Direct Vent

CO-AXIAL DIRECT SIDE WALL VENTING SYSTEM

Installation, Operation and Maintenance Manual

INSTALLATIONS MUST MEET ALL LOCAL AND FEDERAL CODES THAT MAY DIFFER FROM THIS MANUAL

Please read this complete manual before beginning installation.

These instructions must be kept with the furnace for future reference.

The vent and combustion air intake must be installed in accordance to CSA B139/NFPA31 or the applicable local codes.

This co-axial direct side wall venting system cannot be installed with the Paradigm MAX furnace.

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TABLE OF CONTENTS

1.0 INSTALLATION REQUIREMENTS

The vent and combustion air intake must be installed in accordance to CSA B139/NFPA31 or the applicable local codes. We do not recommend enclosing flexible vent pipe, nor having the flexible vent pipe pass through interior walls, floors or ceilings. If the vent passes through walls, floors and ceilings the methods detailed in CSA B139/NFPA 31 must be followed.

1.1 REQUIREMENTS FOR CANADA (Figure – 1)

In Canada, based on CSA B139 placement of the vent must ensure that it shall not terminate:

a) Directly above a paved sidewalk or a paved driveway that is located between two buildings and that serves both buildings.
b) Less than 2.13 m (7') above any paved sidewalk or any paved driveway (Dimension "A").
c) Within 1.8 m (6') of a window, door or mechanical air supply inlet to any building including soffit openings (Dimension "B").
d) Above a gas meter/regulator assembly within 1 m (3') of the vertical centerline of the regulator on a horizontal plane perpendicular to the regulator.
e) Within 1.8 m (6') of any gas service regulator vent outlet or within 1 m (3') of an oil tank vent or an oil tank-fill inlet (Dimension "C").
f) Less than 0.3 m (1') above grade level (Dimension "D").

Note: The vent should terminate 0.3 m (1') above the anticipated snow level for the location.

g) Within 1.8 m (6') of any combustion air inlet, unless the appliance is otherwise certified (Dimension "F").

Note: Exhaust equipment when not operating can inadvertently provide a passage for fumes or products of combustion to leak into a building.

h) With 1.8 m (6') of the property line.
i) Underneath a veranda, porch or deck.
j) So that the flue gases are directed at combustible material or any opening of surrounding buildings that are within 1.8 m (6').
k) Less than 1 m (3') from an inside corner of an L shaped structure (Dimension "E").
l) So that the bottom of the vent termination opening is less than 0.3 m (1') above any surface that may support snow, ice or debris; and
m) So that the flue gases are directed towards brickwork, siding or other construction, in such a manner that may cause damage from heat or condensate from the flue gases.

1.2 REQUIREMENTS FOR THE UNITED STATES (Figure – 1)

Based on NFPA31 Code

1. The exit terminal of the system shall not be less than 7' (2.1 m) above grade when located adjacent to public walkways (Dimension "A").
2. The flue gas outlet of an appliance shall terminate at least 4' (1.2 m) below, 4' (1.2 m) horizontally from, or 1' (0.3 m) above any door, window, or gravity air inlet of the structure (Dimension "B").
3. The air inlet and the flue gas outlet shall terminate at least 5't (1.6 m) from the vent outlet of a supply tank (Dimension "C").
4. The outlet also shall terminate at least 1' (0.3 m) above grade (Dimension "D").
5. The flue gas outlet of an appliance shall terminate at least 3' (0.9 m) from an inside corner of an L shaped structure (Dimension "E").
6. The venting system shall terminate at least 3' (0.9m) above any forced air inlet that is within 10 ft (3.1 m) of the termination point (Dimension "F").

   Exception No. 1: This requirement shall not apply where the inlet is a combustion air intake for a direct vent appliance.

   Exception No. 2: This Requirement shall not apply to the separation distance between the circulating air inlet and the vent discharge of a listed outdoor appliance.

7. The flue gas outlet of an appliance shall terminate at least 1' (0.3 m) above any door, window, or gravity air inlet of the structure.
8. The flue gas outlet of the appliance shall terminate at least 1' (0.3 m) from the soffit of the roof of the structure.
9. The combustion air inlet and flue gas outlet of the direct vent appliance shall terminate in the same plane and in the same ambient pressure zone when they terminate in the sidewall of the structure.

2.0 CO-AXIAL VENT INSTALLATION PROCEDURE

Only approved venting components shall be used. The maximum length of vent and air intake is 20' (6 m).

The vent pipe must be in one continuous piece with no joints.

3.0 INSTALLATION CONSIDERATIONS (Figure – 2)

1. The vent pipe minimum inside bend radius is 12".
2. Place metal strapping every 36" to support vent pipe and prevent it from sagging.
3. Maximum wall thickness is 14".
4. Kit or system may vary based on specific needs of appliance.
5. This system is not designed for common venting. Use for a single appliance only.
6. Utilize the appliance adapter test port for combustion testing.
7. Follow national codes for the installation of oil burning equipment: in USA – NFPA31, in Canada – CAN/CSA – B139 and local regulations.

4.0 DIRECT VENT RECOMMENDATIONS

The following Direct Vent recommendations are based on data from the field and lab testing.

a) Two line oil systems can only be used with inside oil tanks.
b) The minimum inside bend radius for the vent is 12".
c) The appliance must be located within the heated space.
d) The combustion air supply must not be insulated for the last 48" before the burner.
e) A combustion air damper kit is recommended for areas of extreme cold (-30°C).
f) Interior oil tanks are recommended.
g) The oil filter must never be placed outdoors.
h) The standard practice of reducing the CO_2 by 1% after setup should be followed.
i) The vent should be as short as possible with minimum bends.
j) The vent terminal should not be placed on the building exterior side facing high prevailing winds.
k) In extremely cold climates, ice may have to be removed form the terminal on a regular basis.
l) Natural wood and stucco exterior building finishes may be affected by exhaust gases.

5.0 JOINT ASSEMBLY (Figure – 3 & 4)

1. Loosen the gear clamps attached to the adapter sleeve and slide the adapter sleeve over the vent pipe.
2. Pull the corrugated inner tube out of the vent pipe for easy access to insert the adapter.
3. Apply silicone around the corrugated end of the adapter.
4. Align the flat seams at the end of both corrugated tubes and insert the adapter into the vent tube. Screw the adapter into the vent pipe with a counter clockwise motion. The adapter should be fully inserted into the inner vent tube until it's tight. The seams of the tubes must be aligned for ease of insertion. If the adapter does not completely screw into the vent pipe, unscrew it and try again as per Step #4. Note that this is a multi-start left hand thread; with one thread twice the width of the others. Therefore, care must be taken to ensure that the correct threads are engaged before tightening in a counter clockwise direction.
5. Seal around edge of vent pipe inner tube.
6. Slide the adapter sleeve back onto adapter and tighten the gear clamps to complete the connection.
7. If the vent area requires cutting to length, a fine-toothed hacksaw can be used. Remove any burrs and flare out the end of the inner vent tube for easy installation of the adapter. Ensure that there is enough length to form large radius bends no smaller than 1 ft (0.3 m) in radius.
8. The vent must have 9" of clearance to combustibles within 36" of the appliance breech. The remaining section of the vent to the terminal can have a minimum of 1" of clearance. The terminal is rated for 0 clearances.

