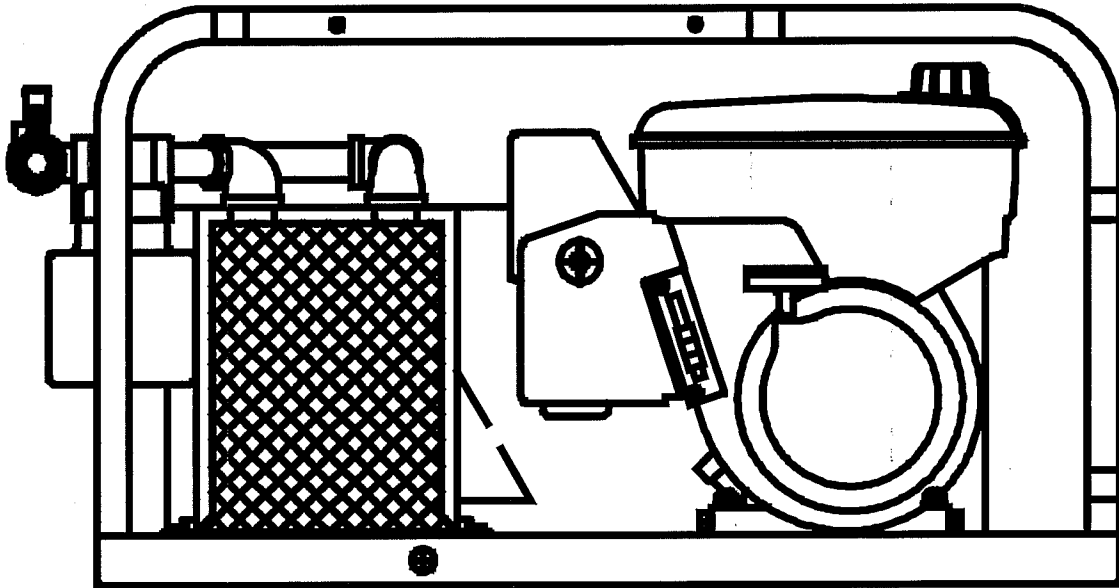


INSTRUCTIONS

AIR-LOC® Vacuum Pumps

Vacuum Pumps W/Honda and Briggs Motors



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UNPACKING

Inspect the product as soon as it is received. If you find damage, notify the delivering carrier immediately to begin the claims process. Carriers have the right to refuse claims for damage if it's not promptly identified.

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.



WARNING Test all manholes for gases before using the Manhole Tester. Ventilate the manhole if toxic or flammable gases are present. **Gases can cause injury, asphyxiation and death!** If the sewer system has hazardous gases from sewage or solvents, the Manhole Tester may draw them into the manhole during the vacuum operation. Test again for gases after the vacuum operation if you need to enter the manhole.

INTRODUCTION

The Cherne Manhole Tester is used for testing the integrity of manholes and their resistance to water infiltration/exfiltration using a vacuum as a test medium. The manhole's integrity is checked by measuring the vacuum loss over a specified time. If too much vacuum is lost, the manhole is defective and must be repaired.

This manual will help you install and operate the Manhole Tester. Parts lists of the test heads are included if it becomes necessary to order replacement parts.

THE ROTARY VANE VACUUM PUMP

Is used for drawing air out of the manhole. The pump is a rotary vane vacuum type which has a minimum pump rating of 20 cubic feet per minute (CFM) air flow when operating at 10 inches Hg. of vacuum.

The pump is powered by either a 5.5 horsepower gasoline Briggs engine or Honda engine (both tuned for use with unleaded regular gasoline).

!!CAUTION!!

ENGINE IS SHIPPED WITHOUT OIL

FILL ENGINE WITH OIL BY REMOVING OIL FILLER PLUG AND FILL UNTIL OVERFLOWING BEFORE ATTEMPTING TO START ENGINE

FAILURE TO FILL ENGINE WITH OIL BEFORE STARTING ENGINE WILL RESULT IN ENGINE FAILURE AND VOID THE WARRANTY.

