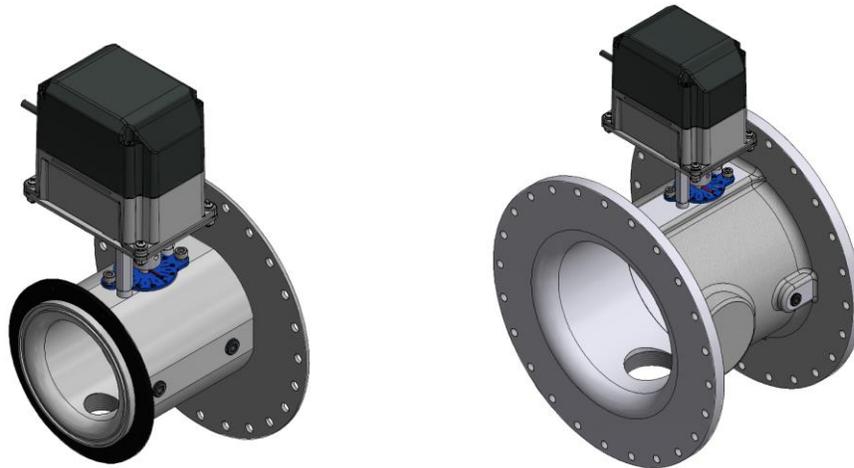


VA Series

VA... Valve Actuator Assemblies with PBA... Valve Manifolds



Description

VA... valve actuator assemblies include a Siemens SQM33... actuator reliably mounted to a PBA... valve manifold to control the flow of air and introduce fuel gas before a premix blower.

Features

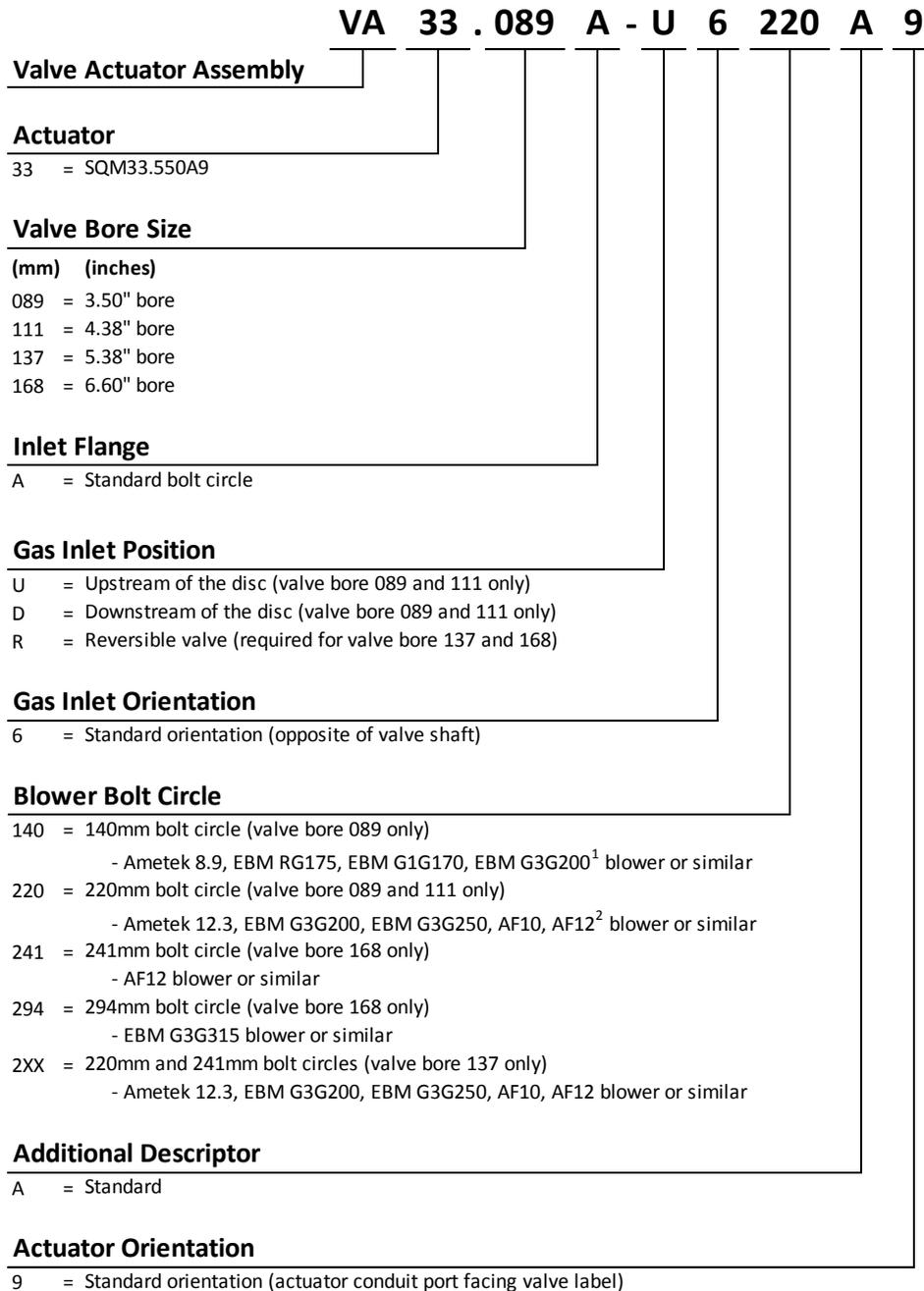
- Precision machined components enable the use of a solid shaft coupling
- Shaft coupling provides a positive connection between the valve and actuator without actuator or valve shaft damage

Application

VA... valve actuator assemblies mount an SQM33... actuator to a PBA... valve manifold. The PBA... valve manifold and SQM33... actuator are rigidly mounted with Siemens engineered brackets and couplings to ensure precise shaft alignment. PBA... technical instructions (CVLV-9000) provide sizing and additional valve information.

Product Part Numbers

The following chart provides VA... valve actuator assembly part number identification only. Not all possible part number combinations are available. See Table 1 on the following page for available part number combinations. Technical instructions for SQM33... actuators are available at www.scccombustion.com.



¹All EBM G3G200 blowers have a 220mm bolt circle. Some EBM G3G200 blowers also have a 140mm bolt circle.

²All AF12 blowers have a 241mm bolt circle. Some AF12 blowers also have a 220mm bolt circle.

Product Part Numbers (continued)

Available VA... valve actuator assembly part numbers are listed in Table 1. For help selecting the proper PBA... valve manifold, see PBA Technical Instructions Document No. CVLV-9000.

