



A tall, cylindrical, light-colored water heater with a black top and bottom. A label on the front reads "american WATER HEATERS" and "POLARIS". The unit is set against a background of a large, ornate chandelier with many hanging crystals. Red curved lines frame the top and bottom of the image.

POLARIS®

Commercial Installation Plumbing Guide

Index & Notes

Symbol Legend	3	Recirculation Loops	18
Plumbing System Component Descriptions	4	Sequence of Operations Diagrams	19-28
34 and 50-Gallon Polaris®		Multiple Polaris® Installation	19-20
Piping Diagrams	6-17	Polaris® Water Heater(s) with Storage Tank(s)	21-22
Single Polaris® Installation	6	Polaris® Water Heater(s) with Booster Heater(s)	23-24
Two Polaris® Installation	7	Polaris® Water Heater(s) with Storage Tank(s) and Booster Heater(s)	25-26
Three Polaris® Installation	8	Polaris® Water Heater with Dishwasher	27-28
Four Polaris® Installation	9		
Single Polaris® with Storage Tank	10		
Two Polaris® with Storage Tank	11		
Single Polaris® with Two Storage Tanks	12		
Polaris® with Dishwasher	13		
Polaris® with Booster Heater	14		
Two Polaris® with Booster Heater	15		
Polaris® with Storage Tank and Booster Heater	16		
Combined Appliance Application	17		



Please Note:

*Hot water systems must be designed by a plumbing engineer and installed by a qualified plumbing professional. Follow all installation instructions in the manual that came with your water heater. **Incorrect installation of water heaters can result in property damage, bodily injury or death.***

American® Water Heaters does not accept any liability for incomplete, outdated or incorrect information provided in this publication.

If you have any questions concerning the installation of a hot water system, consult a local plumbing engineer who will be familiar with code requirements in your area.

Symbol Legend

Thermometer 	Shutoff Valve 	Check Valve (Arrow indicates direction of flow) 	Mixing Valve 	Union 	Plug Cock
Pressure Reducing Valve 	Line Temperature Control 	Bronze Circulating Pump 	Expansion Tank 	Anti-siphon Valve 	Water Hammer Arrestor

Piping Diagram Notes:

1. If water above 120°F is supplied for domestic use (handwashing, showering, etc.) a tempering valve should be installed in the hot water line to domestic fixtures.
2. If a check valve or a non-bypass pressure-reducing valve is installed in the cold water supply line, an expansion tank must be installed between the check valve and the water heater's cold water inlet.
3. When using a storage tank with a water heater, use the plug cock to adjust the flow of the recirculating line between the storage tank and the water heater to 5 gallons per minute.
4. If recirculating lines are used in the building, the flow rate should be determined by the design engineer and adjusted accordingly.
5. When required, vacuum relief valves should be installed per local code.
6. Pipe all T&P valves to an open drain in accordance with local code requirements.
7. Circulating pumps should be bronze and approved for potable water.
8. Primary heater temperature should be set to at least 130°F.
9. Pipe size for all manifolds should be determined by the project's plumbing design engineer.
10. Do not install with iron piping. Use only new piping that is suitable for potable (drinking) water. Do not use piping that has been treated with chromates, boiler seal or other chemicals.

Water Connections:

H	=	Hot Water Outlet
C	=	Cold Water Inlet
T	=	Tempered Water Outlet
HR	=	Hot Water Recirculating Line
TR	=	Tempered Water Recirculating Line
B	=	High Temperature Booster Heater Outlet
BR	=	High Temperature Booster Water Recirculating Line Return

Plumbing Component Descriptions

Anti-siphon Valve - Safety valve that prevents water from siphoning back into the potable water supply.

Check Valve - A device that permits water to flow in only one direction.

Circulating Pump - An all-bronze pump that circulates potable water through the water heating system. A thermostat switches the pump on when water drops below a set temperature in the storage tank or circulating line. Pumps can be used to keep water in a storage tank at a desired temperature, or to circulate hot water through piping, making hot water immediately available at every fixture.

Expansion Tank - A tank installed on the incoming water line that absorbs expanding water and prevents pressure buildup inside the water heater tank. Expansion tanks are necessary in closed water systems. A closed water system is usually caused by a backflow prevention device, such as a check valve or water meter, that prevents heated water from expanding into the cold water supply line.

Line Temperature Control - Thermostat that controls a circulating pump installed in the hot water circulating loop (piping), assuring that the water delivered is the desired temperature.

Mixing Valve - (Tempering Valve) Device that mixes cold water with hot water to a desired temperature for a particular application. For example, some nursing homes require a maximum water temperature of 105°F at showers and other domestic water fixtures. In commercial kitchens, pot sinks may require 140°F water. Mixing valves can be installed to insure the proper temperature for each application.

Plug Cock - Valve that is manually adjusted to regulate water flow through circulating lines and balance water flow through multiple heaters that are manifolded together. Balancing the flow assures that all system components are doing an equal amount of work and that excessive water velocities are avoided in the system's piping.

Pressure Reducing Valve - Valve that controls supplied water pressure, preventing damage to plumbing systems that can be caused by excessive pressure.

Shutoff Valve - Valve that stops the flow of water, allowing a system component to be isolated for repair or service without shutting down the entire system.

Thermometer - Temperature measuring device installed in or near the hot water outlet on a water heater or storage tank to verify that the flow between system components is balanced. Thermometers are used to indicate failed water heaters, improperly operating storage tanks, and to verify that all manifolded water heaters are doing an equal amount of work. If the outgoing water temperatures are the same and rise and fall at the same rate, hot water flow is balanced. If outgoing temperatures are different, or if they rise and fall at different rates, the plug cock can be used to regulate flow through each water heater or storage tank until the system is in balance.

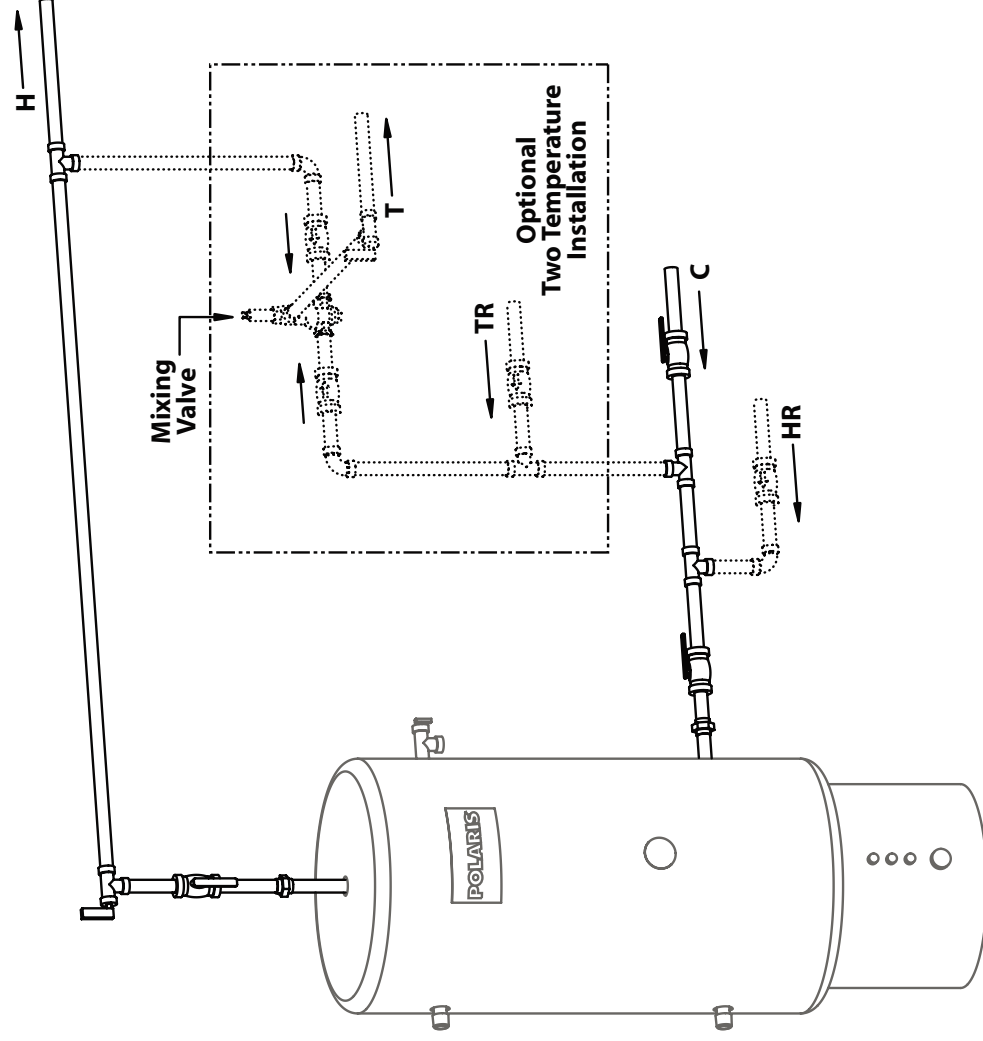
Union - Three-piece fitting used for joining sections of pipe. Unions permit components to be disconnected easily for repair or replacement.

Water Hammer Arrestor - Air cylinder installed near a fixture to absorb the shock wave caused when that fixture closes quickly, resulting in a reverse surge in water pressure in the piping due to abruptly stopping the flow of high velocity water. Water hammer is noticeable as a loud banging noise in the pipes and can cause damage to the plumbing system.

34 and 50-Gallon Polaris® Water Heater Commercial Installation Diagrams

Single Polaris® Water Heater Installation

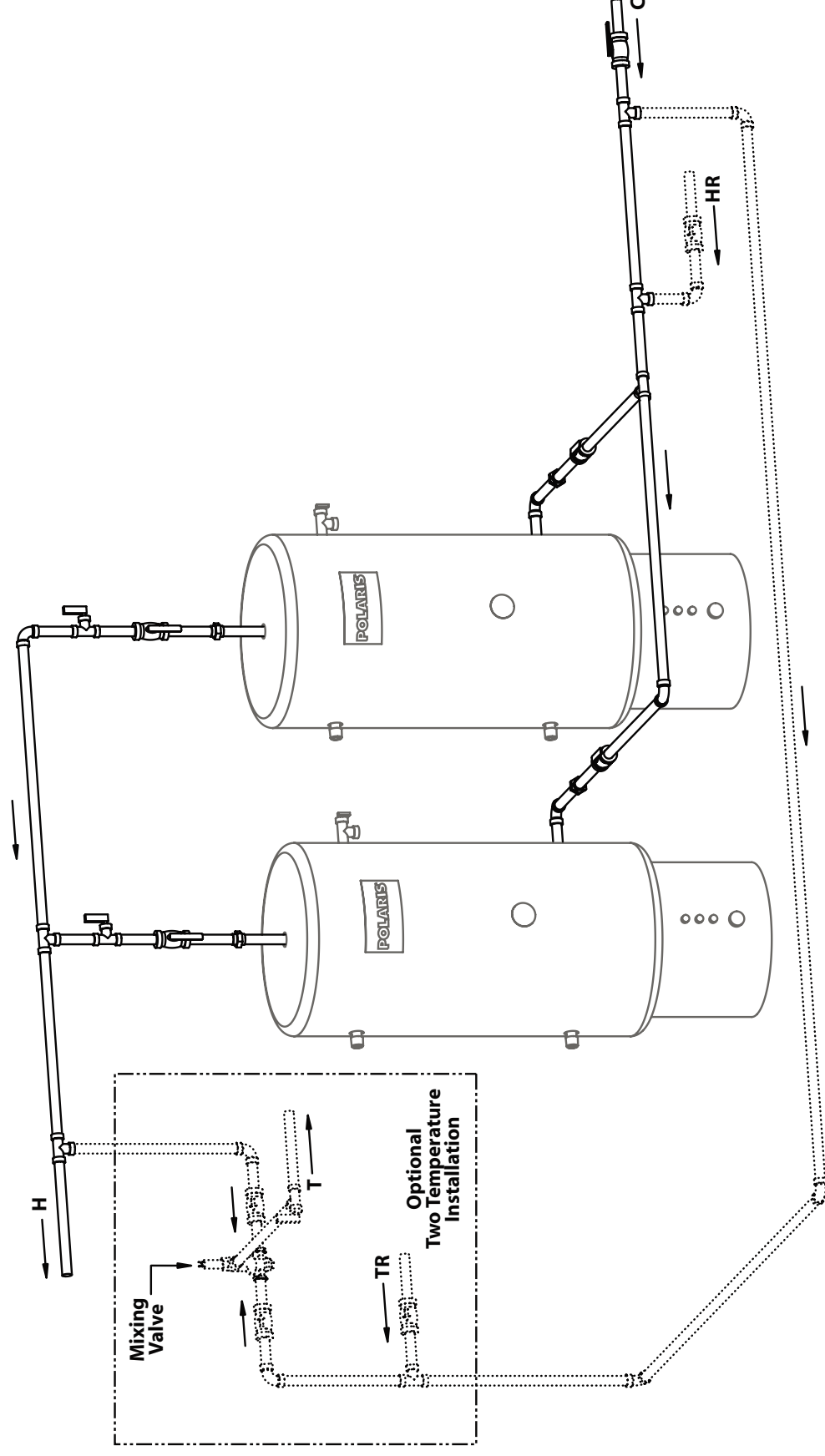
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For recirculation loop information see page 18.