6.0 TERMINAL INSTALLATION (Figure – 5 & 6)

1. Determine the terminal location.
2. Cut a 6 1/4" hole through the wall (slightly larger than the O.D. of the terminal).
3. Remove the Terminal Air Adaptor from the termination.
4. Slide the outer wall plate over the outer section of the terminal until it rests against the bead.
5. From the outside of the building, insert the outer section through the hole until it rests against the wall.
6. From the inside of the building, slide the inner wall plate over the outer section and secure using four (4) screws.
7. Reinstall the Terminal Air Adaptor on the interior portion of the termination.
8. Seal with a weatherproof sealant around the edge of the outer wall plate to prevent water form getting inside. It is recommended that a 24" x 24" patio block be placed under the vent terminal in areas where vegetation may grow up around the terminal.
9. The interior side of the terminal must be supported no less than 6" from the exterior terminal plate. Use the terminal plate with the clamp to mount the terminal to this support. Fasten the plate to the structure with screws and tighten the clamp.

7.0 CONNECTIONS

7.1 CONNECTIONS TO APPLIANCE (Figure – 7 & 8)

1. Connect the appliance adapter to the vent pipe as per joint assembly.
2. Apply sealant around the appliance flue collar.
3. An approved appliance elbow may be used.
4. Slide the appliance adapter over the appliance flue collar.
5. Tighten the gear clamp of the appliance adapter around the flue collar (do not over tighten).
6. Seal the seam in the adapter with sealant.

A 5" appliance elbow is available to accommodate tight flex pipe connections to the appliance where a 90 degree turn is required at the breech connection.

7.2 CONNECTIONS TO TERMINATION (Figure – 7 & 8)

1. Connect the termination adapter to the vent pipe as per joint assembly.
2. Slide the terminal adaptor insulation sleeve over the venting pipe for later use to cover the termination adaptor connection.
3. Apply sealant around the termination pipe.
4. Slide the appliance adapter over the appliance flue collar.
5. Tighten the gear clamp of the termination adapter around the termination pipe (do not over tighten).
6. Seal the seam in the adapter with sealant.
7. Slide the insulation sock over the terminal adaptor connection to butt against the terminal air adaptor tee. Using aluminum duct tape seal each end of the insulation sock to the air adaptor tee and the insulated flex pipe.

A 4" terminal elbow is available to accommodate tight flex pipe connections to the terminal where a 90 degree turn is required at the termination.

8.0 SEALING THE BURNER (Figure – 9)

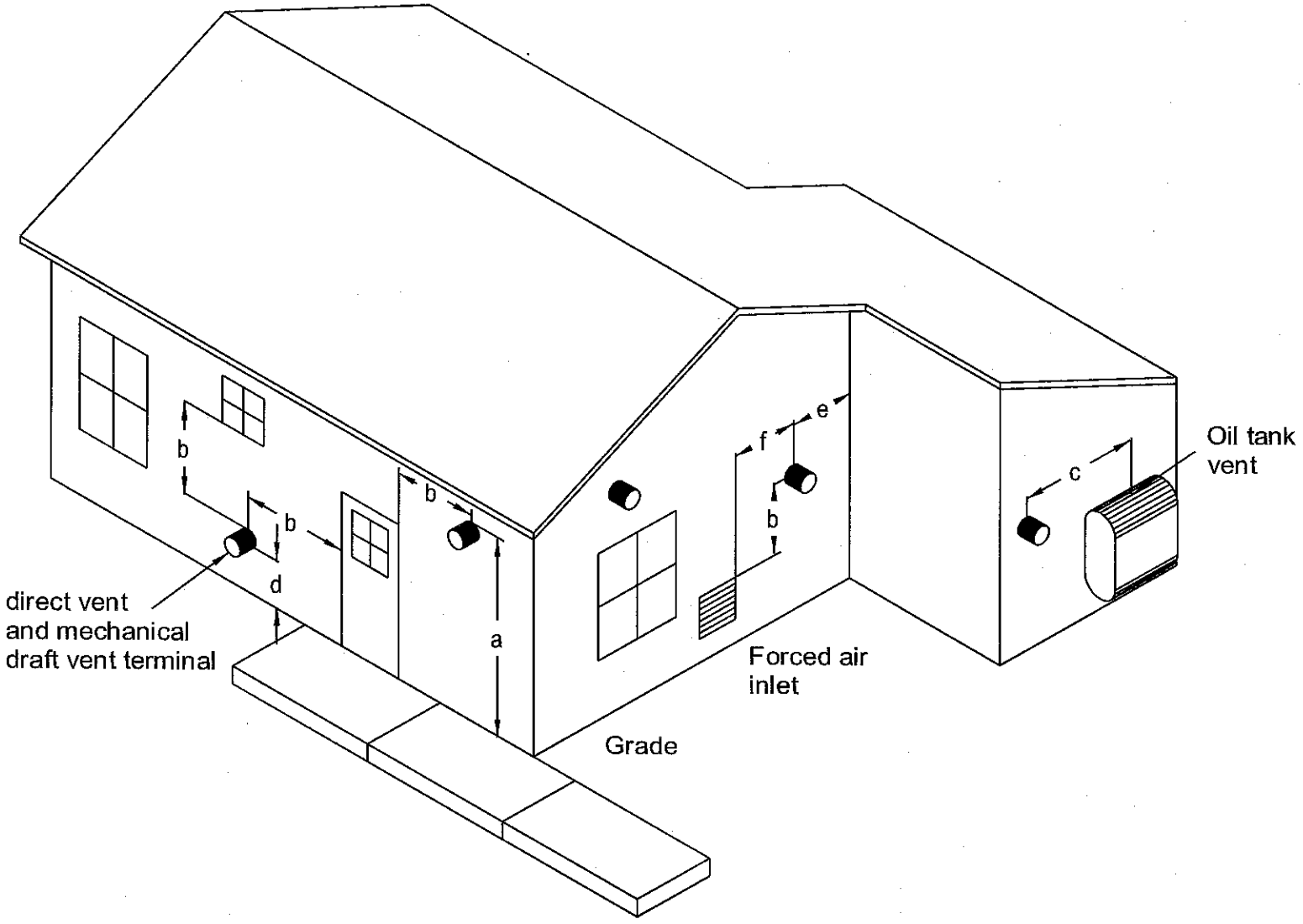
1. Mount the burner flange on the blast tube at the required burner insertion.
2. Now looking at the burner from the front (blast tube side), run a bead of heat resistant sealant around the blast tube where the blast tube and the burner flange join. This is sufficient to seal the burner. Applying sealant to the burner gasket is usually not required and will make it more difficult to remove the burner during future servicing and cleaning of the heating unit.
3. Mount the burner to the heating unit using all four (4) mounting studs. This will secure the burner to the heating unit providing an even seal around the burner gasket.
4. The wires leading from the burner housing must be sealed with the wire seal provided.

9.0 COMBUSTION AIR INSTALLATION

1. Use 4" diameter vent pipe for combustion air.
2. Run from the vent terminal to the burner.
3. A reducer will be required at the burner.
4. Seal all joints with sealant and or aluminum duct tape.

