

Worcester wiring guide

Greenstar gas-fired boilers

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Introduction

NEW COMPLETE SYSTEM INSTALLATIONS

If a new complete heating system installation is in a new build property or it is a first time installation in an existing property, then the heating system must conform to current building regulations Part L1a. All new heating systems in dwellings must have at least two heating zones. Each of these zones will be controlled by a thermostat and zone valve. An alternative would be individual electronically controlled TRVs. If the hot water is provided from a storage system then the DHW cylinder will require separate time and temperature control. All radiators must have TRVs fitted in all rooms except bathrooms and rooms with thermostats. The exception to this are single storey, open plan dwellings where the living area is more than 70% of the total useable floor area. Then this type of dwelling can be controlled as one zone.

EXISTING INSTALLATIONS

For boiler replacements on an existing system, it is not necessary to zone the upstairs and downstairs differently, compliance with the zone requirements can be achieved by a single room thermostat or programmable room thermostat. While the system is drained down, TRVs may be fitted to all rooms except the bathrooms and the room with the thermostat.

Greenstar Ri Regular

2 x 2 Port Valves (S-Plan)

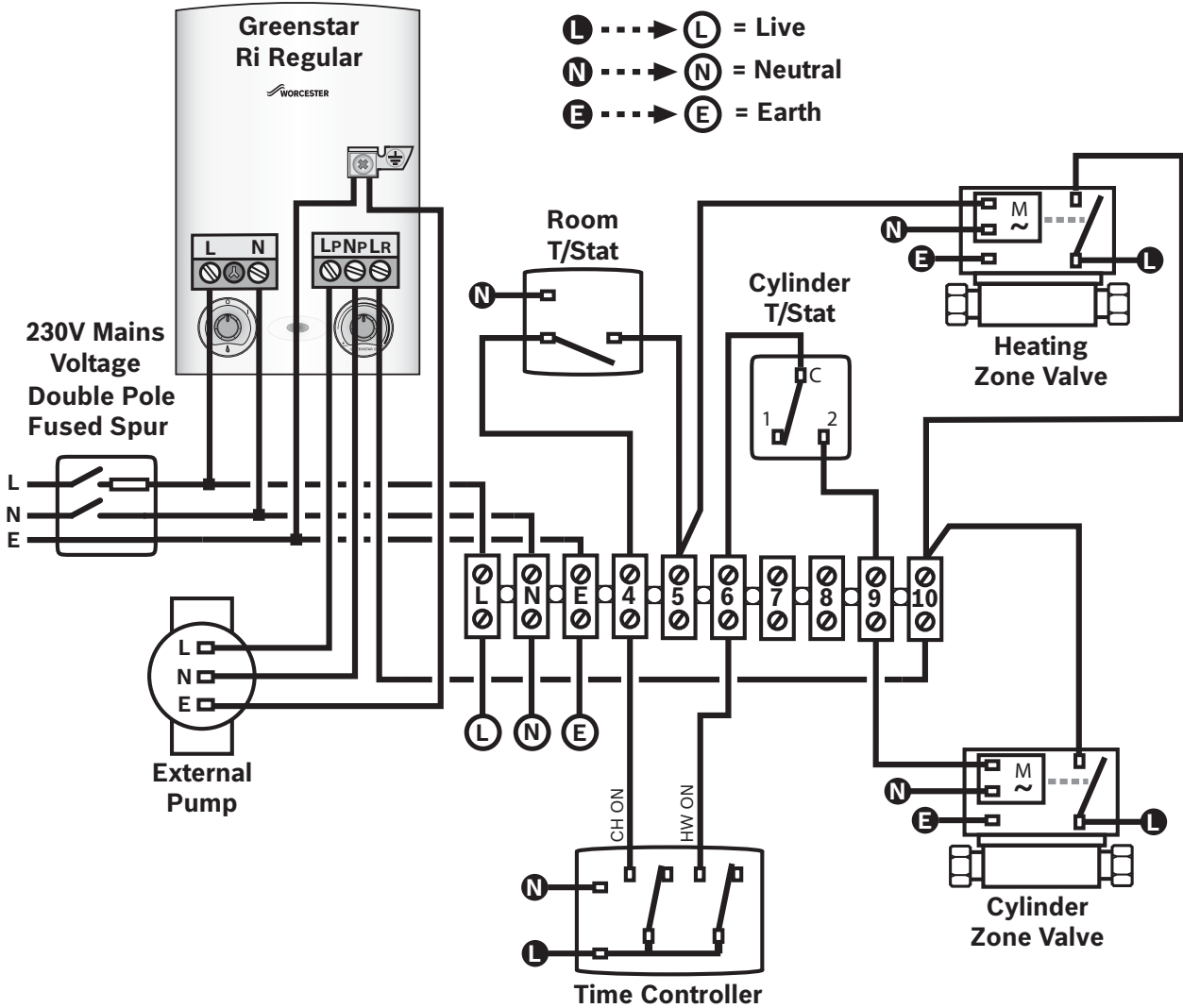


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth

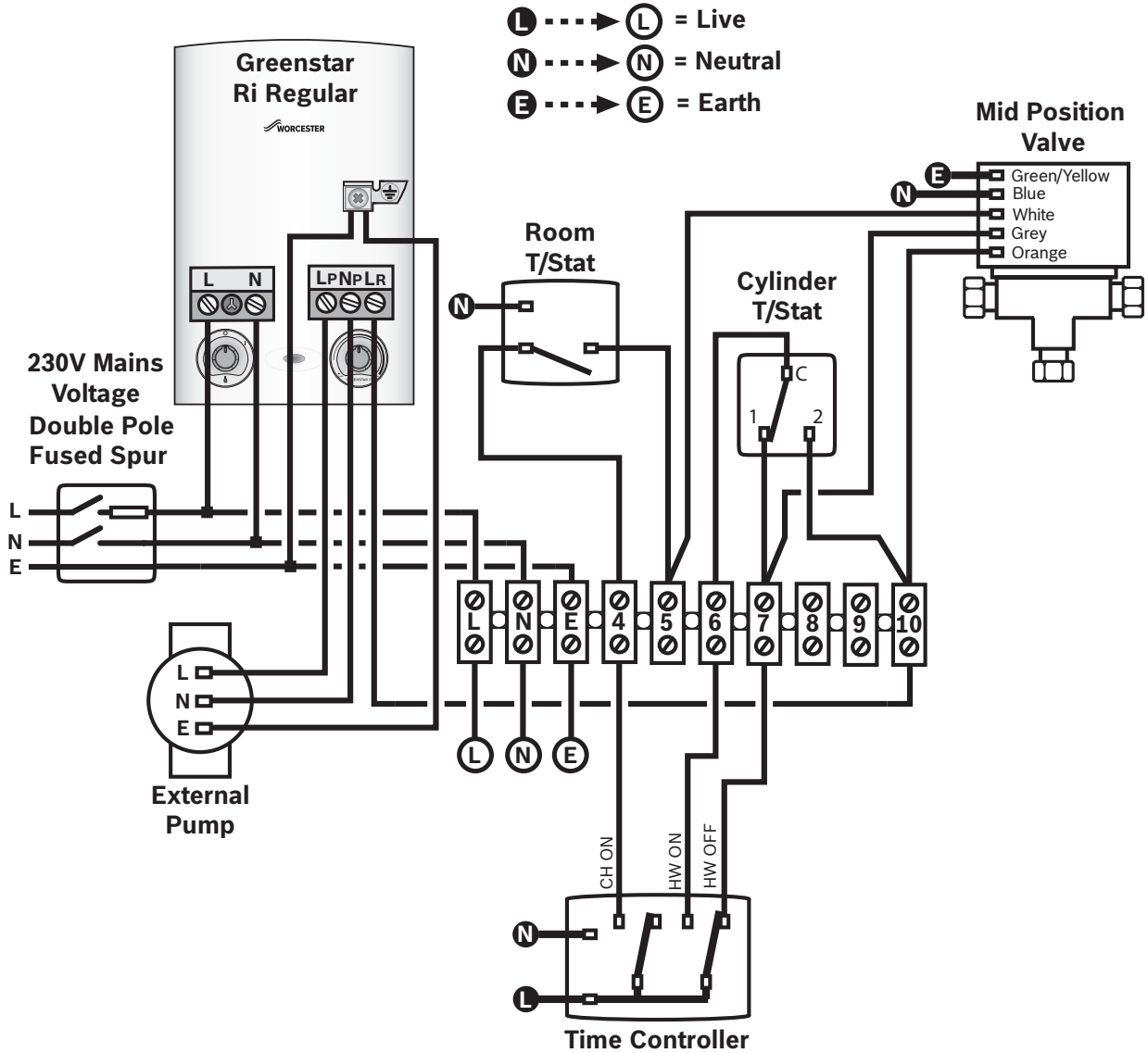


Greenstar Ri Regular Mid Position Valve (Y-Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth



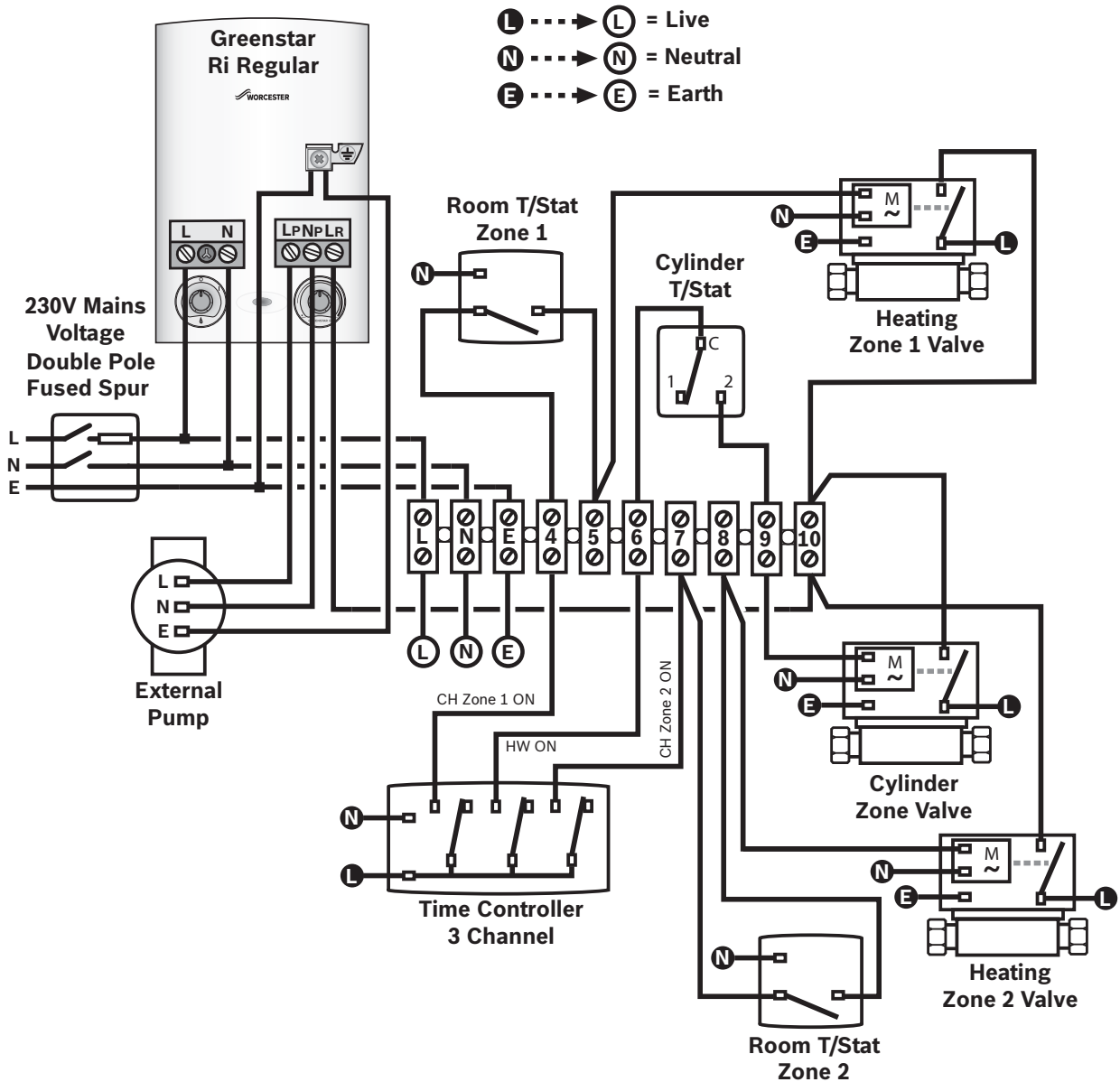
Greenstar Ri Regular

3 x 2 Port Valves (S-Plan Plus)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ---> ○ = Live ● ---> ○ = Neutral ● ---> ○ = Earth



