

## INSTRUCTIONS HI-FLOW AIR-LOC® LINE ACCEPTANCE LINE ACCEPTANCE PART NUMBER 253-278



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### **Introduction**

The Cherne Air-Loc Line Acceptance has been specifically designed for low pressure air testing of sewer lines. Line acceptance testing is done on complete sections of pipe.

## LIMITED WARRANTY

Manufacturer warrants all products manufactured by it will be free from defects in material and workmanship for one (1) year following the date of manufacture. If any of the goods are found to be defective, such goods will, at manufacturer's option be replaced or repaired at manufacturer's cost. The parties hereto expressly agree that buyer's sole and exclusive remedy against the manufacturer shall be for repair or replacement of defective goods as provided herein. (The sole purpose of the stipulated exclusive remedy shall be to provide the buyer with free repair and replacement of defective goods in the manner provided herein. The exclusive remedy shall not be deemed to have failed of its essential purpose so long as the manufacturer is willing and able to repair or replace defective goods in the prescribed manner.) Goods which may be sold by manufacturer but are not manufactured by it are not warranted by manufacturer, but are sold only with the warranties, if any, of the original manufacturers thereof. (This warranty does not cover labor or other costs or expenses to remove or install any defective, repaired or replaced goods.) Manufacturer's warranty does not apply to any goods which have been subjected to misuse, mishandling, misapplication, neglect (including but not limited to use of unauthorized parts or attachments), or adjustment or repair performed by anyone other than manufacturer or one of manufacturer's authorized agents.

Any claim by buyer with reference to the goods sold hereunder shall be deemed waived by the buyer unless submitted in writing to manufacturer within the earlier of (1) thirty days (30) days following the date buyer discovered or by reasonable inspection should have discovered, any claimed breach of the foregoing warranty, or (2) thirteen (13) months following the date of manufacture. Any cause of action for breach of the foregoing warranty shall be brought within one year from the date the alleged breach was discovered or should have been discovered, whichever comes first.

**LIMITATION OF LIABILITY.** Manufacturer's liability (whether under the theories of breach of contract or warranty, negligence, or strict liability) for its goods shall be limited to repairing or replacing parts found by the manufacturer to be defective, or at manufacturer's option, to refunding the purchase price of such goods or parts thereof.

**DISCLAIMER OF CONSEQUENTIAL DAMAGES.** In no event shall manufacturer be liable for consequential damages arising out of or in connection with this agreement, including without limitation breach of any obligation imposed on manufacturer hereunder or in connection herewith. Consequential damages for purposes hereof shall include, without limitation (including death) to any person, or loss of or damage to property (including without limitation property handled or processed by the use of goods). Buyer shall indemnify manufacturer against all liability, cost or expense which may be sustained by manufacturer on account of any such loss, damage or injury.

**DEFECTIVE PRODUCTS POLICY.** To obtain performance under this warranty, any product suspected of having a manufacturing defect in materials or workmanship at manufacturers request must be returned to CHERNE INDUSTRIES INCORPORATED, freight prepaid, for inspection. A returned goods authorization must be obtained before shipping any product back to CHERNE. Call 1-800-843-7584 and ask for customer service.

**CUSTOMER TRANSPORTATION REIMBURSEMENT.** Whenever CHERNE repairs or replaces a product at CHERNE'S expense CHERNE will reimburse the distributor by credit memo, the surface freight amount it cost CHERNE to return the warranty items.

The foregoing warranty is in lieu of all other warranties express or implied, including those of merchantability or fitness for any purpose not expressly set forth herein. No affirmation of manufacturer, by words or action, other than as set forth in this language shall constitute a warranty.