10.0 VENT RISER TERMINATION (Figure – 10, 11 & 12)

The vent riser kit, available in 32.5" and 47" sizes, is used in installations where the termination is located below grade or where the vent outlet needs to exit at a higher point. Proper long term drainage must be placed around the base of the box assembly. The head assembly must have a minimum 12" clearance from grade or normally expected snow accumulation level.

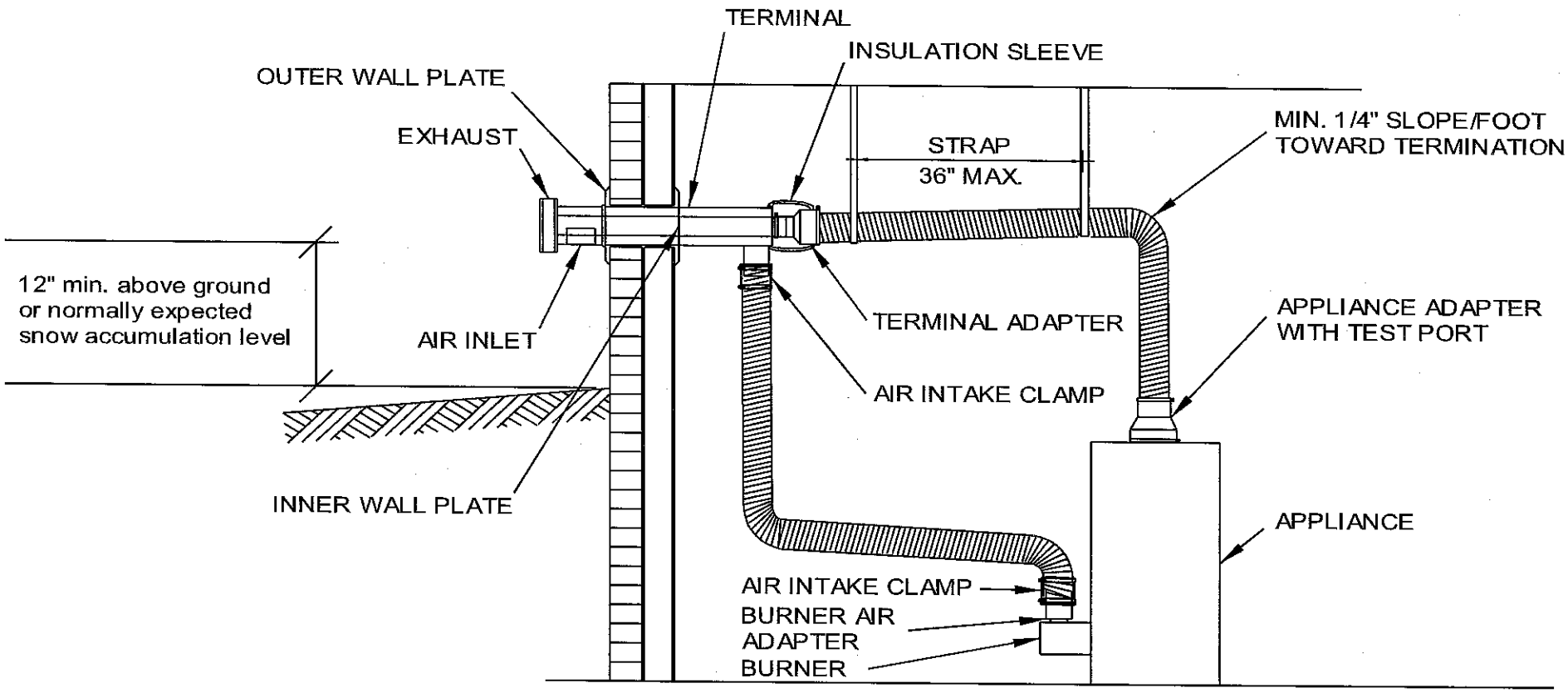


Exit terminals of mechanical draft and direct venting systems.
Alphebetic dimensions refer to installation requirements that are applicable to county of appliance installation.
(Note: Vertical distances are to bottom of draft vent terminal. Horizontal distances are to center line.)