Table 1: Available VA... Valve Actuator Assemblies

VA Assembly Part Number	Maximum Burner Size ²		Valve Bore Size		Gas Inlet		Inlet Flange				Blower Flange Bolt Circle ⁴	
	MBH	kW	inch	mm	NPT inch	Entry Point ³	Bolt Circle		Fastener	Sealing	inch	mm
							inch	mm				
VA33.089A-U6140A9	1845	540	3.50	89	1	Upstream	5.75	146	#10 or M5 (x8)	O-ring (-157)	5.51	140
VA33.089A-D6140A9						Downstream						
VA33.089A-U6220A9						Upstream						
VA33.089A-D6220A9						Downstream						
VA33.111A-U6220A9	2995	877	4.38	111	1.25	Upstream	6.72	171	1/4" or M6 (x8)	O-ring (-161)	8.66	220
VA33.111A-D6220A9						Downstream						
VA33.137A-R62XXA9 ¹	4364	1278	5.38	137	1.50	Reversible	8.66	220	M8 (x8)	Gasket	8.66	220
							9.50	241			7/16" (x8)	9.50
VA33.168A-R6241A9	6431	1883	6.60	168	2	Reversible	9.50	241	7/16" (x8)	Gasket	9.50	241
VA33.168A-R6294A9							11.6	294			M8 (x8)	11.6

Specific Notes:

- VA33.137... assemblies have two bolt circles on the inlet flange and two bolt circles on the blower flange.
- Maximum burner size assumes the following: a 3" WC pressure drop across the PBA... valve, a 14.35 air / fuel ratio, and a natural gas heating value of 1000 BTU / SCF.
- See Compatibility section for specific information concerning PBA... valve to blower compatibility.

General Notes:

Additional dimensional information is available in the Dimensions section of this literature.

When firing natural gas, an air / fuel ratio of 14.35 to 1 results in approximately 6% O₂ (dry) in the boiler exhaust.

When firing natural gas, 6% O₂ (dry) in the boiler exhaust is approximately equal to 8.6% CO₂ (dry).

A lower air / fuel ratio (more rich) will increase the maximum burner size, reduce the % O₂, and increase the % CO₂.

VA assemblies are not supplied with gaskets, O-rings, or fasteners needed to connect to the inlet side of the PBA... valve.

Thread locking hardware (locknuts, lockwashers, loctite, etc) is recommended for inlet flange connection.

Compatibility

The PBA... series valve manifolds have a flange on either end. Valve manifolds with a bore size of 89mm and 111mm will have a different flange for the inlet and outlet. Valve manifolds with a bore size of 137mm and 168mm have identical flanges on the inlet and outlet.

The outlet of a PBA... series valve manifold mates directly to a blower. Sealing between the PBA... valve manifold and the blower is accomplished with either an o-ring or gasket depending on the blower model. Table 2 outlines common blower compatibility and the recommended sealing method.

Table 2: Blower Compatibility

LEGEND:

- G = Gasket Sealing
- O = O-ring Sealing

VA Assembly Part Number	Blower Flange				Blowers								
	Bolt Circle		Fastener		Ametek 8.9 EBM RG175 Ametek 12.3 EBM G1G170 EBM G3G200 ¹ EBM G3G250 EBM G3G315 American Fan AF-10 American Fan AF-12 ²								
	in	mm	Thread Size	Qty.									
VA33.089A-U6140A9	5.51	140	M8 x 1.25mm	6	O	O		O	O				
VA33.089A-D6140A9													
VA33.089A-U6220A9	8.66	220	M8 x 1.25mm	6				O	O	O		G	G
VA33.089A-D6220A9													
VA33.111A-U6220A9	8.66	220	M8 x 1.25mm	6				O	O	O		G	G
VA33.111A-D6220A9													
VA33.137A-R62XXA9	8.66	220	M8 x 1.25mm	6				O	O	O			
	9.50	241	7/16"	8								G	G
VA33.168A-R6241A9	9.50	241	7/16"	8									G
VA33.168A-R6294A9	11.58	294	M8 x 1.25mm	6							O		

Specific Notes:

- The EBM G3G200 can have an 8.66 in (220mm) bolt circle or a 5.51 in (140mm) bolt circle. Verify before ordering blower / VA assembly.
- The American Fan AF-12 can have a 9.50 in (241mm) bolt circle or an 8.66 in (220mm) bolt circle. Verify before ordering blower / VA assembly.

General Notes:

VA assemblies are not supplied with gaskets, O-rings, or fasteners needed to mount the PBA... valve manifold to the blower. Thread locking hardware (locknuts, lockwashers, loctite, etc.) is recommended for blower flange connection. Table 2 only covers mechanical compatibility of the PBA... valve manifold to the blower.

Installation

- VA... assemblies using PBA... valve manifolds with bore sizes 137 and 168 are reversible since the mounting flanges on either end of the valve are identical. Therefore, the VA... assembly can be mounted with the gas inlet on the upstream or downstream side of the PBA... valve disc.
- VA... assemblies can be mounted in any orientation.
- Ensure O-ring is properly installed in the blower before mounting the VA... assembly to the blower. If the blower does not use an O-ring, use a flange gasket that is suited for the type of gas the valve will control. No O-rings or flange gaskets are provided with the VA... assemblies.
- No mounting hardware is provided to mount the VA... assembly to the blower.

Actuator Mounting Instructions

If desired, the actuator and bracket can be rotated relative to the valve for ease of wiring or to alleviate fitment issues. The same procedure can also be used to replace a defective actuator. The instructions below and the exploded view in Figure 1 are a guide to proper disassembly and reassembly of a VA... valve actuator assembly with a PBA... valve manifold.

Disassembly

1. Start with the valve at the closed / 0° position.
2. Remove the (4) #8 pan head screws (#2 phillips drive) and associated washers and nuts that fasten the actuator to the bracket.
3. Loosen the M6 socket set screw (3mm hex drive) that fastens the coupling to the actuator shaft.
4. Lift the actuator off of the bracket and out of the coupling.
Perform the following steps only if the actuator is being rotated relative to the valve:
5. Remove the (2) M6 flat socket head cap screws (4mm hex drive) from the bracket and lift the bracket off of the 1/2" hex standoffs.
6. Remove the M4 socket head cap screw (3mm hex drive) and lock washer fastening the coupling to the valve shaft, and lift the coupling off of the valve.

Reassembly

7. **If the coupling was removed in step 6**, slide the coupling back over the valve shaft. Insert the M4 socket head cap screw and lock washer through the coupling and valve shaft so that the coupling is in the desired position of the four clockable positions. Note that not all four clockable positions are possible depending on which PBA... valve is being used. The valve should still be at the closed / 0° position.
8. **If the (2) M6 flat socket head cap screws were removed in step 5**, fasten the bracket back onto the standoffs with the (2) M6 flat socket head cap screws (4mm hex drive).
9. Insert the actuator shaft into the coupling and press down on the actuator until it is resting firmly against the bracket. The actuator shaft should push the crimped pin out of the way and easily slide into the coupling.
10. Fasten the actuator to the bracket with the (4) #8 pan head screws (#2 phillips drive) and associated washers and nuts.
11. Tighten the M6 socket set screw (3mm hex drive) to secure the coupling to the actuator shaft. In some cases, the M6 socket set screw may be difficult to access. In these cases, perform the following steps in order to fasten the M6 socket set screw:
 - a. Make sure the actuator is connected to LMV3 terminal X53, LMV3 parameter 201 is set to a fuel train that uses an air actuator, and the LMV3 is not in alarm.
 - b. Change LMV3 parameter 502:00 from 0.0° to 90.0°. This will rotate the actuator shaft 90° and allow access to the M6 socket set screw.
 - c. Tighten the M6 socket set screw.
 - d. Change LMV3 parameter 502:00 from 90.0° to 0.0°.
 - e. Verify that the red position indicator is above the 0° mark on the dial when the actuator is at 0°.