## **SAFETY**

1. Prior to using your Air-Loc testing equipment, the PIPE PLUG SAFETY INSTRUCTION AND DATA BOOKLET should be read. Additional copies can be obtained from Cherne Industries Incorporated by requesting form 103-586.
2. Always make sure that the TEST valve and the BALL valve on the Air-Loc control panel are in their OFF position.
3. During testing, do not allow anyone in or near the danger zones (sewer line, manhole) until the test area has been vacated and the plugs are completely deflated.
4. Do not operate at an air inlet pressure greater than 120 PSIG ( 8.2 Bar ).
5. Do not deflate the plugs before the test area has been completely exhausted. Air pressure within the test area may cause the balls to blow out of the sewer causing damage, serious bodily injury or death.
6. Never inflate a plug outside of pipe or inside of an unsupported (above ground) pipe; the pipe may burst, resulting in serious bodily injury or death.
7. Disconnect the air supply hose to the Air-Loc control panel and relieve all test pressure before servicing.
8. Do not over inflate the plugs. Refer to the PIPE PLUG SAFETY INSTRUCTION AND DATA BOOKLET for the proper inflation and back pressure ratings.

## MANHOLE SAFETY PROCEDURE

### RECOMMENDED SAFETY PROCEDURE FOR ENTRANCE INTO MANHOLES OR CONFINED SPACES

**WARNING:** THESE RECOMMENDATIONS ARE TO BE USED AS A GENERAL GUIDELINE ONLY: ALTHOUGH CHERNE RECOMMENDS THESE FOLLOWING GUIDELINES, IT DOES NOT WARRANT, REPRESENT OR ASSUME ANY RESPONSIBILITY THAT THESE RECOMMENDATIONS WILL FULFILL ALL APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS. CHERNE ASSUMES NO LIABILITY FOR EITHER PERSONAL INJURY OR CONSEQUENTIAL DAMAGES THAT RESULT FROM THE RELIANCE ON THESE RECOMMENDATIONS.

**WARNING:** IT IS THE PRODUCT USER'S RESPONSIBILITY TO READ AND COMPLY WITH ALL APPLICABLE REGULATIONS. REFER TO THE CODE OF FEDERAL REGULATIONS, "CFR" PART 1926 AND ALL OTHER PERTINENT FEDERAL, STATE, AND LOCAL REGULATIONS.

ALWAYS OUTFIT YOURSELF WITH THE NECESSARY SAFETY EQUIPMENT FOR ENTRANCE INTO A MANHOLE OR CONFINED SPACE. THIS MAY INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS (REFER TO WARNING STATED IMMEDIATELY ABOVE):

#### Recommended equipment is as follows:

- |  |  |
|--|--|
| A. Safety Hat                              | G. Ear Protection                              |
| B. Safety Glasses                          | H. Hazardous Gas Detector and Oxygen Monitor   |
| C. Respirator or self-contained Air Source | I. Manhole or Confined Space Ventilation       |
| D. Safety Harness, Ropes, and Winch System | J. Protective Clothing                         |
| E. Safety Shoes or Boots                   | K. Safety Ladders                              |
| F. Protective Gloves                       | L. Any Other Recommended or Required Equipment |

ALWAYS ENSURE THAT ALL EQUIPMENT MEETS OR EXCEEDS THE MINIMUM REQUIREMENTS OF ALL APPLICABLE REGULATORY GUIDELINES. ALL EQUIPMENT SHOULD BE PROPERLY MAINTAINED, STORED, CALIBRATED IF NECESSARY, AND INSPECTED PRIOR TO EACH USE, IN COMPLIANCE WITH APPLICABLE REGULATIONS AND EQUIPMENT MANUFACTURER RECOMMENDATIONS.

ALWAYS PROPERLY VENTILATE MANHOLE OR CONFINED SPACE BEFORE ENTERING AND MAINTAIN VENTILATION WHILE IN MANHOLE OR CONFINED SPACE.

ALWAYS THOROUGHLY CHECK AT ALL LEVELS FOR HAZARDOUS GASES AND PROPER OXYGEN LEVELS (20% MINIMUM). CONTINUOUSLY MONITOR THESE LEVELS WHEN WORKERS ARE IN THE MANHOLE.

NEVER ENTER A MANHOLE OR CONFINED SPACE WITHOUT CO-WORKER ASSISTANCE. CO-WORKERS MUST BE PROPERLY TRAINED IN SAFETY REQUIREMENTS FOR ACCESS TO MANHOLES OR CONFINED SPACES.