SAFETY

1. Observe all state and federal regulations when entering manholes. Also follow Cherne's Manhole Safety Procedure on page 13 of this manual.

2.



DANGER!

**Never operate the manhole tester while a person is inside the manhole.
This may result in death or serious bodily injury!**

3. Brace the pipeline inverts if the lines entering the manhole have not been back-filled. This will prevent the pipe from dislodging and being pulled into the manhole.
3. Do not pressurize any manhole with the Manhole Tester – the unit could dislodge and injure the operator.
4. Make sure the inlet/outlet ball is closed before starting the vacuum pump engine.
5. Always disconnect the electrical power source or spark plug wire before servicing.
6. Wear a safety hat, safety glasses, and ear protection during operation.

PREPARING THE MANHOLE

1. Plug the manhole inverts and exits (other than the manhole top access) using proper sized pneumatic or mechanical plugs.

CAUTION!

FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS AND WARNINGS REGARDING SAFE AND PROPER INSTALLATION OF SUCH PLUGS. MAKE SURE THE PLUGS ARE PROPERLY RATED FOR THE PRESSURES REQUIRED IN THE TEST. THE STANDARD TEST OF 10" MERCURY IS EQUIVALENT TO ABOUT 5 PSIG (0.3 BAR) BACKPRESSURE. CHERNE INDUSTRIES INCORPORATED RECOMMENDS THAT THE PLUGS USED HAVE AT LEAST TWICE THE SAFETY FACTOR (OR A RATING OF 10 PSIG/0.7 BAR BACKPRESSURE) AND BE BLOCKED.

2. Brace the pipeline inverts if the lines entering the manhole have not been back-filled. This will prevent the pipe from dislodging and being pulled into the manhole.



DANGER!

**Never operate the manhole tester while a person is inside the manhole.
This may result in death or serious bodily injury!**



WARNING!

Manhole tester can suddenly shoot upwards. This can happen if the plugs suddenly dislodge due to any reason. As the plugs move they can pressurize the manhole causing the tester to shoot upwards suddenly. This may cause death, severe injury and/or property damage.

INSTALLATION AND OPERATION

Testing with gas engine powered vacuum pumps.

1. Prime and start the engine according to the manufacturer's instructions.
2. Honda engine models: The engine throttle is pre-set to achieve maximum RPM.
3. Briggs engine models: Place the throttle in the "fast" position to achieve maximum RPM.
4. Open the ball valve to pull a vacuum in the manhole. The normal test is 10" Hg.
5. Close the ball valve and monitor the vacuum for the specified test period.
6. If the vacuum drops less than one inch of mercury within the test time, the manhole is considered acceptable and passes the test. If the manhole fails and leaks, make the needed repairs and test again until satisfactory results are obtained.
7. Repeat this manhole test after back filling.

DEPTH (FEET) MANHOLE LENGTH	48 INCH	60 INCH	72 INCH
8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	65
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