INSTALLATION REQUIREMENTS

FIGURE - 1

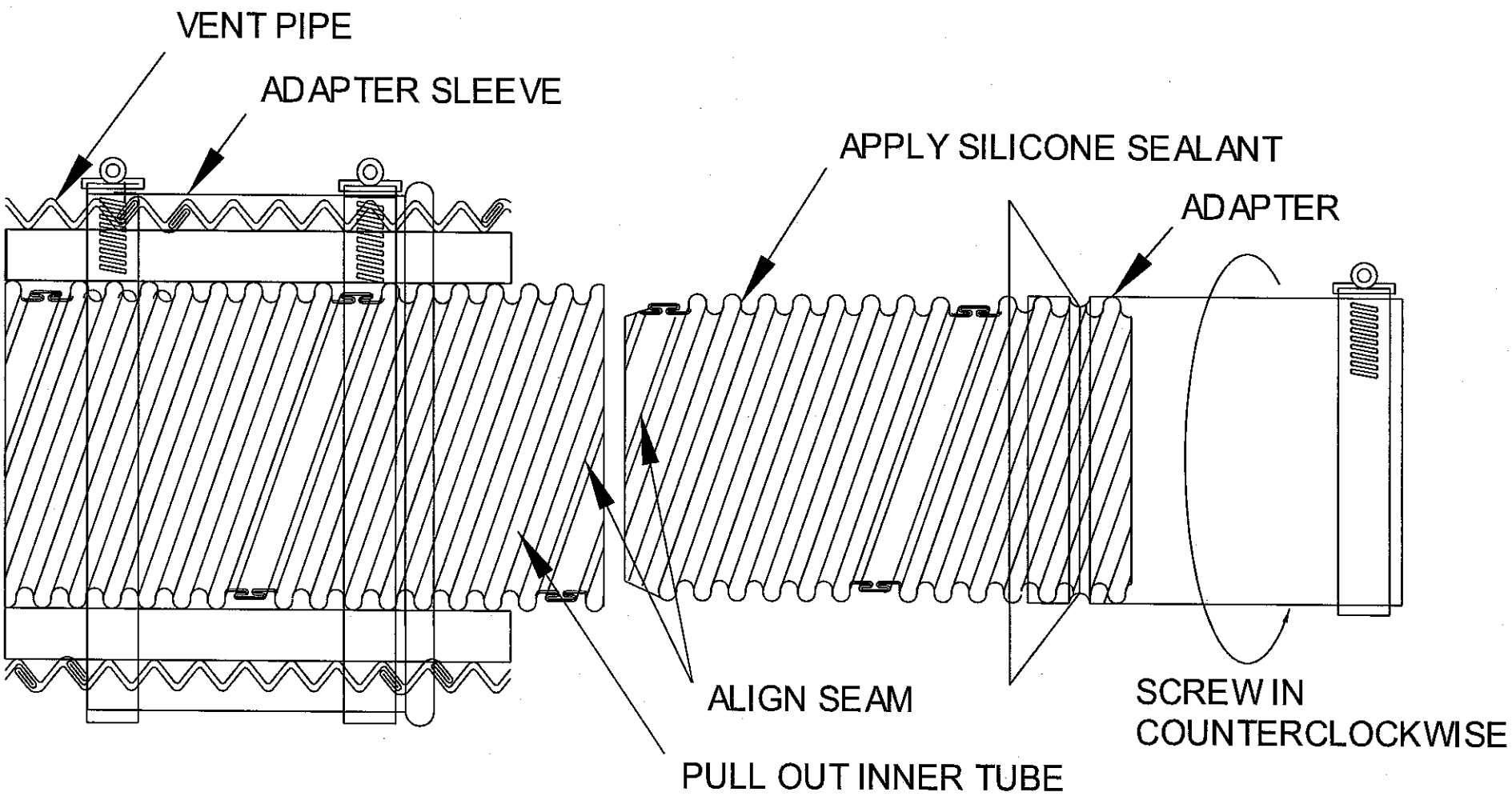
DVFIG - 1 JAN11



INSTALLATION CONSIDERATIONS

FIGURE - 2

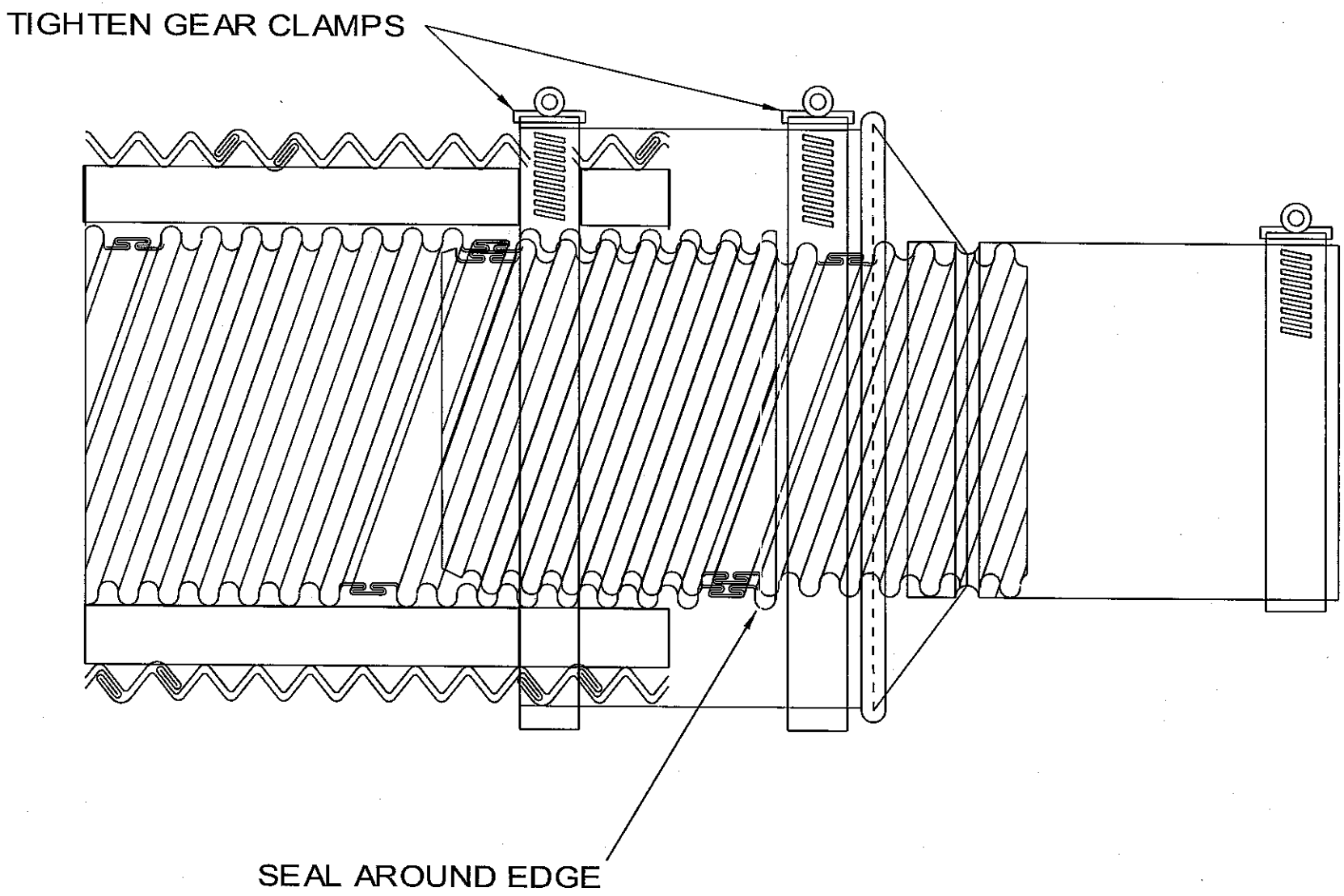
DVFIG - 2/JAN11



JOINT ASSEMBLY

FIGURE - 3

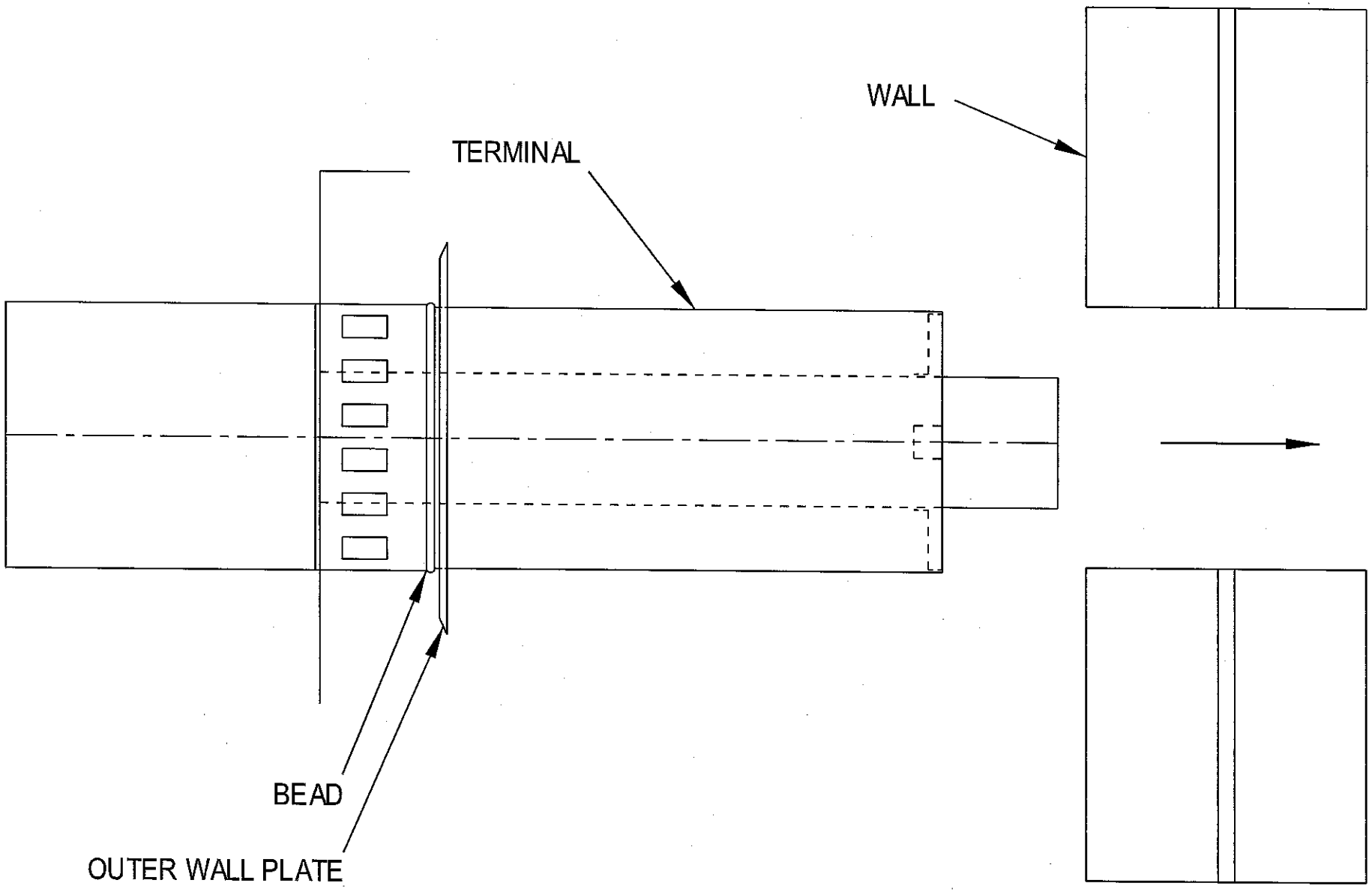