IF YOU ENCOUNTER OR OBSERVE ANY CONDITIONS THAT ARE NOT EXPLAINED HERE OR NOT FULLY UNDERSTOOD BY YOU, NOTIFY YOUR SUPERVISOR OR SAFETY DIRECTOR BEFORE PROCEEDING.

#### **!!DANGER!!**

ALWAYS CONSULT WITH PROPER STATE, LOCAL, AND FEDERAL AGENCIES TO INSURE THAT ALL REQUIRED REGULATIONS ARE BEING FULFILLED.

FAILURE TO COMPLY WITH PROPER SAFETY REGULATIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH!!

## PACKING LIST

Inspect your kit for damage as soon as it is received. If damage is found, the delivering carrier must be notified immediately to file a claim. If the carrier is not notified immediately, they are within their rights to refuse any claims of damage. When unpacking, make sure all items are accounted for and that none are discarded with the packaging.

<u>ITEM</u>	<u>QTY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	1	304-708	A/L Control Panel
2	1	261-106	30 Foot Poly Lift/Inflation
Line			
3	1	273-968	Deluxe Tire Pump w/gauge
4	1	257-098	50 Foot Triple Hose Assembly
(w/QD s)			
5	1	103-586	Safety Instructions and Data
Booklet			

## INDIVIDUAL COMPONENTS

### **Item 1: Air-Loc Control Panel (Part No. 304-708).**

The Control Panel allows the operator to monitor and regulate line acceptance and leak location testing from various locations. A handle located at the top of the panel makes it easy to carry and transport to each test area.

The Control Panel is equipped with:

-Two air control regulators and three mechanical valves. These are provided to control the air flow throughout the system.

-Three air pressure gauges to monitor the pressures of the air compressor, test chamber and the pneumatic plugs.

Compressor Gauge	-0 to 160 PSIG
Test Gauge	-0 to 15 PSIG
Pneumatic Plug	-0 to 60 PSIG

-Leak location / Line acceptance ball valve allows user to switch (blue) test pressure port to 3/8 .

### **Item 2: 30 Foot Poly Lift/Inflation Line (Part No. 261-106).**

Deluxe Tire Pump is used in inflate the plug that is used for blocking in line acceptance testing. The test pump has a large capacity air chamber, long lasting pressure gauge, corrosion resistant brass fittings, and a handy quick disconnect valve.

### **Item 4: 50 Foot Triple Hose Assembly (Part No. 257-098).**

The 50 Foot Triple Hose is used in conjunction with the portable Air-Loc Panel for line acceptance testing.

Three different colored hoses simplify identification and connection to the panel and plugs. A cable restraint is attached to the ball end of the hose assembly to eliminate the need for a separate tow cable.

## LINE ACCEPTANCE TESTING

**CAUTION:** PRIOR TO BEGINNING LINE ACCEPTANCE TESTING, THE PIPE PLUG SAFETY INSTRUCTION AND DATA BOOKLET MUST BE READ. A BOOKLET IS INCLUDED WITH EACH CHERNE PLUG. ADDITIONAL COPIES CAN BE OBTAINED FROM CHERNE INDUSTRIES BY REQUESTING PART NO. 103-586.

### Introduction

Refer to FIGURE 1

Line Acceptance Testing consists of low air pressure testing of sewer lines using two pipe plugs. One plug is placed in each end of a section of sewer line. The plugs are inflated to create an airtight seal and the pipe (test chamber) between the two plugs is pressurized with air. A drop in air pressure beyond the municipality's specifications indicates a leak (refer to test engineers specs). Otherwise, the section passes. When the test is completed, the test chamber is depressurized; the plugs are deflated, and then moved to the next section of pipe to be tested.