Two Polaris® Water Heater Installation

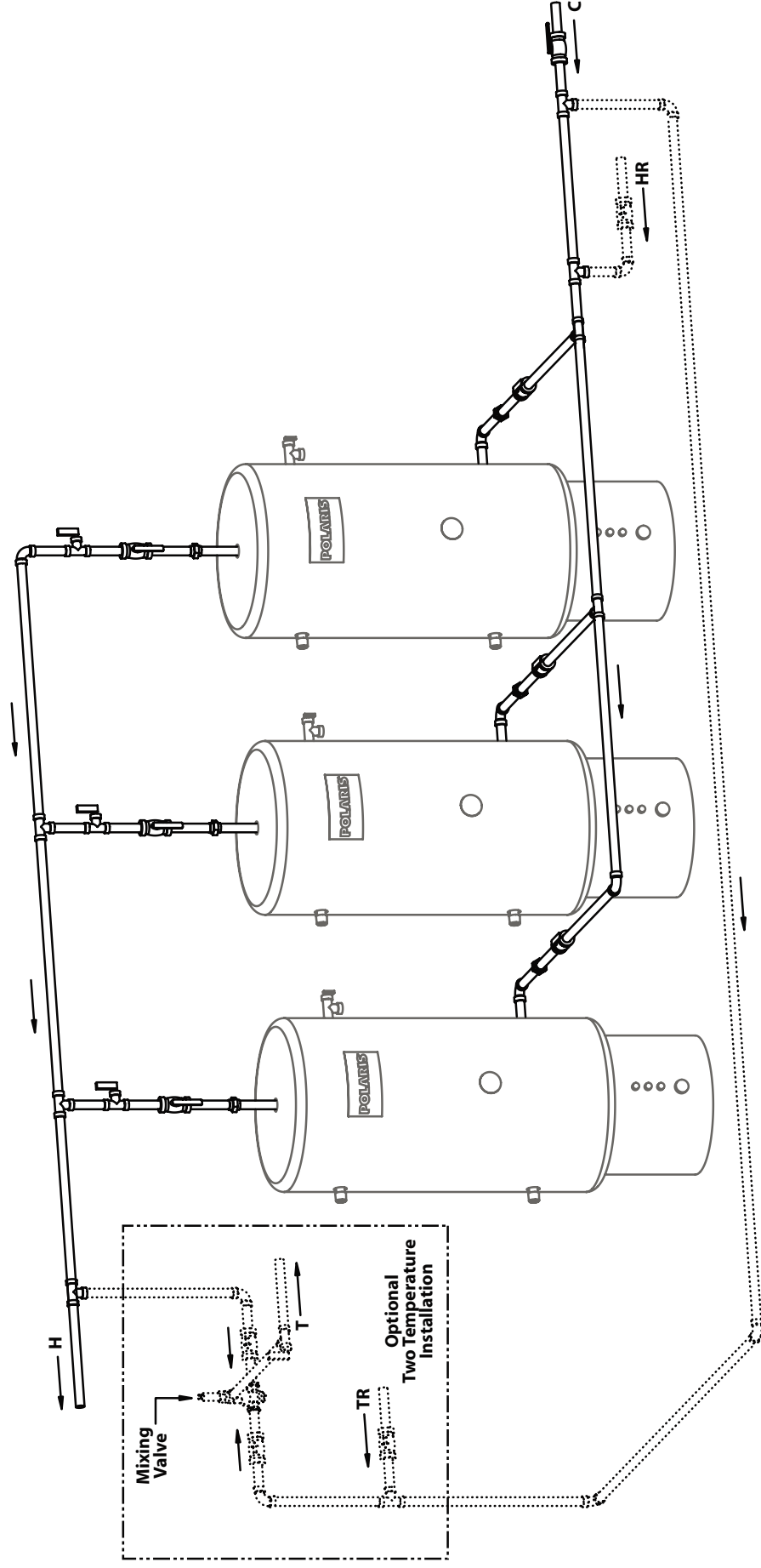
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 19-20. For recirculation loop information see page 18.

Three Polaris® Water Heater Installation

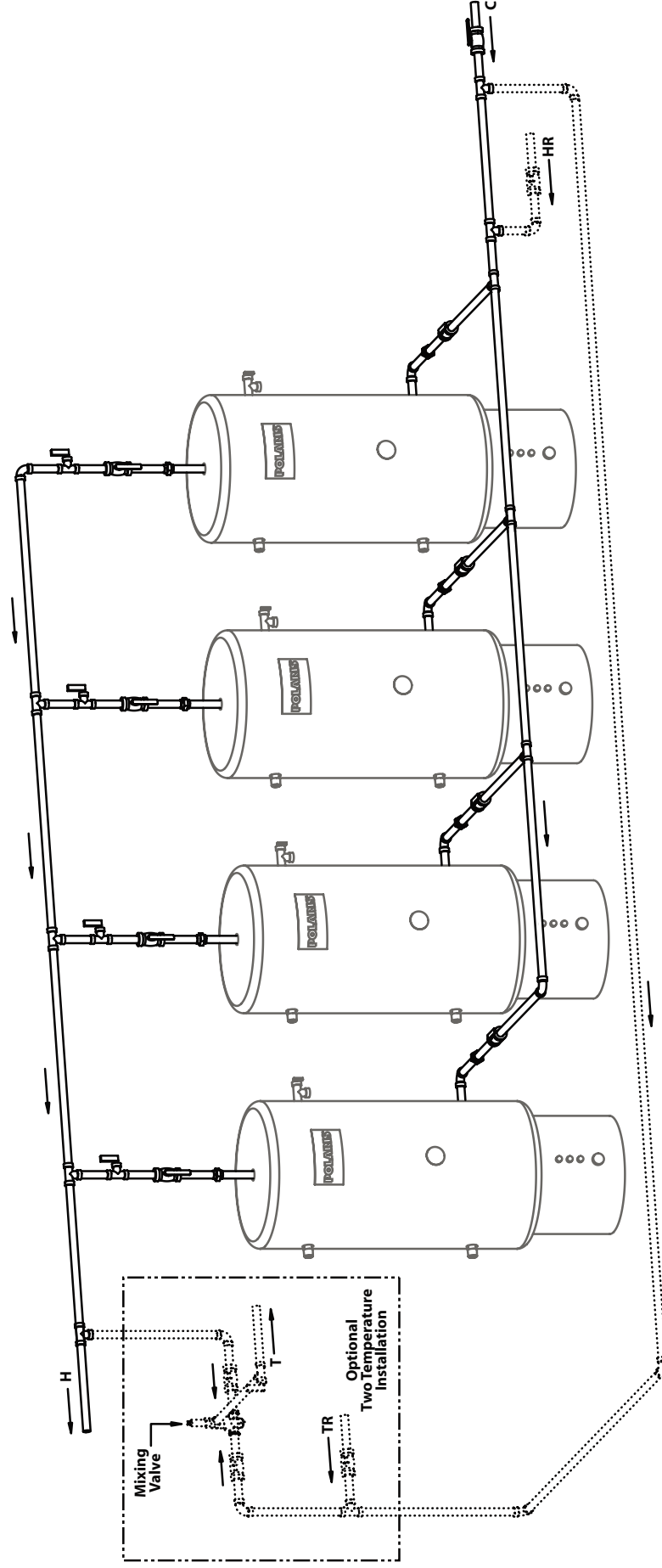
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 19-20. For recirculation loop information see page 18.

Four Polaris® Water Heater Installation

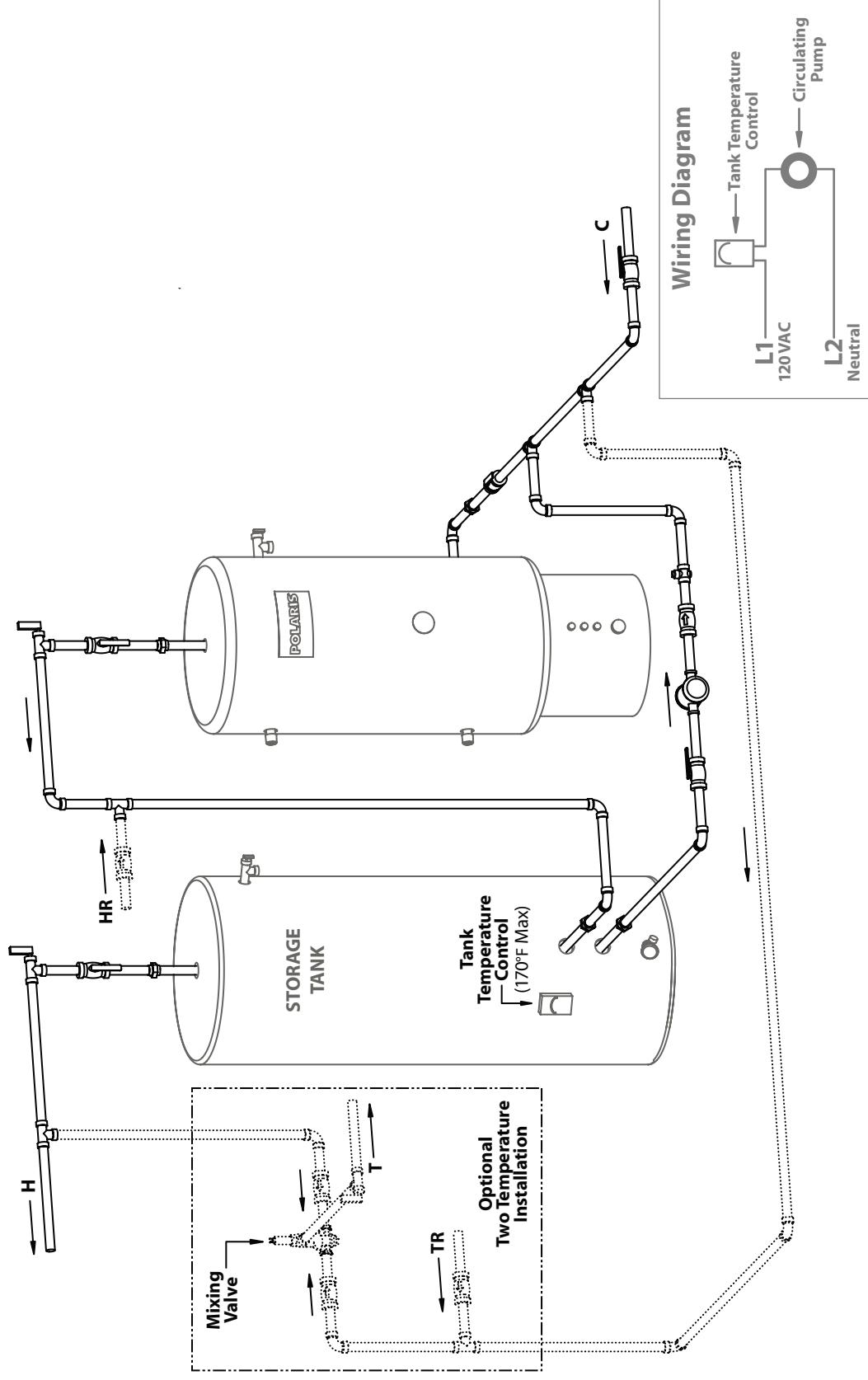
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 19-20. For recirculation loop information see page 18.