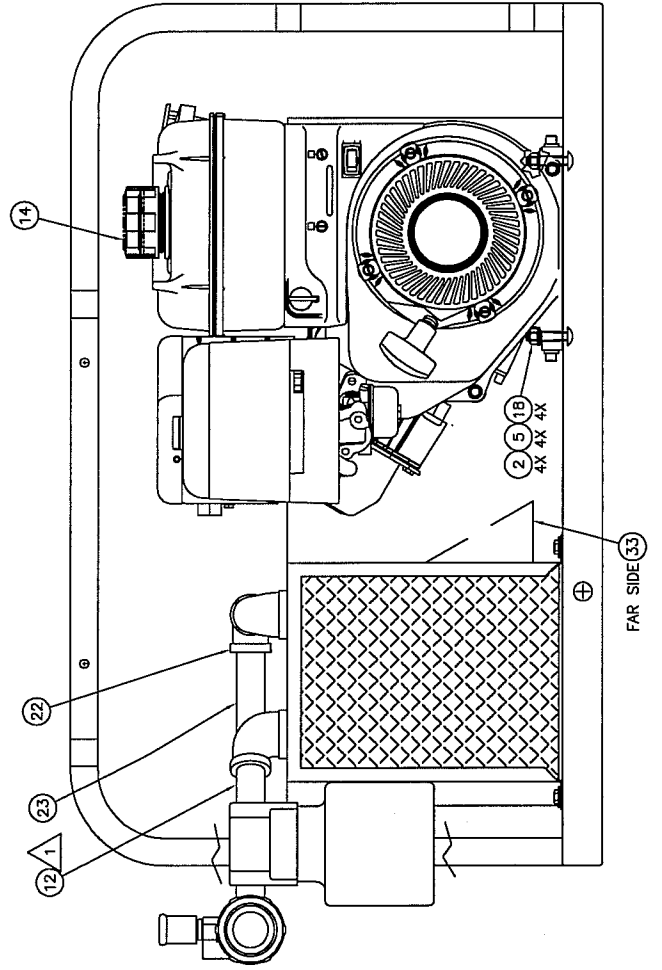
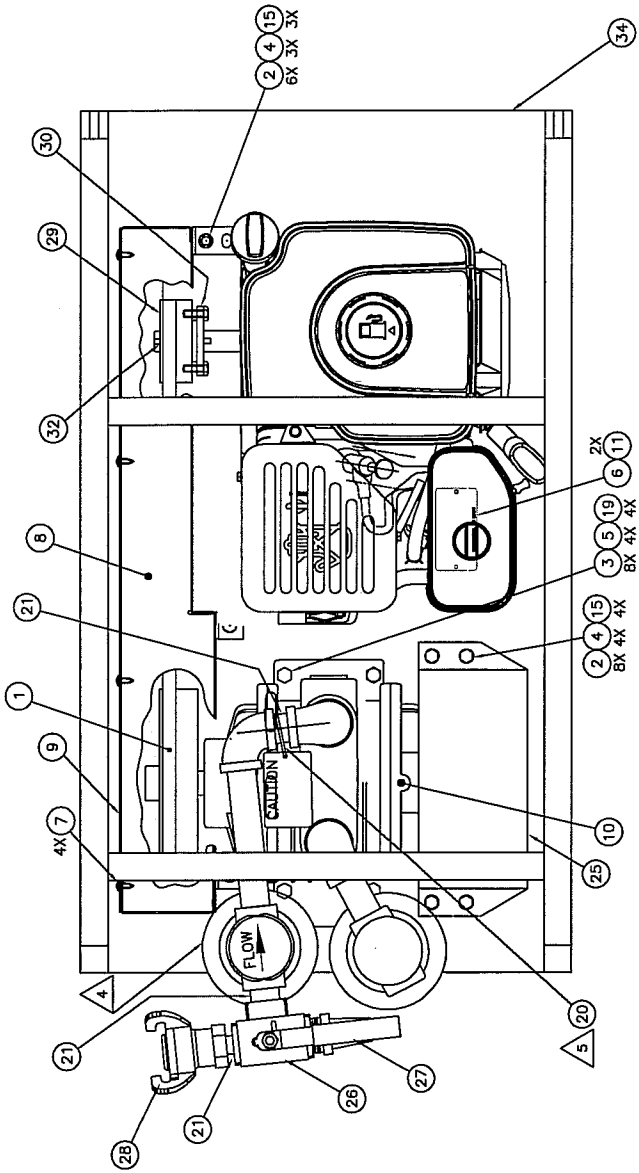
Maintenance

1. Never lubricate an “oil-less” vacuum pump. The carbon vanes and grease-packed bearings don’t need oil.
2. Clean away dirt, foreign particles, oil or moisture from the rotor slots. These can cause the vanes to stick and possibly break. Flush the filters regularly with a non-volatile solvent to preserve the vanes. Refer to the manufactures parts list and instructions (included with the product) for the procedure.
3. Refer to the engine manufacturers instructions for maintenance of the engine.