Actuator Mounting Instructions (continued)

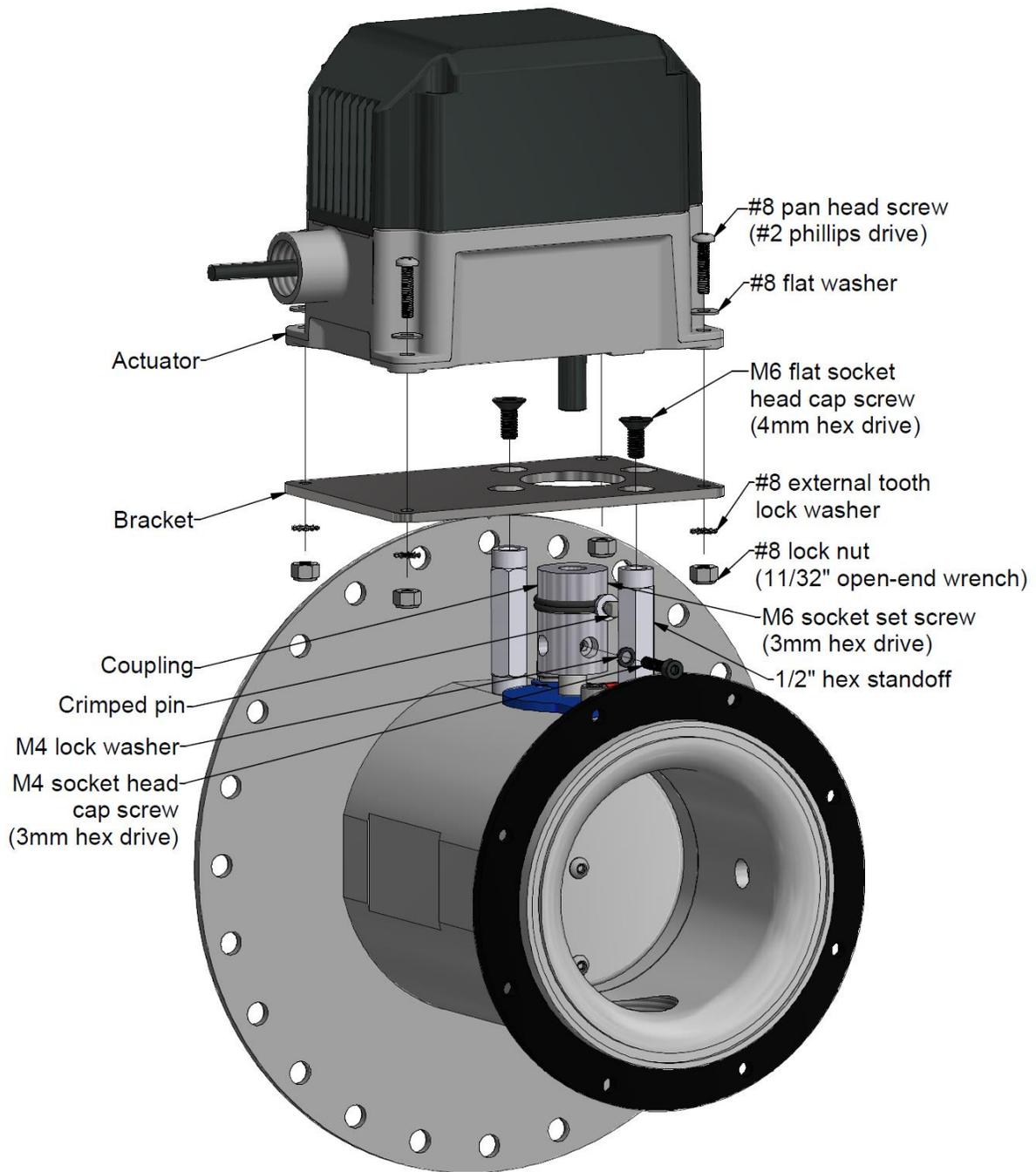


Figure 1: Exploded View of VA33.089A-U6220A9

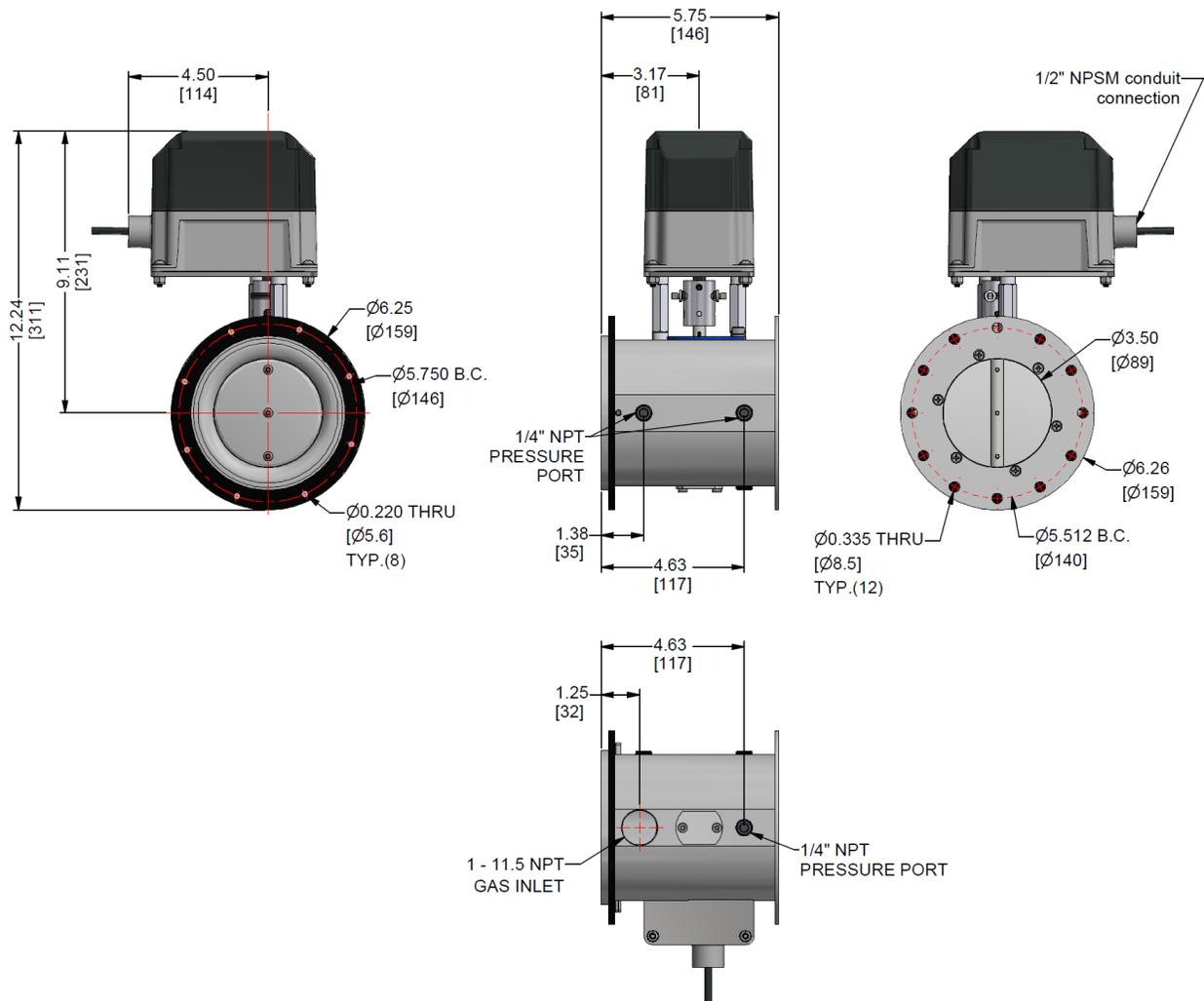
Dimensions

VA33.089A-U6140A9

Valve manifold with a 3.50" (89mm) bore, 1" NPT gas inlet upstream of the disc, and a blower flange mating to a 5.51" (140mm) bolt circle.