Single Polaris® Water Heater with Storage Tank

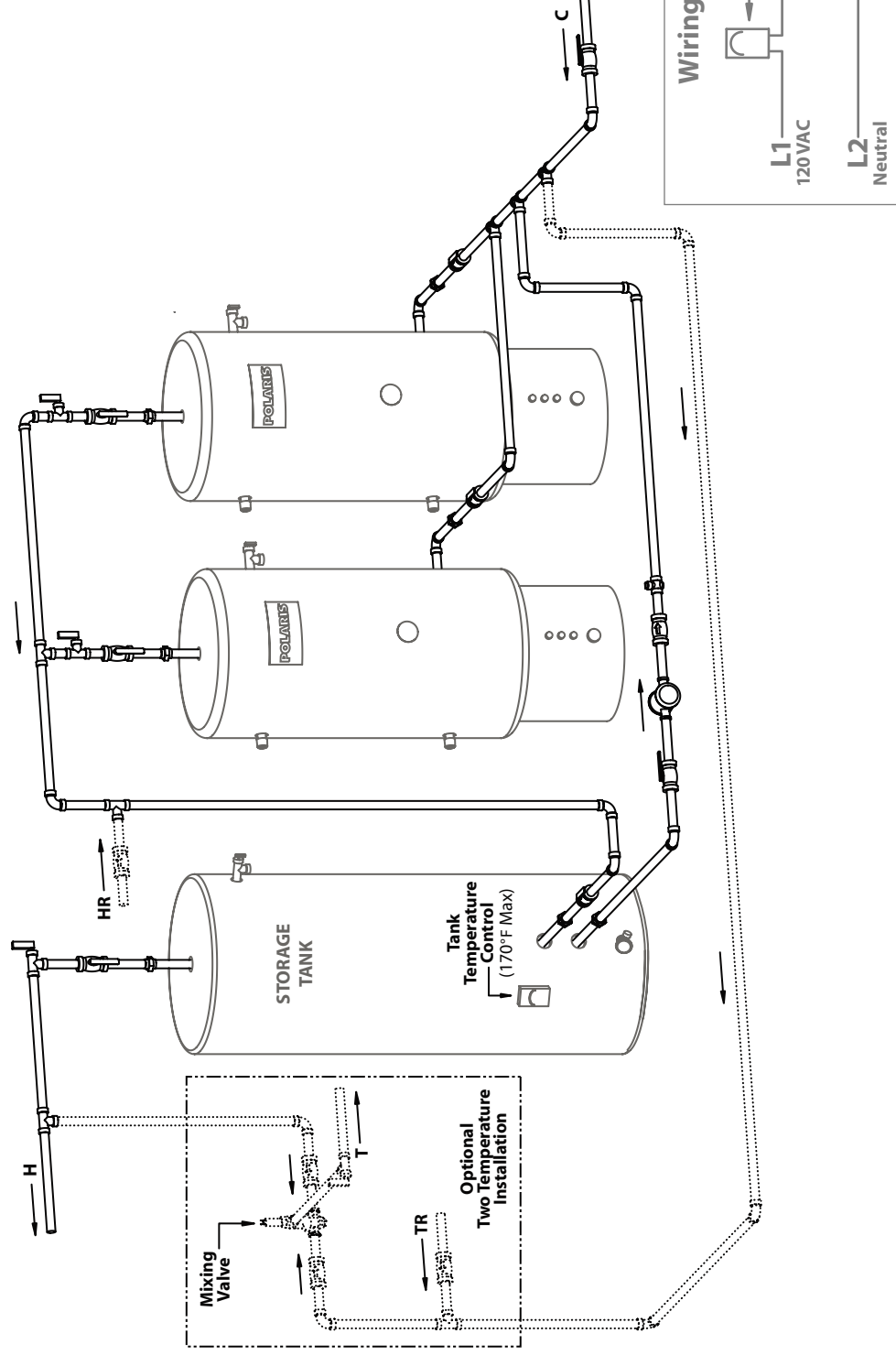
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 21-22. For recirculation loop information see page 18.

Two Polaris® Water Heaters with Storage Tank

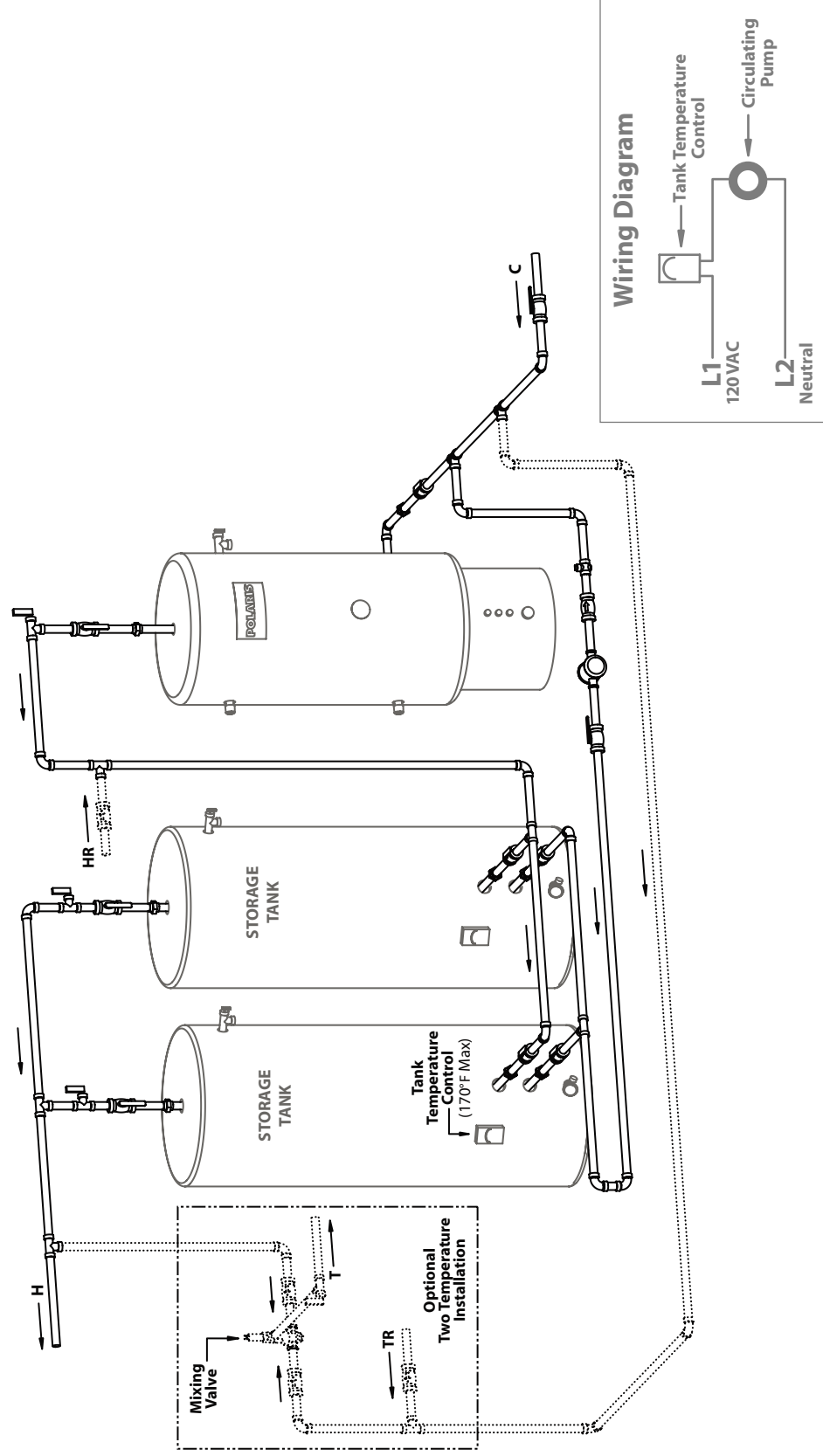
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 21-22. For recirculation loop information see page 18.

Single Polaris® Water Heater with Two Storage Tanks

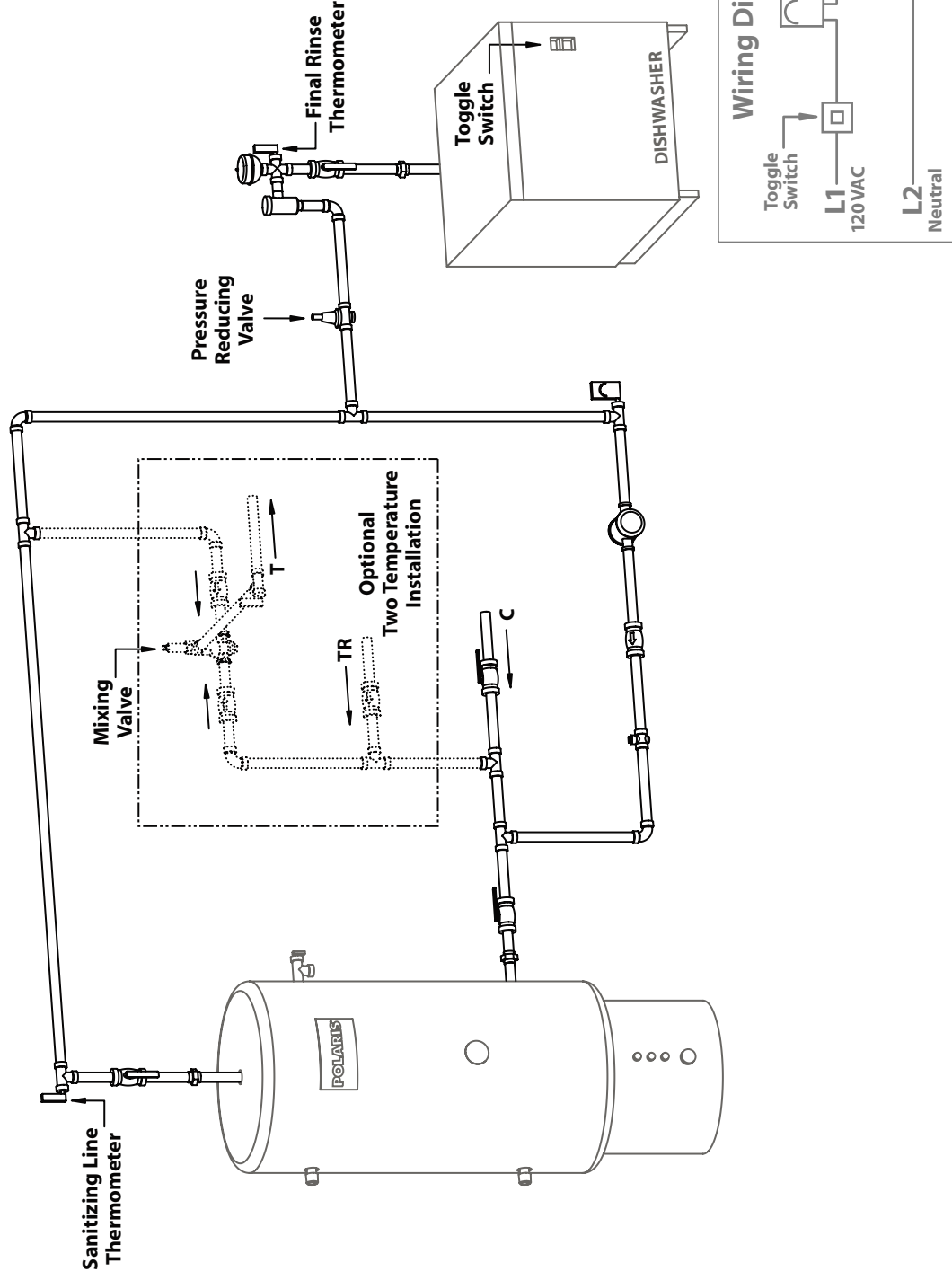
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 21-22. For recirculation loop information see page 18.

