

P-1602 Fuel Conversion to Propane Kit - CX 199



Warning

This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, an explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life.

The qualified service agency is responsible for the proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit.

Note

If converting from propane to natural gas, order the Natural Gas Conversion Parts Kit ([P-1603](#)) from your authorized IBC distributor.

Use the Propane Gas Conversion Parts Kit if the fuel source at the site uses propane and the modulating boiler has been set up (factory fire-tested) to operate with natural gas. Check the rating plate on the boiler to see which fuel source the particular boiler has been set up with.

Using this conversion kit, a qualified technician will need to:

1. Perform a fuel conversion.
2. Perform a combustion test.
3. Fill in the information required on the fuel conversion labels, and affix them to the boiler after the conversion is completed.

Fuel Conversion Kit, NG to LP - CX 199				
		Part #	Description	Quantity
		080-107	Gas Valve Conversion Label	1
		080-244	Installer Identifier Label	1
		080-343	Rating Plate Fuel Overlay	1
		150-073	O-ring -N70 Nitrile - 70mm X 3mm	1
		150-128	Nut, Hex W/ExtLk,Zn, M4	3
		150-271	Gasket, Gas Valve Outlet	1
		150-426	Screw, SHC, Zn, M4x14	3
		180-319	Polidoro Mixer	1

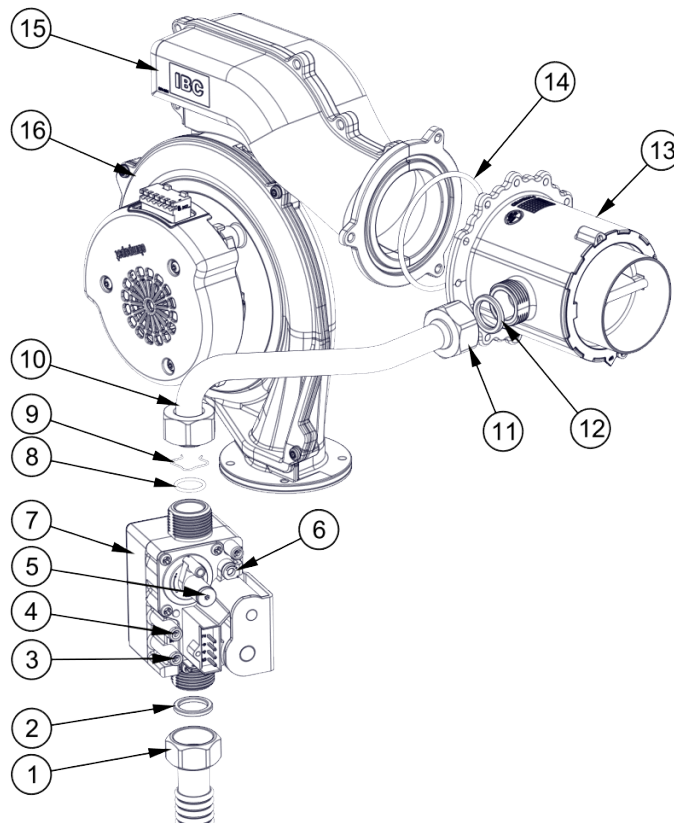


Figure 1 Gas valve and fan components

①	Gas valve inlet	⑨	Nut retainer
②	Gasket	⑩	Gas valve outlet pipe
③	Inlet gas pressure test port	⑪	Brass union nut
④	Manifold gas pressure test port	⑫	Gasket
⑤	Low fire adjustment (offset pressure)	⑬	Mixer
⑥	High Fire Adjustment	⑭	Fan O-ring
⑦	Gas valve	⑮	Fan coupler
⑧	O-ring	⑯	Fan

Note

A ladder or step may be required to have a clear vertical view of the work area.

Do not attempt to remove the assemblies without a clear view, as damage to the connectors, screws or refractory may occur.

Fuel Conversion Instructions

Preparing the boiler for service

1. Remove call(s) for heat.
2. Shut off gas supply to the boiler.
3. Remove power to the boiler at a wall switch or a breaker.

Do not drain the boiler unless freezing conditions are expected during this procedure.

4. Allow the boiler to cool down to the ambient temperature.

Removing the mixer

1. Remove the front door cover.
2. Undo the brass union nut between the gas valve outlet pipe and the mixer. Discard the gas valve outlet gasket **12**.

Note

Be sure to **note the orientation** and the **positions** of the mixer's screws before removing them.

3. Remove the screws and the mixer from the fan, discard the fan o-ring **14**.
4. Remove the mixer.

Installing the new mixer

1. Seat the supplied fan o-ring into the groove.
2. Install the new fuel-appropriate mixer to the fan with the supplied screws; ensure correct orientation and positions of screws is followed.
3. Install the supplied gasket between the gas valve outlet pipe and the mixer.
4. Connect the gas line to the mixer using the brass union nut.

