OPERATION AND MAINTENANCE MANUAL

ACCUSEND PNEUMATIC TUBE TRANSPORT SYSTEM

PEVCO SYSTEMS INTERNATIONAL, INC.
10001 Franklin Square Drive
BALTIMORE, MARYLAND 21236
(410)931-8800

TABLE OF CONTENTS

III. DESCRIPTION OF SYSTEM EQUIPMENT MECHANICAL COMPONENTS AND THEIR OPERATION

A. Station Mechanical Components

The stations have no moving parts which are motor driven. The station door is opened and closed manually. When the station door is closed and the door handle is rotated to the fully clockwise position, the door latch mechanism will engage the Door Open Switch to indicate the door is closed. Also, when the door latch mechanism is in this position, it will allow the door latch to be engaged by the door lock mechanism (when activated). The only other parts that move are the air valves (which open and close according to the direction of the air flow through the station) and the solenoid-driven door lock which locks the station door.

1. When the MAIN Station is sending a carrier to the END Station, the operator opens the MAIN Station door and this actuates the door latch mechanism at the END Station. (Note: The door latch mechanism at either station is actuated when the door at the opposite station is opened.) Next, the operator inserts a carrier into the MAIN Station's send chamber, closes the door, and presses the Send Button. If after closing the door, the operator neglects to press the Send Button, after eight seconds the Master Control Board will begin the send automatically. The Blower Package then provides pressure to the system through the MAIN Station's lower air valve (see Figure III-1).

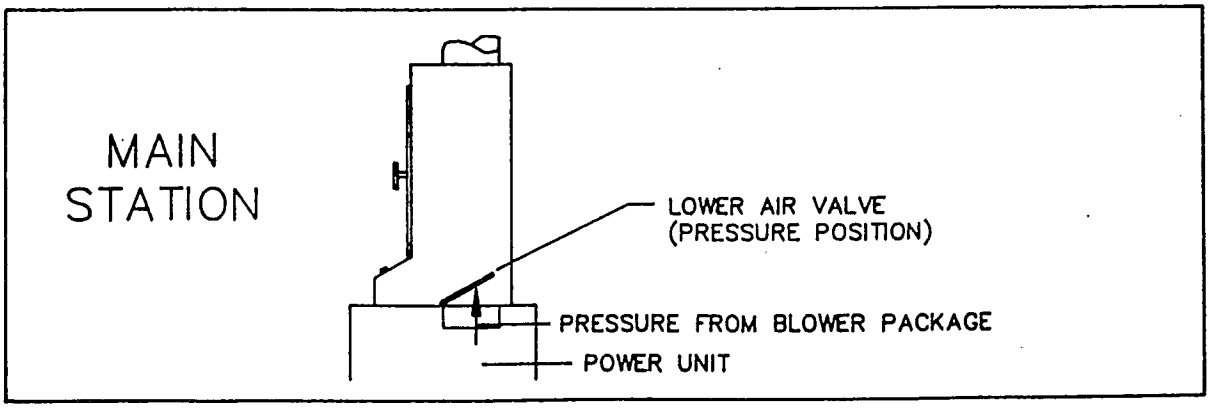


Figure III - 1

Also, at the END Station, the upper air valve is opened and vents the pressured air out of the system (see Figure III-2).

This creates a dead air space between the two valves at the END Station which allows the carrier to drop very softly into the END Station.

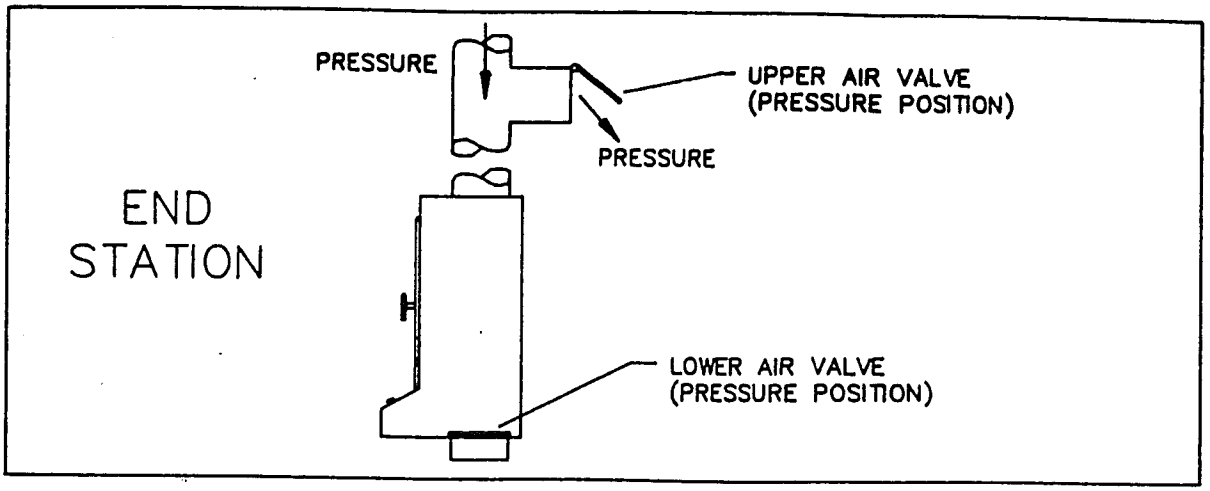


Figure III-2

Refer to Section I, Figure I-3, for an overall diagram of the system's air flow when the MAIN Station is sending to the END Station.

2. When the END Station is sending a carrier to the MAIN Station, the first thing that happens is that the door latch mechanism at the MAIN Station is actuated by the opening of the END Station door. Then, after the carrier is inserted into the send chamber, the door closed, and the send initiated, the Blower Package provides vacuum to the system and causes the END Station's upper valve to close and the lower valve to open (see Figure III-3).

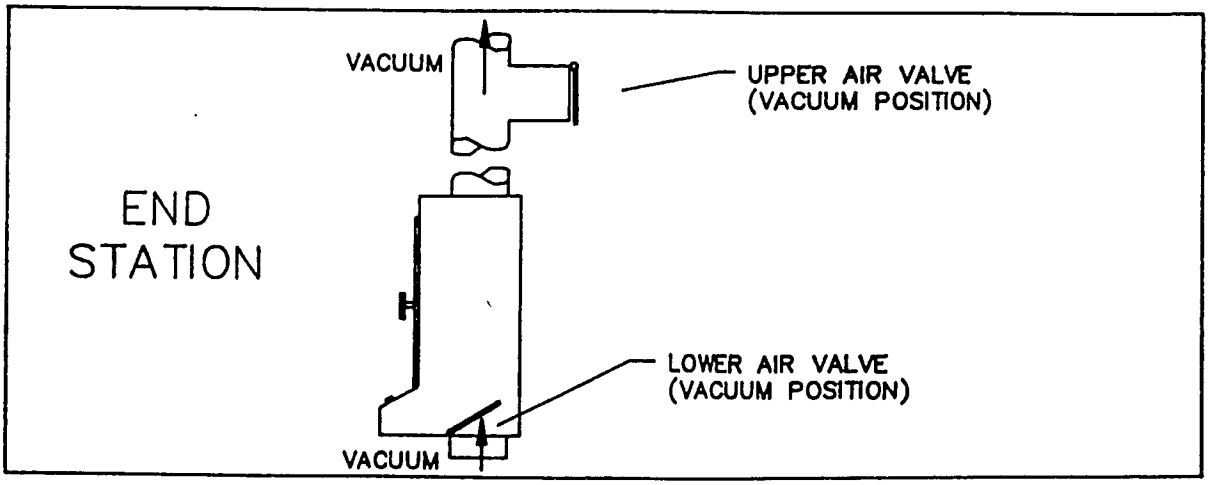


Figure III-3

This creates an air path by which the carrier can be lifted out of the END Station and transported through the system's transmission tubing to the MAIN Station. See Section I, Figure.I-2, for an overall diagram of the system's air flow when the END Station is sending to the MAIN Station.