Polaris® Water Heater with Dishwasher

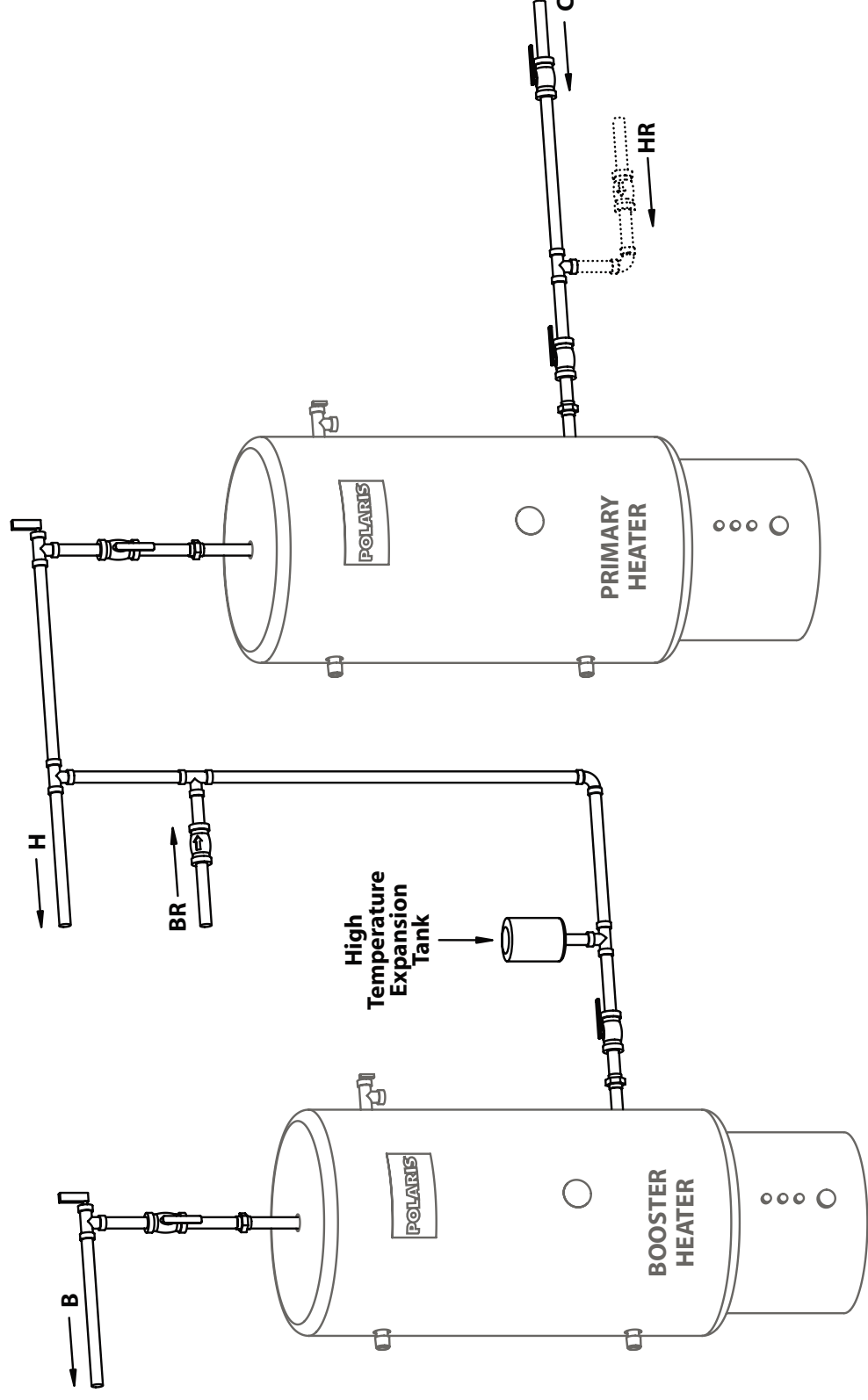
One or Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 27-28. For recirculation loop information see page 18.

Polaris® Water Heater with Booster Heater

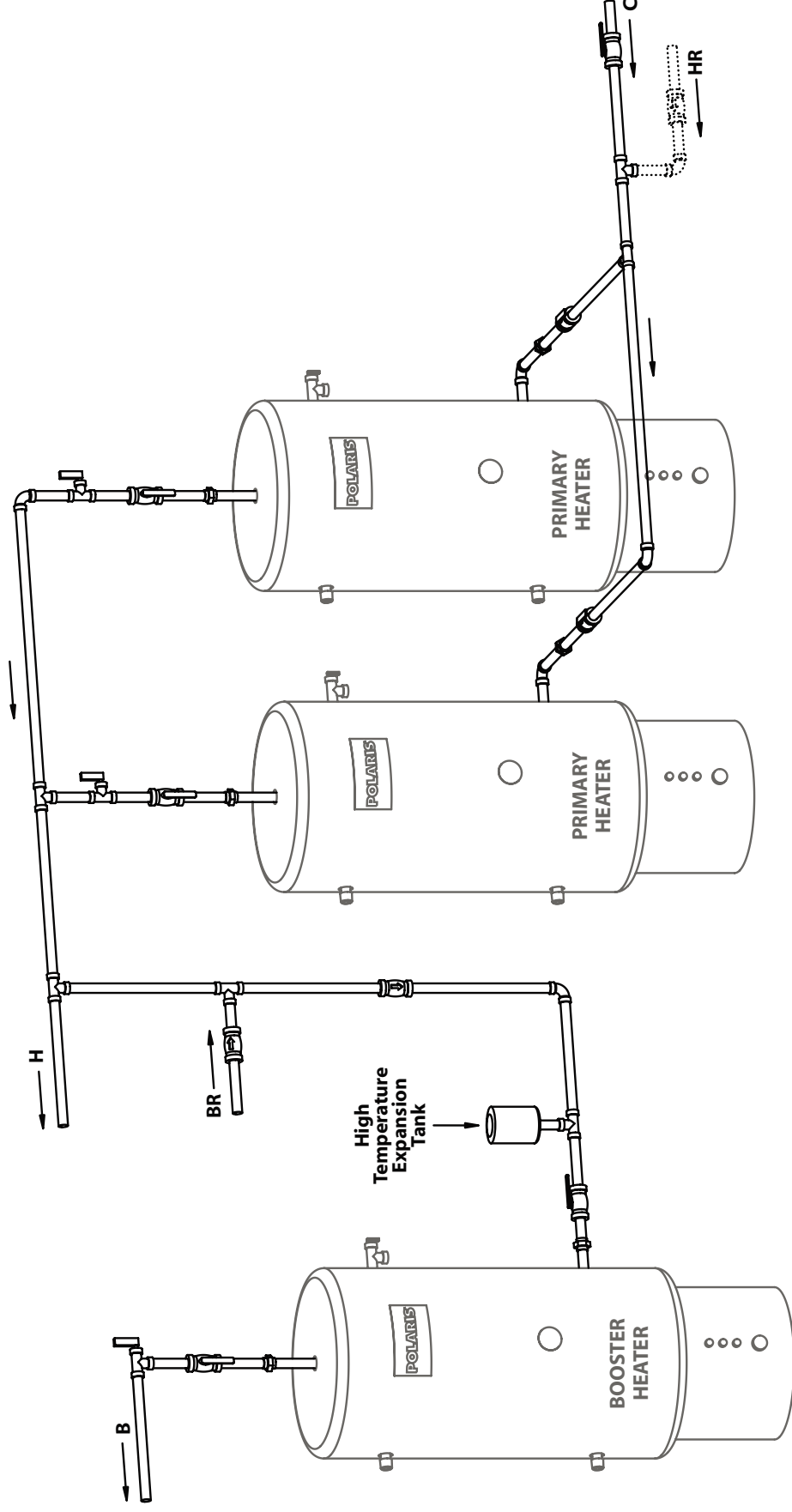
Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 23-24. For recirculation loop information see page 18.