Greenstar Ri Regular

2 x Radiator Heating Zones

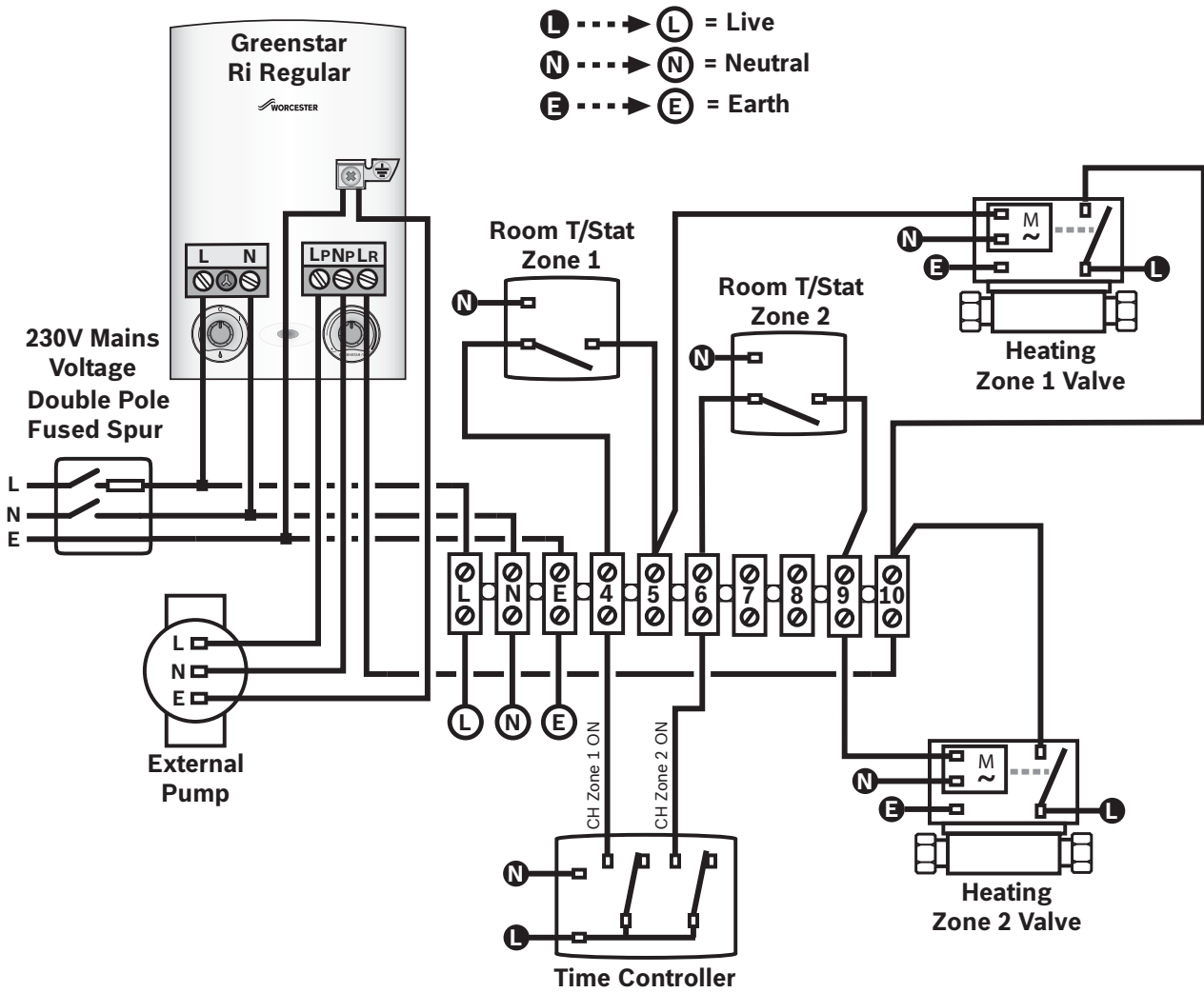


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



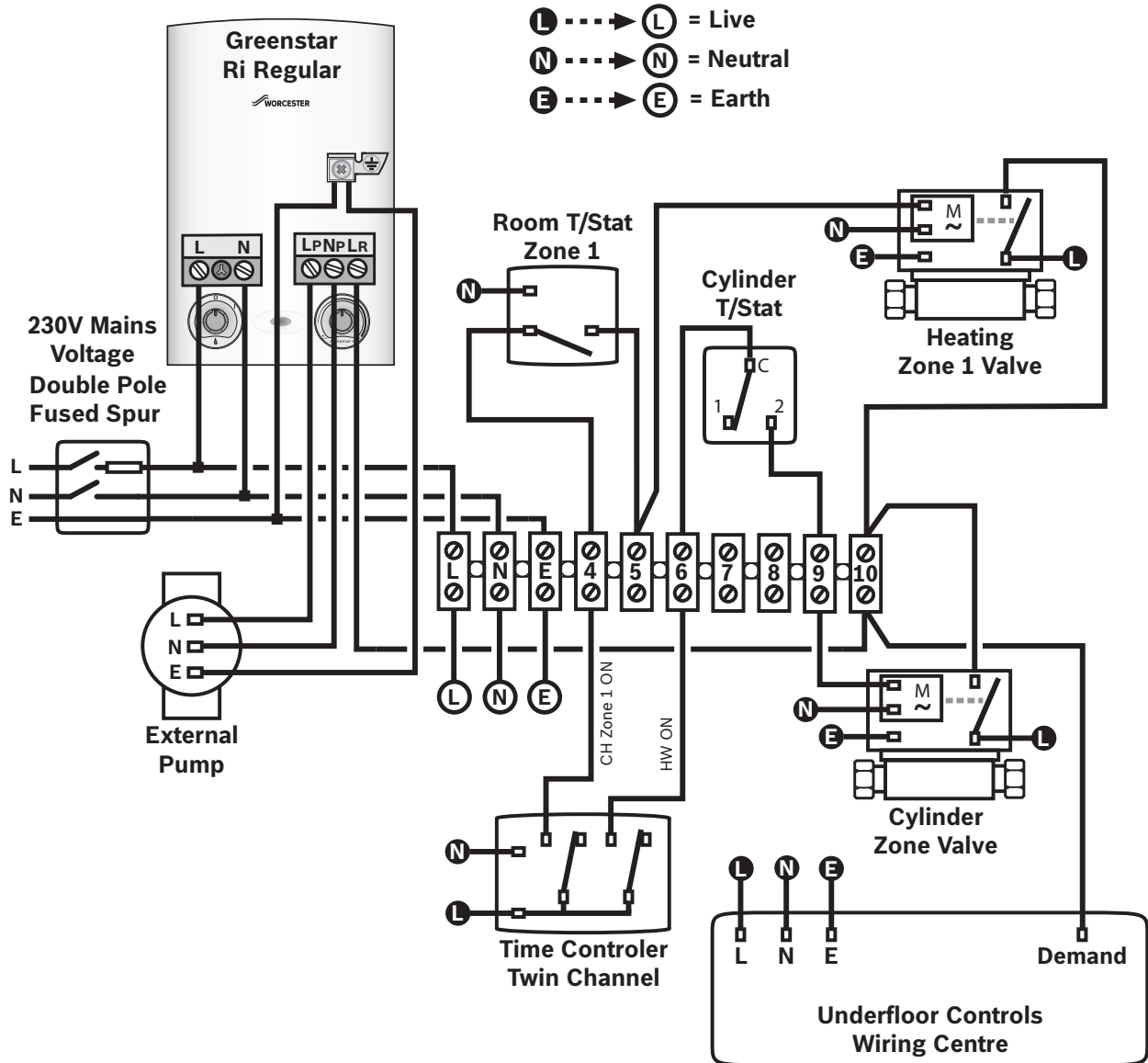
Greenstar Ri Regular

2 x 2 Port Valves & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
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● ----> ○ = Live ● ----> ○ = Neutral ● ----> ○ = Earth