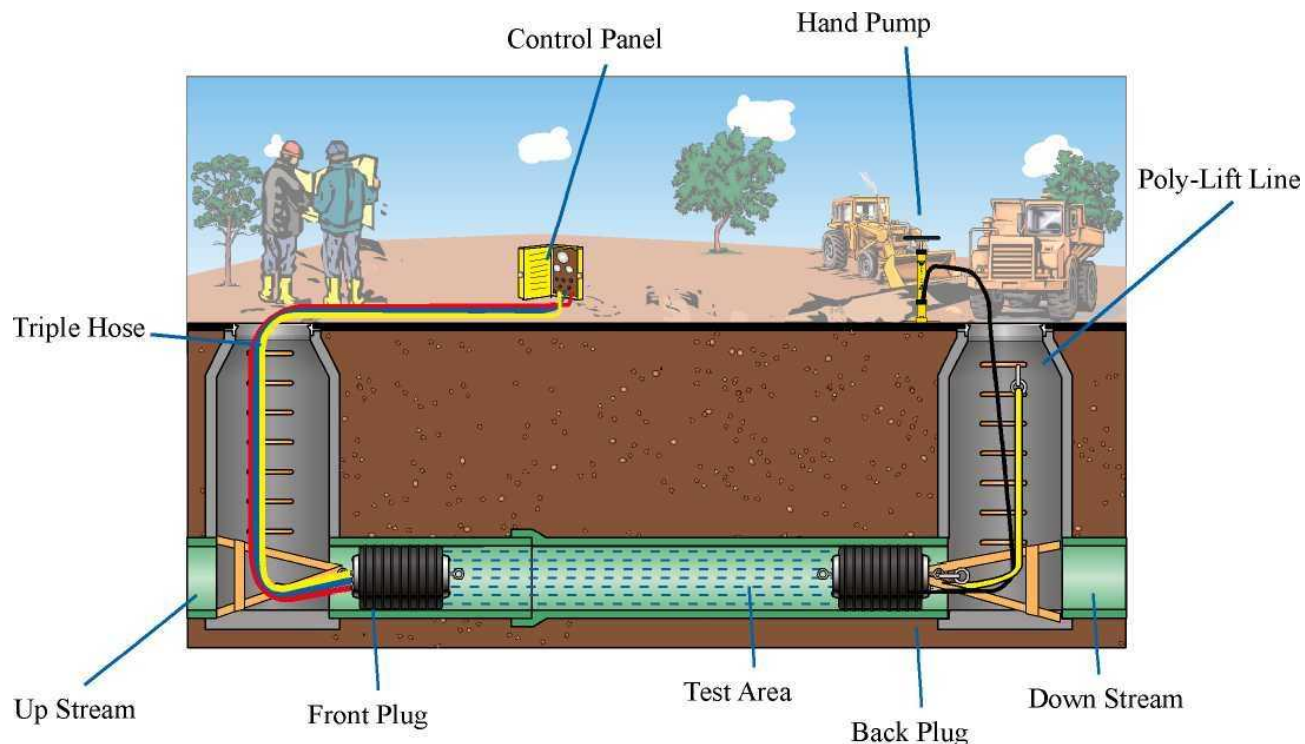


FIGURE 1



PRESET TEST PRESSURE AND BALL PRESSURE FOR LINE ACCEPTANCE & LEAK  
LOCATION

NOTE: Before the triple hose can be attached to the front ball, the Air-Loc control panel test and ball regulators must be adjusted.

1. Unlatch and open the Air-Loc control panel (Item 1). Connect each 50 or 500 foot triple hose quick disconnect to the fittings on the front of the control panel according to color code.

NOTE: Leak Location Procedures use the 500 foot triple hose. Line Acceptance Procedures use the 50 foot triple hose. This allows for faster inflation and deflation times, therefore, speeding up the testing procedure.

2. At the other end of the triple hose, connect the yellow and blue hoses together using two quick disconnect nipples and a hex coupling, if available. If these types of fittings are not available, you'll need to determine the best way to connect these two hoses.

NOTE: Use teflon tape on all pipe thread fittings.

3. Place the TEST VALVE in the EXHAUST position. Make sure the TEST REGULATOR and BALL REGULATOR control knobs are turned fully COUNTERCLOCKWISE.

NOTE: The Test Regulator as well as the Ball Regulator have spring loaded control knobs. Pull the control knob out, turn to adjust, then release to lock.