Two Polaris® Water Heaters with Booster Heater

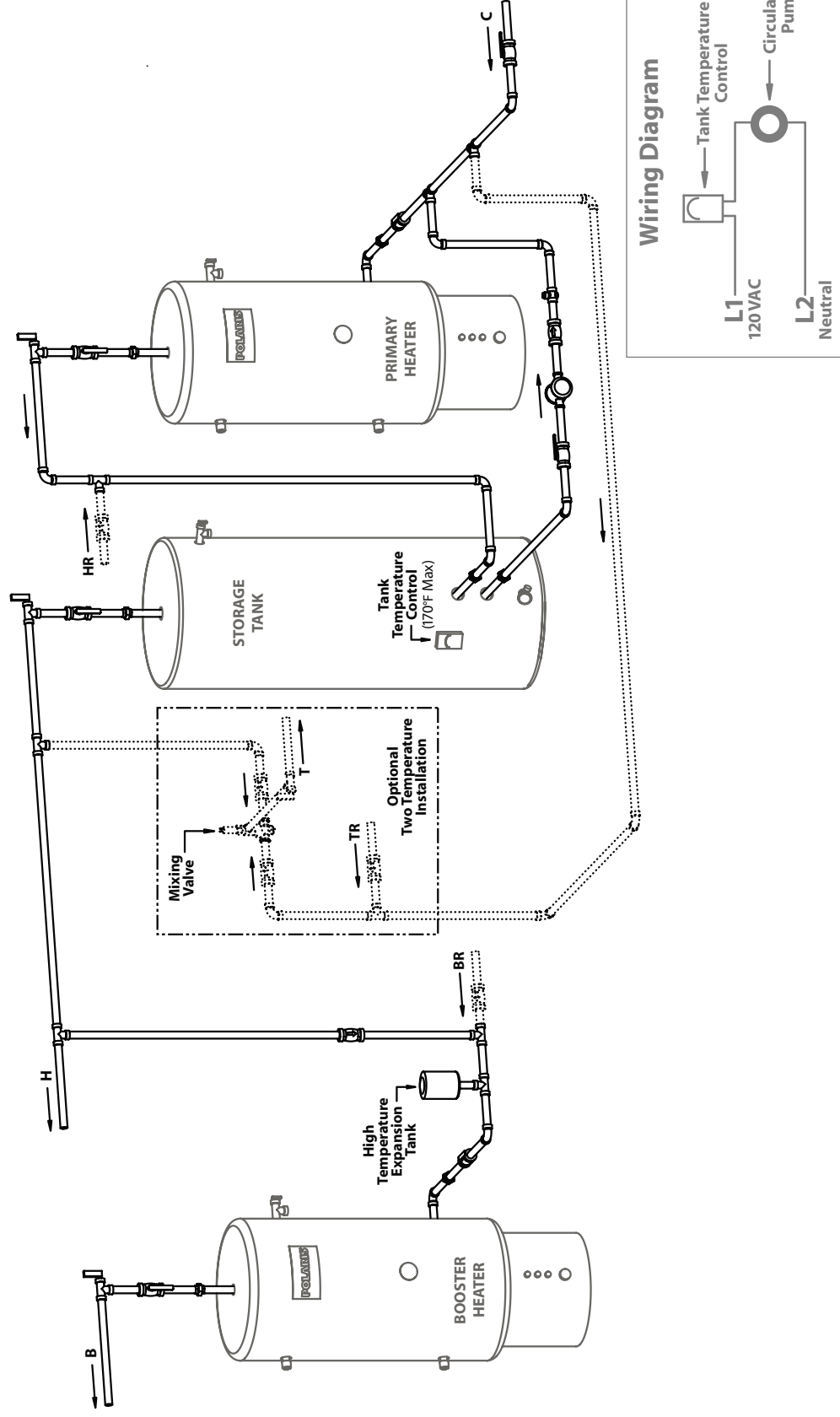
Two Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 23-24. For recirculation loop information see page 18.

Polaris® Water Heater with Storage Tank and Booster Heater

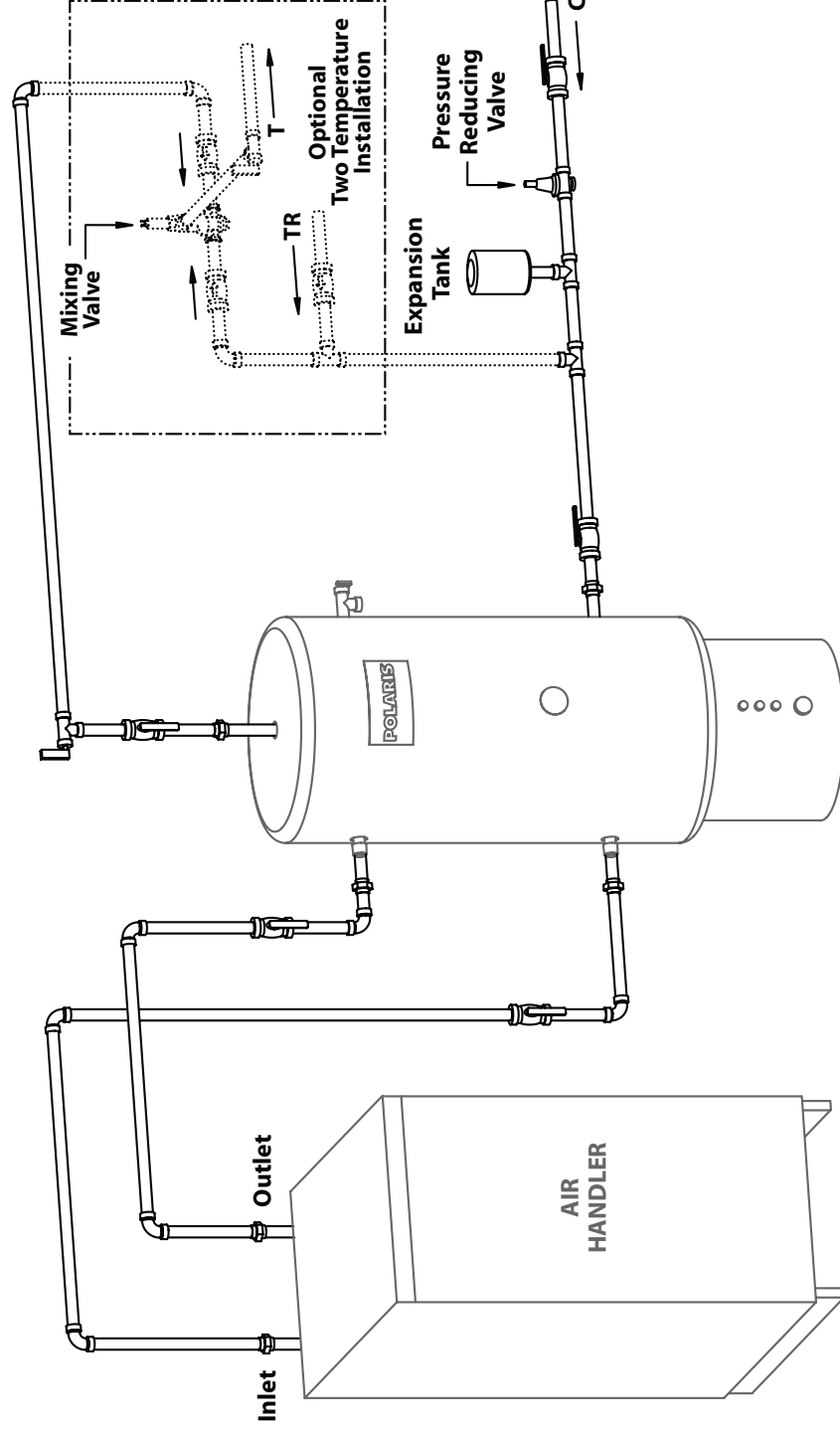
Two or Three Temperature
With or Without Recirculation



Symbol legend and installation notes - page 3. Component descriptions - page 4. For sequence of operation see pages 25-26. For recirculation loop information see page 18.

Combined Appliance Application

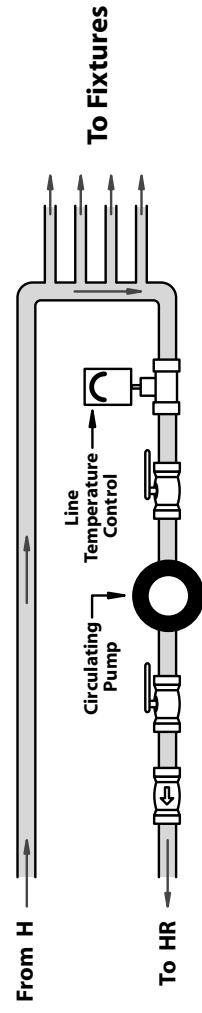
One Temperature
Without Recirculation



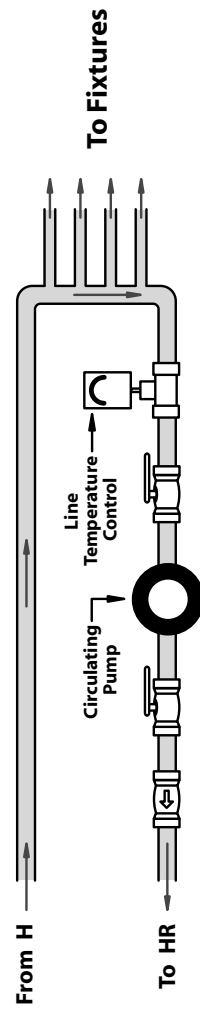
Symbol legend and installation notes - page 3. Component descriptions - page 4.

Recirculation Loops

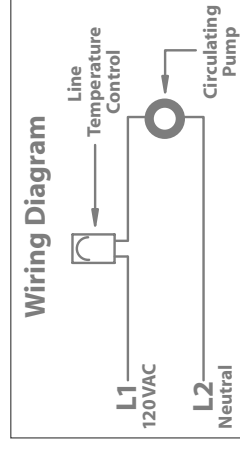
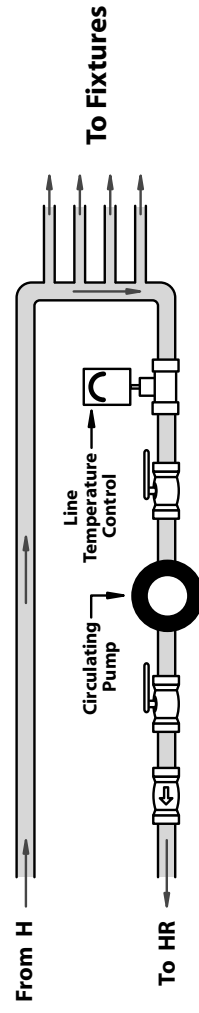
Hot Water Recirculation Loop