GASOLINE VACUUM PUMP PARTS LIST**#278-168***BRIGGS ENGINE*

See FIGURES on page 9

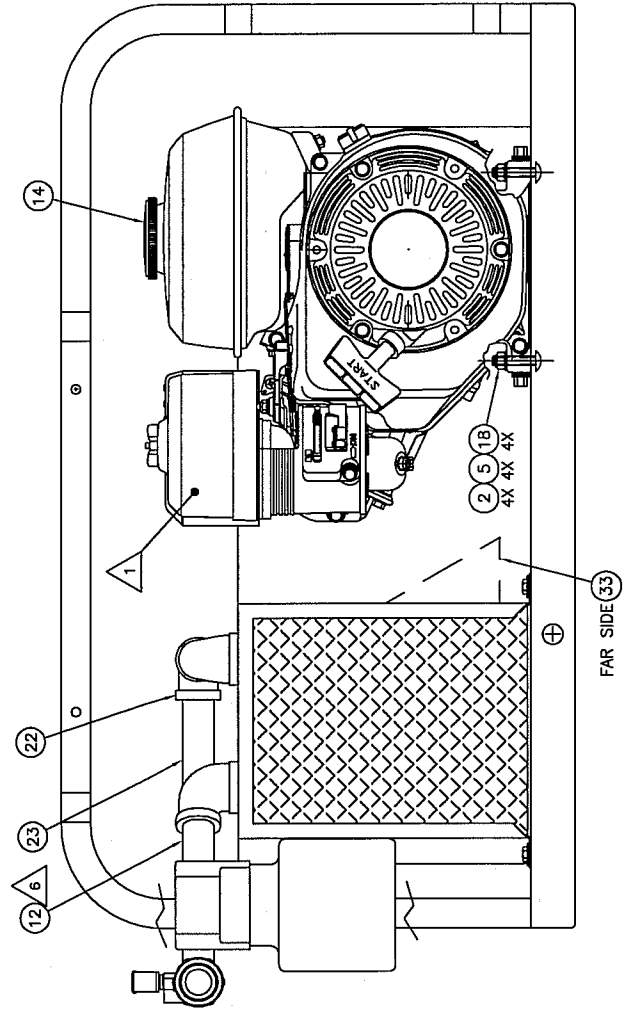
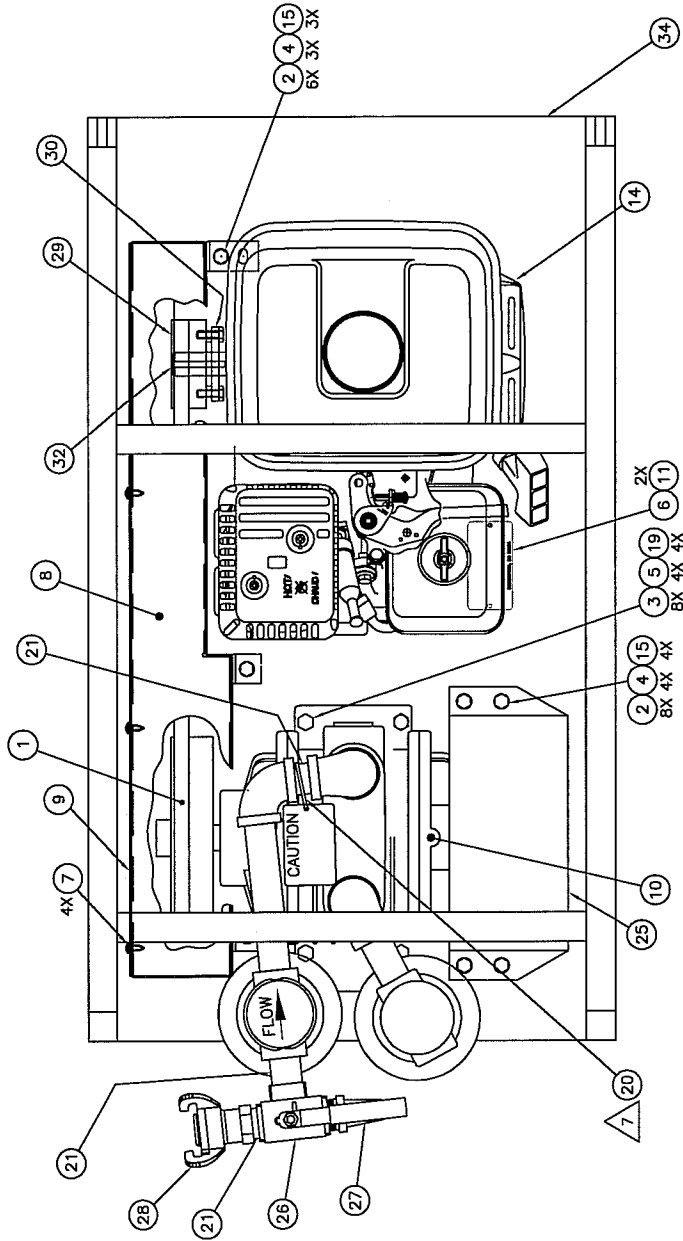
<u>ITEM</u>	<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
1	1	000-008	V-belt drive, 24"
2	18	000-027	1/4" flat washer
3	8	000-043	5/16" flat washer
4	7	000-388	1/4-20 x 3/4" bolt
5	4	000-930	5/16-18 self locking nut
6	1	005-789	Serial label
7	4	008-588	#10-24 x 1/2" pan head screw
8	1	021-438	Belt guard
9	1	019-500	Angle bracket, guard
10	1	019-501	Rotary vane vacuum pump
11	2	019-887	Metal tacks
12	1	022-698	Pipe nipple, 3/4NPT x 2.5"
14	1	040-868	5.5 HP Briggs Engine
15	7	037-338	1/4-20 self-locking nut
18	4	043-230	5/16-18 x 1.5" carriage bolt
19	4	050-709	5/16-18 x 1.25" bolts
20	1	051-543	Ty-wrap, 4" small
21	3	052-272	Nipple, Close, 3/4 NPT
22	1	052-264	Elbow, 90 x 3/4 NPT
23	1	059-927	3/4NPT x 6" pipe nipple
24	1	091-510	30 wt. Oil
25	1	101-303	Fan guard
26	1	056-268	3-way ball valve 3/4" NPT
27	1	056-278	Muffler, Bronze 3/4" NPT
28	1	022-788	Coupling, Chicago fitting 3/4" NPT
29	1	101-508	Sheave, 3/4" shaft
30	1	101-532	3/4" bushing
32	1	292-656	3/16" x 1" key
33	1	301-485	Decal
34	1	056-348	Base, Piston, Diaphragm or Vacuum Pump