Greenstar Ri Regular

Zoned Radiator & Underfloor Heating

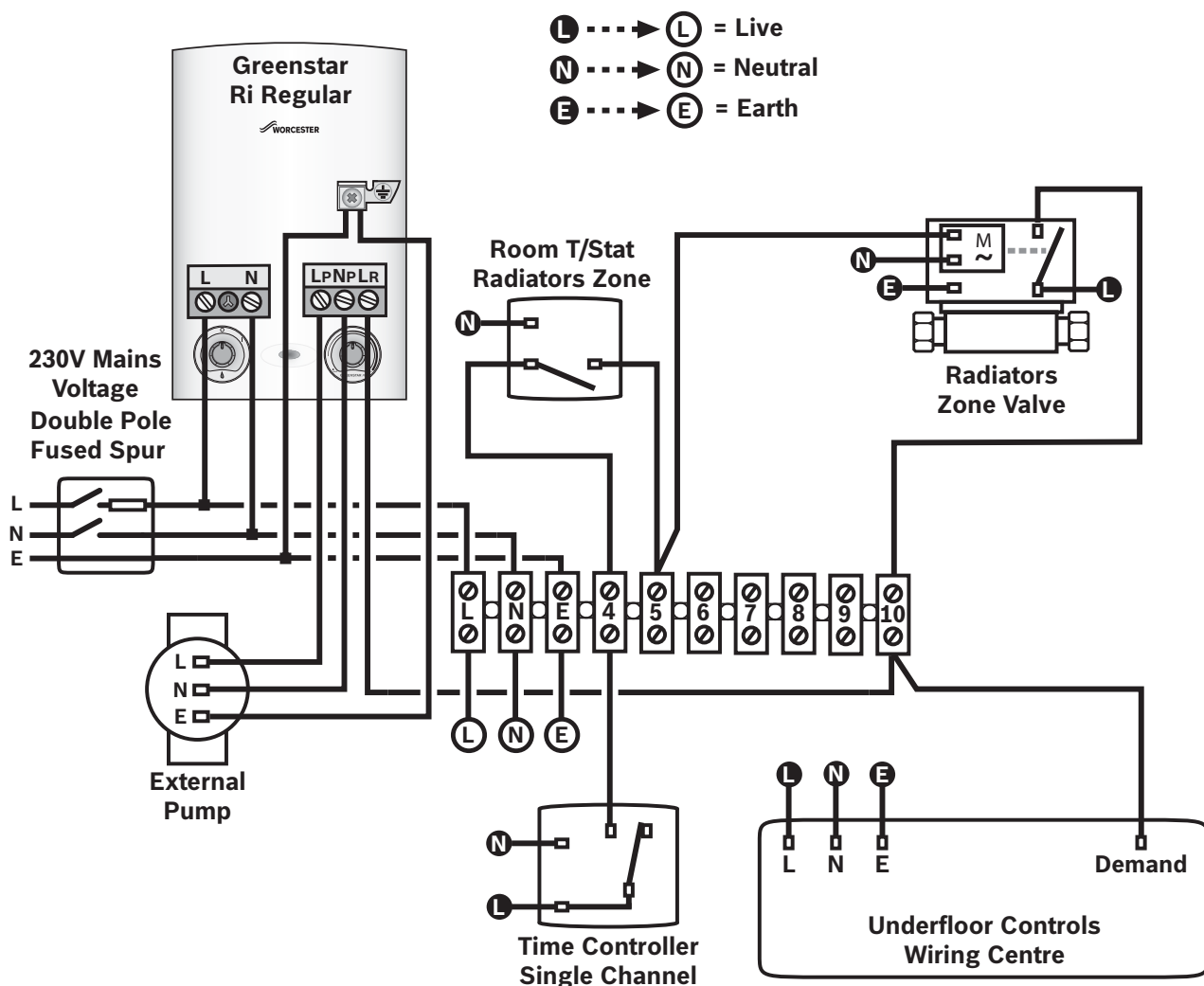


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 = Neutral

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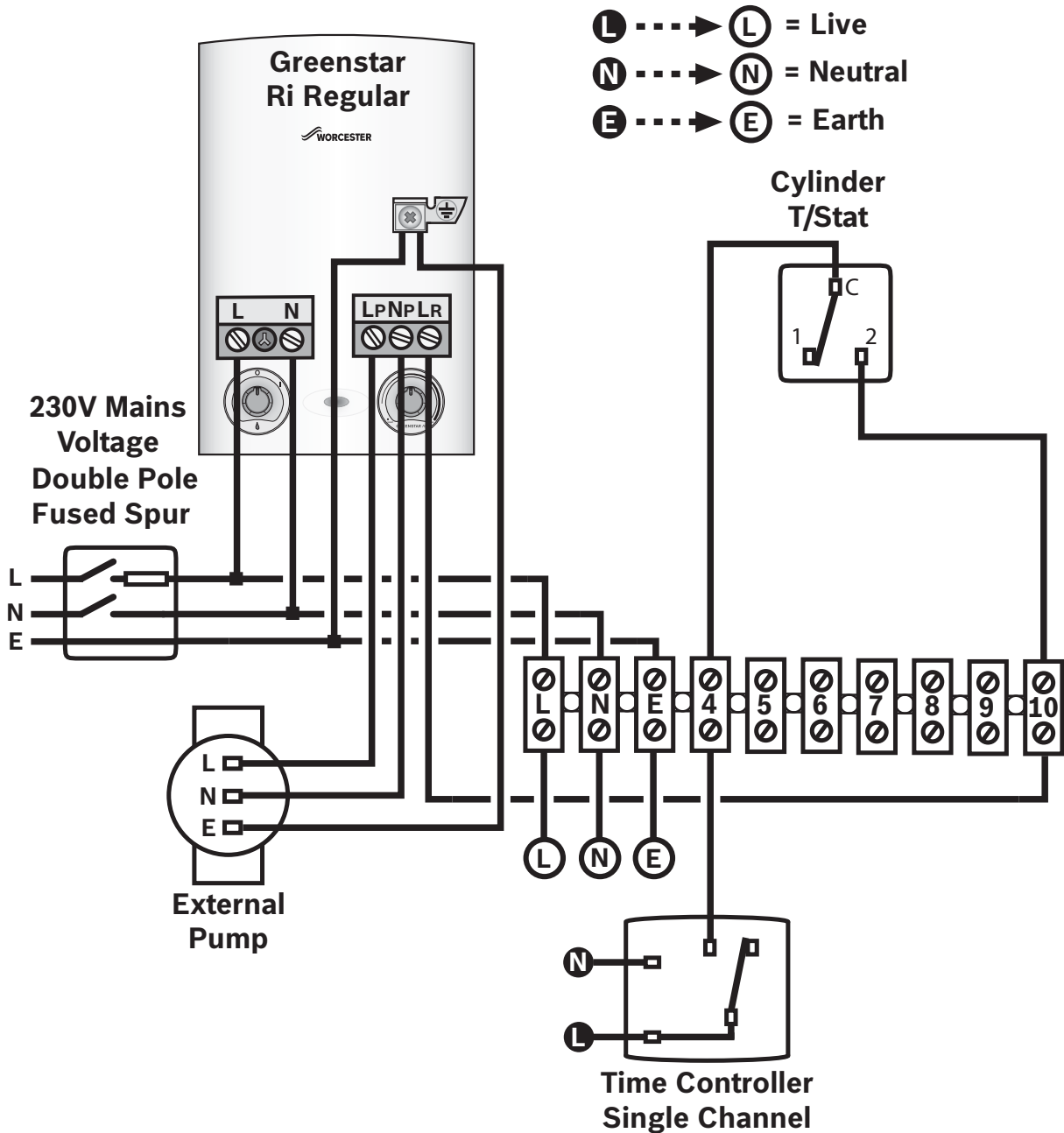
Greenstar Ri Regular

Single Hot Water Zone (Vented Cylinder)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
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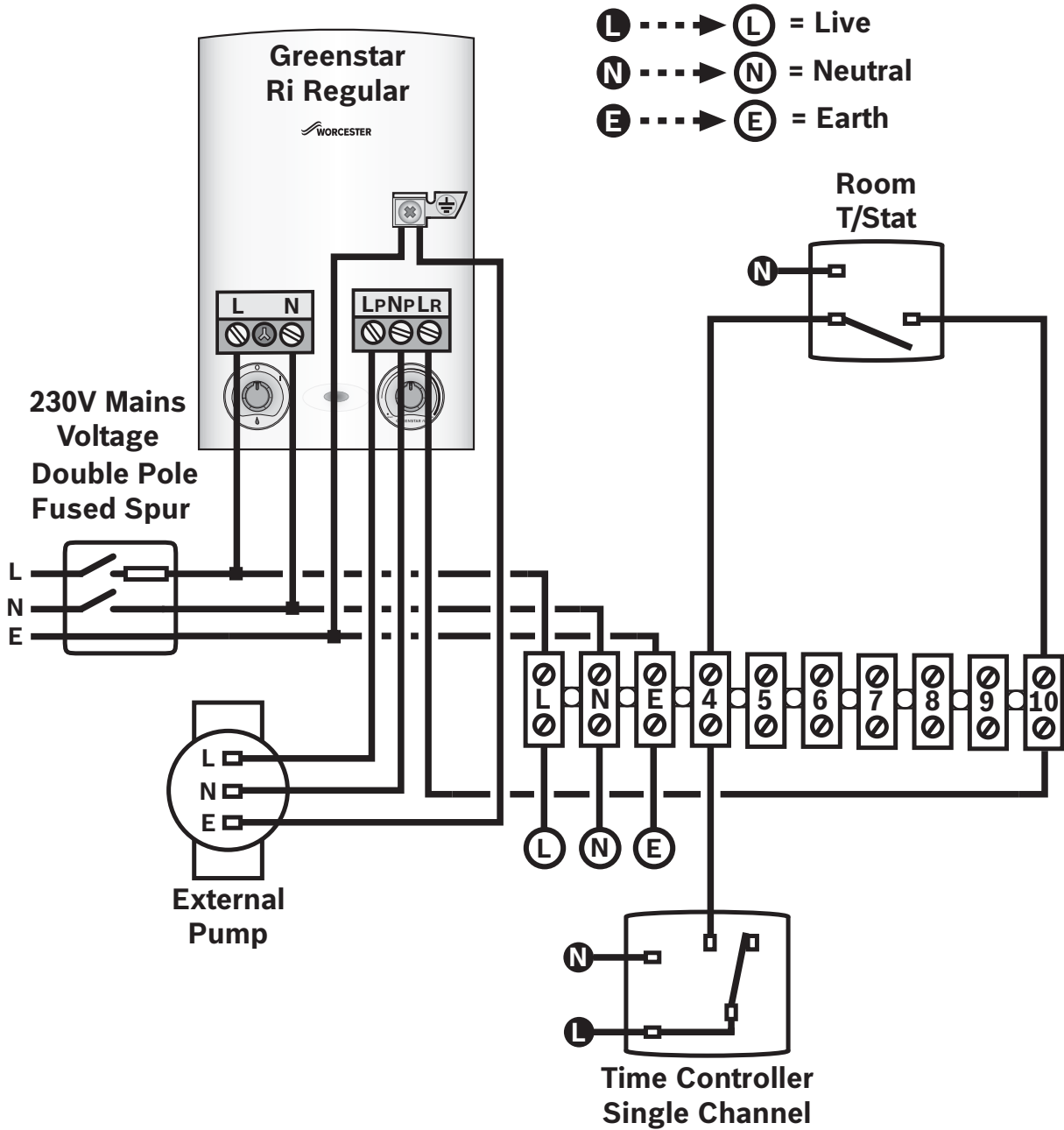


Greenstar Ri Regular Single Heating Zone



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
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Greenstar Ri Regular Grundfos Pump Plan

