALLOWABLE BACKPRESSURE (REFER TO THIS SAFETY INSTRUCTION SHEET)
13. ALWAYS RELEASE BACKPRESSURE FROM THE PIPE FIRST, BEFORE DEFLATING PLUG.