Compatible blowers include: Ametek 8.9, EBM RG175, EBM G1G170

Dimensions in inches; millimeters in brackets



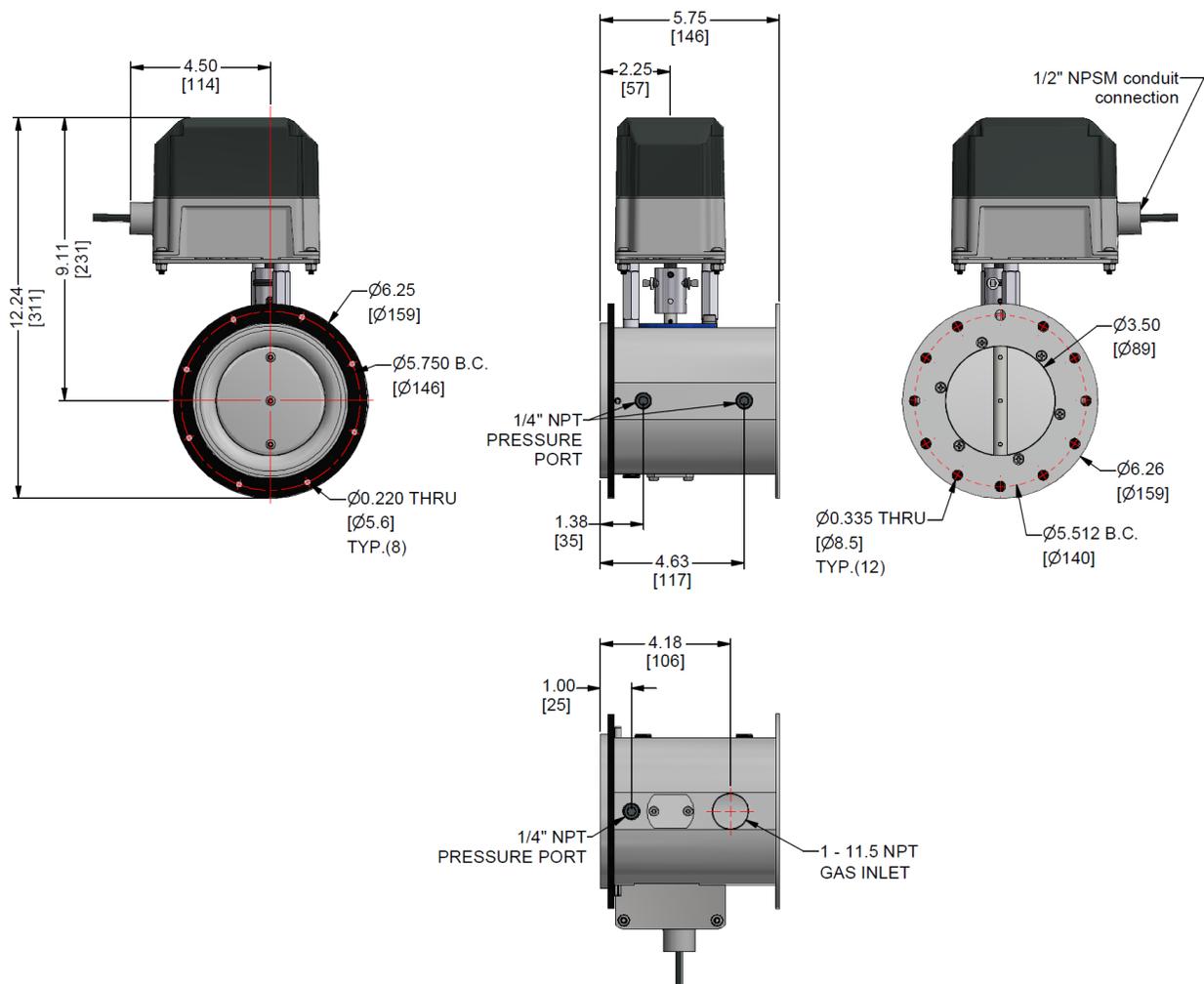
Dimensions (continued)

VA33.089A-D6140A9

Valve manifold with a 3.50" (89mm) bore, 1" NPT gas inlet downstream of the disc, and a blower flange mating to a 5.51" (140mm) bolt circle.