DV FIG - 3JAN11



JOINT ASSEMBLY

FIGURE - 4

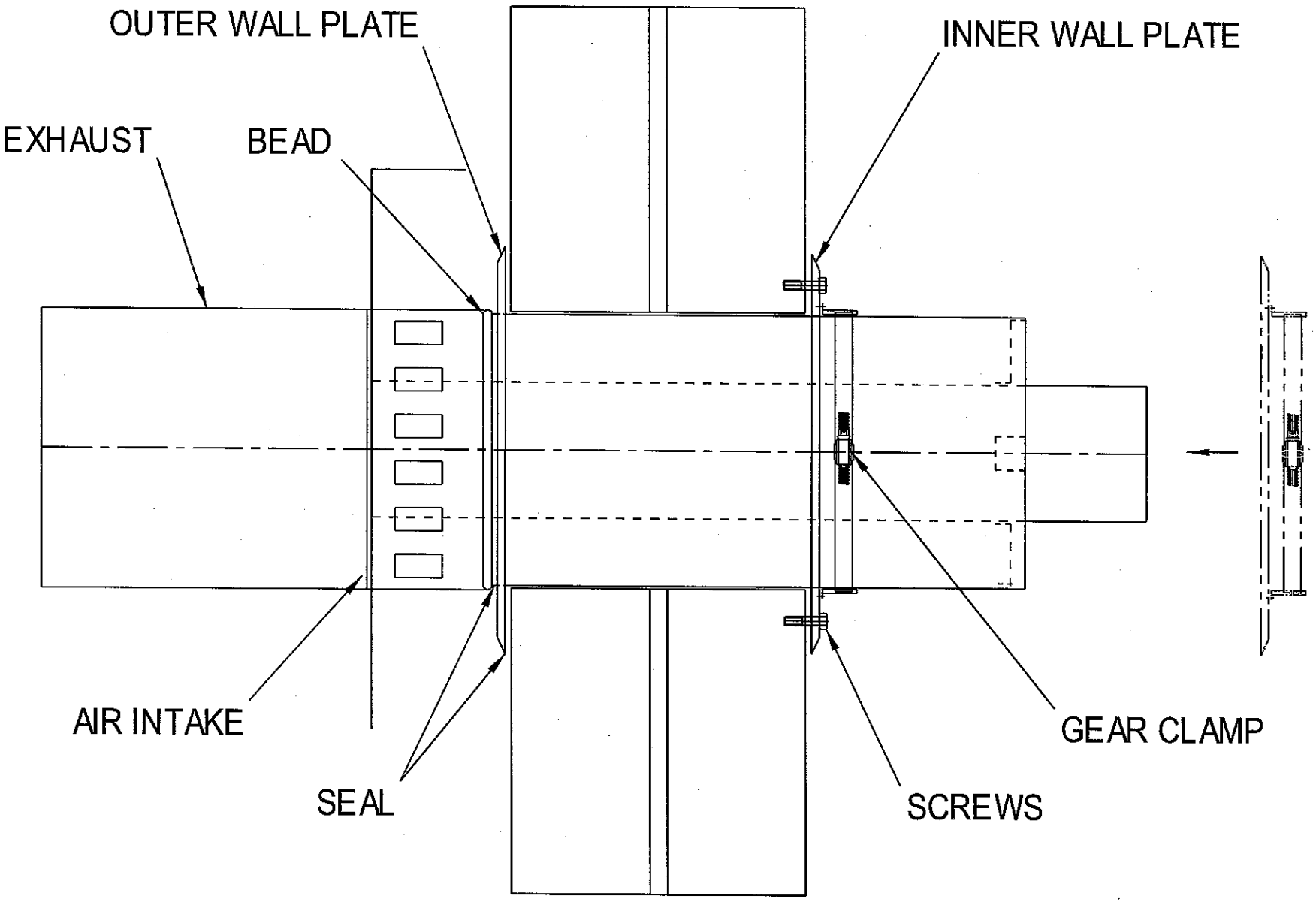
DV FIG - 4FJAN11



TERMINAL INSTALLATION

FIGURE - 5

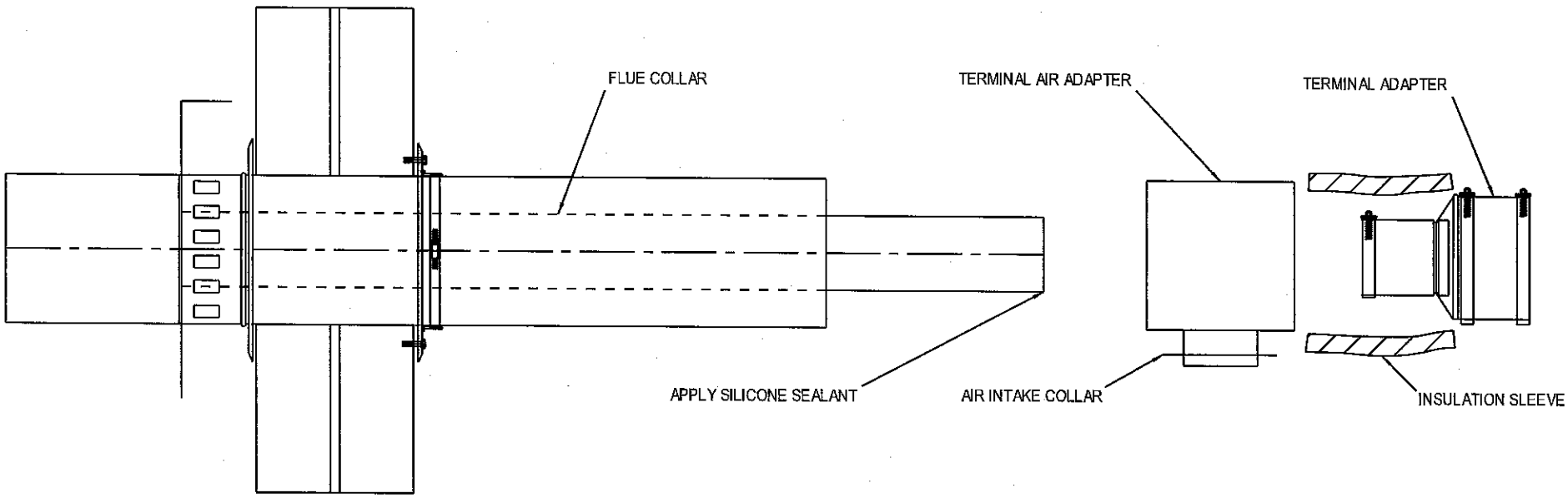
DV FIG - 5JAN11



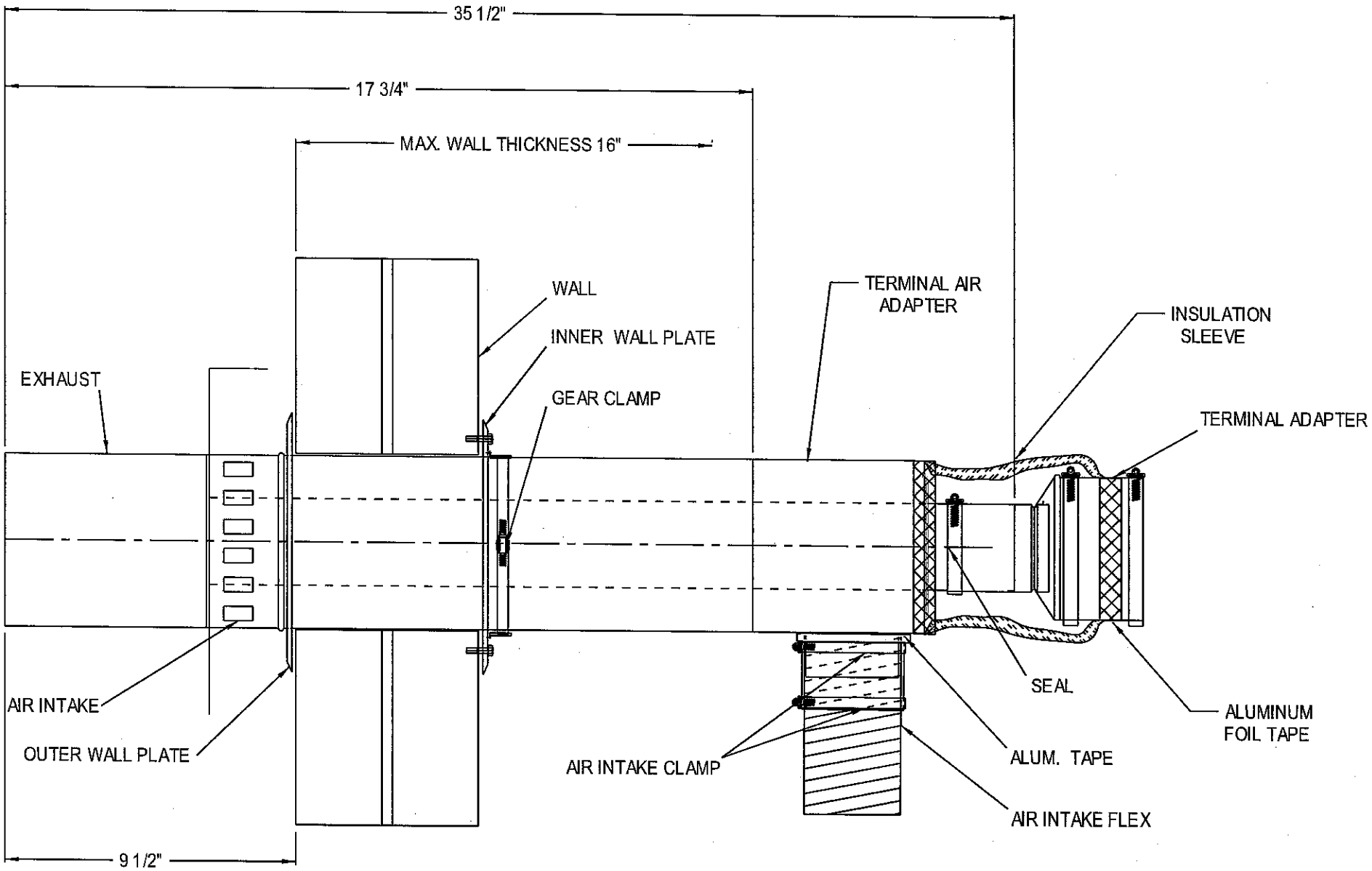
