



**THOMAS**  
INDUSTRIES INC.

# Installation Manual

**Built-In  
Home Vacuum  
Systems**

# Introduction

The Thomas Built-in Vacuum System, when properly installed, should provide you with years of trouble free service. It can be easily installed in either new or existing construction. All you need are a few common tools and a little mechanical knowledge. This manual will provide you with the necessary information for laying out and installing the system.

---

## Index

	Page
1. Determining number and location of hose inlets .....	1, 2, 3
2. Planning and laying out the PVC tubing system .....	3
3. Rough-in of hose inlets—new construction .....	4
4. Installation of tubing and fittings .....	5, 6
5. Pre-testing of roughed-in system—new construction .....	6, 7
6. Installation of power units .....	7, 8
7. Installation of hose inlets in existing construction .....	9, 10
8. Final check and test of completed installation .....	11
9. Parts and fittings .....	12
10. Power unit specifications .....	13

---

## Installation Tools

- |  |                                |
|--|--------------------------------|
| (1) 1/2" power drill with 90° offset drill head                | (7) Keyhole saw.               |
| (2) 2 1/2" self feeding bit.                                   | (8) Hacksaw (32 point).        |
| (3) Bit extensions and couplings for drilling thru fire stops. | (9) Wire strippers.            |
| (4) Hammer.  | (10) 5/8" carbide masonry bit. |
| (5) Screw drivers.   | (11) Flashlight.               |
| (6) Philips screw driver.                                      | (12) Stud finder.              |
|  | (13) T-499 test gauge.         |

# Built-in Vacuum Systems Installation Instructions

## 1. Determine the number and location of hose inlets.

- A. Cut a cord to the length of cleaning hose to be used. When working from plans, cut a piece of string to scale length of cleaning hose—usually  $\frac{1}{4}$ " to the foot.
- B. Extend the cord or string to the farthest corner to be cleaned and then in a 360° circle to see what other areas can be reached from that location. Place inlet in the hallway or beside a door so as not to interfere with the placement of furniture.
- C. Locate additional inlets so cord radius will cover all areas to be cleaned. Do not place so that two inlets are required to cover the same room.

## Typical Types of Construction

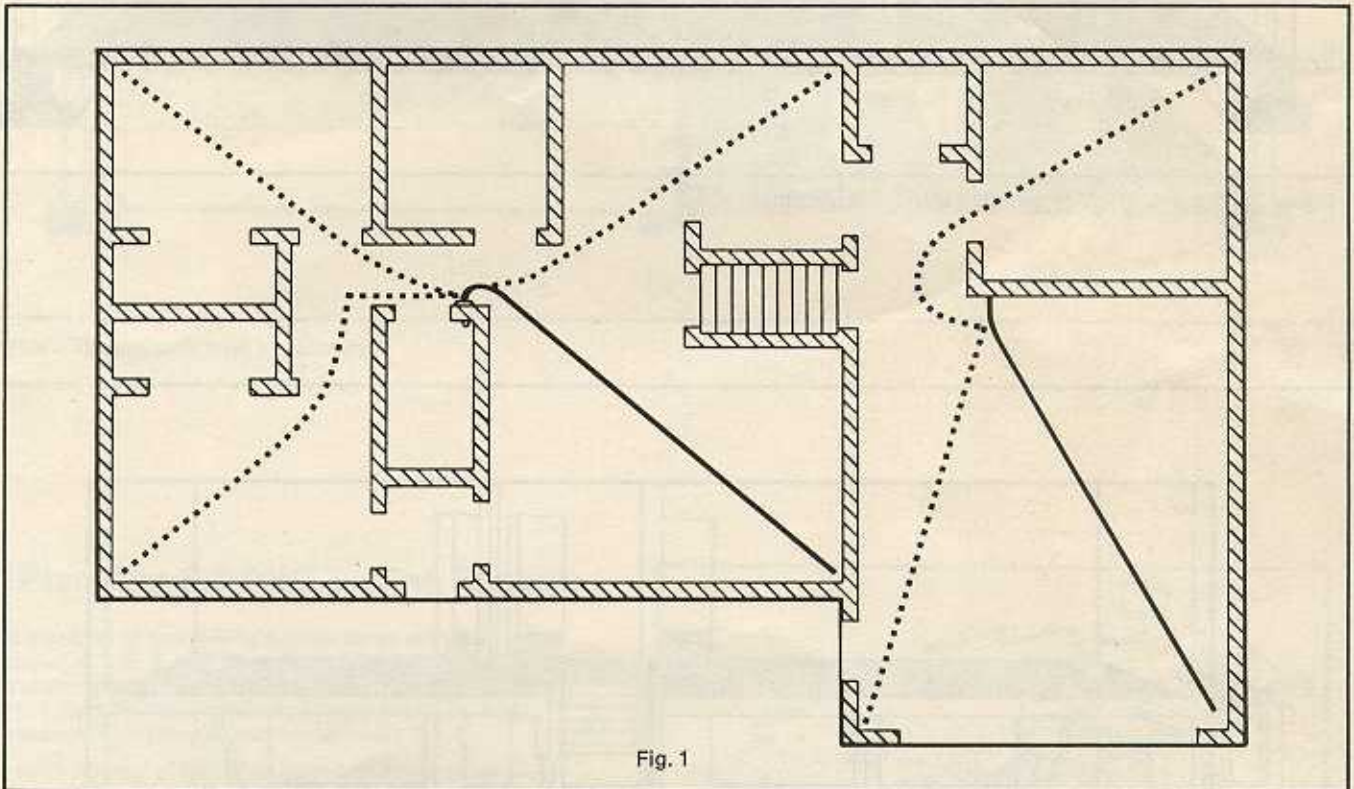


Fig. 1

Figure 1 shows a typical two inlet installation providing complete coverage.

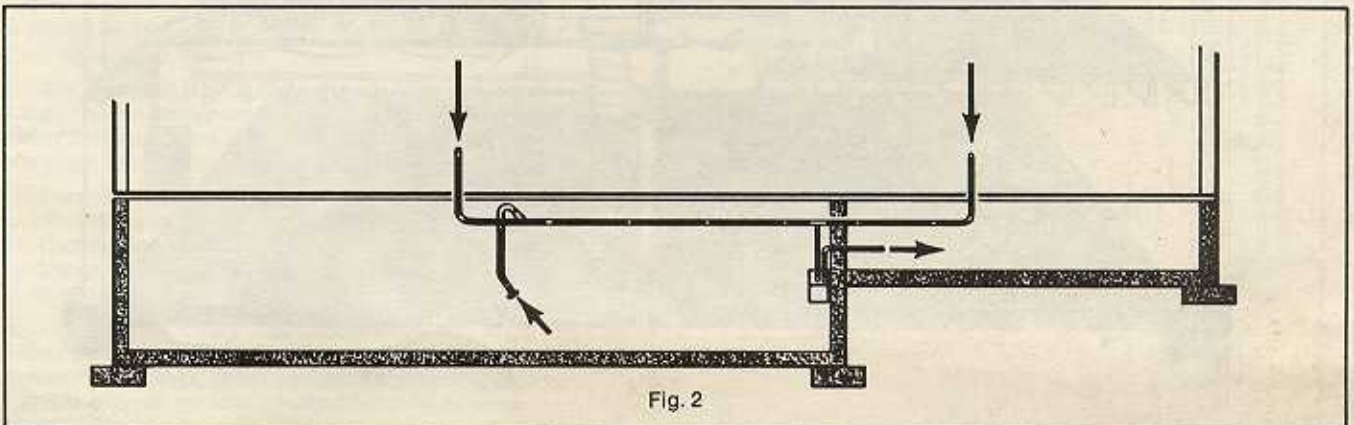


Fig. 2

Figure 2 illustrates basement elevations showing power unit, utility inlet, and two main floor inlets.