Compatible blowers include: Ametek 8.9, EBM RG175, EBM G1G170

Dimensions in inches; millimeters in brackets



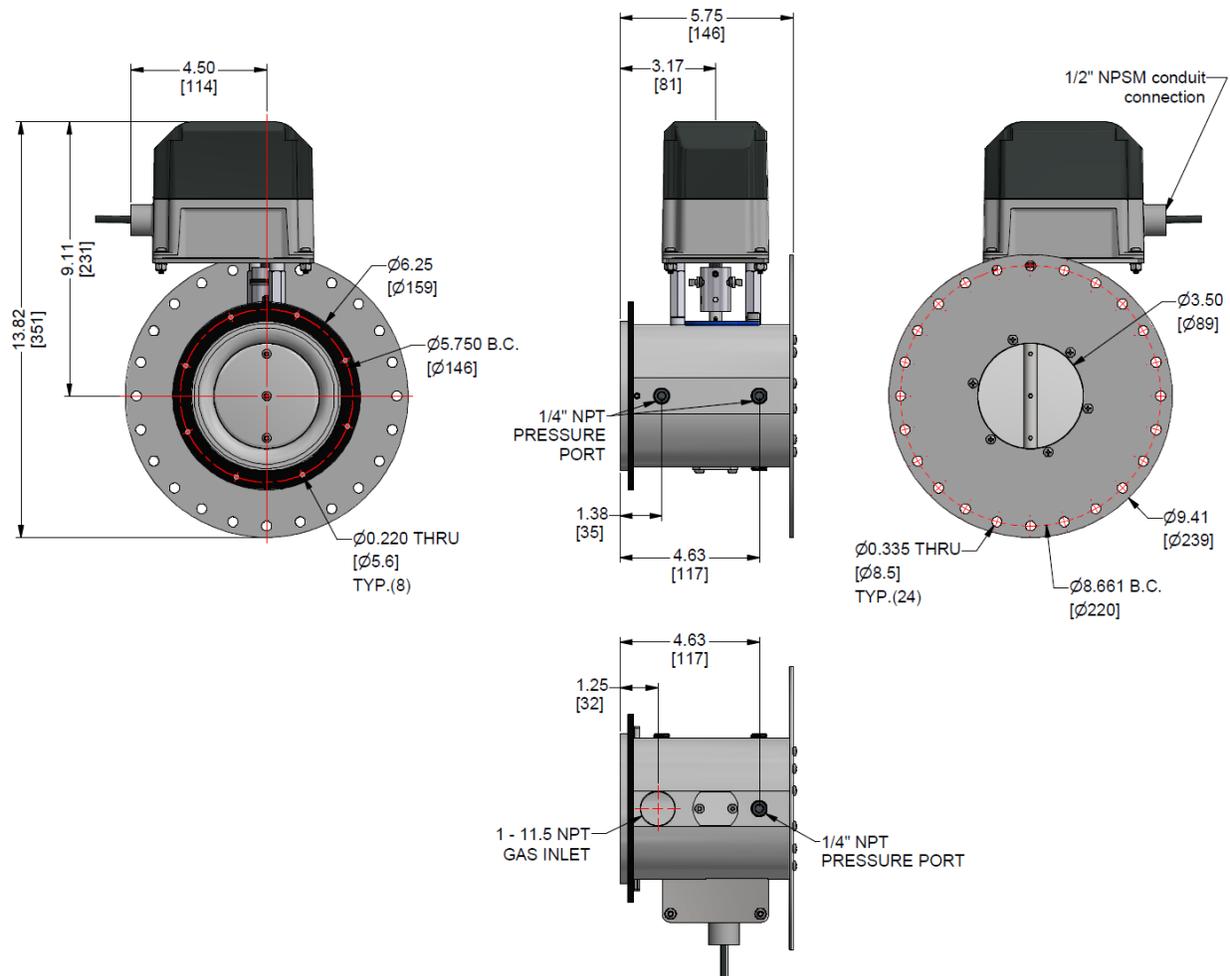
Dimensions (continued)

VA33.089A-U6220A9

Valve manifold with a 3.50" (89mm) bore, 1" NPT gas inlet upstream of the disc, and a blower flange mating to a 8.66" (220mm) bolt circle.

Compatible blowers include: Ametek 12.3, EBM G3G200, EBM G3G250, and AF-10

Dimensions in inches; millimeters in brackets



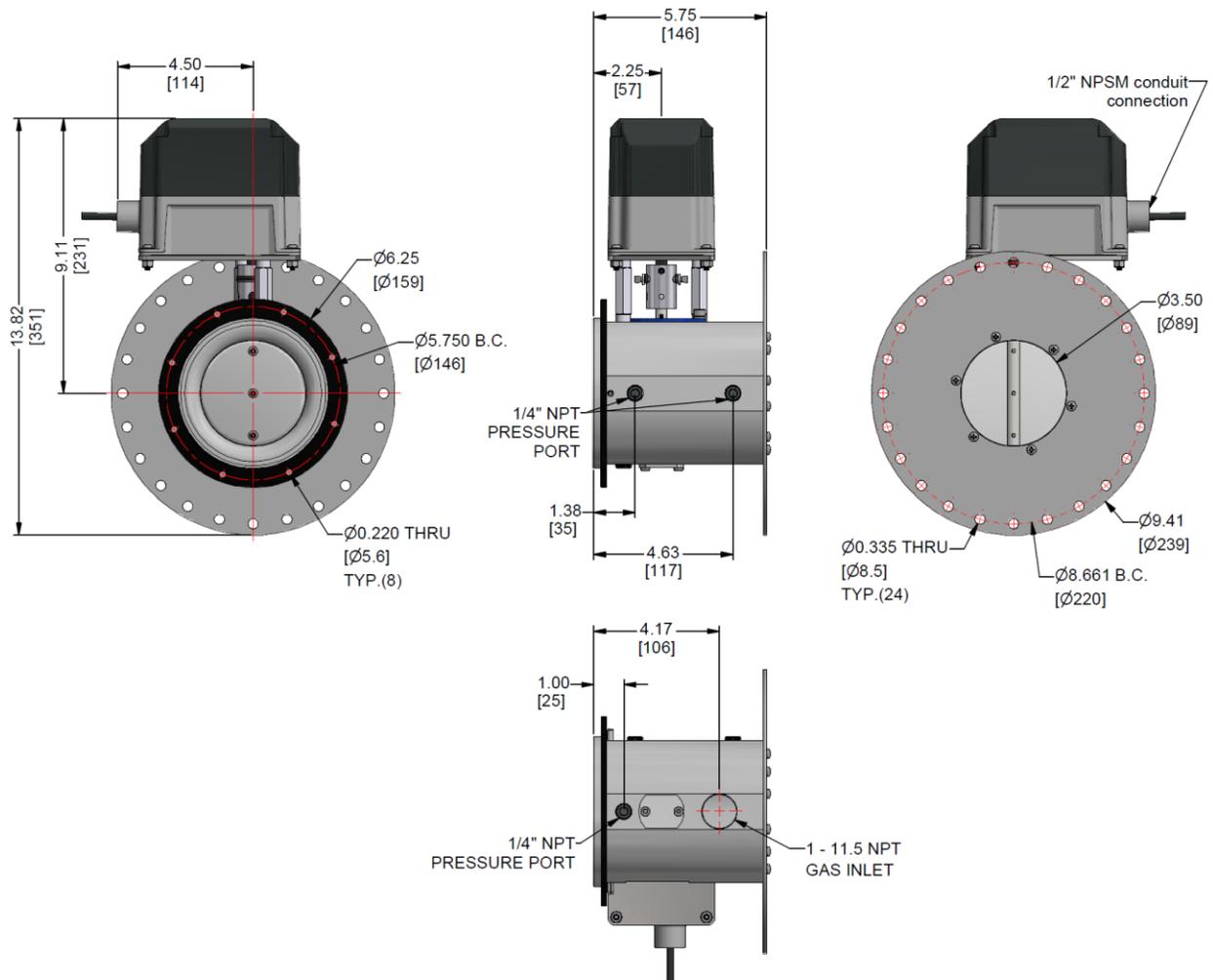
Dimensions (continued)

VA33.089A-D6220A9

Valve manifold with a 3.50" (89mm) bore, 1" NPT gas inlet downstream of the disc, and a blower flange mating to a 8.66" (220mm) bolt circle.