3. The station solenoid-driven door lock is an electro-mechanical device which when actuated engages the door latch mechanism and locks the station door. This prevents injury to operators who otherwise could inadvertently open the station door as a carrier is arriving. Figure III-4 below is a diagram of the Door Lock Box.

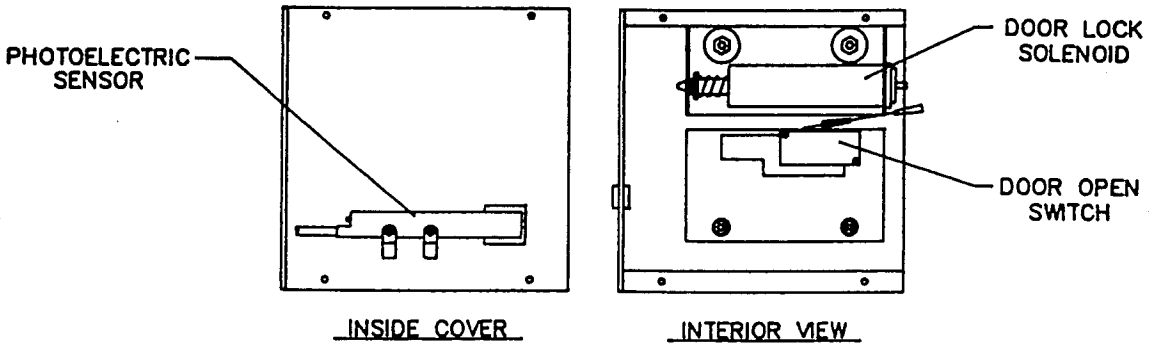


Figure III-4

4. The Sliding Sleeve Terminal performs the send and receive functions the same as the Vertical Airtite Terminal, with the exception that the Sliding Sleeve replaces the station door. Also, the solenoid-driven door lock is installed at the bottom rear of the station to lock the Sliding Sleeve from opening while a carrier is in transit to or from the station (see Figure III-5).

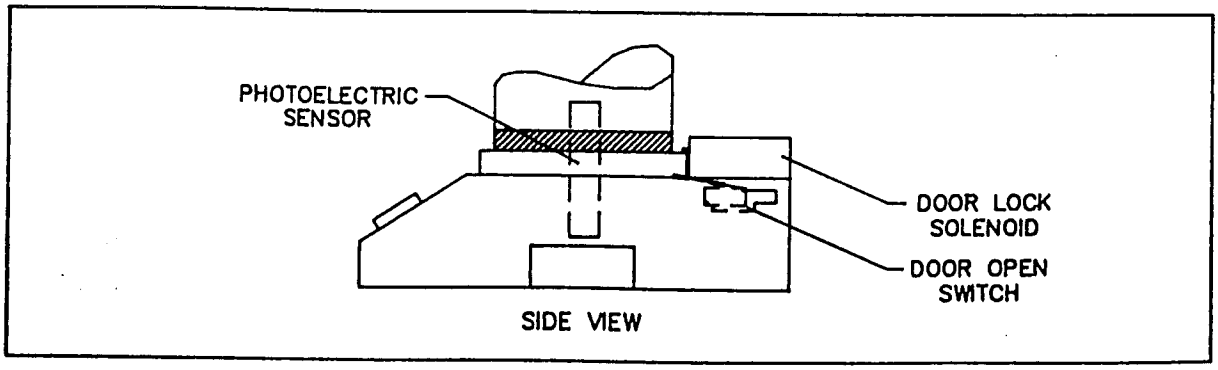


Figure III-5

B. AccuSend Blower Operation

The new Pevco Systems Blower Package has no moving mechanical parts with the exception of the Shifter Valve Assembly. The air shifter valves are moved to their correct position by the air flow through the unit.

The Blower Package uses two sets of motors in an opposing configurations. These, together with mechanical check valve assemblies for both vacuum and pressure, eliminate the need for shifter motors and reduce the number of moving parts to an absolute minimum. The vacuum mechanical check valve is located on the Blower Package and the pressure mechanical check valve is located externally in the pressure line. Figure III-6 below is a diagram of the Blower Package.

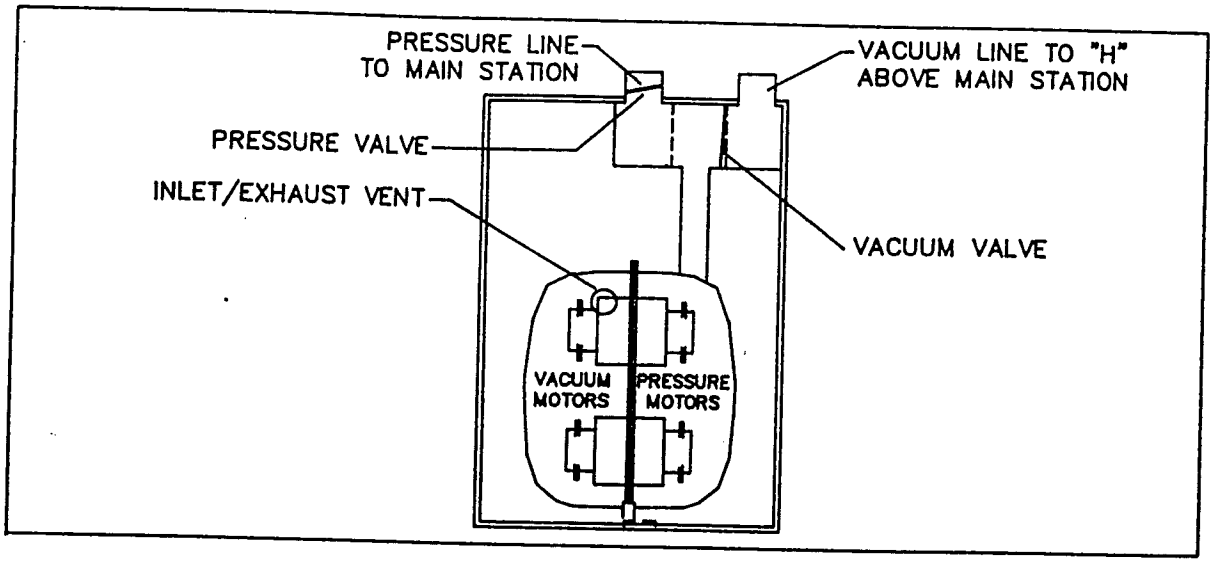


Figure III-6

The Pressure Cycle: When the program calls for pressure, the motors on the right side of the Blower Package are turned on. These motors draw air in through the Inlet/Exhaust Vent and blow out through the pressure line to the MAIN Station. The pressure mechanical check valve location in the pressure line is dependent on the distance of the air line (see attachments to this section). At

the same time, the vacuum valve is sealed shut by the force of the pressured air the same time to prevent air from escaping through the vacuum line. The pressured air is vented out of the system through the pressure relief valve located above the receiving END Station. When the lower (vacuum) valve at the END Station is closed, a dead air cushion is created, allowing the carrier to land gently inside the END Station.