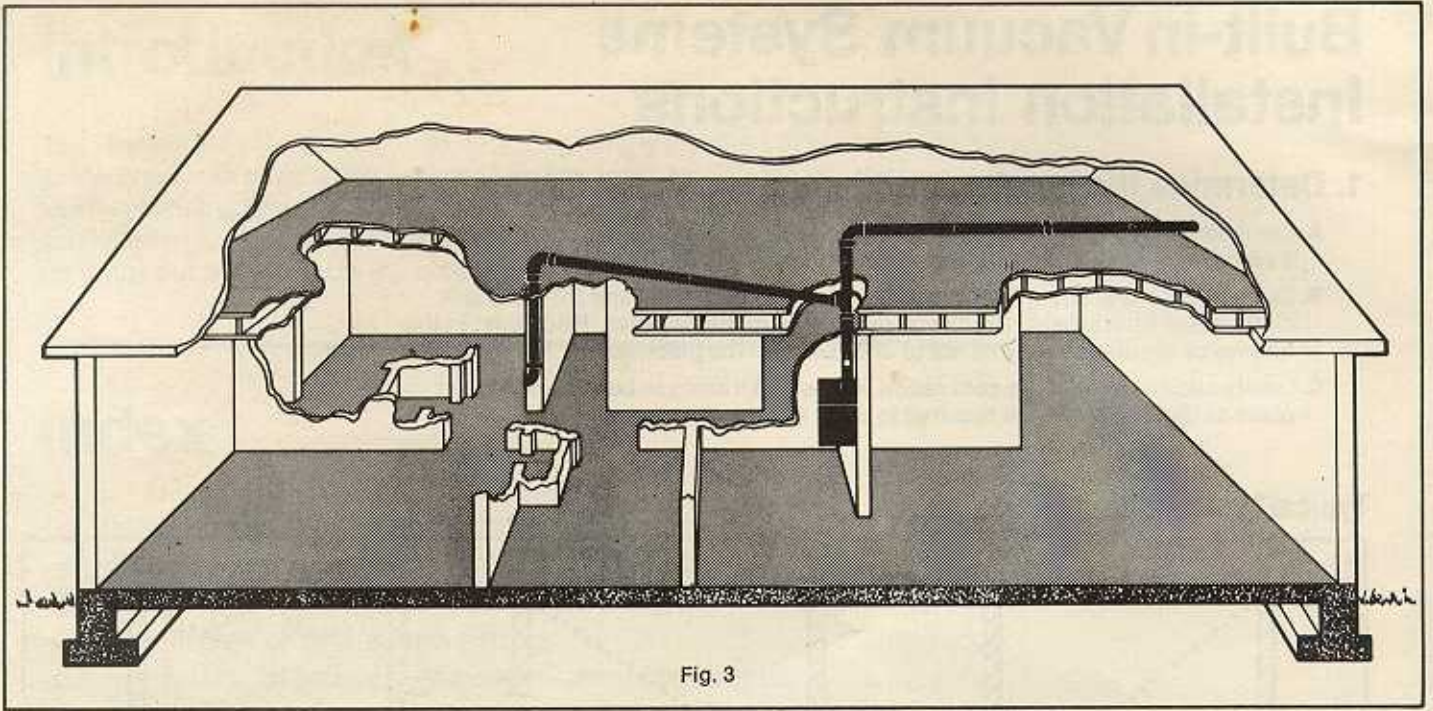


Figure 3 Typical one floor installation without basement.

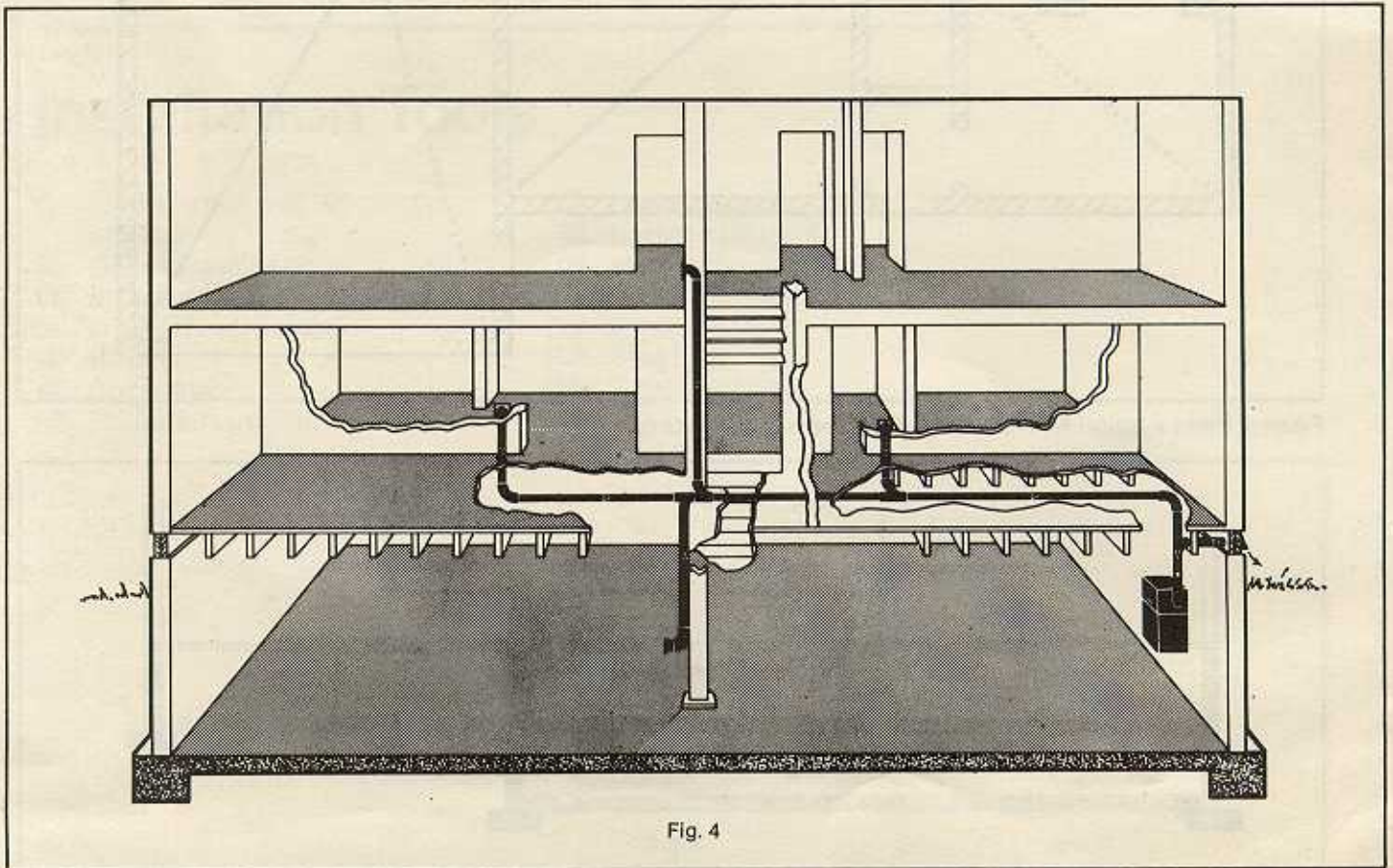


Figure 4 Typical two story installation with basement.

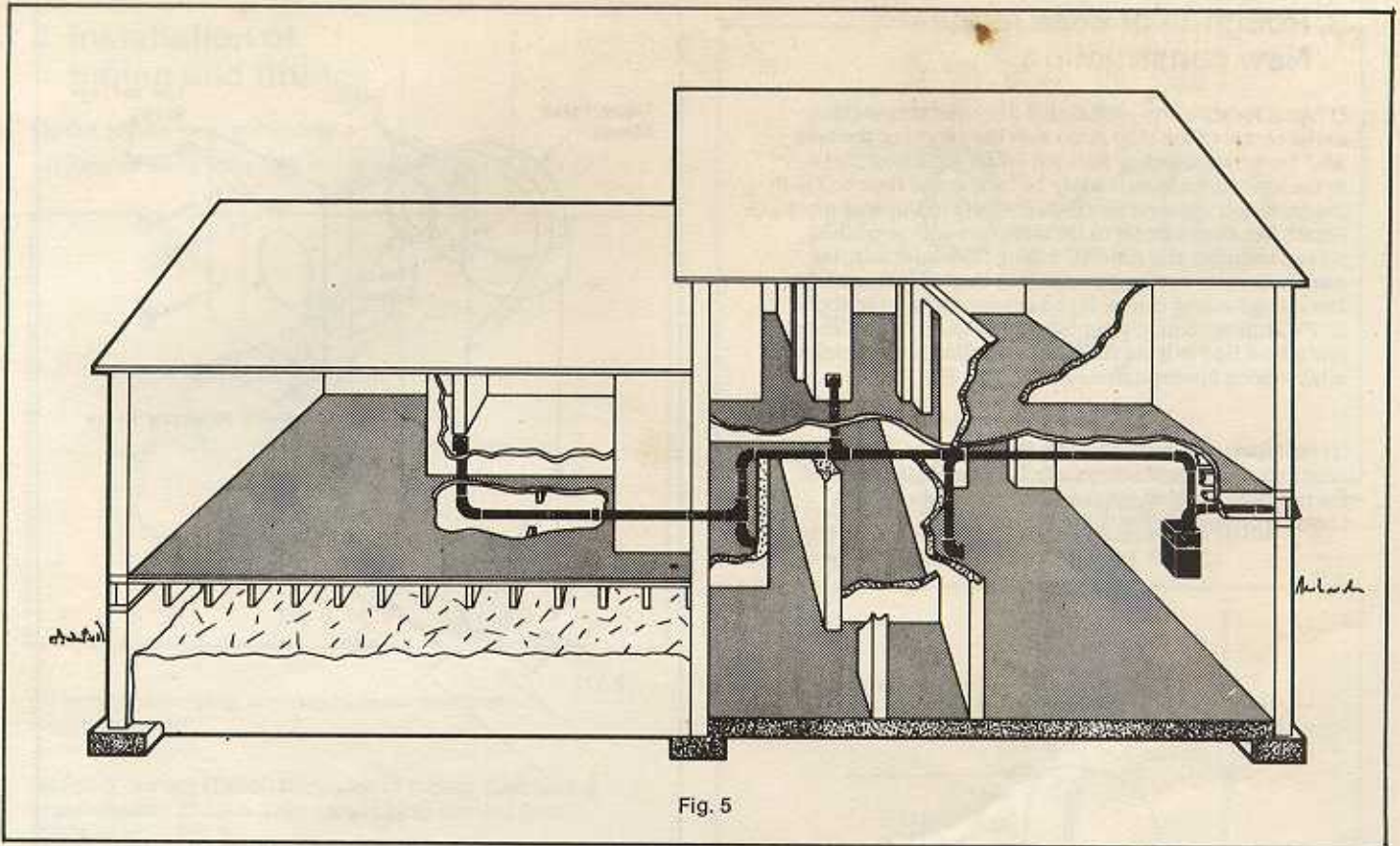


Figure 5 Typical split level installation.