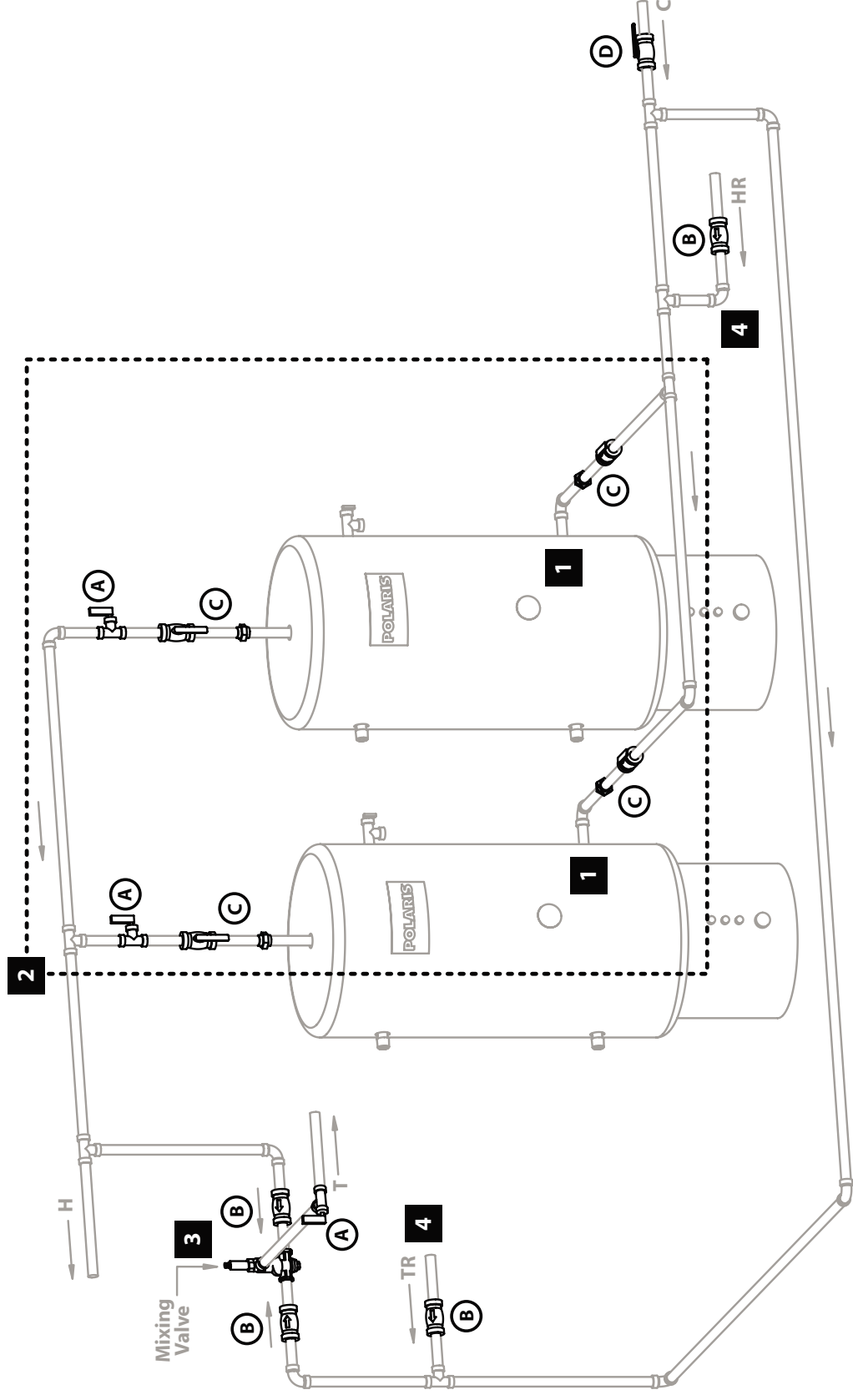
Tempered Water Recirculation Loop



Boosted Water Recirculation Loop



Multiple Polaris® Water Heater Installation Sequence of Operations



1 As hot water is drawn from fixtures, cold water enters each water heater near the bottom, lowering the water temperature below the thermostat's set point. The thermostat activates the gas burner. The burner continues heating water until the temperature of the water at the thermostat reaches the thermostat's set point. The thermostat shuts down the burner. The heating cycle repeats itself as often as required.

2 When multiple water heaters are manifolded together, reverse return or equally yoked piping insures that water is drawn from, and enters into, each of the water heaters at an equal (balanced) flow rate. This ensures that each water heater performs the same amount of work during heating cycles, provides the maximum amount of hot water available from each water heater's storage tank, and has approximately the same life span. Reverse return piping is shown. All water heaters must be exactly the same.

A Thermometers on hot water outlet lines indicate approximately the same temperature at all times if the system is balanced and provides a means to verify that the water provided is at the correct temperature for the application.

3 In two temperature systems, the mixing (tempering) valve combines cold water from the cold water supply line with hot water from the primary hot water outlet to provide a second hot water outlet temperature according to the mixing valve's setting. The mixing valve should be set for the desired temperature according to the application's hot water requirement. For example, nursing homes may require a maximum water temperature of 105°F at showers and other domestic water fixtures. In commercial kitchens, pot sinks may require 140°F water.

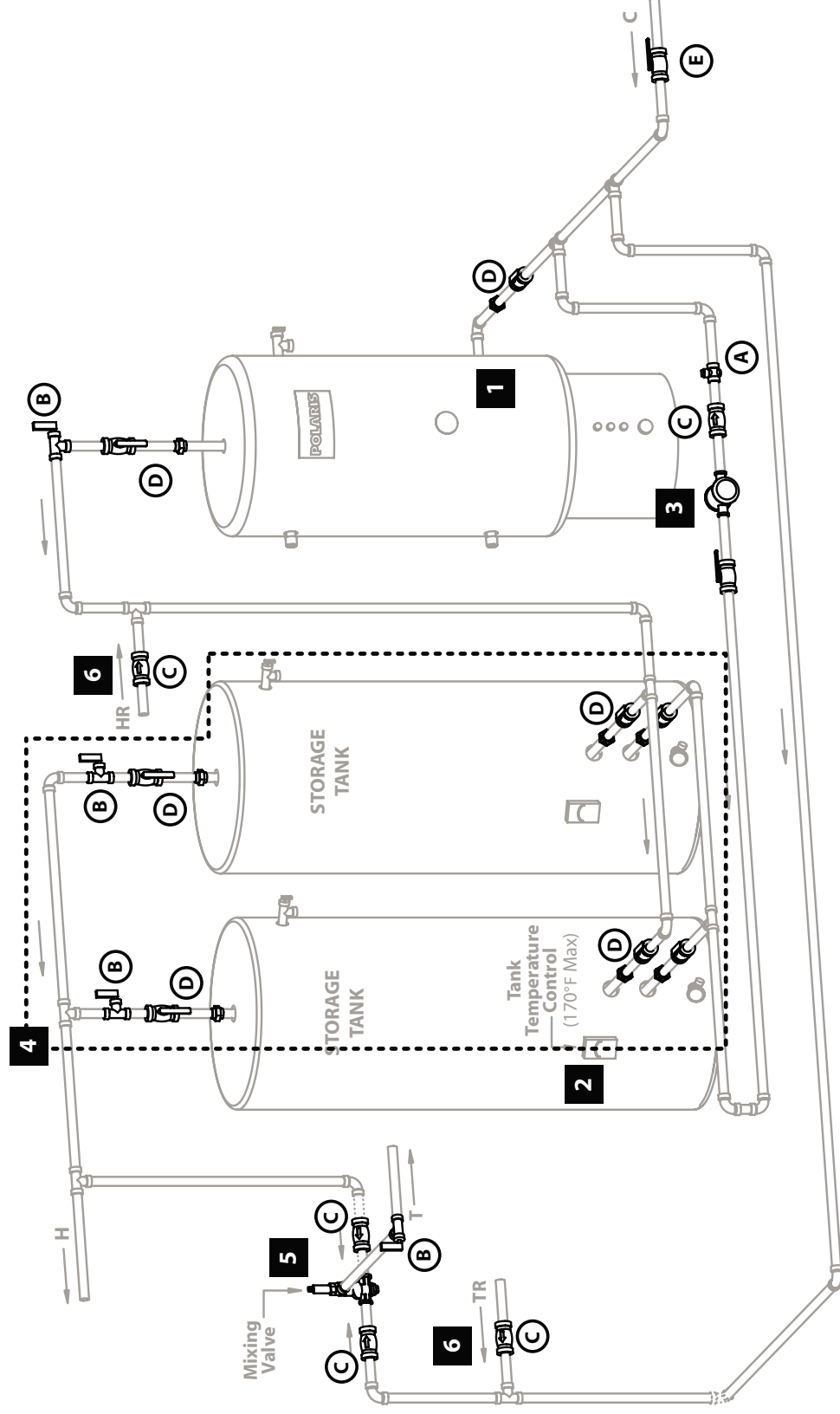
4 Hot and tempered water outlets can be provided with or without a recirculating line. When long runs of pipe are required between the water heater(s) and the fixtures, recirculating lines are used to eliminate wasted water and time delays while the user is waiting for usable hot water at each fixture. Recirculating lines feed hot or tempered water to fixtures and return unused water back from the furthest fixture to the water heater(s) for reheating. Water flow through recirculating lines is controlled by a line temperature control (thermostat) that operates a bronze circulating pump. When water temperature in the recirculating line drops below the line temperature control's set point, the control turns on the pump causing hot or tempered water to circulate through the line. Flow rate in the circulating line is adjusted using a flow regulating plug cock.

B Check valves installed on the lines insure that water flows in one direction only, preventing backflow and unexpected mixing of hot and cold water. Some check valves can only be installed horizontally. Refer to the check valve manufacturer's installation instructions.

C All water heaters should be installed with shutoff valves and unions in cold water inlet and hot water outlet lines to allow isolation and replacement of failed heaters without completely shutting off the water supply. When multiple units are installed, functioning units can remain in service while the failed unit is repaired or replaced.

D A shutoff valve on the incoming cold water supply line allows the system to be shut down in the event of an emergency, or when necessary for service.

Polaris® Water Heater(s) with Storage Tank(s) Sequence of Operations



1 As hot water is drawn from fixtures, cold water enters each water heater near the bottom, lowering the water temperature below the thermostat's set point. The thermostat activates the gas burner. The burner continues heating water until the temperature of the water at the thermostat reaches the thermostat's set point. The thermostat shuts down the burner. The heating cycle repeats itself as often as required.

2 As hot water is drawn from fixtures, hot water is drawn in equal amounts from each water heater into the bottom of each storage tank. When the water temperature in the storage tank drops below the tank temperature control's set point, the circulating pump is activated. The storage tank's temperature control set point should be 5-10°F lower than the water heater's thermostat setting.

3 The circulating pump draws cool water from the bottom of each storage tank returning it to the cold water inlet on each water heater for reheating. As cool water is drawn from each storage tank it is replaced by hot water from the water heater. Heated water enters the storage tank below the tank temperature control. Heated water rises in the storage tank forcing cool water to the bottom of the tank where it is drawn out by the circulating pump. When the temperature control on the storage tank is satisfied, it shuts down the circulating pump. The water heater continues heating until its thermostat is satisfied.

A The plug cock is used to adjust the flow of water to 3-5 gallons per minute, which reduces condensation and increases the amount of hot water available by limiting turbulence in the tank.

4 When multiple water heaters and multiple storage tanks are manifolded together, reverse return or equally yoked piping insures that water is drawn from and enters into each of the water heaters and storage tanks at an equal (balanced) flow rate. This insures that each water heater and storage tank performs the same amount of work during heating

cycles, provides the maximum amount of hot water available from stored water, and has approximately the same life span. Reverse return piping is shown. All water heaters manifolded together, or storage tanks manifolded together, must be exactly the same.

B Thermometers on hot water outlet lines indicate approximately the same temperature at all times if the system is balanced and provides a means to verify that the water provided is at the correct temperature for the application.

5 In two temperature systems, the mixing/tempering valve combines cold water from the cold water supply line with hot water from the system's primary hot water outlet to provide a second hot water outlet temperature according to the mixing valve's setting. The mixing valve should be set for the desired temperature according to the application's hot water requirement. For example, nursing homes may require a maximum water temperature of 105°F at showers and other domestic water fixtures. In commercial kitchens, pot sinks may require 140°F water.

6 Hot and tempered water outlets can be provided with or without a recirculating line. When long runs of pipe are required between the water heater(s) and the fixtures, recirculating lines are used to eliminate wasted water and time delays while the user is waiting for usable hot water at each fixture. Recirculating lines feed hot or tempered water to fixtures and return unused water back from the furthest fixture to the water heater(s) for reheating. Water flow through recirculating lines is controlled by a line temperature control (thermostat) that operates a bronze circulating pump. When water temperature in the recirculating line drops below the line temperature control's set point, the control turns on the pump causing hot or tempered water to circulate through the line. Flow rate in the circulating line is adjusted using a flow regulating plug cock.