The Vacuum Cycle: For vacuum, the opposite motors are used. The left side motors are activated and begin drawing air from the vacuum check valve located at the bottom of the END Station. The air is then drawn through the carrier transmission path to the vacuum line connected at the MAIN Station, and then through the vacuum line to the vacuum check valve at the Blower. This air is exhausted through the Inlet/Outlet Vent. The pressure valves at the MAIN Station and/or in the pressure line are closed during this operation. The upper valve at the END Station is also closed during this operation.

C. ENVELOPE (Cut-Sheet) Drawings

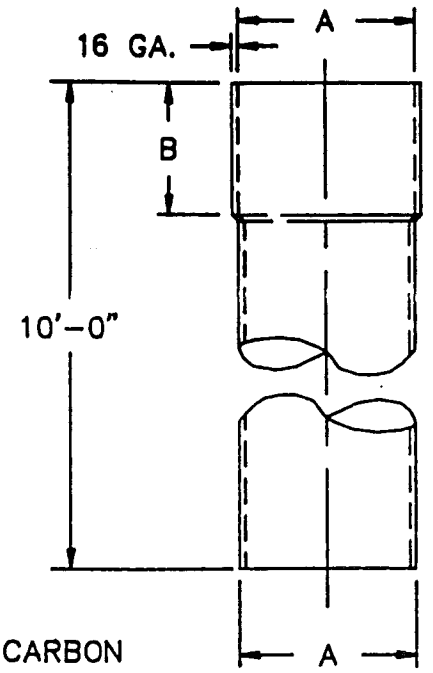
Envelope drawings, commonly referred to as "cut sheets", for all major mechanical components of the AccuSend System are provided on the following pages of this section. These drawings include:

1. Transmission Line Material - tubing, bends, sleeves, and elbows
2. Sliding Sleeve Terminal
3. Vertical Airtite Terminal
4. Carriers
5. Blower Package
6. Blower Package connection diagram for systems with the MAIN Station remote under 50' from Blower Package
7. Blower Package connection diagram for systems with the MAIN Station remote over 50' from Blower Package

	A	B
4" SYSTEM	4"ø	3 3/4"
6" SYSTEM	6"ø	4 3/4"

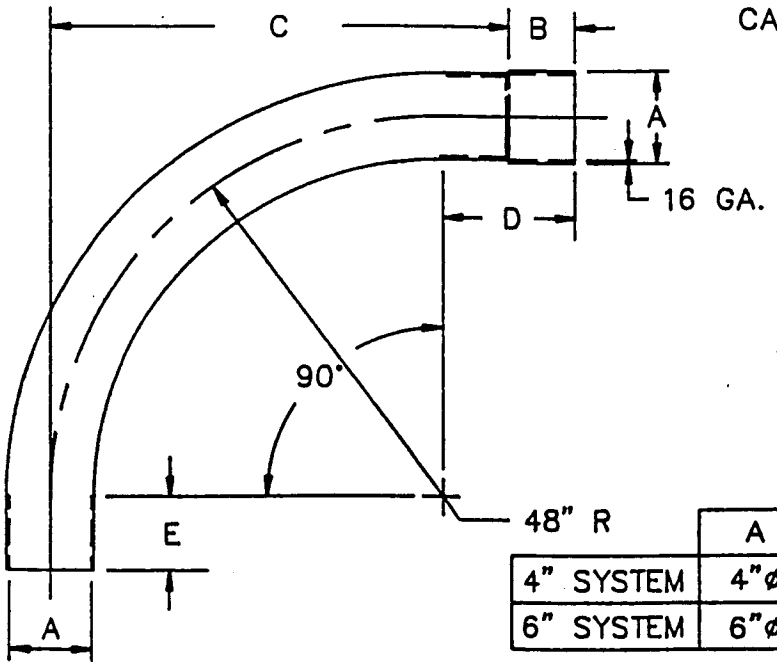
LENGTH: 10'-0"

BELLED END STRAIGHT TUBING



MATERIAL: 4"/6" O.D. – 16 GA. GALVANIZED CARBON STEEL, ELECTRIC WELD

MATERIAL: 4"/6" O.D. – 16 GA. GALVANIZED CARBON STEEL, ELECTRIC WELD



BELLED END 48" RADIUS BEND

	A	B	C	D	E
4" SYSTEM	4"ø	3 3/4"	61 3/4"	17"	13 1/4"
6" SYSTEM	6"ø	4 3/4"	70 3/8"	26 7/8"	22 3/8"

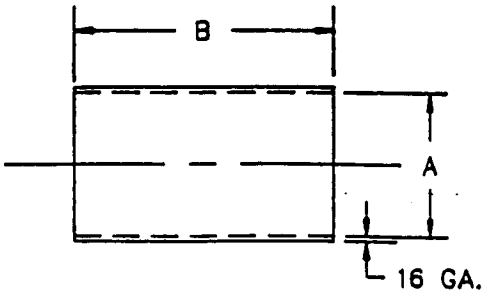
PEVCO SYSTEMS INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

TUBING & BENDS

4" & 6" SYSTEMS

SCALE	NONE	DATE
DRAWN	SDW	07.06.93
REVISED	SDW	10.10.95
	SDW	11.15.95
DRAWING NUMBER	TB460000	

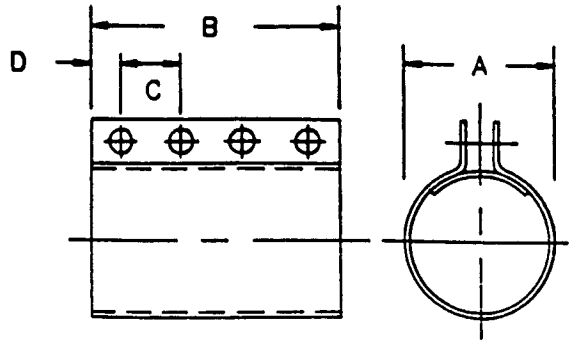
	A	B
4" SYSTEM	4"ø	5"
6" SYSTEM	6"ø	6"



SOLID SLEEVE

MATERIAL: 16 GA. GALVANIZED CARBON STEEL, ELECTRIC WELD

	A	B	C	D
4" SYSTEM	4"ø	5"	1 1/2"	1/4"
6" SYSTEM	6"ø	5 7/8"	1 3/4"	5/16"