## 2. Planning the PVC Tubing System

The planning of your tubing system varies with the type of house—fig. 1, 2, 3, 4, 5. The system of tubing connecting the power units to the inlets is composed of two sections; (A) the trunk line that connects several branches, and (B) branch lines that connect to the inlets. Fig. 6.

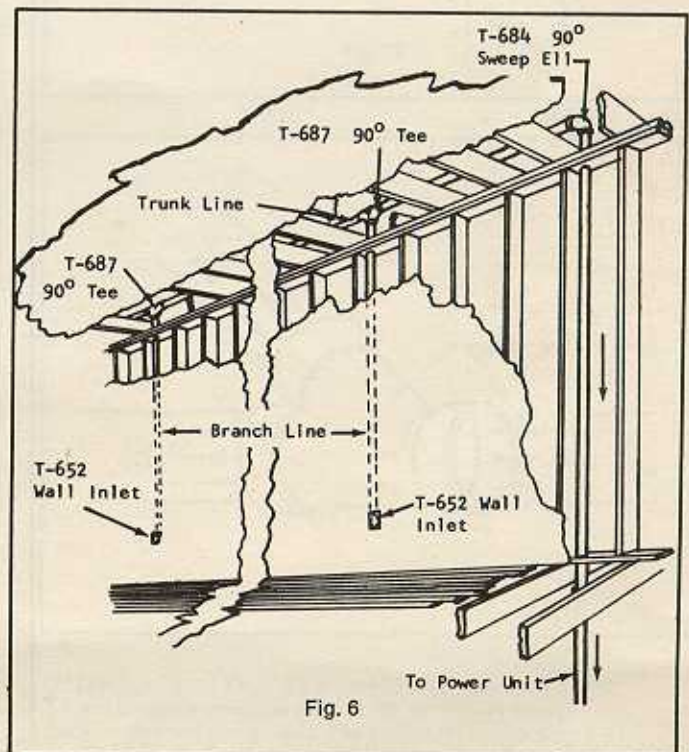
(1) Keep all runs of tubing as short and direct as possible. Unnecessary turns, offsets, and fittings reduce operating efficiency.

(2) Where a vertical run of tubing carries dirt upward the rise should be limited to one story maximum—approximately eight to ten feet.

(3) Where structure is split level or multi-story, tubing on the top floor can run upward to attic space or downward through stud walls, or it may be run horizontally between joists when roughing in new construction.

(4) Generally, where tubing for two or more inlets on the upper floor goes upward, it makes a simpler layout to tie them together in the attic space and then run one vertical drop downward at the most convenient point to the power unit location. Fig. 6.

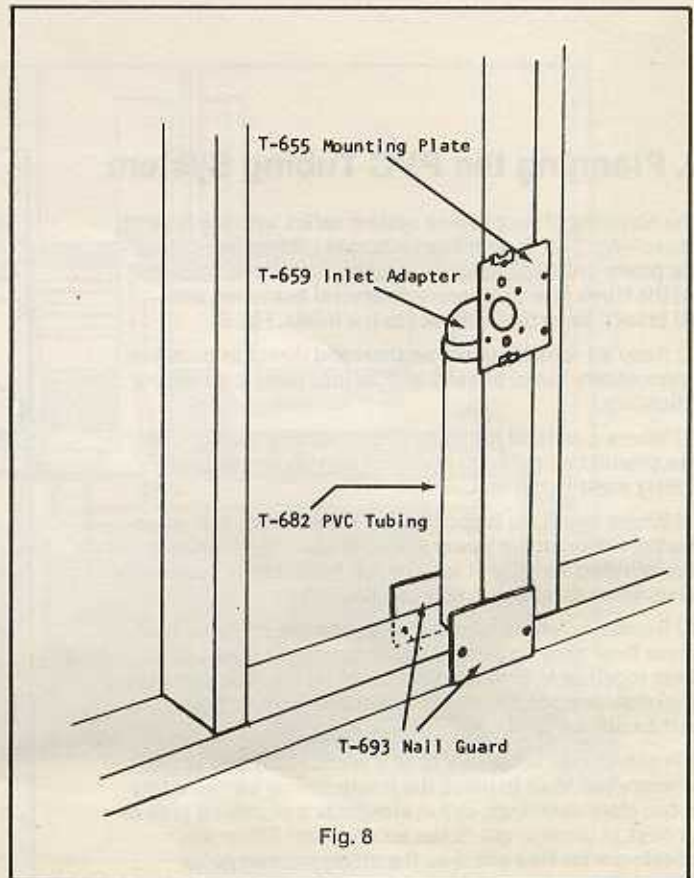
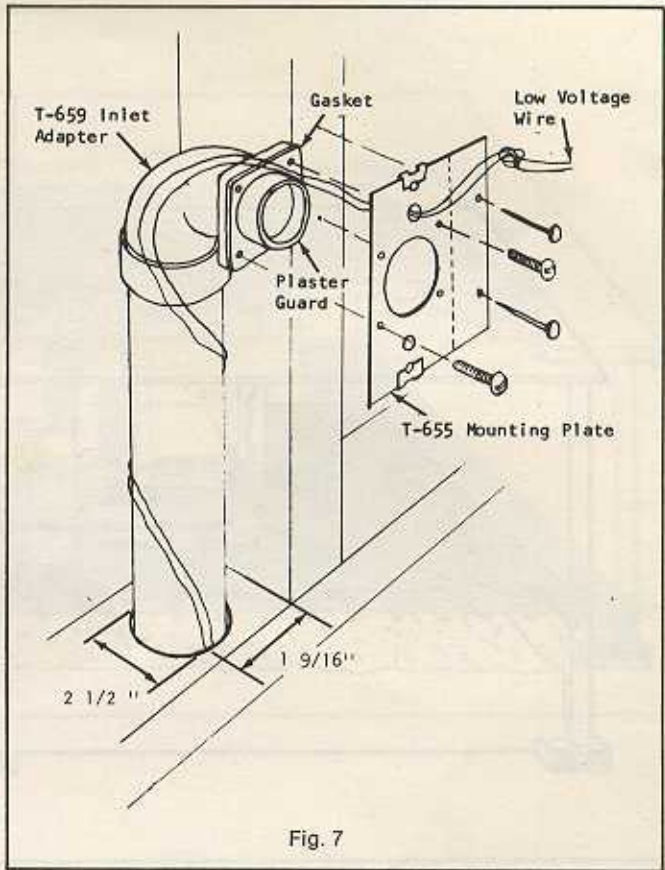
It is sometimes necessary to go a roundabout way to get to where you wish to place the inlets. It may be necessary in two story dwellings, to run alongside a plumbing pipe or air duct in order to get to the second floor. Often when closets are located one over the other, you can go up through them.



### 3. Rough-in of hose inlets— New construction

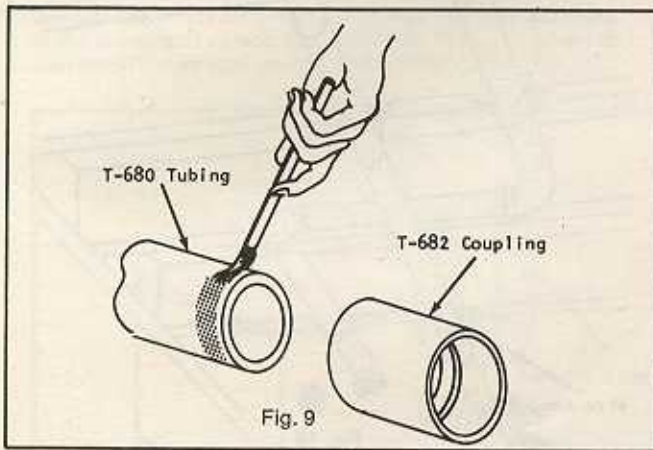
(1) After locating the inlet, drill a  $2\frac{1}{2}$ " diameter hole in the center of the stud plate with the center of the hole  $1\frac{9}{16}$ " from the wall stud. Nail the T-655 mounting plate to the wall stud approximately 14" above the floor and with the inlet opening directly above the hole in the stud plate. Attach the inlet adapter to the wallplate with two 10-32 screws supplied and run PVC tubing from inlet adapter back to the point where you connect the feeder line. The low voltage wiring can be taped or wrapped around the 2" PVC tubing, brought through the opening in the bracket, and a knot tied in it (so it cannot be pulled back accidentally), leaving approximately 12" of wire. Fig. 7.

(2) Nail Guard—When installing the tubing in new construction, you should always use T-693 nail guards where the tubing is run through the soleplate or where nails could be driven into the tubing system. Fig 8.