TERMINAL INSTALLATION

FIGURE - 6

DV FIG - 6JAN11



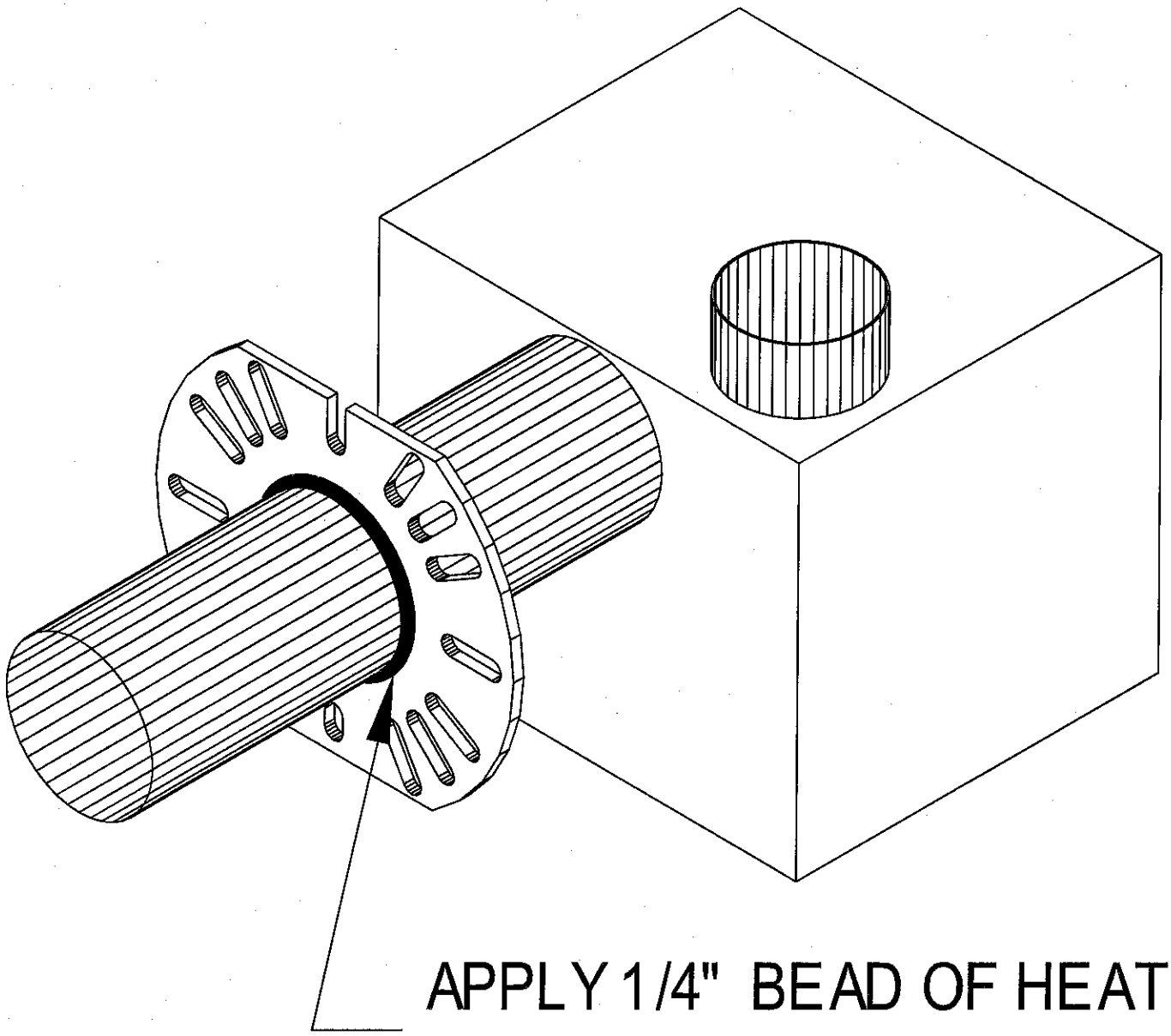
CONNECTION TO TERMINATION
FIGURE - 7



COMPLETE TERMINATION ASSEMBLY

FIGURE - 8

DV FIG - 8JAN11



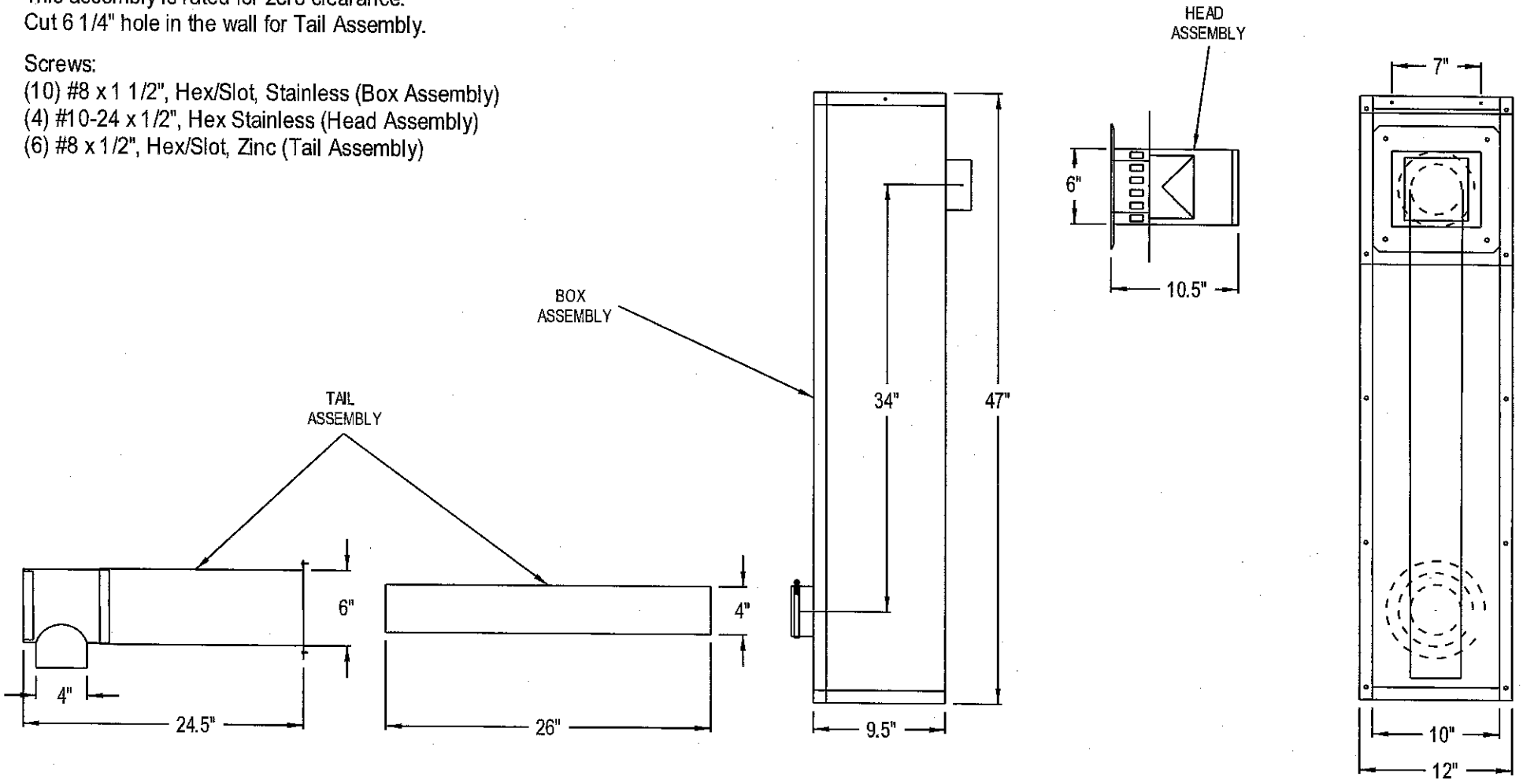
SEALING THE BURNER

FIGURE - 9

DVFIG - 9JAN11

This assembly is rated for zero clearance.
Cut 6 1/4" hole in the wall for Tail Assembly.

Screws:
(10) #8 x 1 1/2", Hex/Slot, Stainless (Box Assembly)
(4) #10-24 x 1/2", Hex Stainless (Head Assembly)
(6) #8 x 1/2", Hex/Slot, Zinc (Tail Assembly)