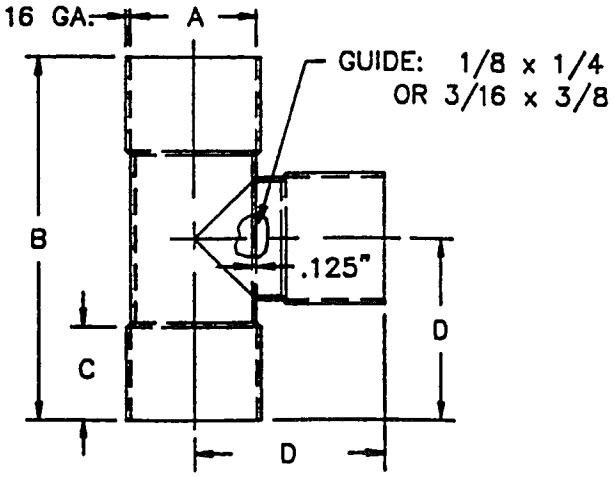


CLAMP SLEEVE

HOLES ARE 9/32"—NUTS & BOLTS ARE INCLUDED

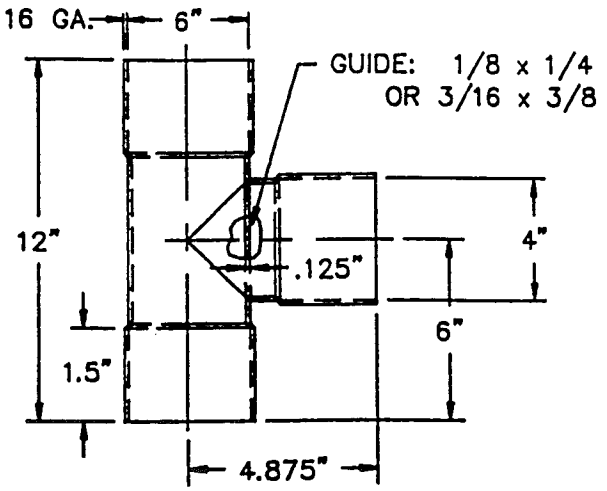
MATERIAL: 4"ø, 18ga GALVANIZED CARBON STEEL
6"ø, 20ga GALVANIZED CARBON STEEL

	A	B	C	D
4" SYSTEM	4"ø	7 3/4"	1 1/4"	3 7/8"
6" SYSTEM	6"ø	12"	1 1/2"	6"



SEGEMENTED TEE

MATERIAL: 16 GA. GALVANIZED CARBON STEEL



6" x 4" SEGMENTED TEE

MATERIAL: 16 GA. GALVANIZED CARBON STEEL

PEVCO SYSTEMS INTERNATIONAL, INC.

10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

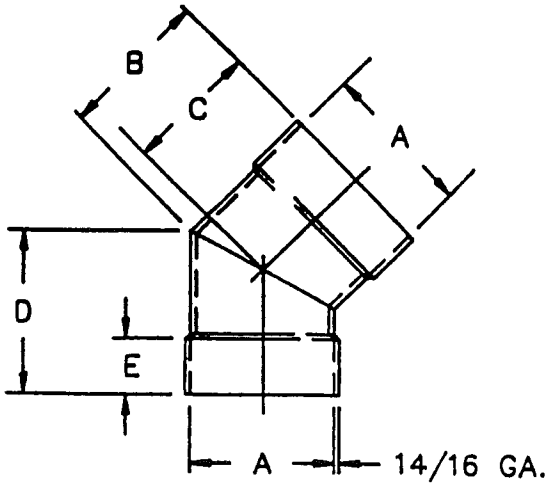
SLEEVES & TEE

4" & 6" SYSTEMS

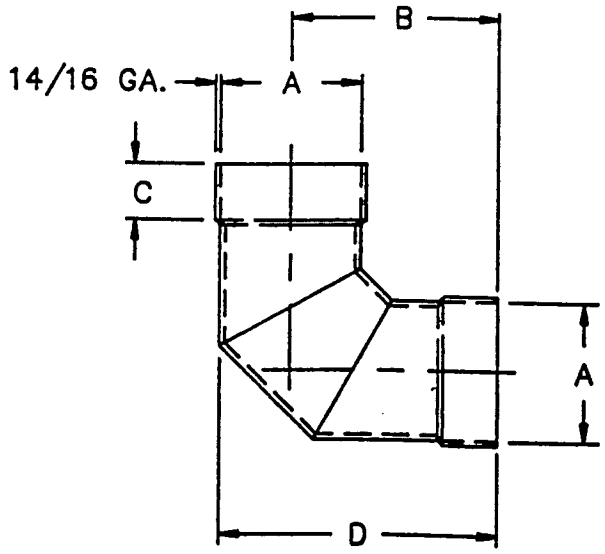
SCALE	NONE	DATE
DRAWN	SDW	07.12.93
REVISED	SDW	07.19.93
	SDW	10.10.95
DRAWING NUMBER	TB460001	

	A	B	C	D	E
4" SYSTEM	4"ø	3 11/16"	2 7/8"	3 11/16"	1 1/4"
6" SYSTEM	6"ø	5"	3 3/4"	5"	1 1/2"

45° SEGMENTED ELBOW



MATERIAL: 4"ø 16 ga/6"ø 14 ga GALVANIZED CARBON STEEL



	A	B	C	D
4" SYSTEM	4"ø	4 15/16"	1 1/4"	6 15/16"
6" SYSTEM	6"ø	6"	1 1/2"	9"

90° SEGMENTED ELBOW

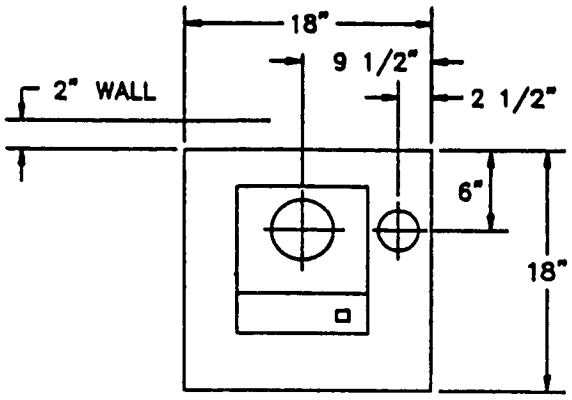
MATERIAL: 4"ø 16 ga/6"ø 14 ga GALVANIZED CARBON STEEL