## 4. Installation of tubing and fittings

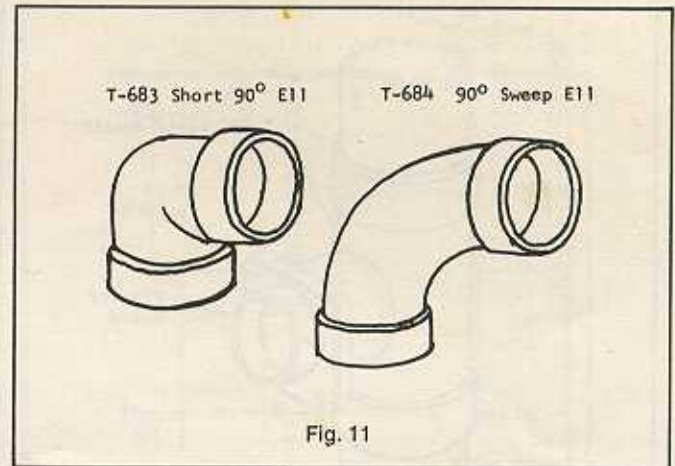
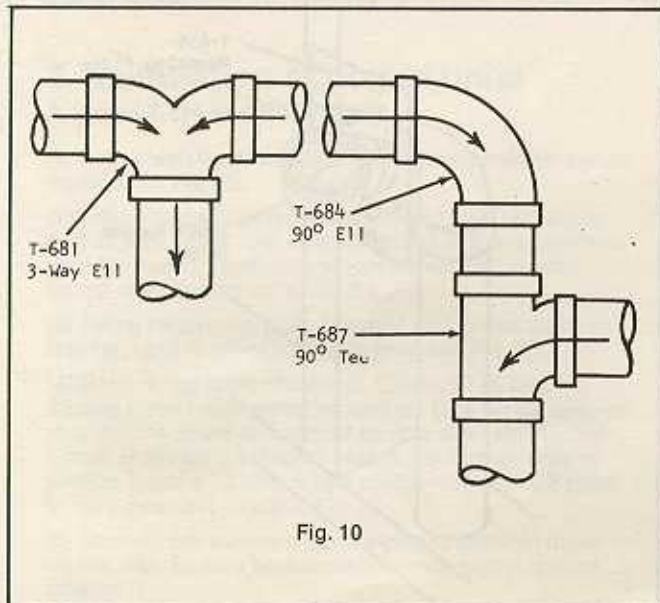
- (1) Cut tubing, keep cut square.
- (2) Remove burrs from both inside and outside of tubing.



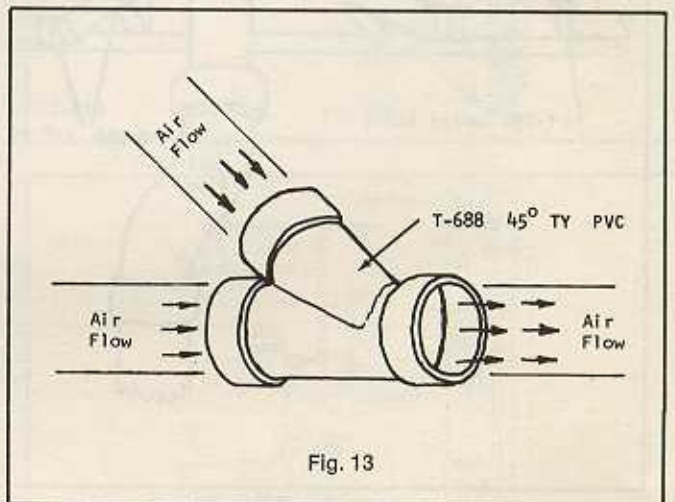
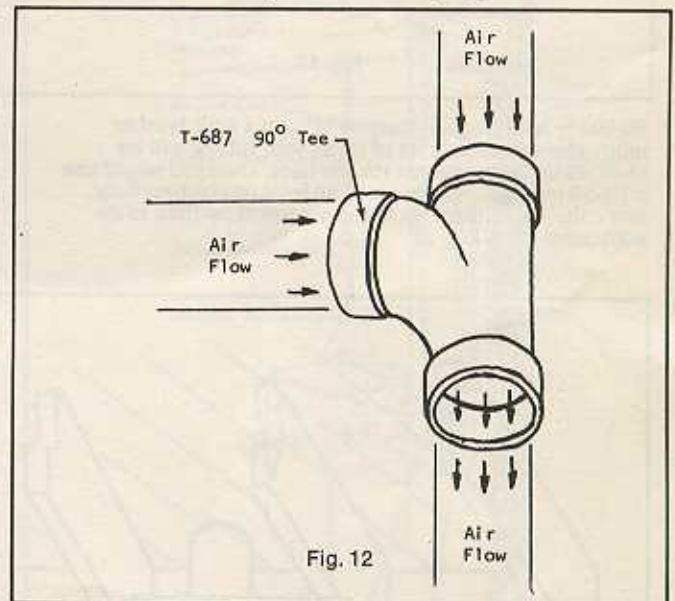
- (3) Before cementing, pre-assemble section to check for proper length.

- (4) Apply cement (T-689) to outside of tubing. Coat tubing approximately 1" back. Take care to keep cement from inside of tube. Fig. 9.

- (5) Insert tubing into fitting with a twisting motion to evenly spread cement. Be sure tubing is firmly seated in fitting.



- (6) Long Radius Elbows—always use the long radius T-684 elbows. Avoid using the T-683 short elbows except in the exhaust line and then only when necessary. Fig. 11.



- (7) Orientation of Y's and T's—make sure that the Y's and T's are properly oriented so that the air flow is always back toward the power unit. The radius on connecting tees must always follow direction of air flow. Fig. 10, 12, 13.

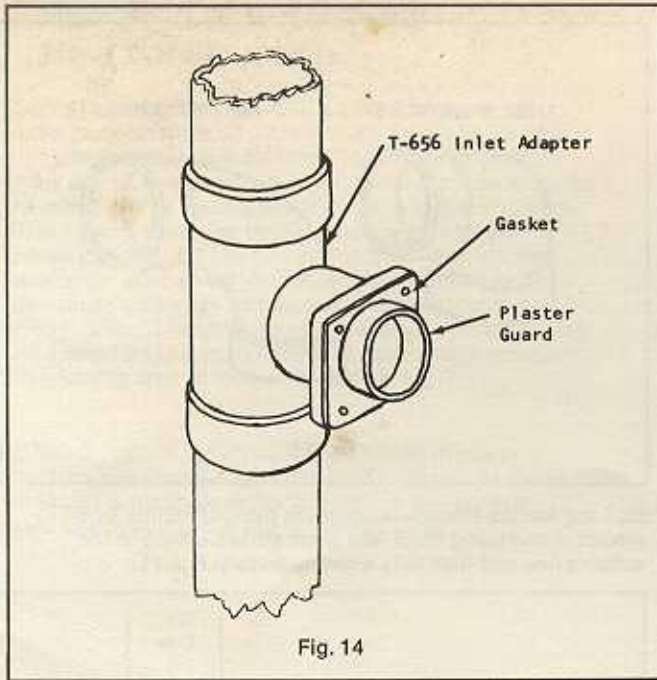


Fig. 14

(8) Using feed through flanged "T"—in a split level or multi-storied house, a lot of times your tubing will be stubbed up from underneath the floor. Then you would use a T-656 inlet adapter, to place an inlet on the first floor, and coupling straight up to the second story floor to an additional inlet. Fig. 14.

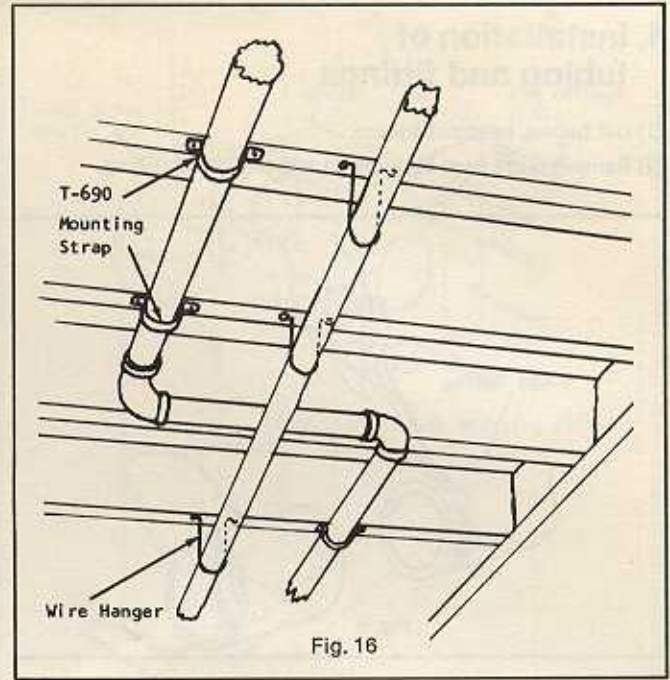


Fig. 16

(10) Supporting Tubing—hand all horizontal tubing runs with proper straps at a maximum of six foot centers. Anchor tubing at all turns to prevent separation or movement. Fig. 16.