4. Connect the air compressor hose to the INLET AIR fitting on the control panel and place the TEST VALVE in the OFF position.
5. On the air compressor, relieve all residual backpressure. Start the compressor. Let it build to full pressure (approx. 110 PSIG) before adjusting the TEST REGULATOR.

CAUTION: DO NOT OPERATE AT AN AIR INLET PRESSURE GREATER THAN 120 PSIG (8.2 BAR).

6. Place the TEST VALVE in the INFLATE position and adjust the TEST REGULATOR control knob by turning it in a CLOCKWISE direction. Adjust the TEST REGULATOR to the correct "TEST PRESSURE". Refer to your city/state municipal test requirements.
7. Return the TEST VALVE to the EXHAUST position.
8. Disconnect the blue and yellow hoses.
9. Place the BALL VALVE in the EXHAUST position. Make sure the BALL REGULATOR control knob is turned fully COUNTERCLOCKWISE.

10. Place the BALL VALVE in the INFLATE position and adjust the BALL REGULATOR control knob by turning it in a CLOCKWISE direction. Adjust the BALL REGULATOR to the correct Ball Inflation Pressure as indicated on the plug and/or in the SAFETY INSTRUCTION AND DATA BOOKLET.

NOTE: The quick disconnect coupler on the red hose does not need to be plugged to set the ball pressure.

11. Return the BALL VALVE to the EXHAUST position.
12. Attach the 50 or 500 foot triple hose with cable restraint to the Air-Loc plug according to the color coding of the hoses.

**F** Triple hose color codes:

- Red - Ball Inflation
- Blue - Pressurizes the test area
- Yellow - Monitors test pressure (on large gauge)

13. Attach the cable from the strain relief on the triple hose to the eye bolt using the snap hook. When line acceptance testing is completed, this cable assists in the removal of the ball from the manhole.
14. Lower the converted ball into the upstream manhole and insert fully into the pipe. Make sure that the area within the pipe where the ball will be seated is cleaned of all debris or matter that may cause an improper seal.

Ground Water Pressure Calculation

Where ground water is present in the area to be air tested, the pressure of the water must be calculated and added to the test pressure specified.

Water exerts a pressure of 0.433 PSI for each foot in height. The calculated water pressure should be added to the pressures in the engineers specifications for a total pressure required in air testing.

<b>GROUND WATER CHART</b>			
<b>FEET</b>	<b>PSI</b>	<b>METERS</b>	<b>Kg/CM</b>
1	.43	.3	0.03
2	.86	.6	0.06
3	1.2	.9	0.09
4	1.7	1.2	0.12
5	2.1	1.5	0.15
6	2.6	1.8	0.18
7	3.0	2.1	0.21
8	3.4	2.4	0.24
9	3.9	2.7	0.27
10	4.3	3.0	0.30

## TROUBLE SHOOTING GUIDE

### **PROBLEM: AIR-LOC PLUGS WILL NOT INFLATE**

Symptom: Ball pressure gauge registers too low.

Cause . . . . Regulator set too low.

Solution . . . . Reset as required.

Cause. . . . Compressor off.

Solution . . . . Start compressor.

Symptom: Ball pressure gauge will not register.

Cause . . . . Leak in Air-Loc plug.

Solution . . . . See Air-Loc plug sleeve/body replacement.

Cause . . . . Leak in air hose system.

Solution . . . . See "Air Line System Leaks on page 14.

Cause . . . . Broken pressure gauge.

Solution . . . . Replace gauge.

### **PROBLEM: AIR-LOC PLUGS LOSE PRESSURE**

Symptom: Reading on ball pressure gauge drops; leak is heard at the control panel.

Cause . . . . Leak in air hose system.

Solution . . . . See "Air Line System leaks" on page 14.

Symptom: Reading on ball pressure gauge drops; no leak is heard.

Cause . . . . Leak in air hose system.

Solution . . . . See "Air Line System leaks" on page 14.

Cause . . . . Hose between plugs leaking or fittings are loose.