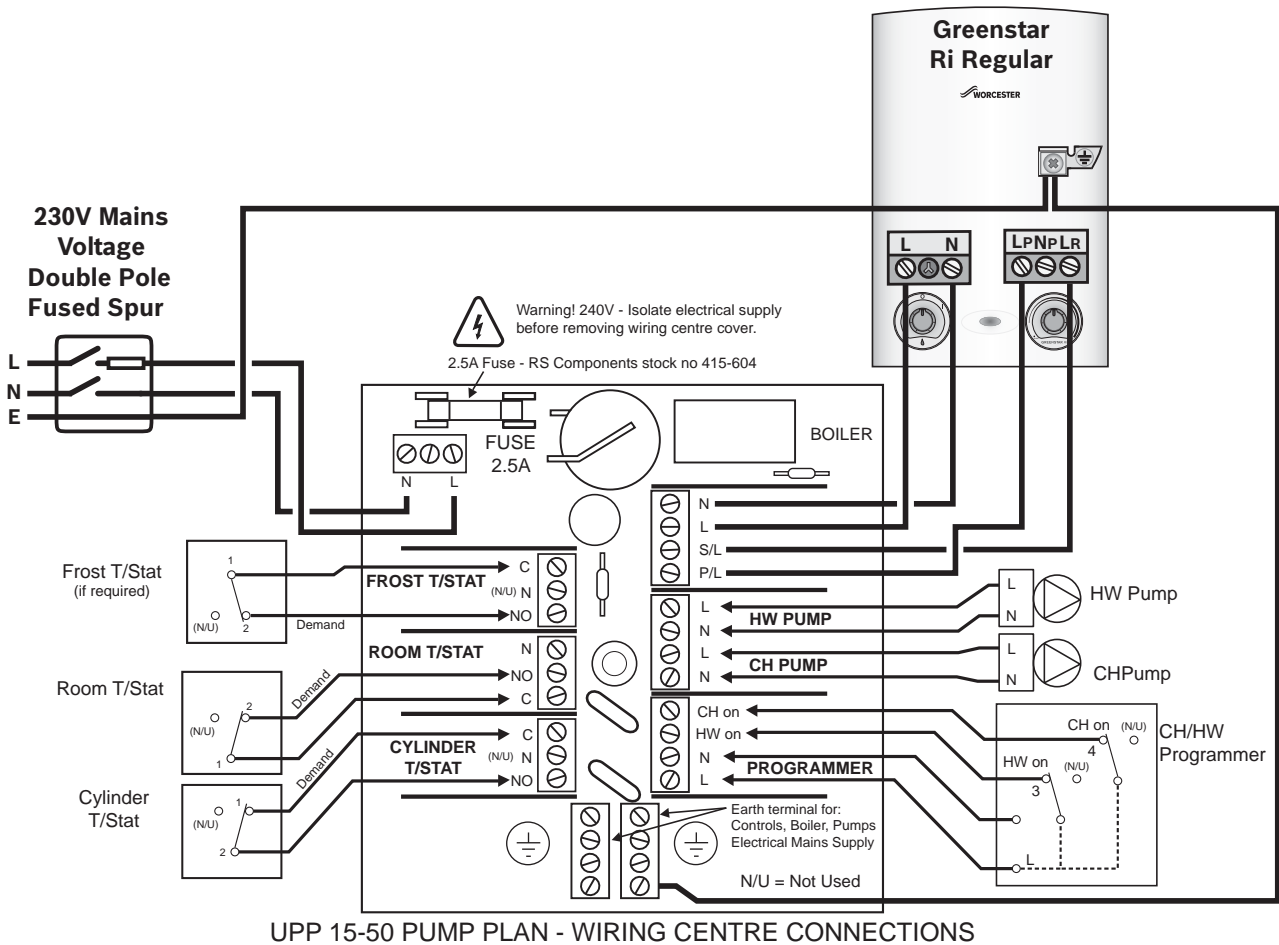


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

IMPORTANT NOTE

The pump over-run of the pump plan module, causes the hot water pump to run regardless of the hot water cylinder demand, to dissipate boiler heat. Worcester will only recommend the Grundfos pump plan system on a vented cylinder.

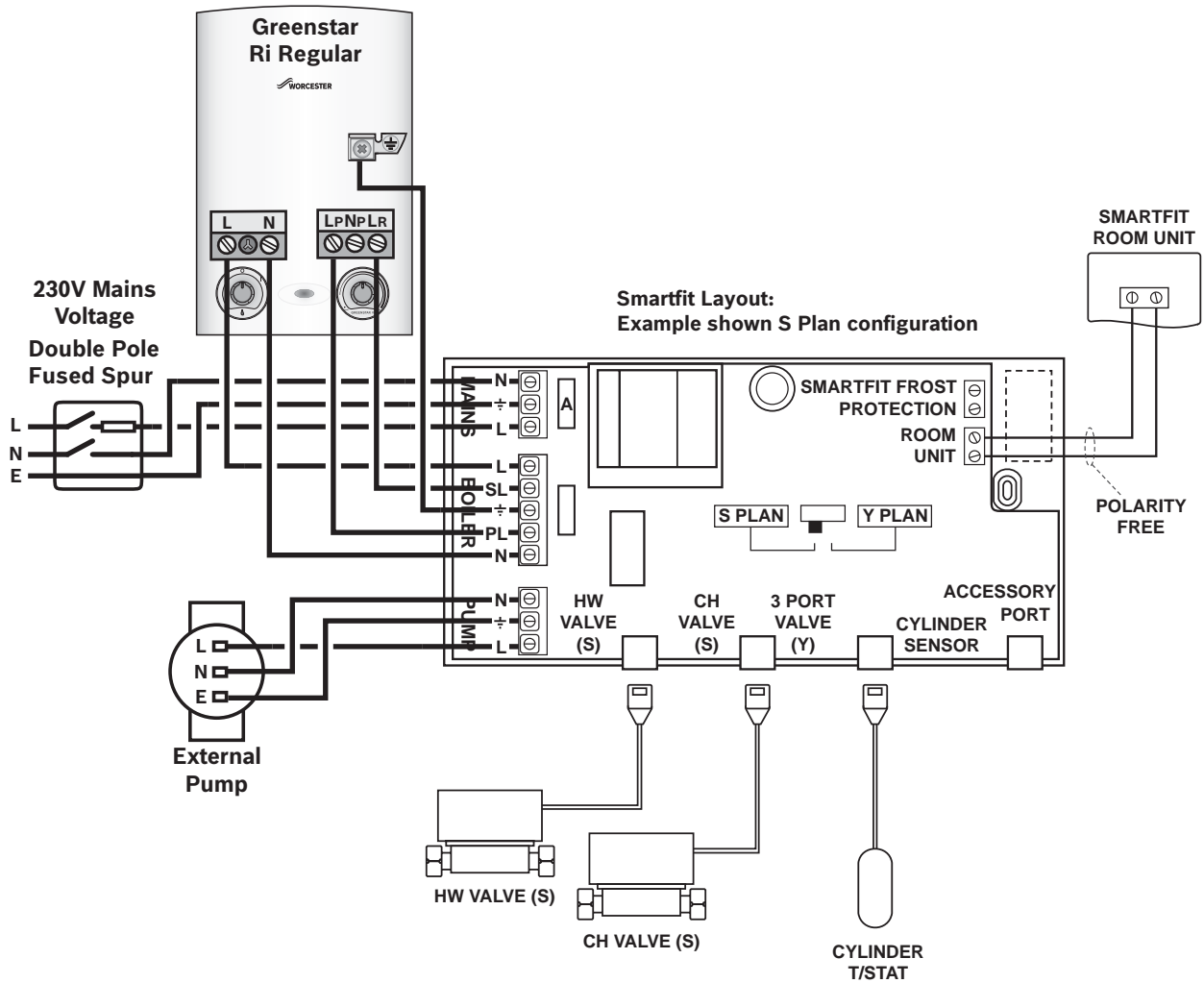


Greenstar Ri Regular Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth



Greenstar Ri Regular

Cascaded boilers with low loss header



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

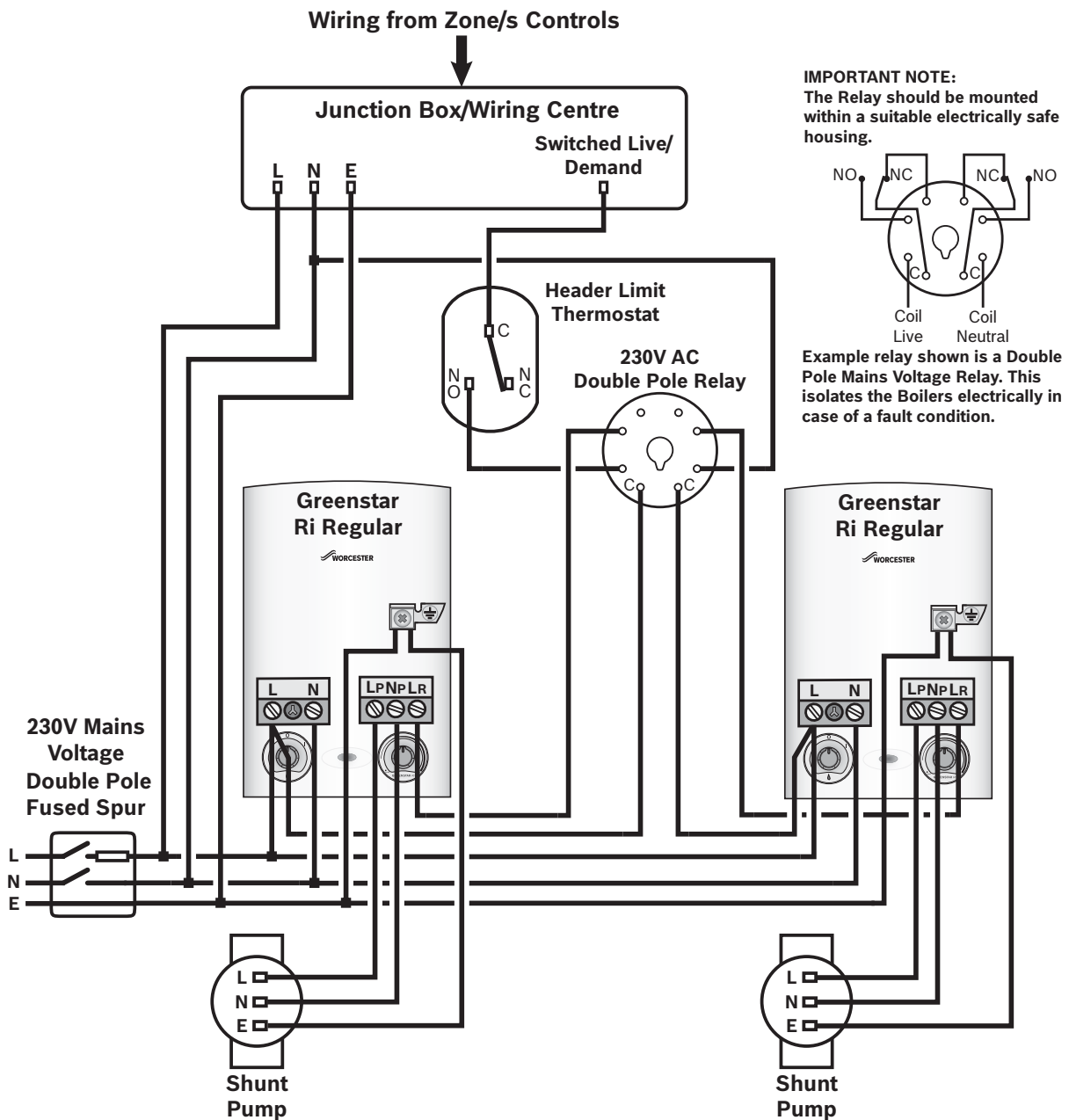
●---● = Live ●---● = Neutral ●---● = Earth