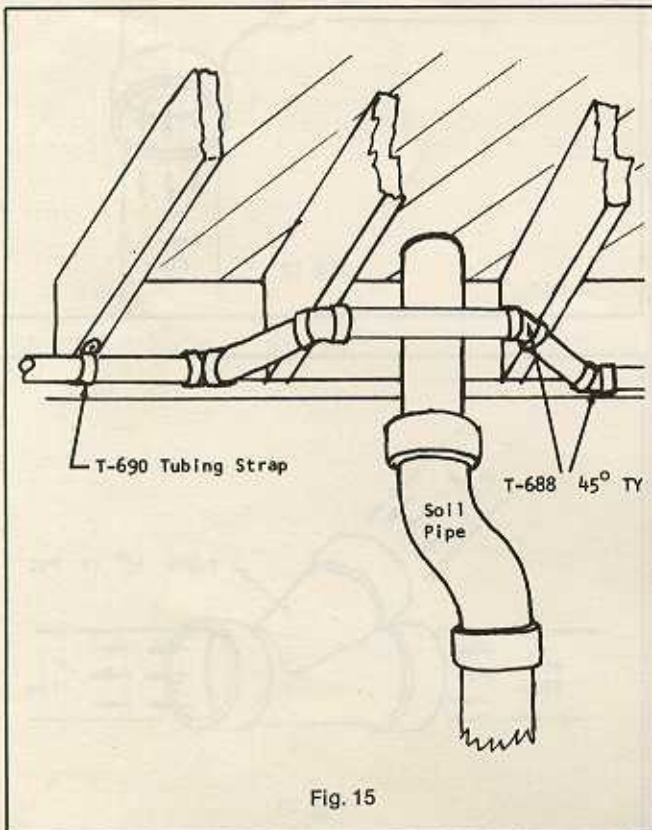


Fig. 15

(9) Using 45° fitting—45° fittings can be used to run PVC tubing around obstructions. They may be used in conjunction with other fittings. However, it is important that you use as few fittings as possible in order to cut down on air flow resistance. Fig. 15.

## 5. Pre-testing system— New Construction

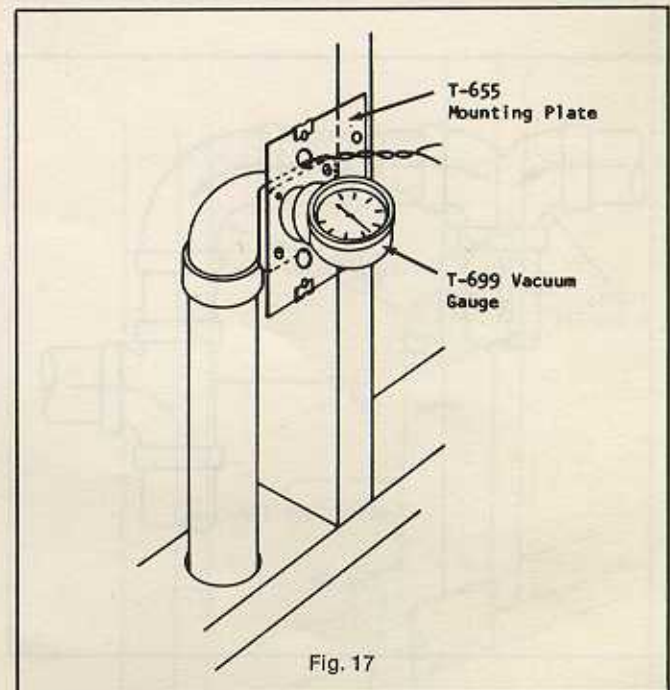
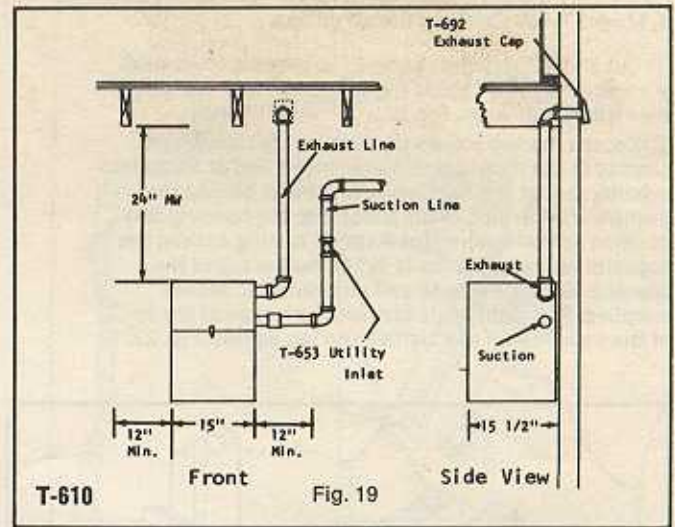
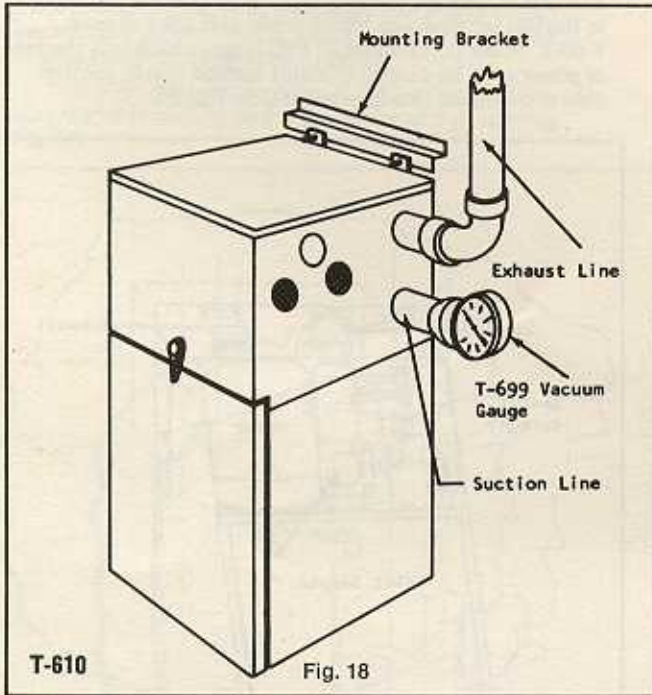


Fig. 17

(1) After a tubing system has been roughed in, it is a very good practice to test the tubing system at that point to make sure that you have a good tight system. This can be accomplished by hooking up a power unit and plugging up all but one inlet. At that inlet, take a sealed vacuum reading to determine how much leakage there is in the system. Use T-699 vacuum test kit. Fig. 17.



(2) Usually, you should have no more than a 5" drop by taking a reading at the power unit and a reading at an inlet with all other inlets sealed off. A leak found at this stage is much easier to locate and repair before the walls are closed in. It is well to remember that in many new homes there will be a power drop due to the temporary service coming into the house. This can cause an unusually low voltage that will considerably affect the output of the vacuum motor. This is why it is important to take a reading at the power unit as well as at the inlet. Then you will know how much actual loss you will have in the system. Fig. 18.



## 6. Installation of power units

### A. Model T-610 and Model T-606

(1) Select wall location where minimum clearances can be maintained. Fig. 19.

(2) Attach mounting bracket securely to wall. Make sure that at least two screws attach to studs in frame construction. On masonry walls use proper screws and inserts. Do not use masonry nails. Fig. 20.

(3) Swing hangers vertical. Suspend unit on two studs on bracket. Lock in place with nuts provided. Fig. 20.

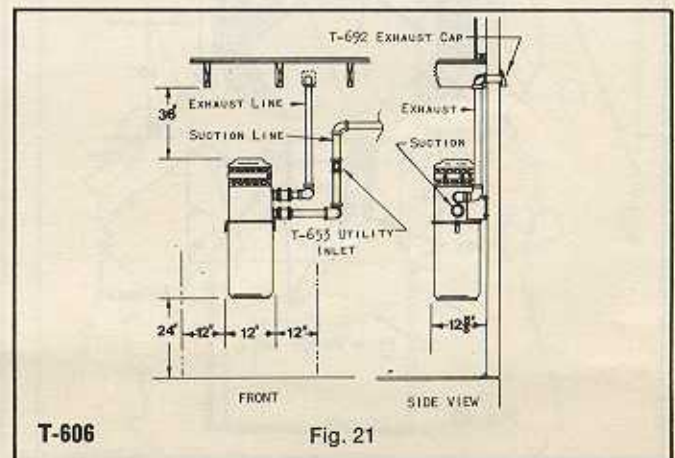
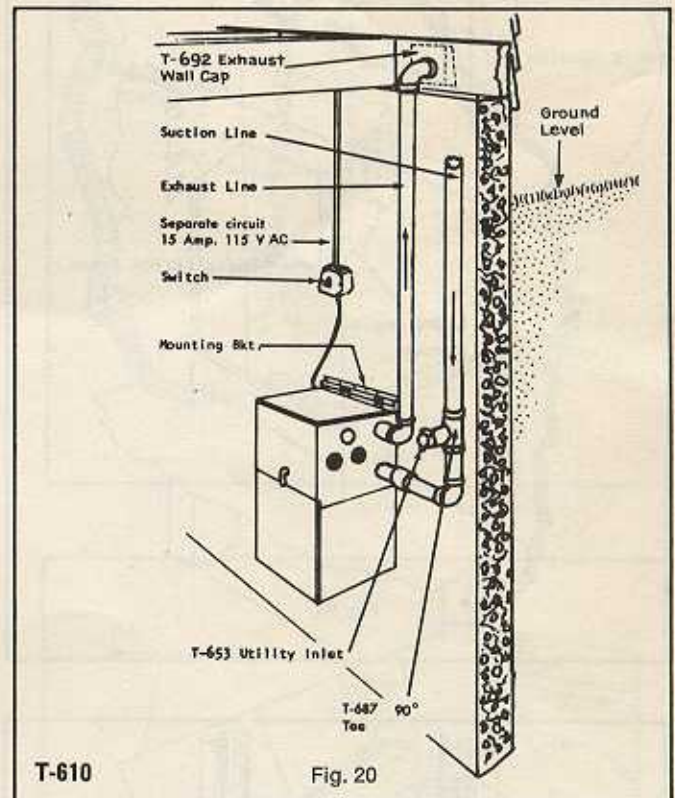
(4) Remove top cover of cabinet. Connect 115 volt, AC, 15 amp circuit with grounded neutral. (See wiring diagram in unit.) The power unit should be on a separate electrical circuit at the main entrance switch. For convenience in service, insert a 15 amp toggle switch in the circuit close to the power unit location. Fig. 20.