PEVCO SYSTEMS INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

SEGMENTED ELBOWS

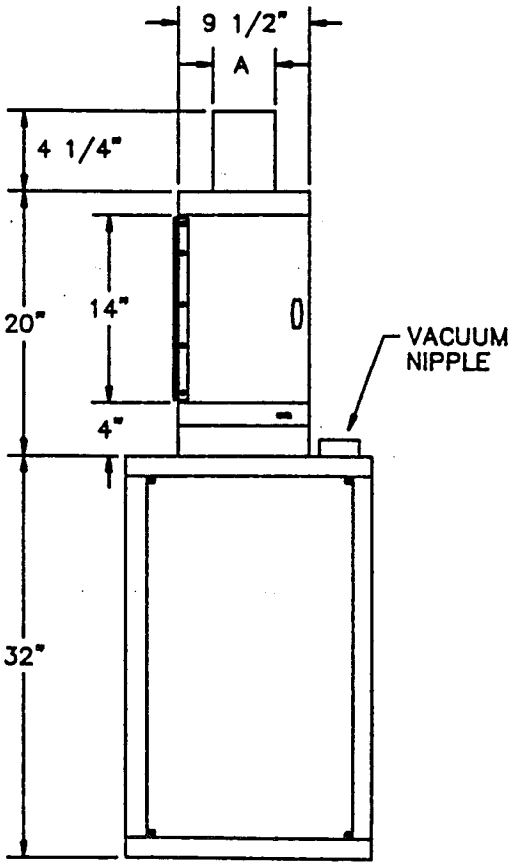
4" & 6" AIR LINES

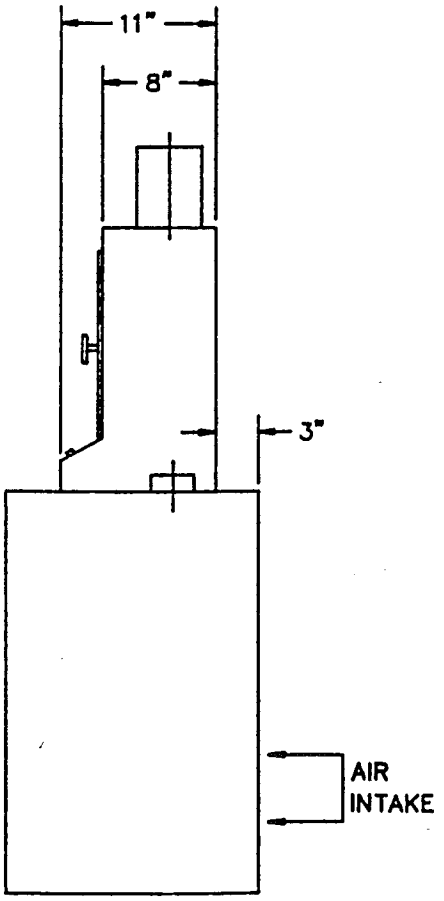
SCALE	NONE	DATE
DRAWN	SDW	07.12.93
REVISED	SDW	07.19.93
	SDW	10.10.95
DRAWING NUMBER	TB460002	



ELECTRICAL REQUIREMENTS:
4" – 120 VOLTS, 20 AMP
6" – 120 VOLTS, 30 AMP
DEDICATED CIRCUIT
(PROVIDED BY OTHERS)

	'A'
4" SYSTEM	4"ø
6" SYSTEM	6"ø





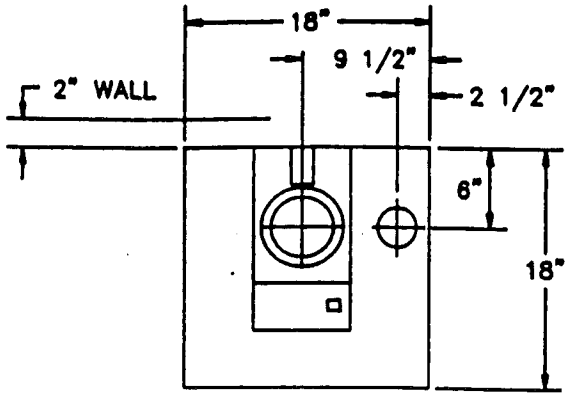
WEIGHTS: 4" = 148 lbs, 6" = 154 lbs

PEVCO SYSTEMS
INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

ACCUSEND
VERTICAL TERMINAL WITH
POWER UNIT

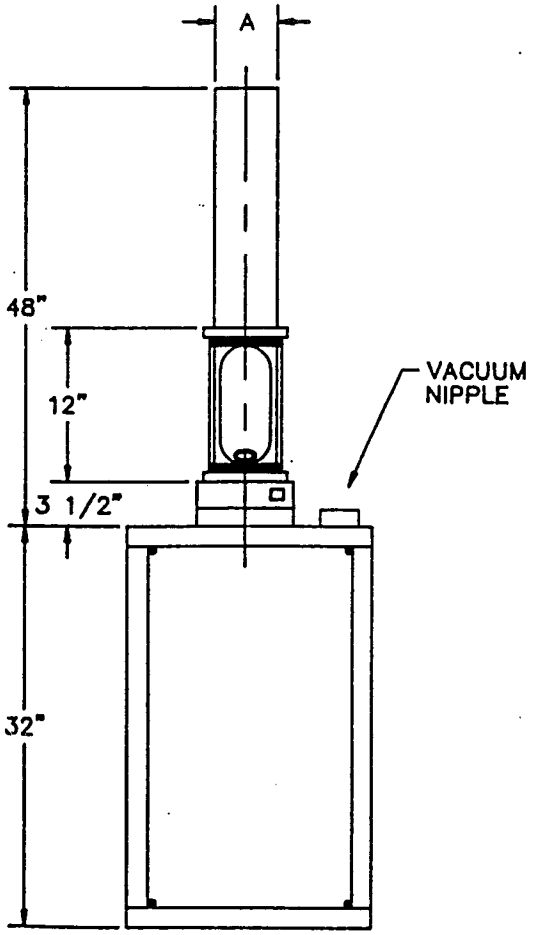
4" & 6" SYSTEMS

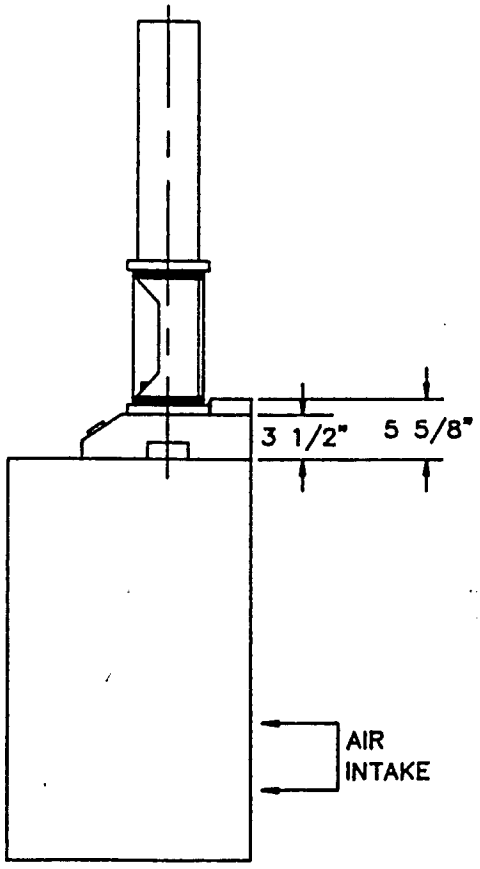
SCALE	NONE	DATE
DRAWN	SDW	06.20.94
REVISED	SDW	11.15.95
	SDW	01.02.96
DRAWING NUMBER	C10–1000	



ELECTRICAL REQUIREMENTS:
4" – 120 VOLTS, 20 AMP
6" – 120 VOLTS, 30 AMP
DEDICATED CIRCUIT
(PROVIDED BY OTHERS)