Solution . . . . Repair or replace hose, tighten fittings.

Cause . . . . Leak in Air-Loc ball.

Solution . . . . Repair or replace.

(Trouble Shooting Guide continued next page)

## **PROBLEM: TEST PRESSURE WILL NOT BUILD**

Symptom: Test Pressure gauge registers too low.

Cause . . . Compressor off.  
Solution . . Restart compressor.

Cause . . . Water in test monitor line.  
Solution . . Temporarily reverse the yellow and blue hoses at the Air-Loc control panel to flush the test line.

Cause . . . Regulator set too low.  
Solution . . Reset as required.

Cause . . . Leak in pipe.  
Solution . . Replace or repair pipe.

Cause . . . Air by-passing balls.  
Solution . . Clean line, remove debris.

Symptom: Test pressure gauge will not register.

Cause . . . Yellow hose plugged.  
Solution . . Disconnect the yellow hose from the Air-Loc reel rotary union and induce air into the test line. This will remove any debris blocking the test line air passage.

Cause . . . Bad leak in pipe.  
Solution . . Leak location procedure.

## **PROBLEM: TEST PRESSURE DROPS**

Symptom: Reading on test pressure gauge drops, leak is heard at control panel.

Cause . . . Leak in hose system.  
Solution . . See "Air Line System Leaks" on page 14.

Cause . . . Air by-passing Air-Loc balls.  
Solution . . Clean line, remove debris. See problem called "Air-Loc balls will not inflate".

Cause . . . Leak in sewer line.  
Solution . . Leak location procedures.

## **PROBLEM: TEST PRESSURE INCREASES**

Symptom: Reading on test pressure gauge rises.

Cause . . . Sewer line is warmer than test air introduced.  
Solution . . Read air testing procedures.

Cause . . . Infiltrating water between balls.  
Solution . . See "Ground Water Pressure Calculation", page 16.

Cause . . . Air by-passing to test chamber.  
Solution . . Check all air connections, check fittings on ball.

## Time Charts

APPROXIMATE TIME REQUIRED TO PRESSURIZE TO 4 PSIG (0.28 Kg/cm<sup>2</sup>)  
THROUGH 50 FOOT (15.2 METERS) INFLATION HOSE  
(IN MINUTES, UNLESS OTHERWISE NOTED)

Pipe Size Inches mm	20' Reach (6.09M)	100' Reach (30.4M)	200' Reach (60.9M)	300' Reach (91.4M)	400' Reach (121.9M)	500' Reach (152.4M)	600' Reach (182.8 M)
4 101	1 sec.	7 sec.	14 sec.	21 sec.	28 sec.	34 sec.	42 sec.
6 152	3 sec.	14 sec.	31 sec.	44 sec.	1.02 min.	1.37 min.	1.51 min.
8 203	5 sec.	28 Sec.	52 sec.	1.4 min.	1.79 min.	2.24 min.	2.7 min.
10 254	8 sec.	39 sec.	1.37 min.	2.1 min.	2.7 min.	3.4 min.	4.1 min.
12 304	12 sec.	58 sec.	1.96 min.	2.94 min.	3.92min.	4.94 min.	5.99 min.
15 381	18 sec.	1.54 min.	3.1 min.	4.62 min.	6.16 min.	8.2 min.	9.24 min.
18 457	28 sec.	2.21 min.	4.4 min.	6.6 min.	8.8 min.	11 min.	13.2 min.
21 533	36 sec.	2.5 min.	5.9 min.	8.82 min.	11.8 min.	15 min.	17.6 min.
24 609	48 sec.	4 min.	7.9 min.	12 min.	15.9 min.	24 min.	32 min.

\* The above times are approximate only. They're applicable to a compressor with capacity of 17.9 CFM at 100 PSI.

SAMPLE PIPE TESTING TIMES		
PIPE DIAMETER/INCHES	PIPE DIAMETER/MM	MINUTES PER 100 FEET
4	101	.11
6	152	.23
8	203	.42
10	254	.53
12	304	.63
15	381	.74
18	457	.84
21	533	1.1
24	609	1.3

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