(5) Connect low voltage control wiring to terminal block on left side. Be sure bare strands are not touching each other.

(6) Connect exhaust tubing to a ventilated crawl space or through outside wall to outside of home.

(7) Make final suction tube connections.

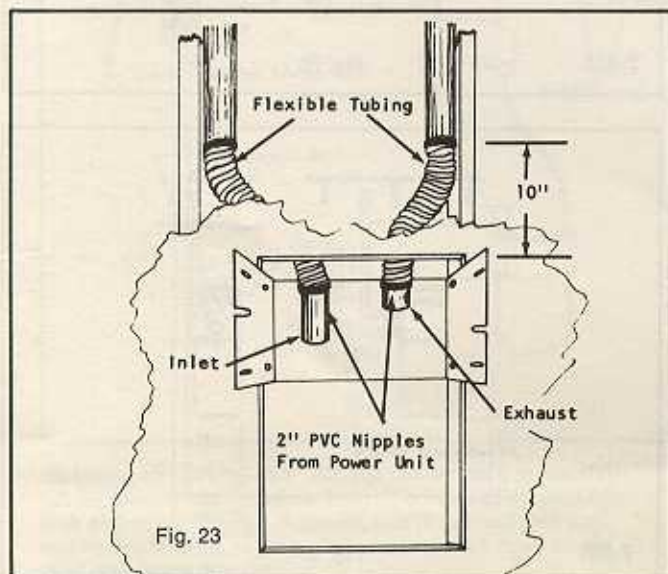
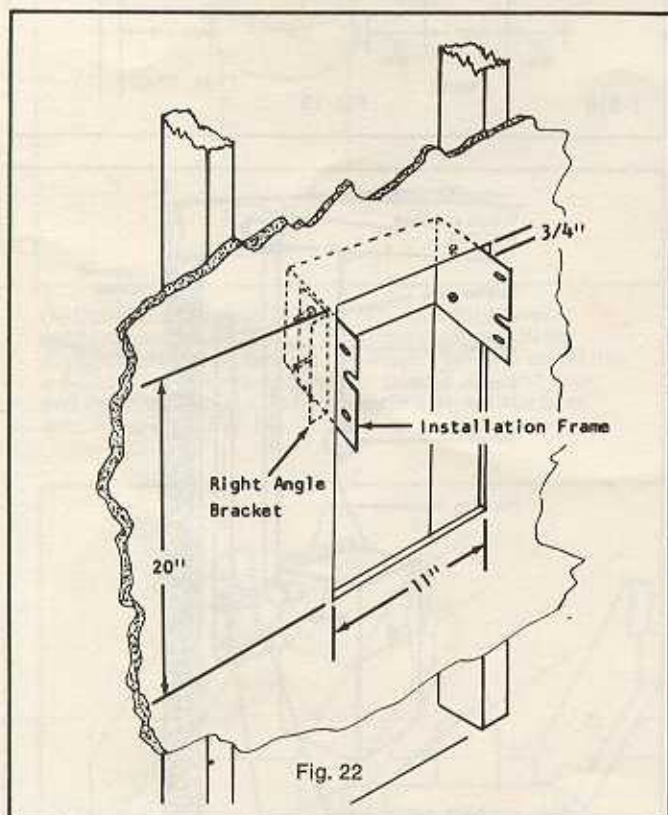
(8) Exhaust Lines—It is recommended that all models be exhausted to the outside of the building. The 2" PVC tubing along with the standard fittings are used for this job. Never exhaust into a closed wall stud space. The T-692 exhaust vent with back draft damper is available for exhausting through outside walls. Fig. 19, 20, 21.



## B. Model T-600 Existing Construction

(1) Cut 11" x 20" opening in wall so that the lower edge is approximately 6" above the baseboard and one side is even with a wall stud. Fig. 22.

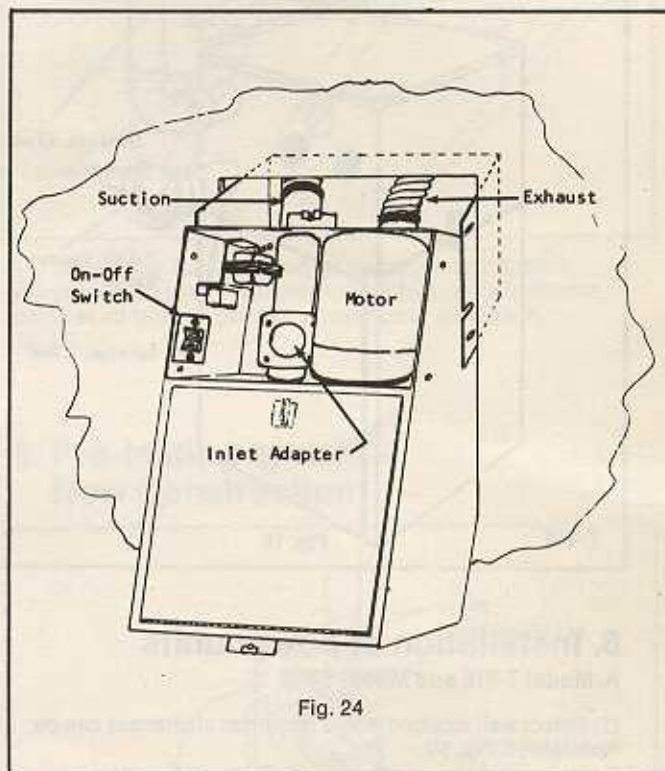
(2) Loosen the two screws that secure the right angle bracket to the installation frame. Insert end of frame into opening so that the right angle bracket is behind the wall. Swing the other side of the frame into the opening and position so that back of the frame is resting against the opposite wall and the top is  $\frac{3}{4}$ " below the top of the opening. Secure frame to wall stud with two screws supplied. Pull right angle bracket flush against the back of the forward wall and tighten the two screws. Fig. 22.



(3) Unscrew the two screws from front of the power unit cover and remove cover. Remove 24" piece of 2" flexible tubing from filter compartment and the two 2" PVC nipples from the top of power unit. Cut the flexible tubing in half.

(4) Lower PVC tubing to opening for ease in attaching flexible tubing. Now raise PVC to 10" above top of opening and secure. Fig. 23. Connect flexible tubing to PVC nipples and secure with electricians tape.

(5) Run power cable into splice compartment thru opening at top left of power unit. Power should come from a 10 amp 115 volt AC circuit. Connect two low voltage control wires to the two terminals on top of power unit. (Not used on T-600L power unit.) Insert 2" PVC nipples back into the top of power unit. Be careful to insert suction line to suction side and exhaust line to exhaust side. Fig. 24.



(6) Push cabinet into place. Secure loosely to mounting bracket with 4 screws provided. Position cabinet so that the filter door extends past wall surface and tighten screws to lock power unit into place. Connect power supply cable to wires inside splice compartment.

(7) Attach front cover by inserting inlet into inlet adapter on power unit and secure with two screws provided. It may be necessary to loosen the 4 mounting screws and move power unit forward or backwards in order to fit cabinet cover flush against wall and even with power unit. Fig. 24.

## C. Model T-600 New Construction

New construction is performed basically the same as for existing construction except the plaster frame from rough-in kit T-600-A should be nailed to the wall stud during the roughing in of the tubing system. Locate the frame so that the bottom is 6" above the baseboard and the front edge of the frame will be even with the surface of the finished wall.

NOTE: The T-600 power unit can also be surface mounted. Drill four holes thru the back of the mounting bracket and screw bracket to wall or furring strip.