Compatible blowers include: Ametek 12.3, EBM G3G200, EBM G3G250, and AF-10

Dimensions in inches; millimeters in brackets



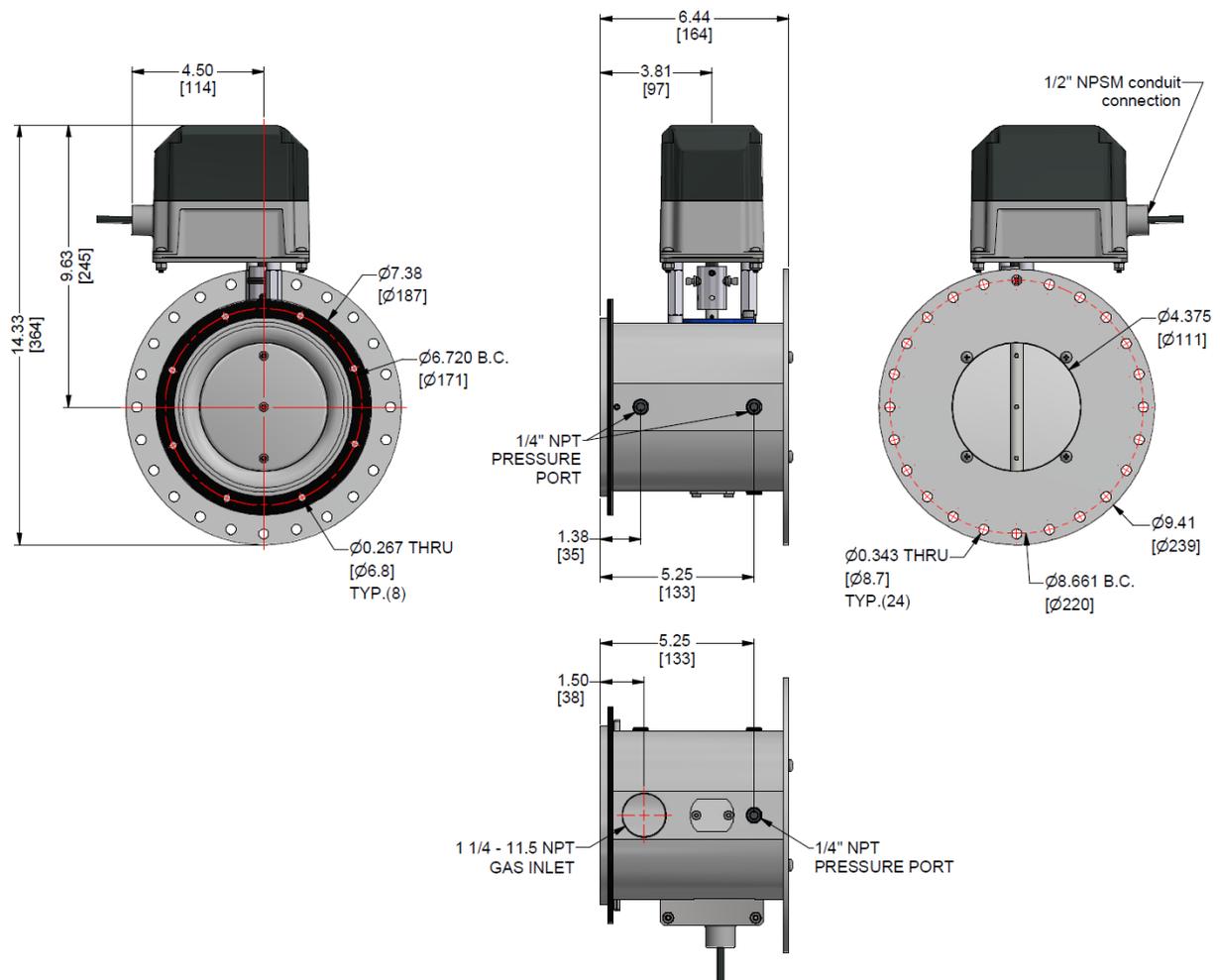
Dimensions (continued)

VA33.111A-U6220A9

Valve manifold with a 4.38" (111mm) bore, 1-1/4" NPT gas inlet upstream of the disc, and a blower flange mating to a 8.66" (220mm) bolt circle.

Compatible blowers include: Ametek 12.3, EBM G3G200, EBM G3G250, and AF-10

Dimensions in inches; millimeters in brackets



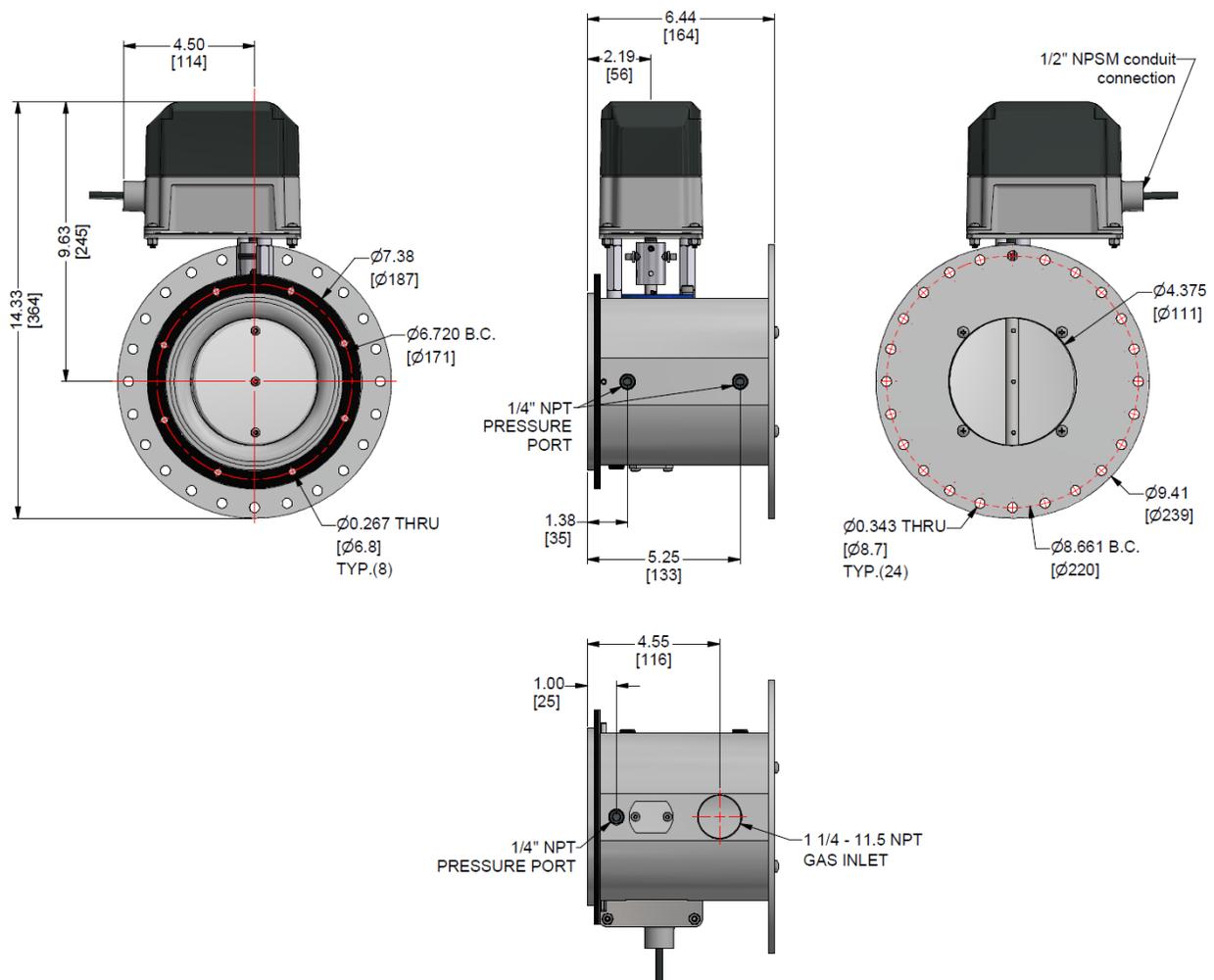
Dimensions (continued)