	'A'
4" SYSTEM	4"ø
6" SYSTEM	6"ø





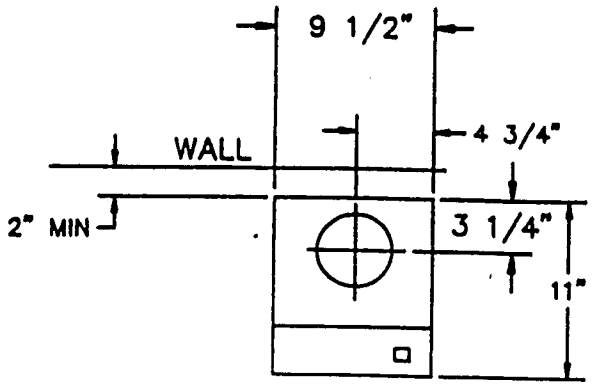
WEIGHTS: 4" = 125 lbs, 6" = 132 lbs

PEVCO SYSTEMS
INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

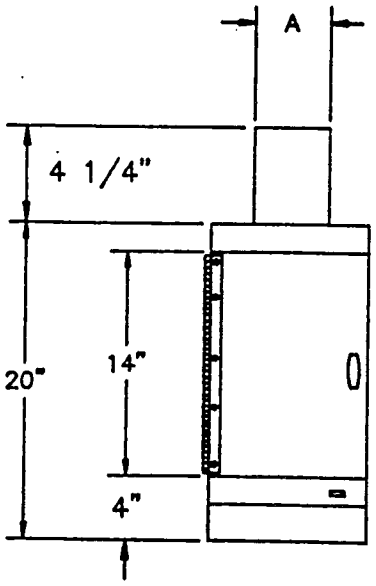
ACCUSEND
SLIDING SLEEVE TERMINAL
WITH POWER UNIT

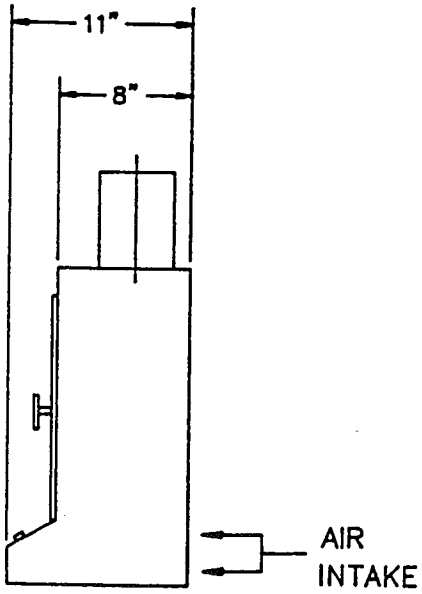
4" & 6" SYSTEMS

SCALE	NONE	DATE
DRAWN	SDW	06.20.94
REVISED	SDW	11.15.95
	SDW	01.02.96
DRAWING NUMBER	C12–1000	



	'A'
4" SYSTEM	4"ø
6" SYSTEM	6"ø





WEIGHTS: 4" = 42 lbs, 6" = 48 lbs

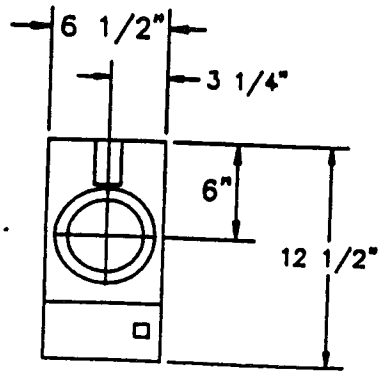
PEVCO SYSTEMS INTERNATIONAL, INC.