## 7. Installation of hose inlets. Existing Construction

Before drilling holes or cutting wall openings make doubly sure of your dimensions. Also that there are no obstructions below the point you are planning to come through, such as heating duct or plumbing pipe. This can easily be done by driving a finishing nail or drilling a small hole beside the molding opposite the proposed hole location. The nail or drill can be located underneath the floor to make sure there are no obstructions to prevent drilling. Fig. 25. Locate center line of inlet approximately 14" above floor. Cut opening 2½" wide by 4¼" high. Use a fine-tooth keyhole saw for a clean cut. There is very little overlap of inlet flange to cover errors. Fig. 25.

(1) Drill 2½" diameter hole for 2" PVC tubing, making sure that it is directly below the center of wall opening. Fig. 25.

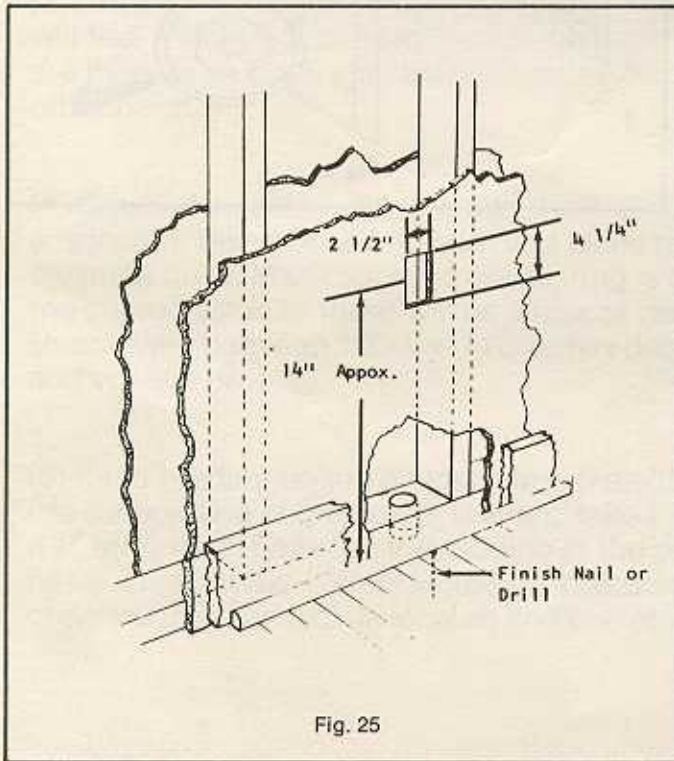


Fig. 25

(2) Wiring for the low voltage controls, T-671 (#22/2), should be looped from one inlet to the next before installing the tubing or wall inlets. Run the wiring through the same openings drilled for the tubing. Leave approximately 12" of wire at each inlet opening and secure to prevent accidental withdrawal prior to completion.

(3) Insert vertical 2" PVC tubing through hole. Top of 2" PVC must extend 1 13/16" above lower edge of rectangular wall opening. Fig. 26.

(4) Apply cement to outside end of the vertical 2" PVC tubing. Insert inlet adapter through opening and push securely onto the 2" PVC tubing. Fig. 26.

NOTE: The T-691 flexible hose can be used with the T-659 inlet adapter when the wall inlet opening and the hole for the tubing are not in alignment.

(5) Thread low voltage wires through hole in mounting plate. Long legs of two speed nuts should face inside of wall, insert plate through wall opening. Fig. 27.

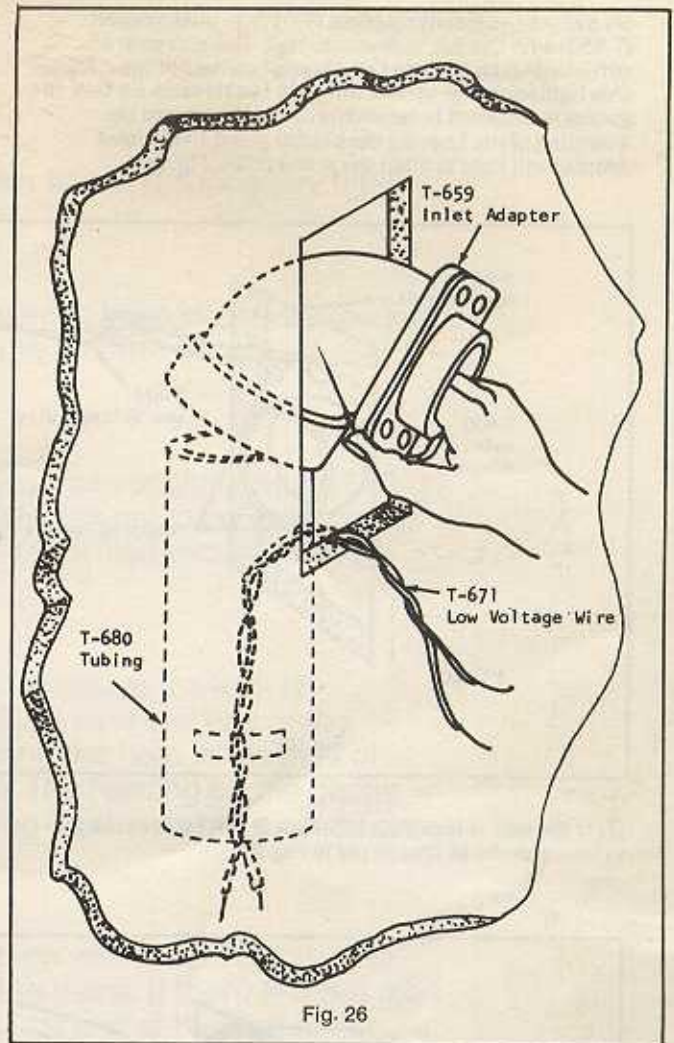


Fig. 26

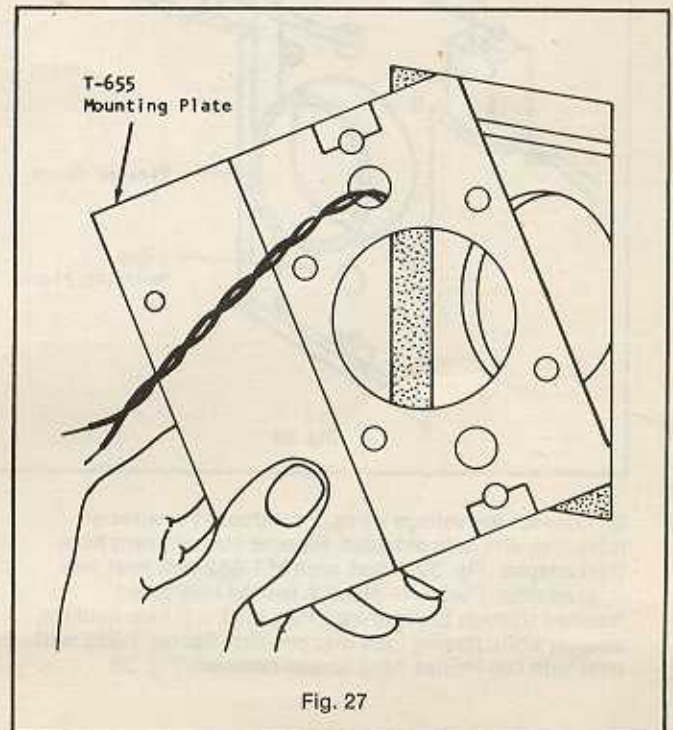
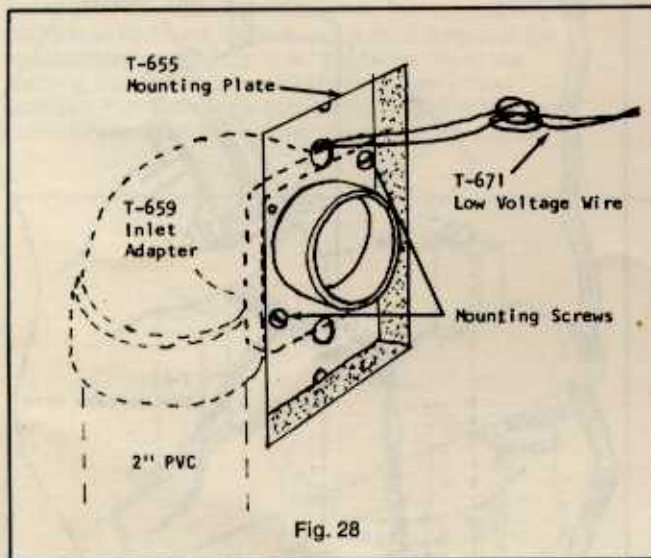
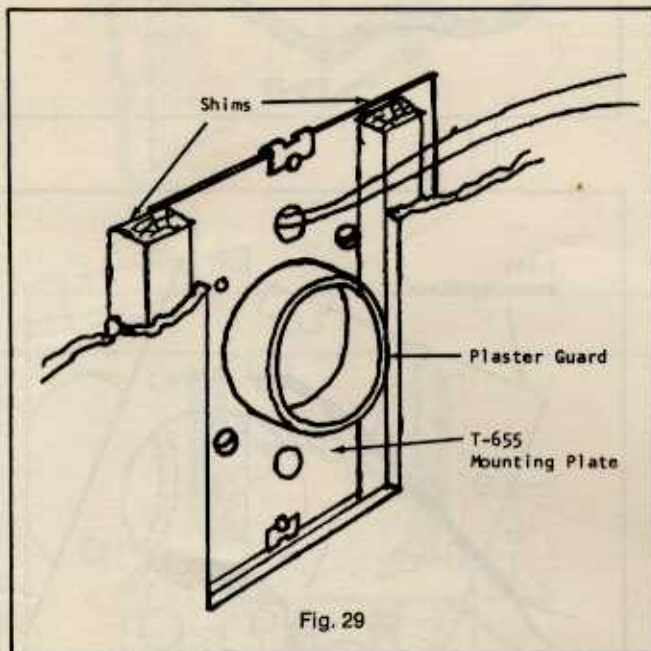