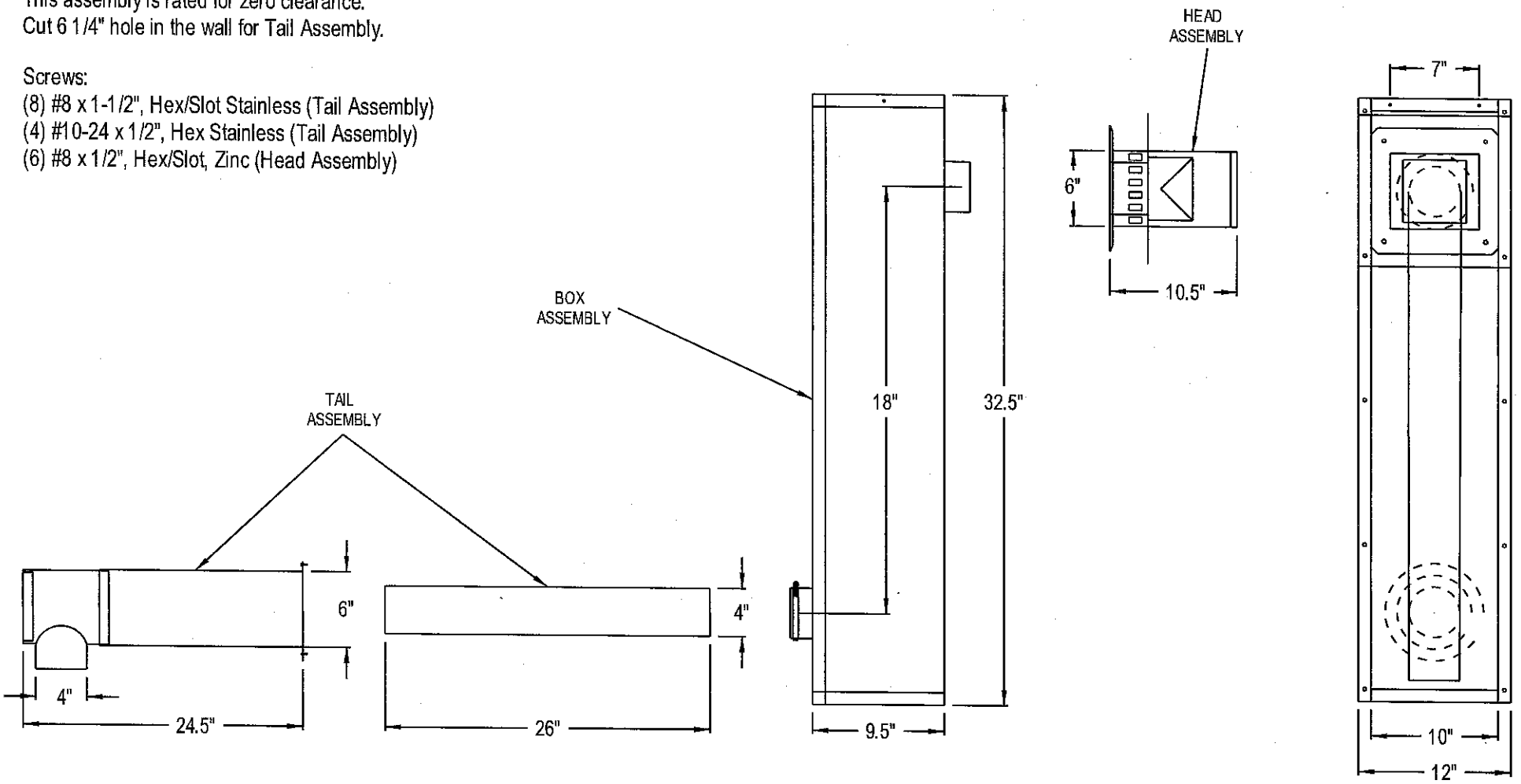


VENT RISER TERMINATION
FIGURE - 10

VENTRISER INSERTJAN11

This assembly is rated for zero clearance.
Cut 6 1/4" hole in the wall for Tail Assembly.

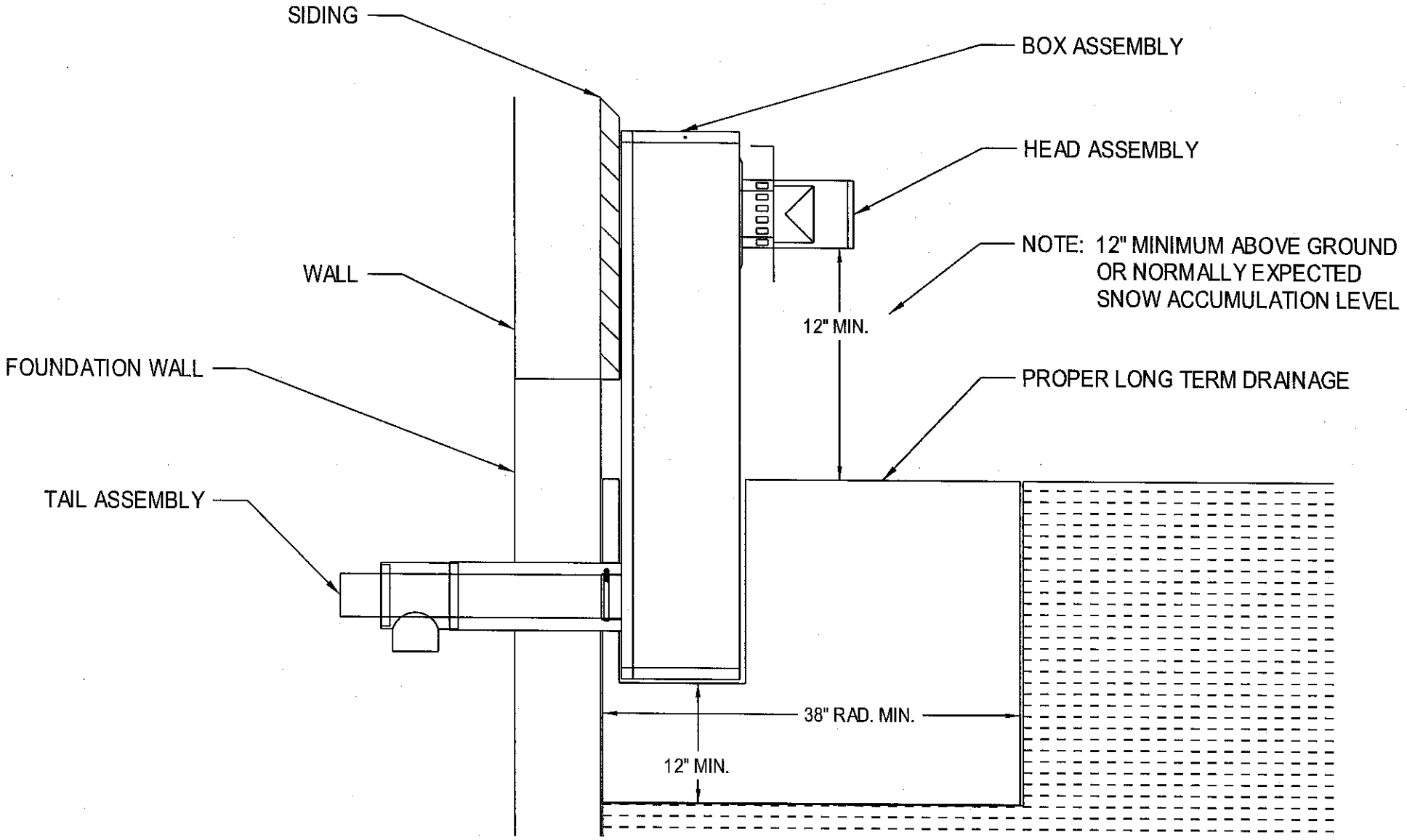
Screws:
(8) #8 x 1-1/2", Hex/Slot Stainless (Tail Assembly)
(4) #10-24 x 1/2", Hex Stainless (Tail Assembly)
(6) #8 x 1/2", Hex/Slot, Zinc (Head Assembly)



LOW VENT RISER TERMINATION

FIGURE - 11

SHORT VENTRISER INSERTJAN11



BELOW GRADE

FIGURE - 12

BELOWGRADEJAN11