10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

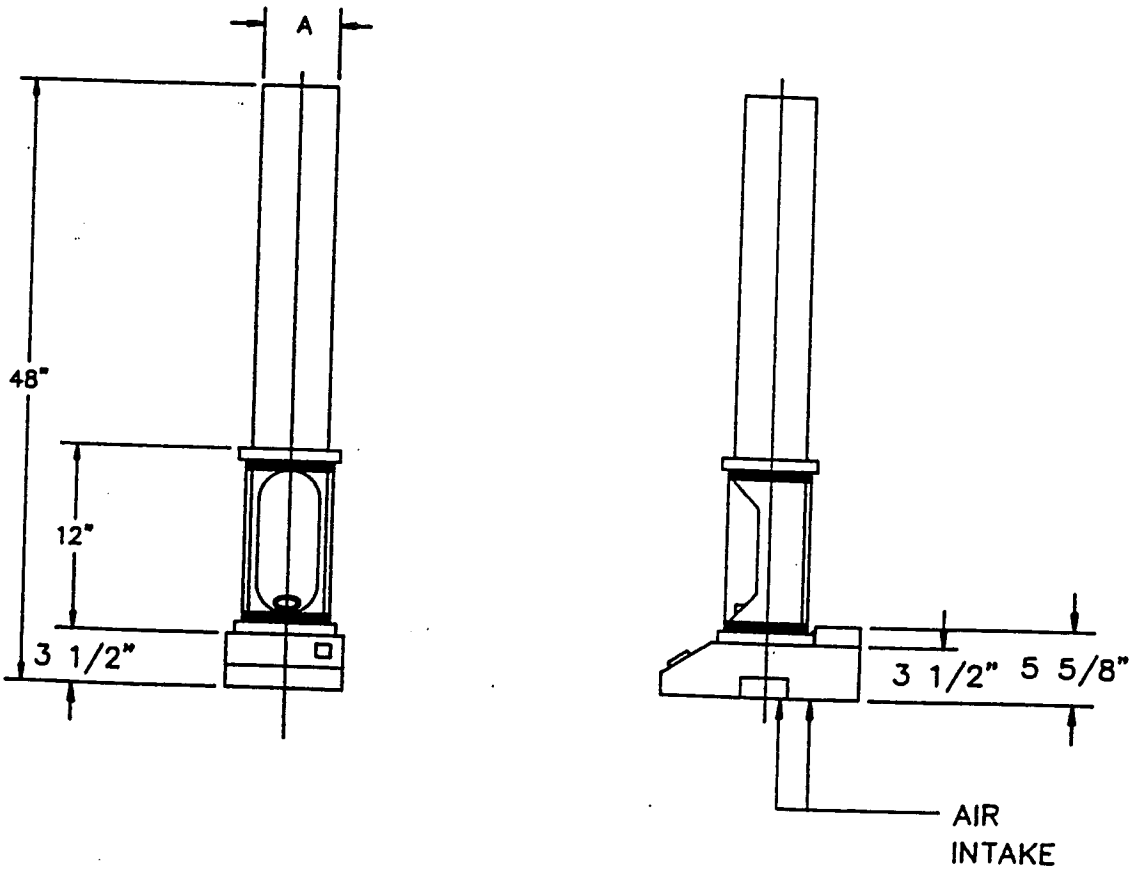
ACCUSEND & DIRECT DISPATCH
VERTICAL TERMINAL
END STATION

4" & 6" SYSTEMS

SCALE	NONE	DATE
DRAWN	SDW	06.20.94
REVISED	SDW	11.15.95
DRAWING NUMBER	C14-1000	



	'A'
4" SYSTEM	4"ø
6" SYSTEM	6"ø



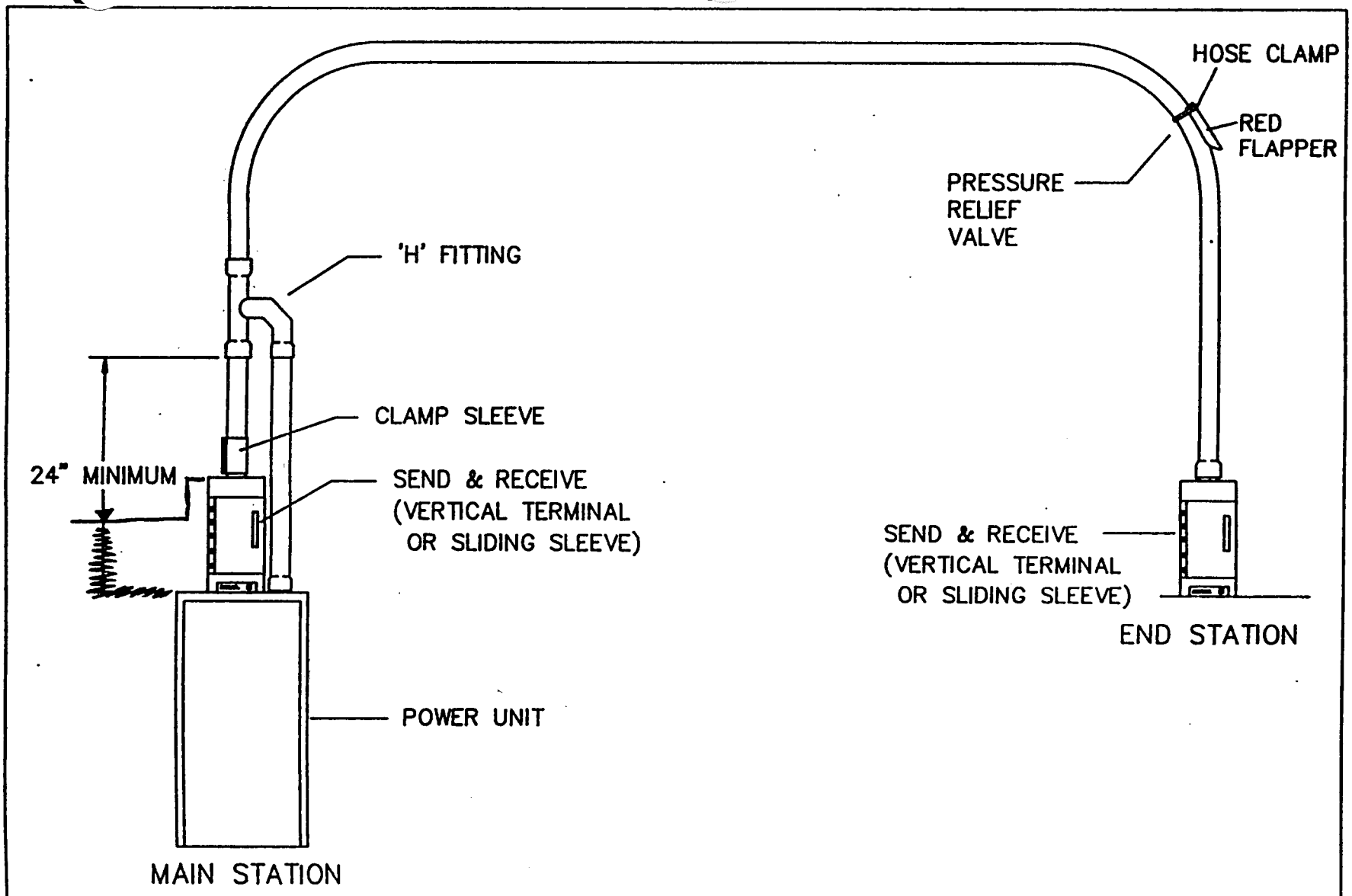
WEIGHTS: 4" = 19 lbs, 6" = 26 lbs

PEVCO SYSTEMS INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

ACCUSEND & DIRECT DISPATCH
SLIDING SLEEVE TERMINAL
END STATION

4" & 6" SYSTEMS

SCALE	NONE	DATE
DRAWN	SDW	06.20.94
REVISED	SDW	11.15.95
DRAWING NUMBER	C16–3000	



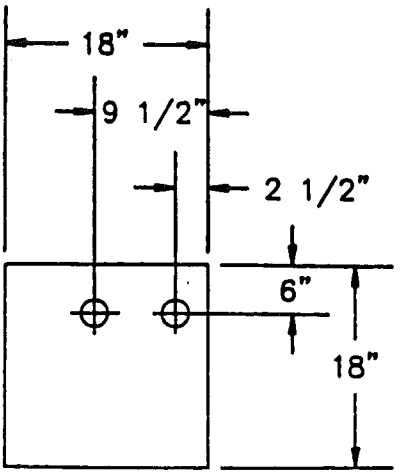
PEVCO SYSTEMS
INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

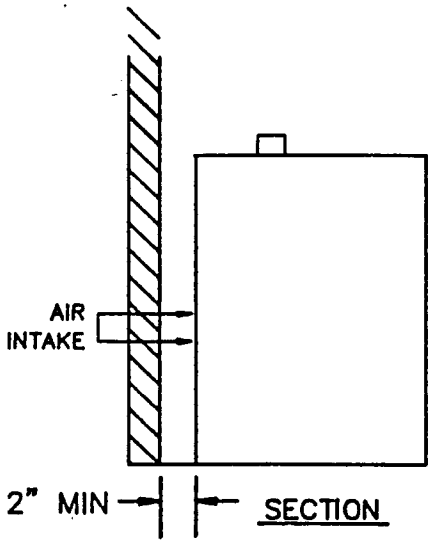
TYPICAL ACCUSEND
MAIN & END STATION
CONFIGURATION

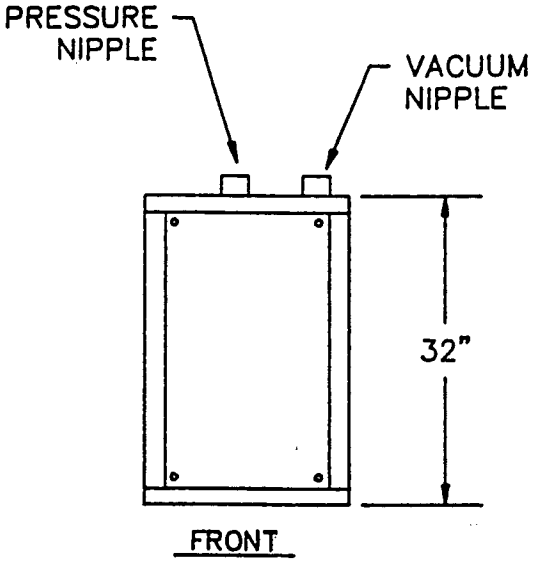
SCALE	NONE	DATE
DRAWN	SDW	5.21.92
REVISED	SDW	06.23.95
	SDW	11.15.95
DRAWING NUMBER	C18-1000	

ELECTRICAL REQUIREMENT:

4" AccuSend = 120 VOLTS, 20 AMP
4" DDS, 6" AccuSend = 120 VOLTS, 30 AMP
DEDICATED CIRCUIT (PROVIDED BY OTHERS)