NOTE

A pump must be wired to each boiler for pump over-run to dissipate heat from within the boiler. The connections are Live of pump to LP and Neutral of pump to NP and the Earth of the pump to the Earth point of each boiler.

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90° C.



Greenstar Ri Regular Frost Protection

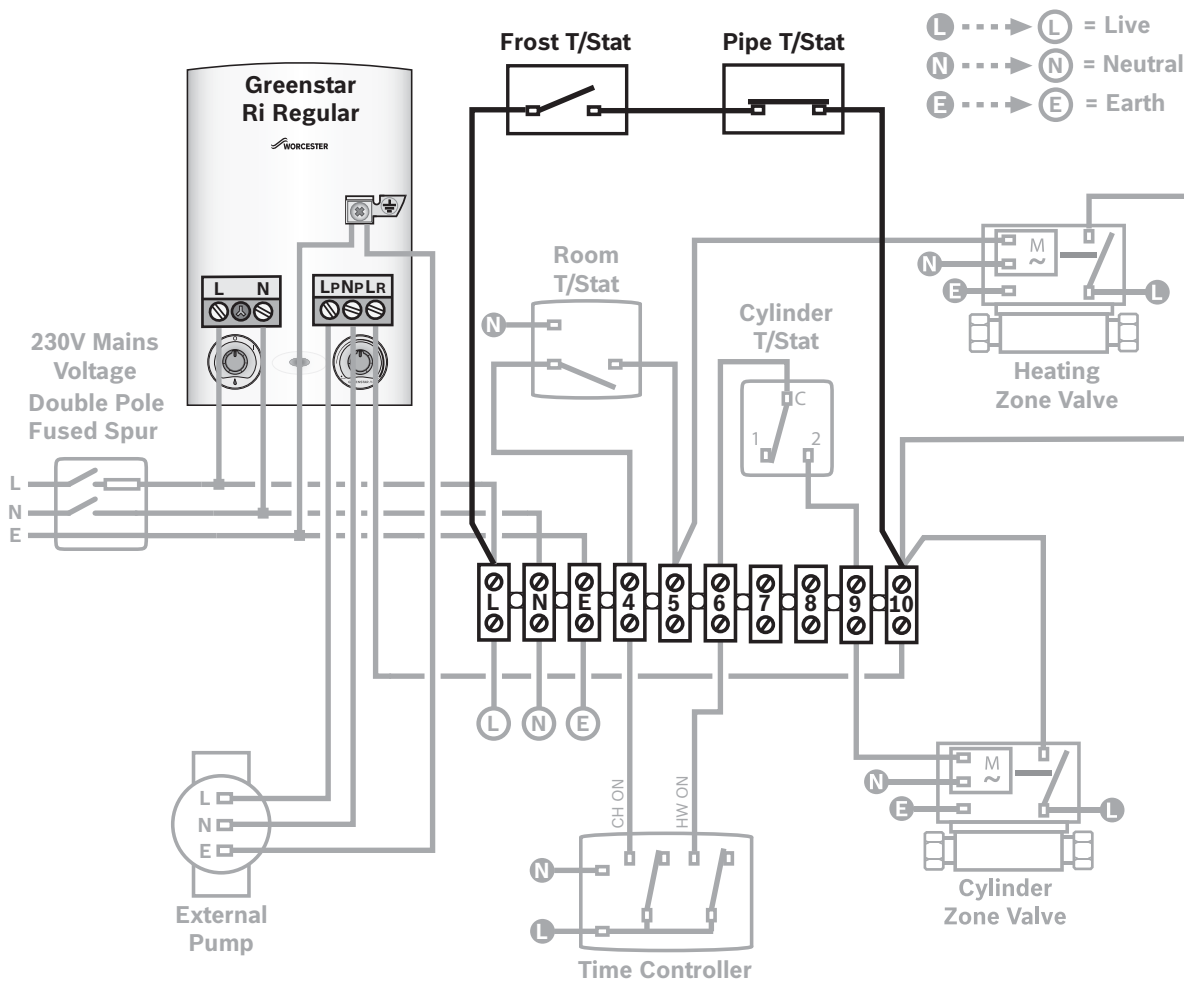


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ---> ○ = Live ● ---> ○ = Neutral ● ---> ○ = Earth

NOTE

A frost thermostat is normally used to protect locations which have no heat source e.g. a garage. It is recommended that a pipe thermostat is also used (wired in series with the frost thermostat) to avoid long periods of heat demand if the air temperature does not satisfy the frost thermostat.



Greenstar CDi Regular

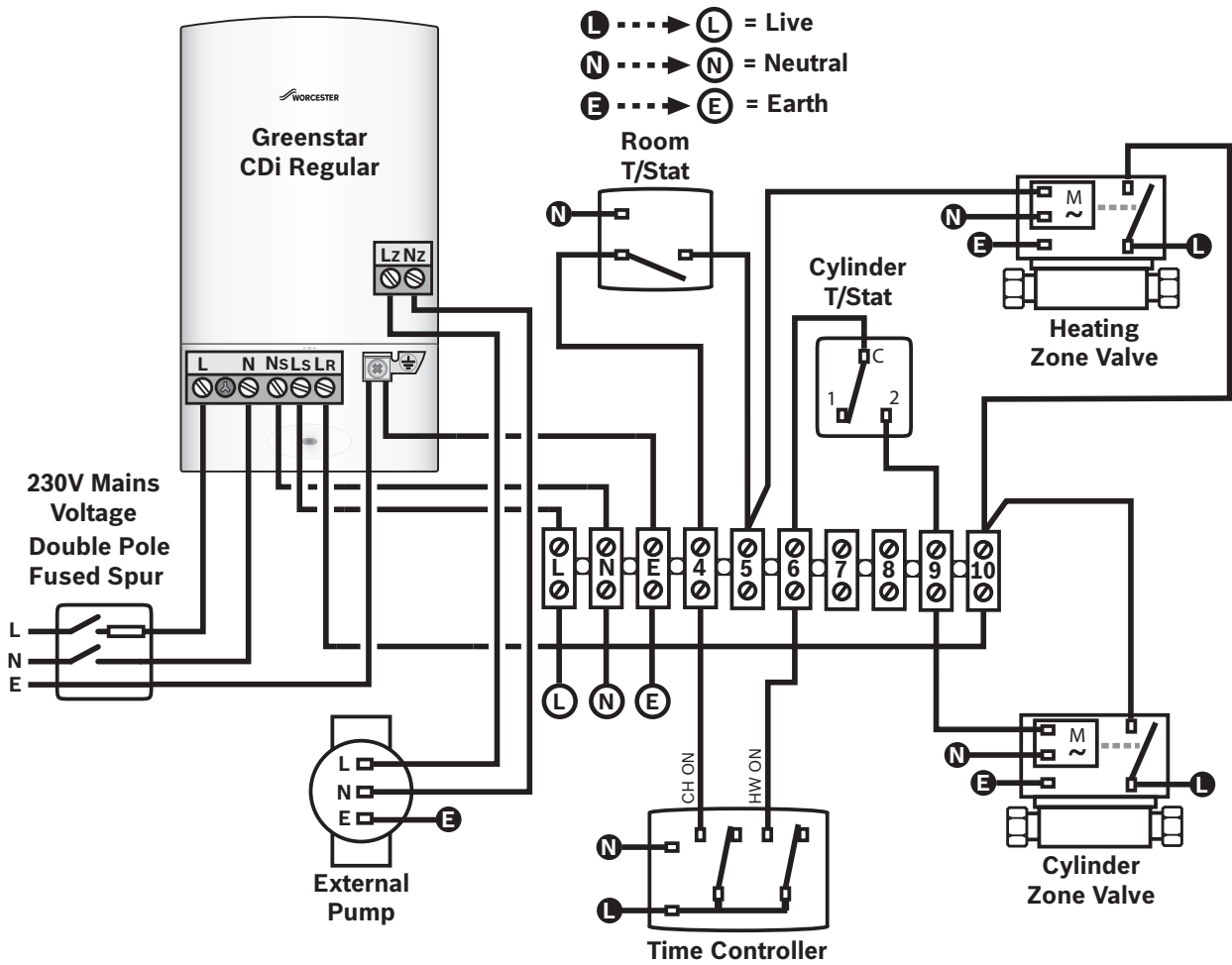
2 x 2 Port Valves (S-Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