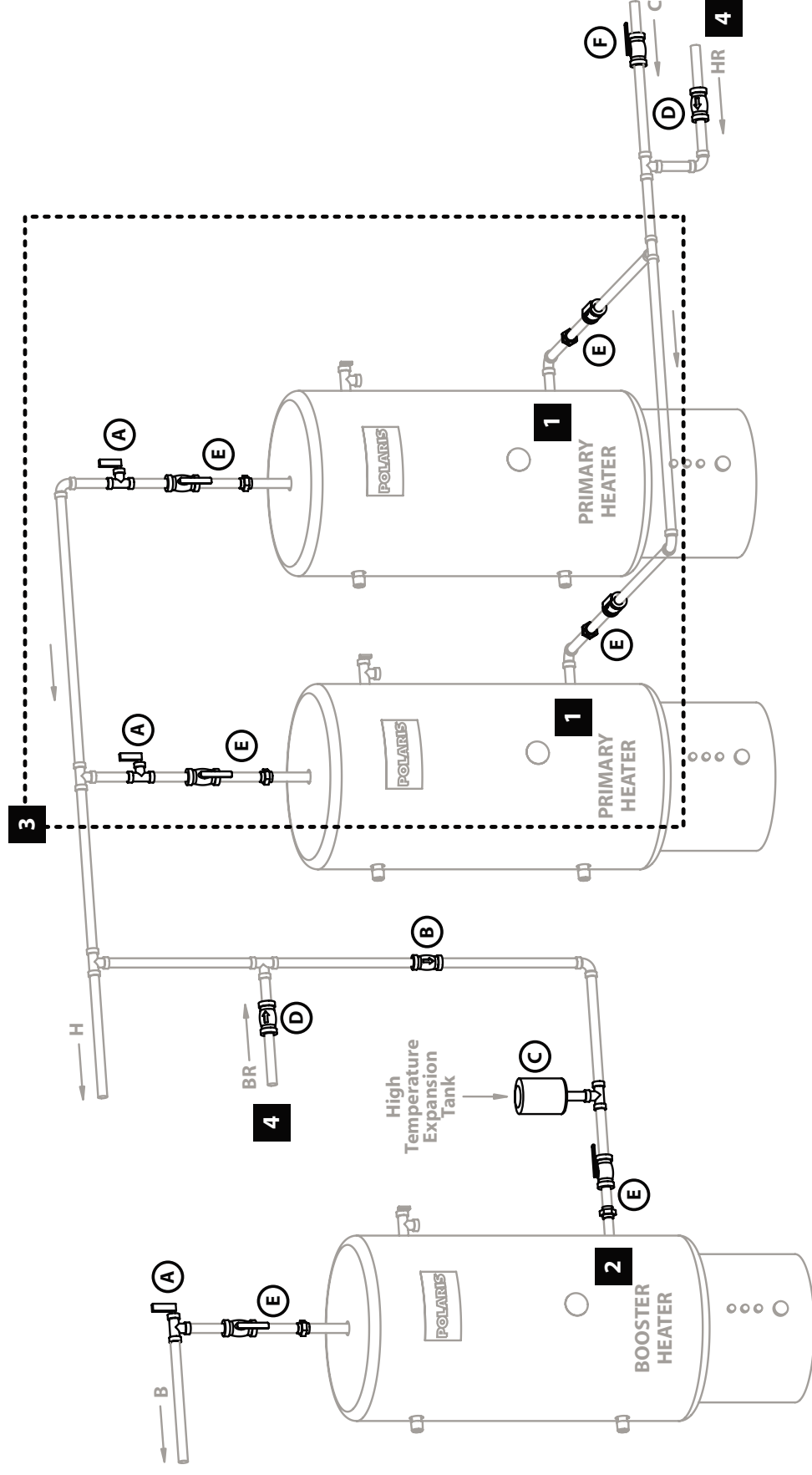
C Check valves installed on the lines insure that water flows in one direction only. This prevents

the mixing of hotter and cooler water. Some check valves can only be installed horizontally. Refer to the check valve manufacturer's installation instructions.

D Each water heater and storage tank should be installed with shutoff valves and unions in cold water inlet and hot water outlet lines to allow isolation and replacement of failed heaters without shutting off the water supply. When multiple water heaters and storage tanks are installed, functioning units can remain in service while the failed unit is replaced.

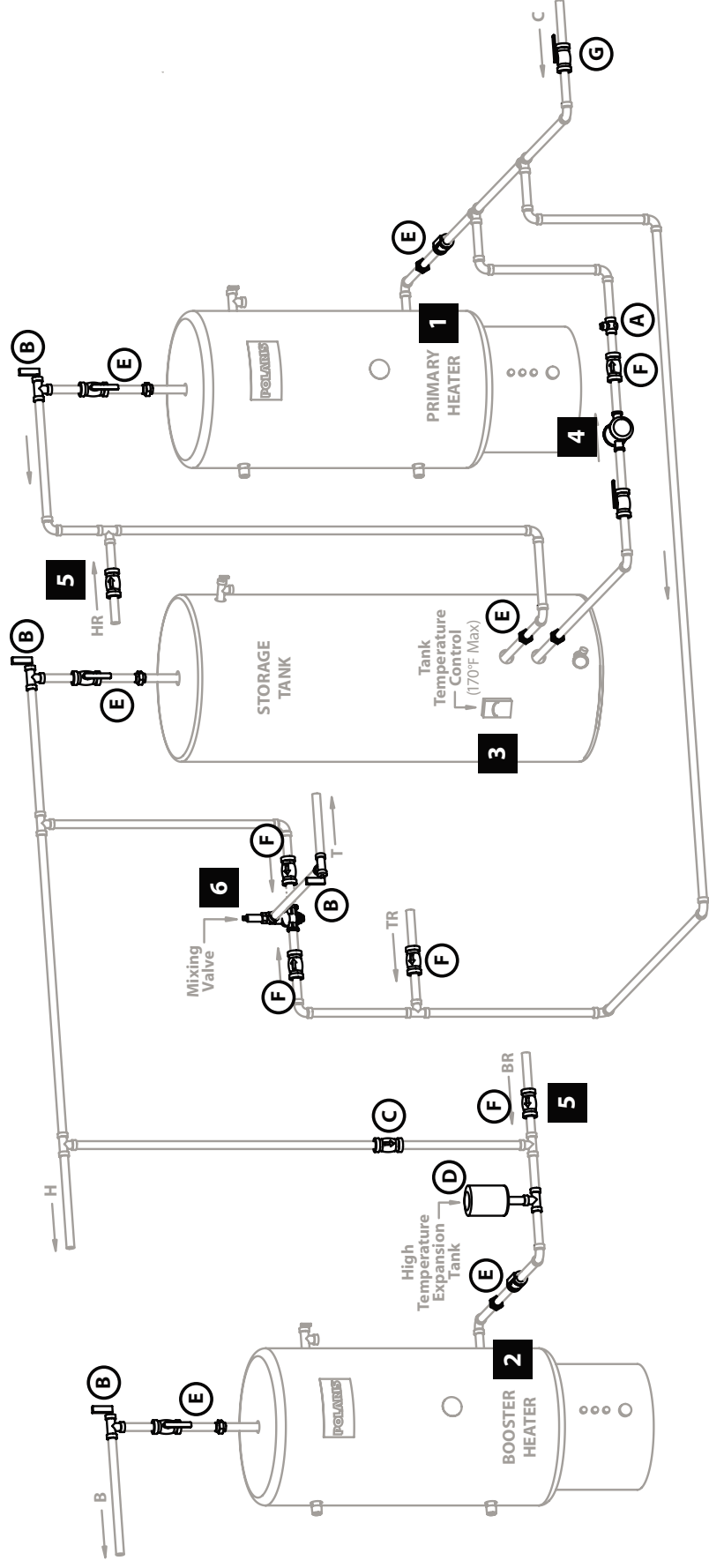
E A shutoff valve on the incoming cold water supply line allows the system to be shut down in the event of an emergency, or when necessary for service.

Polaris® Water Heater(s) with Booster Heater(s) Sequence of Operations



1 As hot water is drawn from fixtures, cold water enters each primary water heater near the bottom, lowering the water temperature below the thermostat's set point. The thermostat activates the gas burner. The burner continues heating water until the temperature of the water at the thermostat reaches the thermostat's set point. The thermostat shuts down the gas burner. The heating cycle repeats itself as often as required. (A) Thermometers on hot water outlet lines indicate approximately the same temperature at all times if the system is balanced and provides a means to verify that the water provided is the correct temperature for the application.	temperature booster heater water from reaching fixtures not connected to the booster heater's hot water outlet. Some check valves can only be installed horizontally. Refer to the check valve manufacturer's installation instructions. (C) Water expands as it is heated and cannot be compressed. A check valve in the booster heater's supply creates a closed system, preventing the water from expanding back through the line. An expansion tank is required to absorb the expanding water, preventing pressure buildup inside the booster heater or water lines.	Refer to the check valve manufacturer's installation instructions. (E) Each primary water heater and booster heater should be installed with shutoff valves and unions in water inlet and outlet lines to allow isolation and replacement of failed heaters without shutting off the water supply. When multiple primary water heaters and/or booster heaters are installed, functioning units can remain in service while the failed unit is repaired or replaced. A shutoff valve on the incoming cold water supply line allows the system to be shut down in the event of an emergency, or when necessary for service.
2 As hot water is drawn from fixtures served by each booster heater's hot water outlet, hot water from primary water heaters is drawn into the bottom of each booster heater. When the water temperature in the booster heater's tank drops below the thermostat's set point, the booster heater's gas burner is energized. The burner stays on until the water temperature in the booster heater reaches the set point of the booster heater's thermostat. This cycle repeats itself as often as required. 3 When multiple primary water heaters and/or multiple booster heaters are manifolded together, reverse return or equally yoked piping insures that water is drawn from and enters into each of the primary water heaters and/or booster heaters at an equal (balanced) flow rate. This insures that each primary water heater and/or booster heater performs the same amount of work during heating cycles, provides the maximum amount of hot water available from stored water, and has approximately the same life span. Reverse return piping is shown. All water heaters manifolded together, or booster heaters manifolded together, must be exactly the same. (B) A check valve on the line from the primary heater to the booster heater insures that water flows in one direction only. This keeps high	4 Hot water from primary water heaters and/or booster heaters can be provided with or without recirculating lines. When availability of hot water is immediately required for the application and/or when long runs of pipe are required between the booster water heater(s) and/or the primary water heater(s) and the fixtures, recirculating lines can be used to eliminate wasted water and time delays. Recirculating lines feed hot water from the booster heater or hot water from the primary water heater to fixtures and return unused water from the furthest fixture to the water heater(s) for reheating. Water flow through each recirculating line is controlled by a line temperature control (thermostat) that operates a bronze circulating pump. When water temperature in the recirculating line drops below the line temperature control's set point, the control turns on the pump causing hot or tempered water to circulate through the line. Flow rate in the circulating line is adjusted using a flow regulating plug cock. Hot water from each booster heater's recirculating line is returned to the booster heater's inlet. Hot water from each primary water heater's recirculating line is returned to the primary heater's inlet. (D) Check valves installed on the lines insure that water flows in one direction only. This prevents the mixing of hotter and cooler water. Some check valves can only be installed horizontally.	

Polaris® Water Heater(s) with Storage Tank(s) and Booster Heater(s) Sequence of Operations



1 As hot water is drawn from the storage tank through fixtures, cold water enters the primary water heater near the bottom, lowering the water temperature below the thermostat's set point. The thermostat activates the gas burner. The burner continues heating water until the temperature of the water at the thermostat reaches the thermostat's set point. The thermostat shuts down the burner. The heating cycle repeats itself as often as required.

2 As hot water is drawn from fixtures served by the booster heater's hot water outlet, hot water from the storage tank is drawn into the bottom of the booster heater. When the water temperature in the booster heater's tank drops below the thermostat's set point, the booster heater's gas burner is energized. The burner stays on until the water temperature in the booster heater reaches the set point of the booster heater's thermostat. This cycle repeats itself as often as required.

3 As hot water is drawn from the storage tank through fixtures, hot water from the water heater is drawn into the bottom of the storage tank. When the water temperature in the storage tank drops below the tank temperature control's set point, the circulating pump is activated. The storage tank's temperature control set point should be 5-10°F lower than the primary water heater's thermostat setting.