VA33.111A-D6220A9

Valve manifold with a 4.38" (111mm) bore, 1-1/4" NPT gas inlet downstream of the disc, and a blower flange mating to a 8.66" (220mm) bolt circle.

Compatible blowers include: Ametek 12.3, EBM G3G200, EBM G3G250, and AF-10

Dimensions in inches; millimeters in brackets



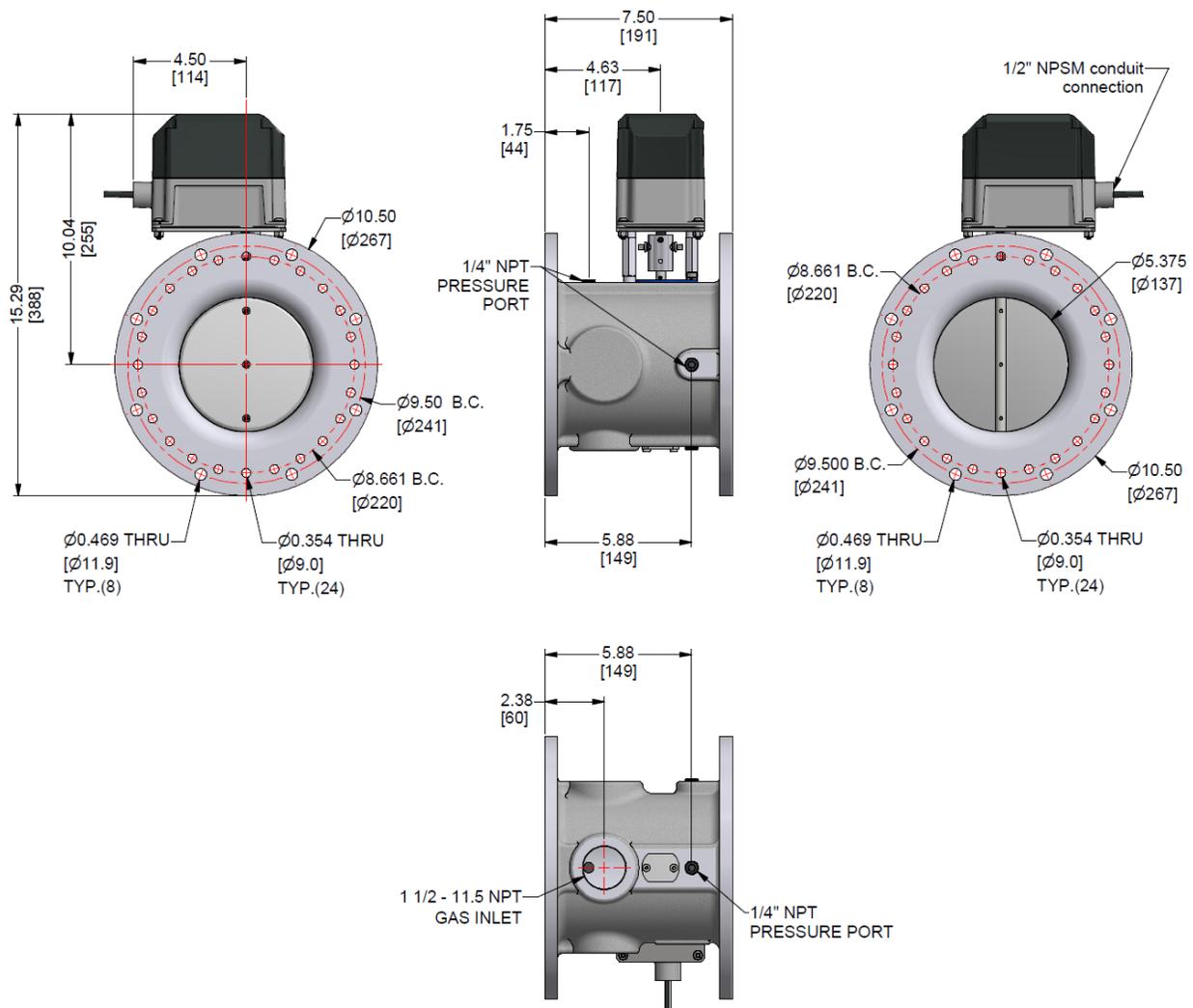
Dimensions (continued)

VA33.137A-R62XXA9

Reversible valve manifold with a 5.38" (137mm) bore, 1-1/2" NPT gas inlet, and flanges with two bolt circles: 8.66" (220mm) and 9.50" (241mm).

Compatible blowers include: Ametek 12.3, EBM G3G200, EBM G3G250, AF-10, and AF-12