Fig. 27

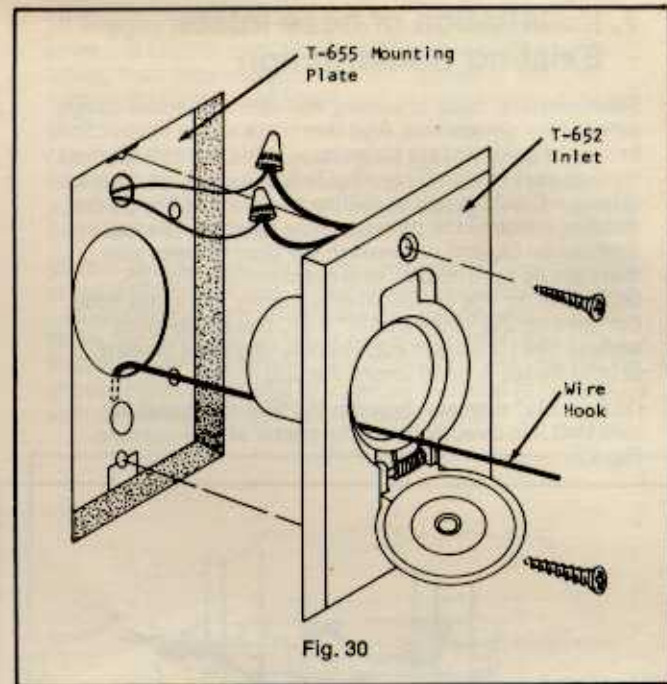
(6) Secure the mounting place (T-655) to inlet adapter (T-659) with the two screws provided. Two screws are sufficient when installed at diagonal corners of the flange. Overtightening the screws will strip the threads. Be sure the gasket is installed between the inlet adapter and the mounting plate. Leaving the plaster guard in the inlet adapter will help to align the screw holes. Fig. 28.



(7) If the wall is less than  $\frac{1}{2}$ " thick, it will be necessary to insert shims as illustrated in Fig. 29.










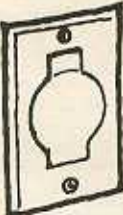
























(8) Connect low voltage wires (2-conductor) to wires on inlet. Use wire nuts provided. Remove plaster guard from inlet adapter. Fig. 30. Insert neck of T-652 wall inlet into inlet adapter. Push into place. A hooked wire or rod inserted through the opening of the inlet will help hold the adapter while forcing inlet into position. Secure T-652 wall inlet with two Philips head screws provided. Fig. 30.



## 8. Final check of installation

- (1) Make sure that all inlets are closed and the filter bag and secondary filter are in place before starting the vacuum motor.
- (2) Open one inlet at a time. Insert metal end of cleaning hose into inlet. Vacuum motor will start automatically. Remove hose and the unit will cut off automatically.
- (3) Check the vacuum. Insert hose again. Place fingers over cleaning end. You will feel a violent rush of air thru the fingers. Should this fail to occur, chances are there is an open joint somewhere in the tubing or a malfunction at some other point.
- (4) Check the sealed vacuum with the T-699 vacuum gauge if a leak is suspected. Insert hose into inlet and place test gauge over the end of the cleaning hose. Make sure the plastic ring is covering the hole in the side of the curved wand or there will be a loss of vacuum. The reading on the gauge should vary between 100 and 110 inches depending on atmospheric conditions and voltage drop.
- (5) If the reading on the gauge is less than 100", then you should disconnect the suction line at the power unit and take a reading there. If there is more than a 7" difference between the reading at the power unit and at the end of the hose, a leak in the system would be indicated. All inlets and fittings should be checked until the leak is located and corrected.

# Parts and Fittings

T-620 Wall Inlet Pkg.									
									
T-652	T-655	T-659	T-682 4 ea.	T-684 2 ea.	T-685	T-687			
									
T-652 Wall Inlet	T-653 Utility Inlet	T-655 Inlet Mtg. Plate	T-656 Inlet Adapter For Pass Thru Risers	T-657 Inlet Adapter For 2-way Plug-in					
									
T-658 Inlet Adapter	T-659 Inlet Adapter	T-660 Inlet Adapter For 3" Wall Studs	T-671 500' Spool Low Voltage Wire	T-676 Sleeve Coupling					
									
T-680 2" x 10' PVC Tubing	T-681 3-way EII	T-682 Stop Coupling	T-683 Short 90° EII	T-684 Sweep 90° EII					
									
T-685 45° EII	T-686 30° EII	T-687 90° Tee	T-688 45° TY	T-689 PVC Cement					
									
T-690 Tubing Strap	T-691 24" Flexible Tubing for use in Existing Construction	T-692 Exhaust Wall Cap	T-693 Nail Guard	T-699 Vacuum Test Kit					

# Power Unit Specifications

	MODEL T-600	MODEL T-610	MODEL T-606
Air Flow— Cubic Ft. Per Minute	90*	110*	110*
Inches Water Lift— Sealed Vacuum	85*	110*	110*
Voltage	115	115	115
Horse Power—Input	1	2	2
Current—Amps-Approx.	7	13	13
Motor Manufacturer	Lamb	Lamb	Lamb
Motor Brush Life—Hours	700	1000	1000
Type Motor	Feed Thru	By-Pass	By-Pass
Impeller Stages	2	2	2
Motor RPM	18500	17500	17500
Inlet on Power Unit	Yes	No	No
Filter Bag Capacity	7½ Qts.	24 Qts.	24 Qts.
Low Voltage Controlled	Yes	Yes	Yes
Height	21½ in.	23 in.	31¼ in.
Width	12 in.	15 in.	12 in.
Depth	2¾" exposed 4" recessed	12½ in.	12⅝ in.
Weight—Lbs.	30	55	31
Guarantee	1 Year	1 Year	1 Year

\*Will vary with voltage and atmospheric conditions

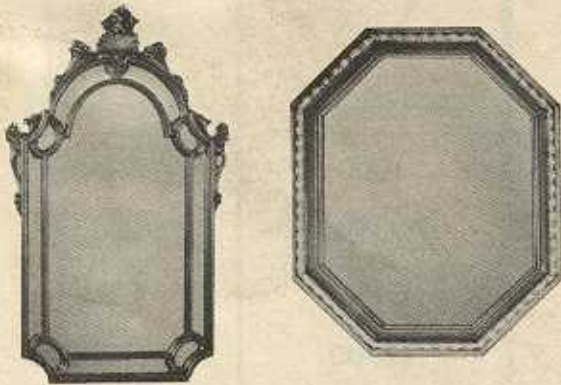
See your Thomas Industries Distributor for:



Lighting / Bathroom Cabinets



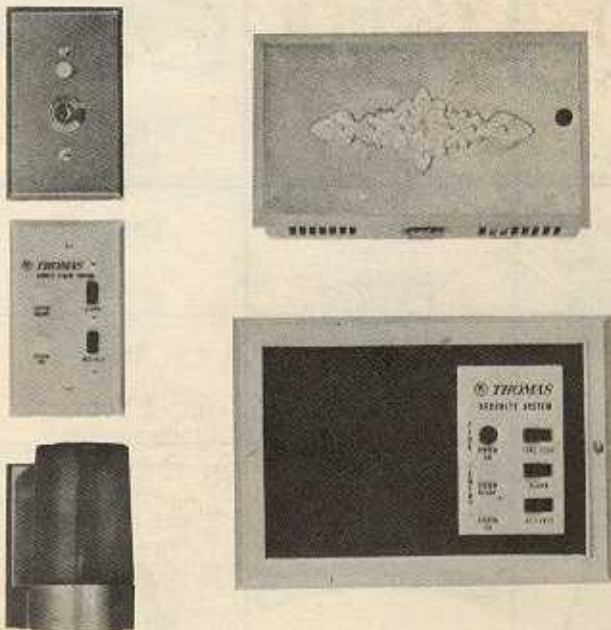
Track Lighting



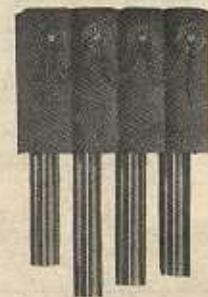
Decorative Mirrors



Heater Ventilators



Home Protection



Door Chimes



Central Vacuum Systems



**THOMAS**  
INDUSTRIES INC.

Box 666, Matthews, N.C. 28105  
Executive Offices: 207 E. Broadway, Louisville, Ky. 40202  
In Canada: C&M Products Ltd., Toronto