GASOLINE VACUUM PUMP PARTS LIST**#278-088***HONDA ENGINE*

See FIGURES on page 11

<u>ITEM</u>	<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
1	1	000-008	V-belt drive, 24"
2	18	000-027	¼" flat washer
3	8	000-043	5/16" flat washer
4	7	000-388	¼-20 x 3/4" bolt
5	4	000-930	5/16-18 self locking nut
6	1	005-789	Serial label
7	4	008-588	#10-24 x ½" pan head screw
8	1	019-499	Belt guard
9	1	019-500	Angle bracket, guard
10	1	019-501	Rotary vane vacuum pump
11	2	019-887	Metal tacks
12	1	022-698	Pipe nipple, ¾NPT x 2.5"
14	1	021-408	5.5 HP Honda Engine
15	7	037-338	¼-20 self-locking nut
18	4	043-230	5/16-18 x 1.5" carriage bolt
19	4	050-709	5/16-18 x 1.25" bolts
20	1	051-543	Ty-wrap, 4" small
21	3	052-272	Nipple, Close, ¾ NPT
22	1	052-264	Elbow, 90 x ¾ NPT
23	1	059-927	3/4NPT x 6" pipe nipple
24	1	091-510	30 wt. Oil
25	1	101-303	Fan guard
26	1	056-268	3-way ball valve ¾" NPT
27	1	056-278	Muffler, bronze ¾" NPT
28	1	022-788	Coupling, Chicago fitting ¾"NPT
29	1	101-508	Sheave, ¾" shaft
30	1	101-532	¾" bushing
32	1	292-656	3/16" x 1" key
33	1	301-485	Decal
34	1	056-348	Base, Piston, Diaphragm or Vacuum Pump



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 Winching 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.

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 DEATH, SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE.

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Cherne Industries Incorporated
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