Ⓛ --- Ⓛ = Live Ⓝ --- Ⓝ = Neutral ⓔ --- ⓔ = Earth

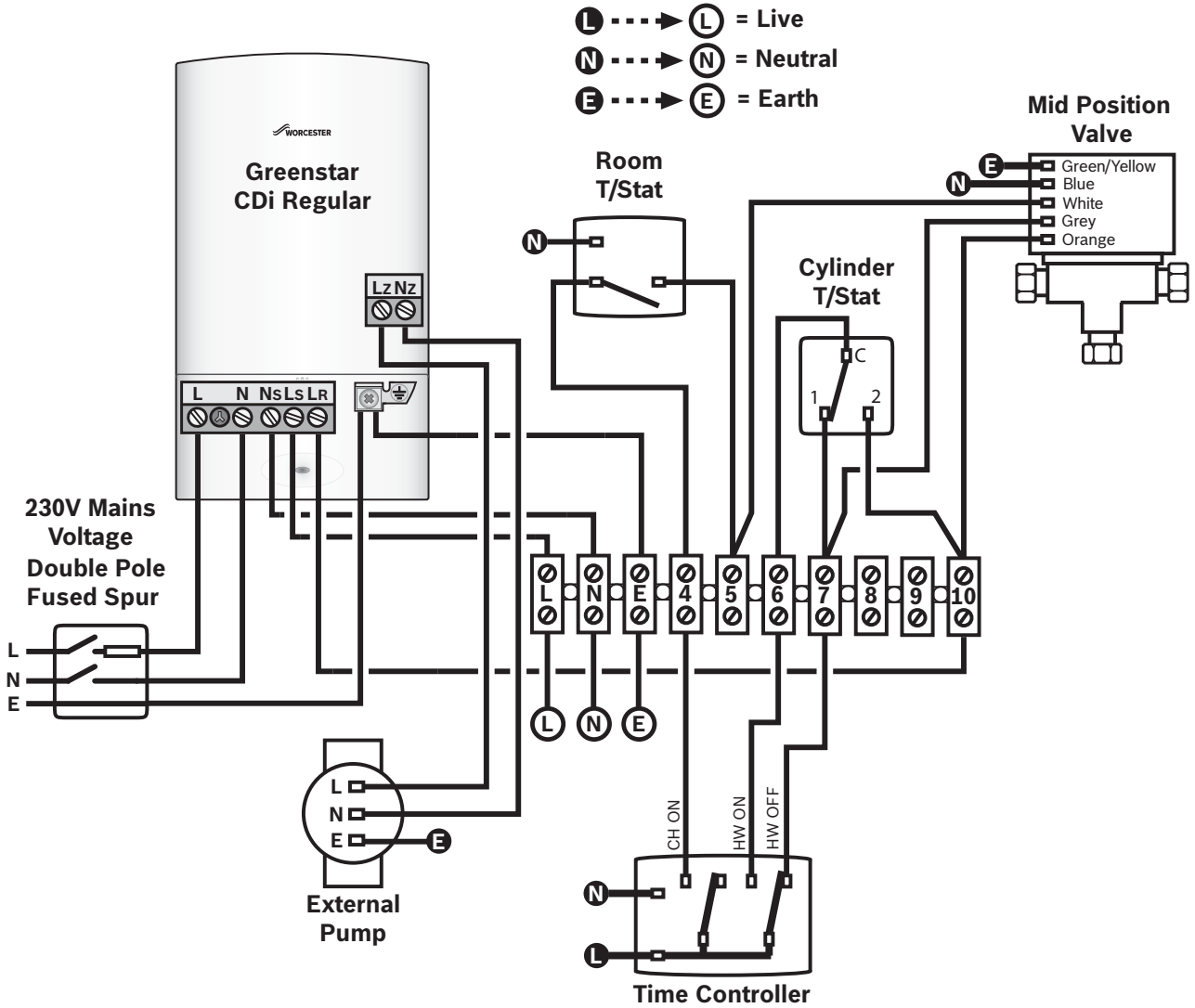


Greenstar CDi Regular Mid Position Valve (Y-plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ----> ● = Live ● ----> ● = Neutral ● ----> ● = Earth



Greenstar CDi Regular

3 x 2 Port Valves (S-Plan Plus)



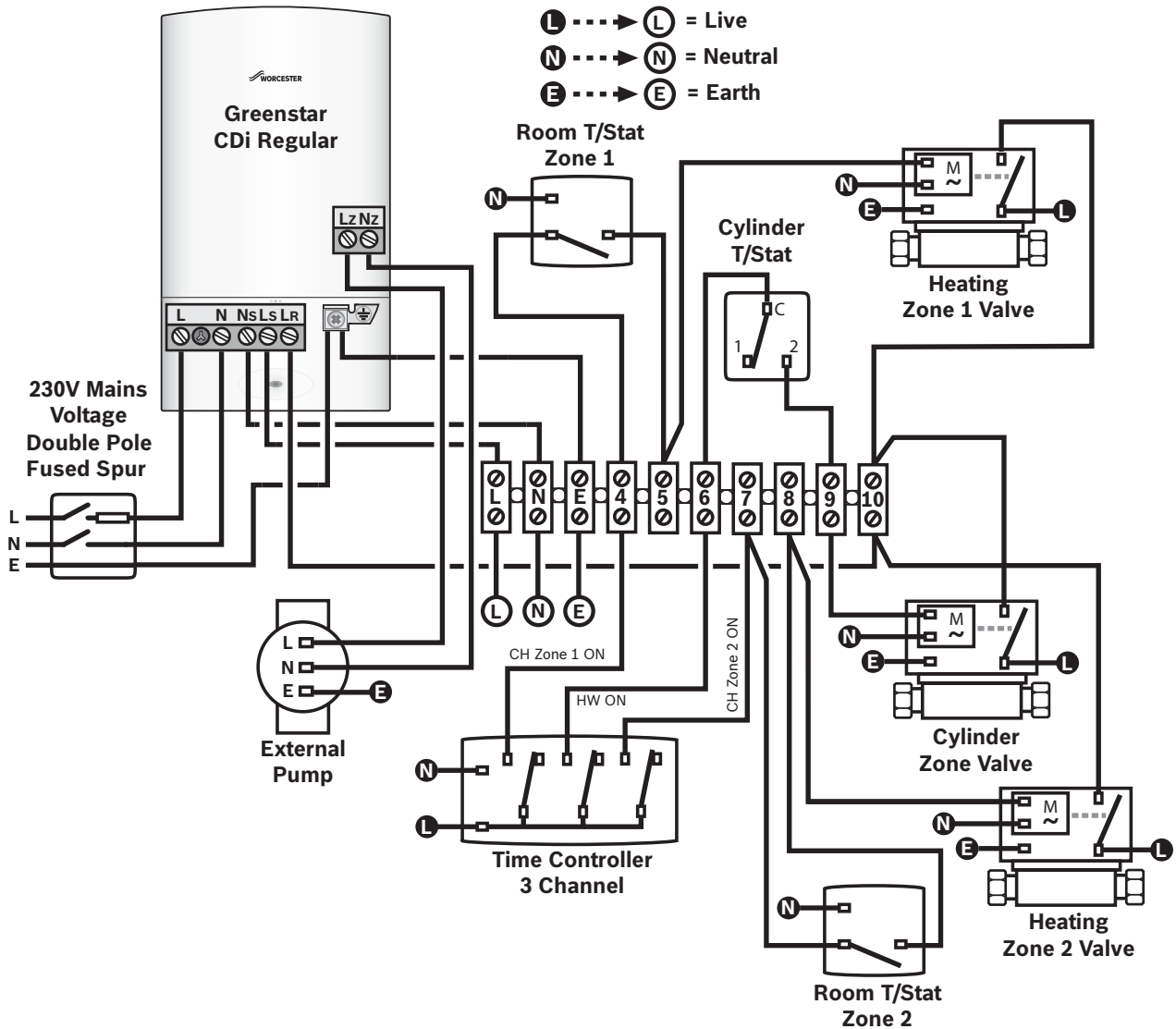
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar CDi Regular