Start-up procedure

1. Restore the gas supply and reconnect the electrical power.
2. Restore the cal(s) for heat.
3. Use an approved leak detection solution to soap test all joints.
4. Perform a combustion test (see instructions below).
5. Place conversion labels associated with the new fuel onto the boiler.

6. Replace front door cover.

Adjusting the gas valve



Danger

Making adjustments to the IBC gas valve without a properly calibrated gas combustion analyzer and by people who are not trained and experienced in its use is extremely dangerous.

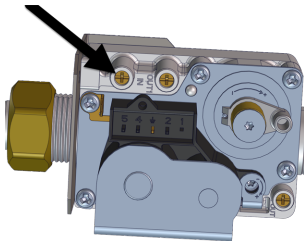
Failure to use an analyzer can result in an immediate hazard.

A combustion test checks that the gas valve is operating properly in the field. To perform a combustion test, you must be a qualified, trained and licensed gas fitter.

Measuring the inlet gas pressure

To perform a gas pressure test, you will need to use a Torx 15 screwdriver and a manometer.

1. Shut off the gas supply.
2. Loosen the inlet gas pressure test port screw counter-clockwise located on the gas valve.
3. Attach the manometer to the inlet gas pressure test port, as seen in [Figure 2](#).



[Figure 2](#) Location of inlet gas pressure test port

4. Turn on the gas supply to measure the inlet gas pressure.

Note

Ensure that you have a load configured (reset heating, set point, or DHW). This load should be large enough to allow the boiler to operate at high fire for over 10 minutes.

It is not necessary to do a manifold pressure test.

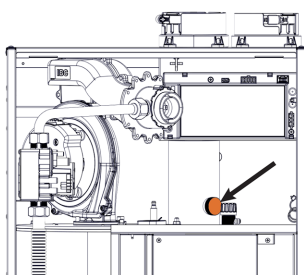
5. Measure the gas pressure while boiler is operating at high fire. The gas pressure for natural gas should register at 7" wc at high fire and 11" wc for propane.
6. Turn off the gas supply when testing has been completed.
7. Remove the manometer from the inlet gas pressure test port.

8. Tighten inlet gas pressure test port screw.
9. Turn on the gas supply, and return the boiler to normal operation.

Performing a combustion test and adjustment

The High Fire (gas-air ratio) adjustment screw will have to be adjusted to attain optimum combustion results whenever fuel conversion is undertaken.

1. Set the heat-out value in *Test Operation* mode on the controller to the maximum MBH for the boiler in order to run the boiler at high fire:
 - a. Select ●●● > **Test Operation** >
 - b. Select the **Fan Test: Heat Out** field, and tap **0 MBtu**, and then enter the maximum MBH.
 - c. When the boiler reaches high fire, insert the combustion analyzer test probe into the flue gas test port as seen in [Figure 3](#)



[Figure 3](#) Flue gas test port

- d. Verify that the CO₂% reading is within the combustion test targets at [Table 1](#) values.
2. Adjust the high fire according to values in [Table 1](#) using a Torx 15 screwdriver.
 - » Turn the screwdriver clockwise **no more than a maximum** of one full rotation at a time to raise the CO₂% (to enrich). Turn counter-clockwise **no more than a maximum** of one full rotation at a time to lower CO₂%.
3. Set the heat-out value in *Test Operation* mode to the minimum MBH for the boiler:
 - a. Select ●●● > **Test Operation** >
 - b. Select **Fan Test: Heat Out** field and tap **0 MBtu**, and then enter the minimum MBH.
4. Adjust the low fire according to values in [Table 1](#) using a Torx 15 screwdriver:
 - » Turn the screwdriver clockwise to raise the CO₂% (to enrich). Turn counter-clockwise to lower CO₂%.

Note

Start with 1/8 of a turn until you see the analyzer measure a change then only make 1/16 adjustments. If changing direction on this adjustment you may notice a significant backlash.

5. Verify the results and confirm the correct settings when returning the boiler to high fire, and then to low fire.
6. Exit the **Test Operation** screen by selecting **Back**.

7. Remove the call for heat.
8. If a manometer is connected to the gas valve inlet gas pressure port:
 - a. Turn off the gas supply at the external gas shut-off valve.
 - b. Disconnect the manometer.
 - c. Tighten the inlet pressure port screw with a Torx 15 screwdriver.
9. Remove the analyzer probe, and install the test port plug.
10. Turn on the gas supply shut off valve.

Fuel	High fire		Low fire		CO max PPM
	Range %	Target %	Range %	Target %	
Natural Gas	9.0 - 10.0	9.5	8.2 - 9.2	8.7	<150
Propane	10.3 - 11.3	10.8	9.3 - 10.3	9.8	< 250

Table 1 Combustion test target ranges - CO₂ / Maximum CO

Conversion label placement on boiler