Dimensions in inches; millimeters in brackets



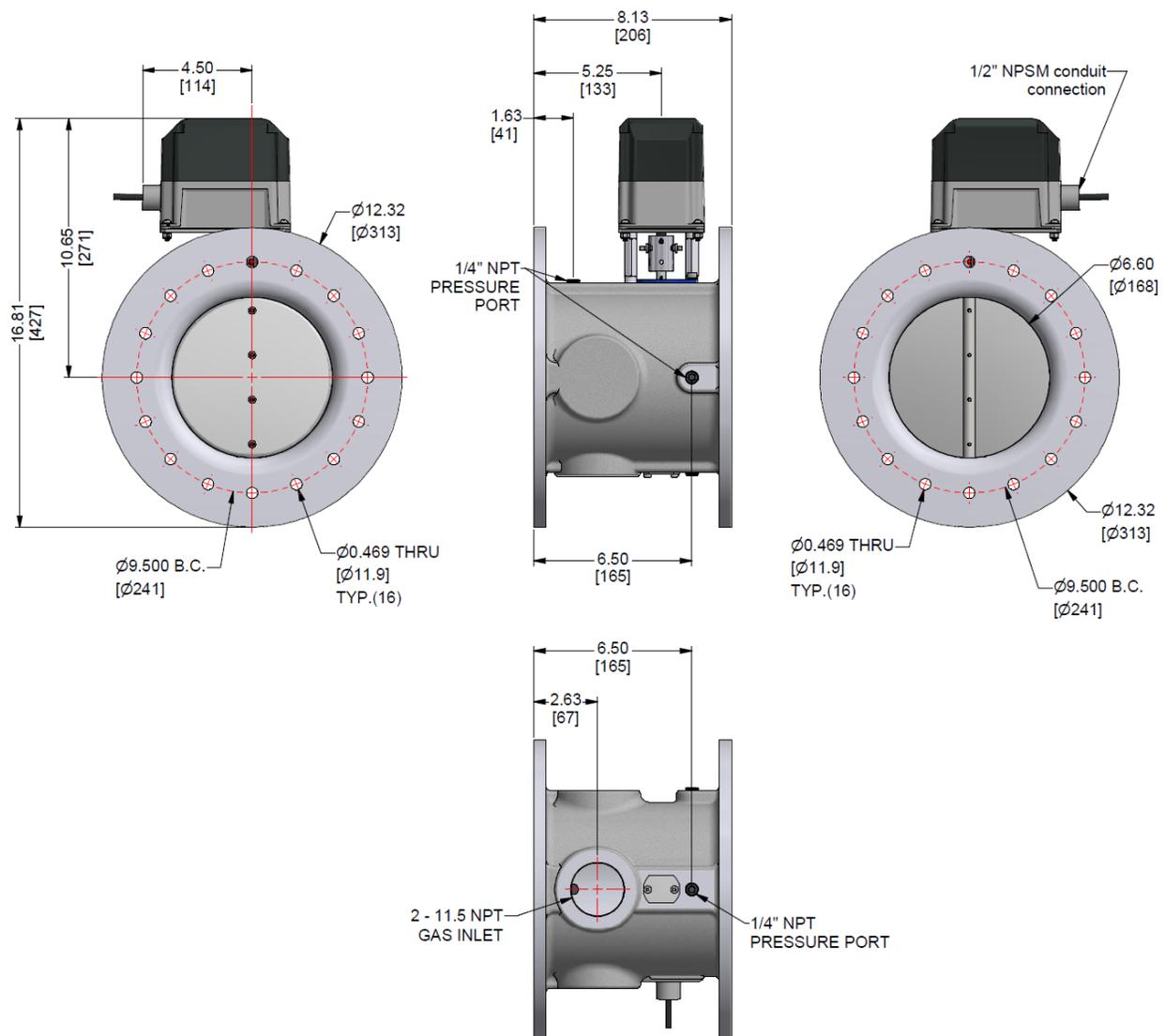
Dimensions (continued)

VA33.168A-R6241A9

Reversible valve manifold with a 6.60" (168mm) bore, 2" NPT gas inlet, and flanges with a bolt circle of 9.50" (241mm).

Compatible blower: AF-12

Dimensions in inches; millimeters in brackets



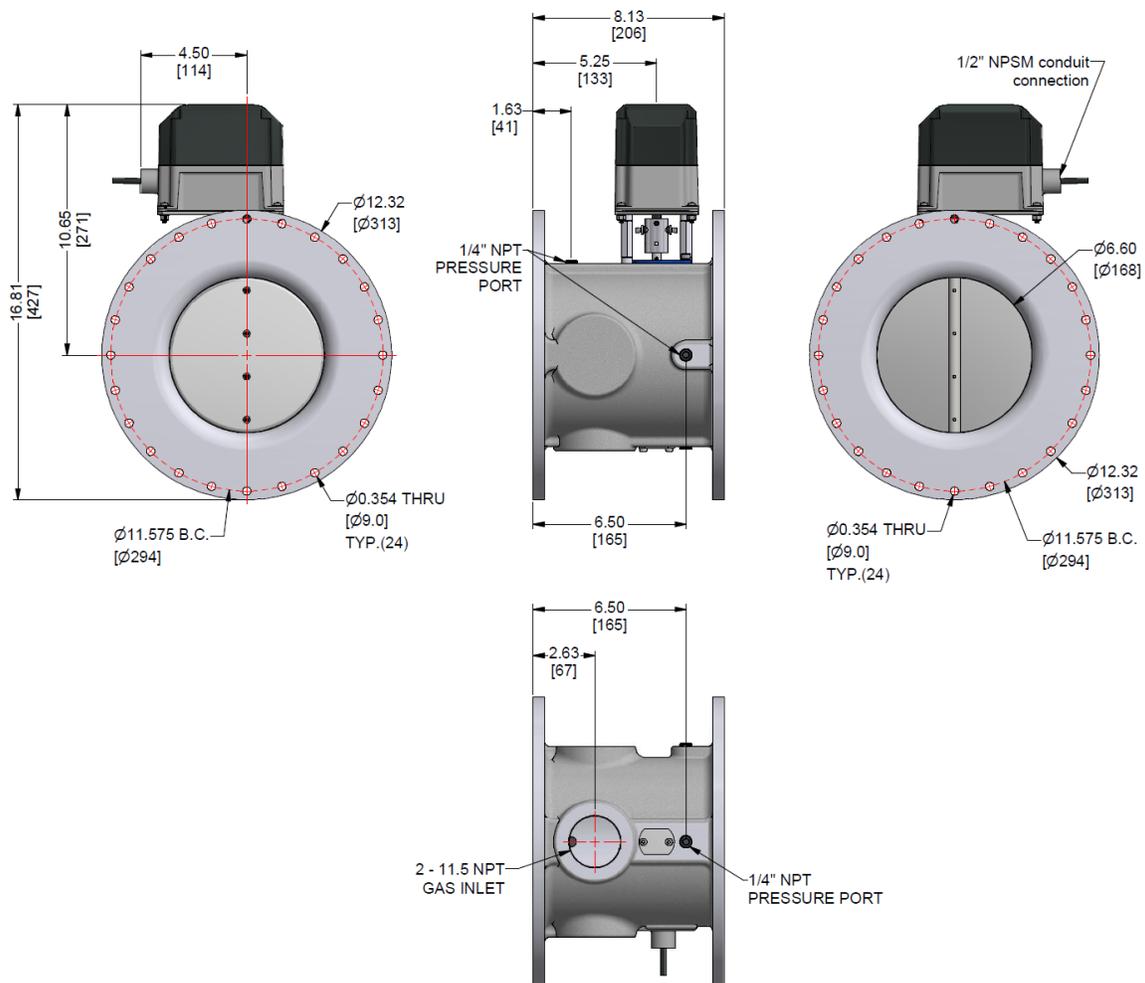
Dimensions (continued)

VA33.168A-R6294A9

Reversible valve manifold with a 6.60" (168mm) bore, 2" NPT gas inlet, and flanges with a bolt circle of 11.58" (294mm).

Compatible blower: EBM G3G315

Dimensions in inches; millimeters in brackets



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