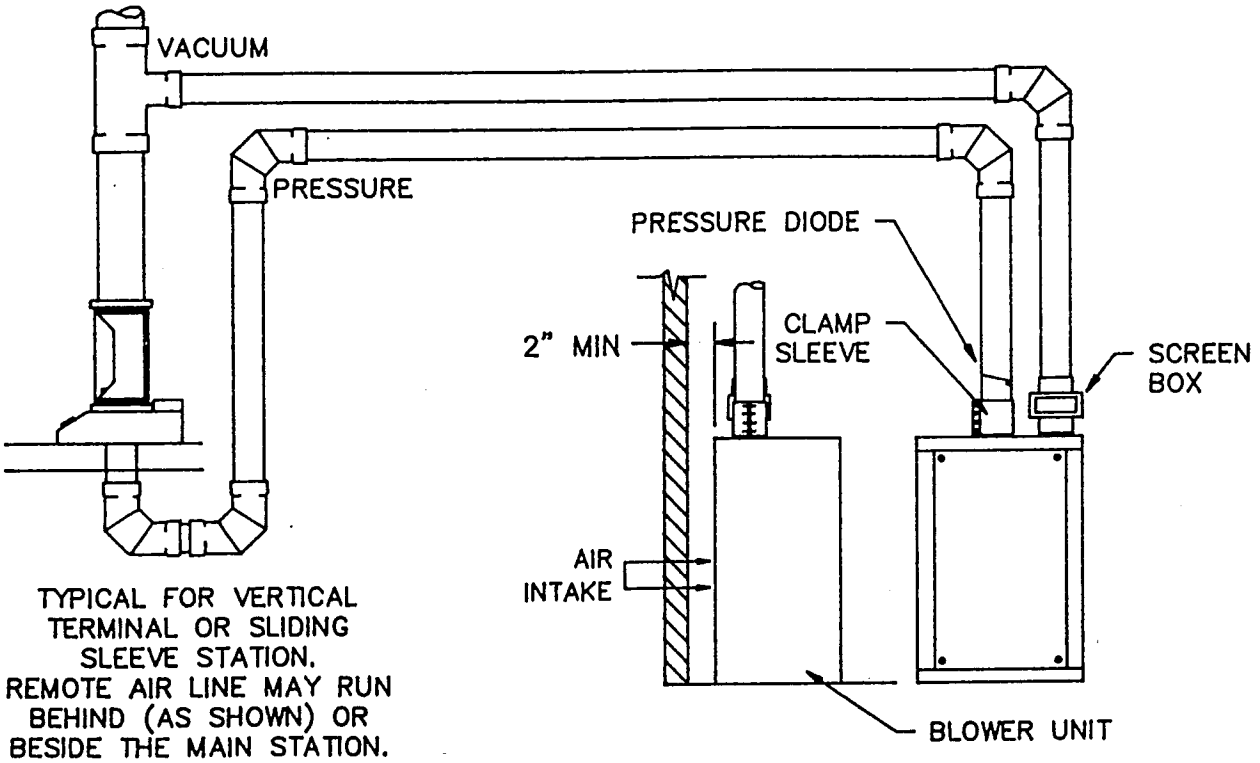
WEIGHT: 106 lbs

PEVCO SYSTEMS INTERNATIONAL, INC
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

REMOTE BLOWER PACKAGE

TYPICAL FOR 4" & 6" SYSTEMS
ACCUSEND & DIRECT DISPATCH

SCALE	NONE	DATE
DRAWN	SDW	11.15.95
REVISED	SDW	02.06.96
DRAWING NUMBER	C20–1000	



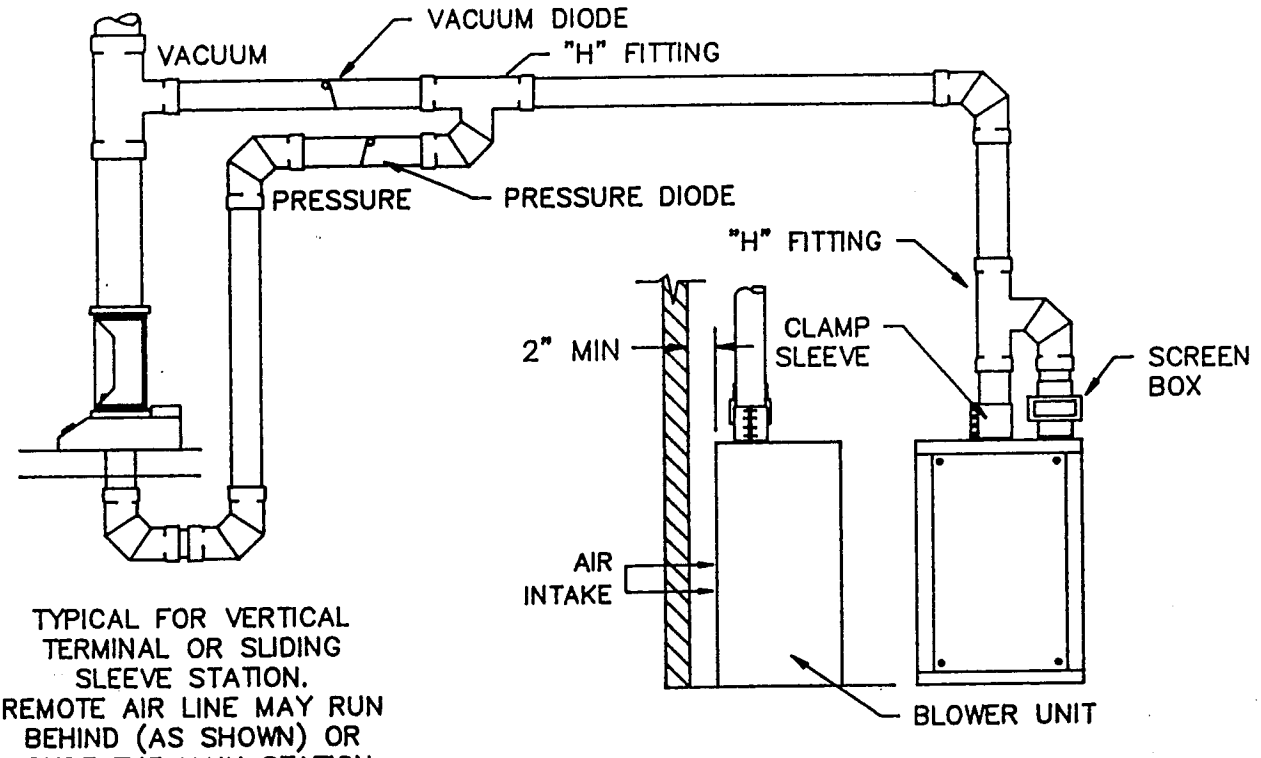
TYPICAL FOR VERTICAL TERMINAL OR SLIDING SLEEVE STATION. REMOTE AIR LINE MAY RUN BEHIND (AS SHOWN) OR BESIDE THE MAIN STATION.

PEVCO SYSTEMS INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

ACCUSEND MAIN STATION & REMOTE BLOWER

CONFIGURATION #1 (1'-0" TO 50'-0")

SCALE NONE	DATE
DRAWN SDW	01.17.96
REVISED	
DRAWING NUMBER ACC10018	



TYPICAL FOR VERTICAL TERMINAL OR SLIDING SLEEVE STATION. REMOTE AIR LINE MAY RUN BEHIND (AS SHOWN) OR BESIDE THE MAIN STATION.

PEVCO SYSTEMS INTERNATIONAL, INC.
10001 Franklin Square Drive
Baltimore, MD 21236
(410) 931-8800

ACCUSEND MAIN STATION & REMOTE BLOWER

CONFIGURATION #2 (50'-0" TO 150'-0")

SCALE NONE	DATE
DRAWN SDW	01.17.96
REVISED	
DRAWING NUMBER ACC10020	