4 The circulating pump draws cool water from the bottom of the storage tank returning it to the cold water inlet of the primary water heater. As cool water is drawn from the bottom of the storage tank it is replaced by hot water from the outlet of the primary water heater. Heated water enters the storage tank below the tank temperature control. Heated water rises in the storage tank forcing cool water to the bottom of the tank where it is drawn out by the circulating pump. When the temperature control on the storage tank is satisfied, it shuts down the circulating pump. The water heater continues heating water until the thermostat on the water heater is satisfied.

A The plug cock is used to adjust the flow of water to 3-5 gallons per minute, which reduces condensation and increases the amount of hot water available by limiting turbulence in the tank.

B Thermometers on hot water outlet lines are used to verify water outlet temperature and system operation. Hot water from the booster heater usually has to be a specific temperature, often 185°F for a commercial dishwasher rinse cycle. The thermometers provide a means to verify that the water provided is the correct temperature for the application.

C A check valve on the line from the storage tank to the booster heater insures that water flows in one direction only. This keeps high temperature booster heater water from reaching fixtures not connected to the booster heater's hot water outlet. Some check valves can only be installed horizontally. Refer to the check valve manufacturer's installation instructions.

D Water expands as it is heated and cannot be compressed. A check valve in the booster heater's supply creates a closed system, preventing the water from expanding back through the line. An expansion tank is required to absorb the expanding water, preventing pressure buildup inside the booster heater or water lines.

5 Hot water from primary water heaters and/or booster heaters can be provided with or without recirculating lines. When availability of hot water is immediately required for the application and/or when long runs of pipe are required between the booster water heater(s) and/or the primary water heater(s) and the fixtures, recirculating lines can be used to eliminate wasted water and time delays. Recirculating lines feed hot water from the booster heater or hot water from the primary water heater to fixtures and return unused water from the furthest fixture to the water heater(s) for reheating. Water flow through each recirculating line is controlled by a line temperature

control (thermostat) that operates a bronze circulating pump. When water temperature in the recirculating line drops below the line temperature control's set point, the control turns on the pump causing hot or tempered water to circulate through the line. Flow rate in the circulating line is adjusted using a flow regulating plug cock. Hot water from each booster heater's recirculating line is returned to the booster heater's inlet. Hot water from the storage tank's recirculating line is returned to the primary heater's inlet.

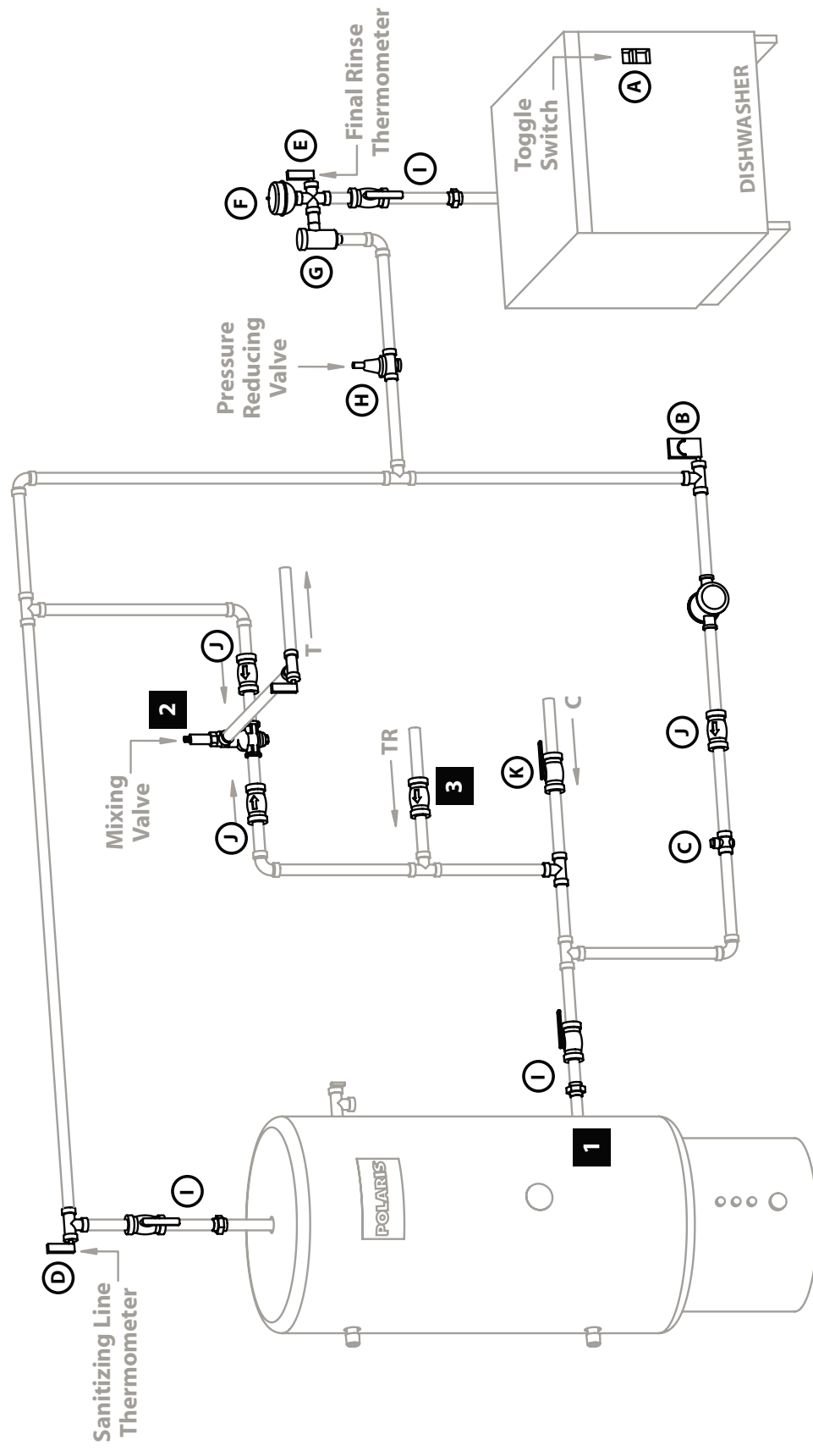
E Each primary water heater, booster heater, and storage tank should be installed with shutoff valves and unions in water inlet and outlet lines to allow isolation and replacement of failed units without shutting off the water supply. When multiple primary water heaters, and/or storage tank(s), and/or booster heaters are installed, functioning units can remain in service while the failed unit is replaced.

6 In three temperature systems, the mixing/tempering valve combines cold water from the cold water supply line with hot water from the system's primary hot water outlet to provide a third hot water outlet temperature in addition to the booster heater outlet temperature and the storage tank's outlet temperature according to the mixing valve's setting. The mixing valve should be set for the desired temperature according to the application's hot water requirement. For example, nursing homes may require a maximum water temperature of 105°F at showers and other domestic water fixtures. In commercial kitchens, pot sinks may require 140°F water.

F Check valves installed on the lines insure that water flows in one direction only. This prevents the mixing of hotter and cooler water.

G A shutoff valve on the incoming cold water supply line allows the system to be shut down in the event of an emergency, or when necessary for service.

Polaris® Water Heater with Dishwasher Sequence of Operations



1 As hot water is drawn from fixtures, cold water enters the water heater near the bottom, lowering the water temperature below the thermostat's set point. The thermostat activates the gas burner. The burner continues heating water until the temperature of the water at the thermostat reaches the thermostat's set point. The thermostat shuts down the burner. The heating cycle repeats itself as often as required.

(A) A toggle switch on the dishwasher is used to control power to the recirculation system. When turned on, the toggle switch energizes the electrical circuit to the circulation pump.

(B) A line temperature control activates the circulating pump, insuring that the water in the circulating line is always the required temperature and should be set at 185°F.

(C) The plug cock is used to adjust the flow of water to 3-5 gallons per minute, which reduces condensation and increases the amount of hot water available by limiting turbulence in the tank.

(D) The sanitizing line thermometer is used to verify that water leaving the tank is the required temperature.

(E) The final rinse thermometer is used by local health officials and the dishwasher operator to verify that the water temperature at the dishwasher is always 180°F, as required by the National Sanitation Foundation.

2 In two temperature systems, the mixing/tempering valve combines cold water from the cold water supply line with hot water from the system's primary hot water outlet to provide a second hot water outlet temperature according to the mixing valve's setting. The mixing valve should be set for the desired temperature according to the application's hot water requirement. For example, nursing homes may require a maximum water temperature of 105°F at showers

and other domestic water fixtures. In commercial kitchens, pot sinks may require 140°F water.

3 Tempered water outlets can be provided with or without a recirculating line. When long runs of pipe are required between the water heater and the fixtures, recirculating lines are used to eliminate wasted water and time delays while the user is waiting for usable hot water at each fixture. Recirculating lines feed hot or tempered water to fixtures and return unused water back from the furthest fixture to the water heater for reheating. Water flow through recirculating lines is controlled by a line temperature control (thermostat) that operates a bronze circulating pump. When water temperature in the recirculating line drops below the line temperature control's set point, the control turns on the pump causing hot or tempered water to circulate through the line. Flow rate in the circulating line is adjusted using a flow regulating plug cock.

(F) Dishwashers often use quick closing solenoid operated water shutoff valves that can cause water hammer. A water hammer arrestor absorbs the shock in the water piping from quick closing valves.

(G) An anti-siphon valve prevents water from the dishwasher from siphoning back into the potable water supply.

(H) Water flow into the dishwasher is control by a pressure-reducing valve installed on the hot water supply line to the dishwasher.

(I) Every water heater and dishwasher should be installed with shutoff valves and unions in water inlet and outlet lines to allow isolation and replacement of failed units without shutting off the water supply.

(J) Check valves installed on the lines insure that water flows in one direction only. This prevents the mixing of hot and cold water.

(K) A shutoff valve on the incoming cold water supply line allows the system to be shut down in the event of an emergency, or when necessary for service.

Notes

[illegible]

Notes

[illegible]

POLARIS®

DEPARTMENT	HOURS OF OPERATION*	PHONE	FAX
Sales/Order Entry	8 AM – 6:30 PM (M,T) 8 AM – 5:30 PM (W-F)	800-937-1037	800-581-7224
Residential Product Service and Support	8 AM – 7 PM (M) 8 AM - 8 PM (T-F) 9 AM – 6 PM (Sat.)	800-999-9515	800-999-5210
Commercial Product /Polaris® Service and Support	8 AM – 7 PM (M) 8 AM – 8 PM (T-F) 9 AM – 6 PM (Sat.)	800-456-9805	800-999-5210
Warranty Claims	8 AM – 5 PM (M-F)	800-999-5052	800-999-5210
General Information	8 AM – 5 PM (M-F)	423-283-8000	423-283-8050
International Sales	8 AM – 5 PM (M-F)	423-283-8176	423-283-8137
Literature Fulfillment	8 AM – 5 PM (M-F)	888-301-3240	615-778-0874
Promotional Items	8 AM – 5 PM (M-F)	888-301-3240	615-778-0874
Credit/Collections	8 AM – 5 PM (M-F) * Operating Hours Based On Eastern Time	423-283-1679	423-975-2458

www.americanwaterheater.com

WARRANTY AND SERVICE

500 Princeton Road (FEDEX, UPS)
Johnson City, TN 37601-2030
P.O. Box 1597 (Mailing)
Johnson City, TN 37605-1597
(800) 999-9515
FAX (800) 999-5210

ORDER ENTRY & SALES

500 Princeton Road (FEDEX, UPS)
Johnson City, TN 37601-2030
P.O. Box 4808 (Mailing)
Johnson City, TN 37602-4808
(800) 937-1037
FAX (800) 581-7224