2 x 2 Port Valves & Underfloor Heating

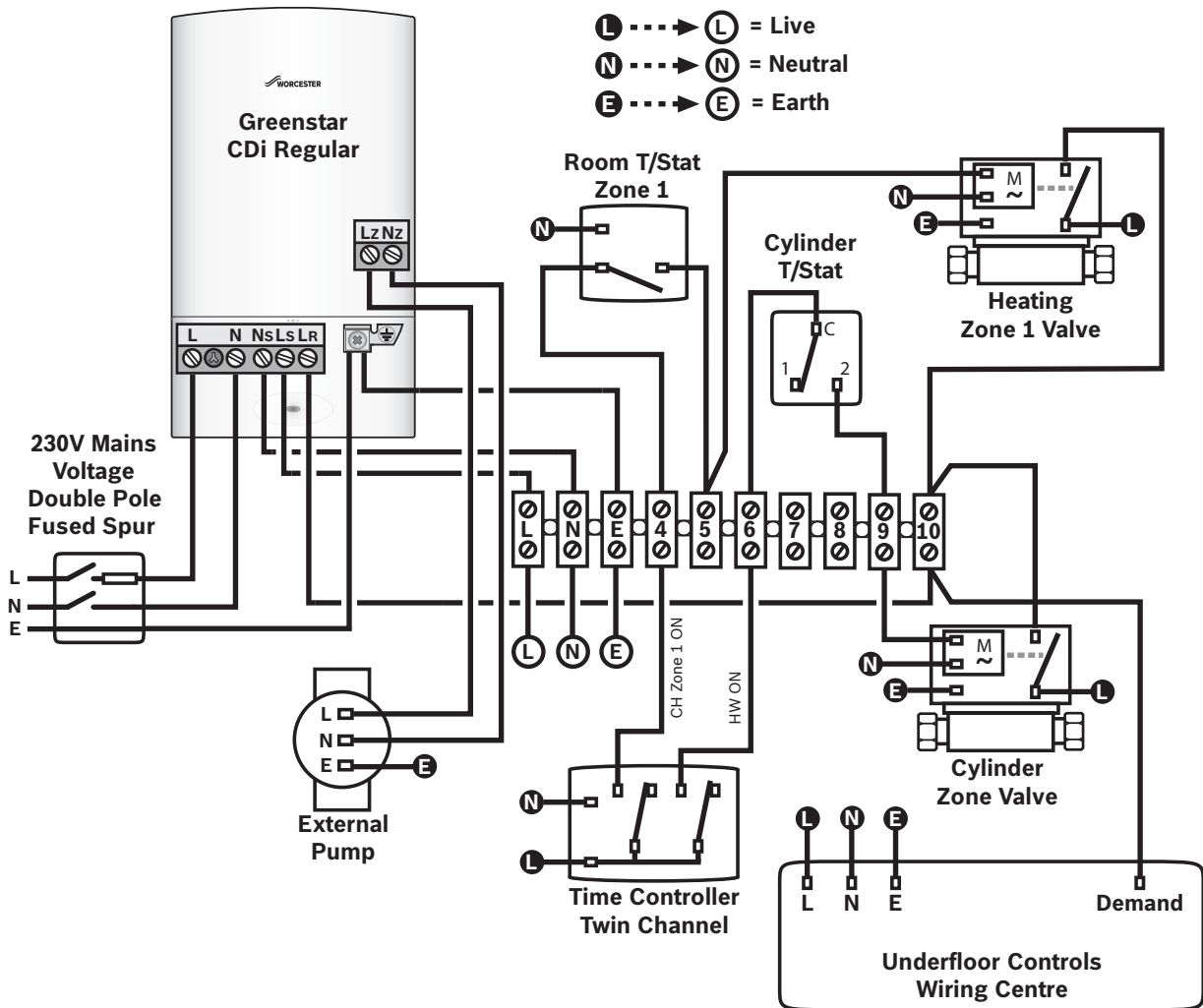


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar CDi Regular

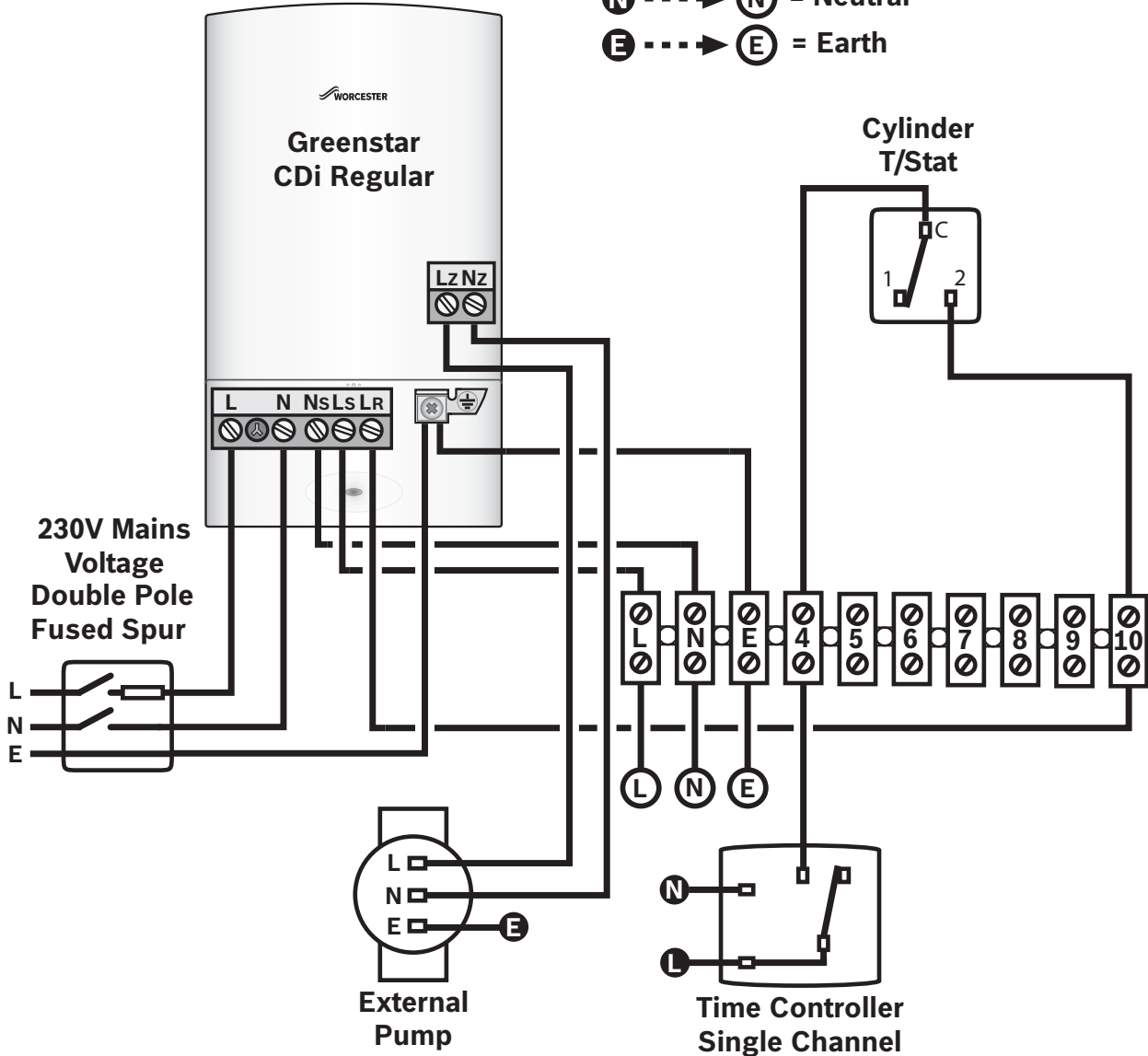
Single Hot Water Zone (Vented Cylinder)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral ⓔ → ⓔ = Earth

Ⓛ → Ⓛ = Live
Ⓝ → Ⓝ = Neutral
ⓔ → ⓔ = Earth



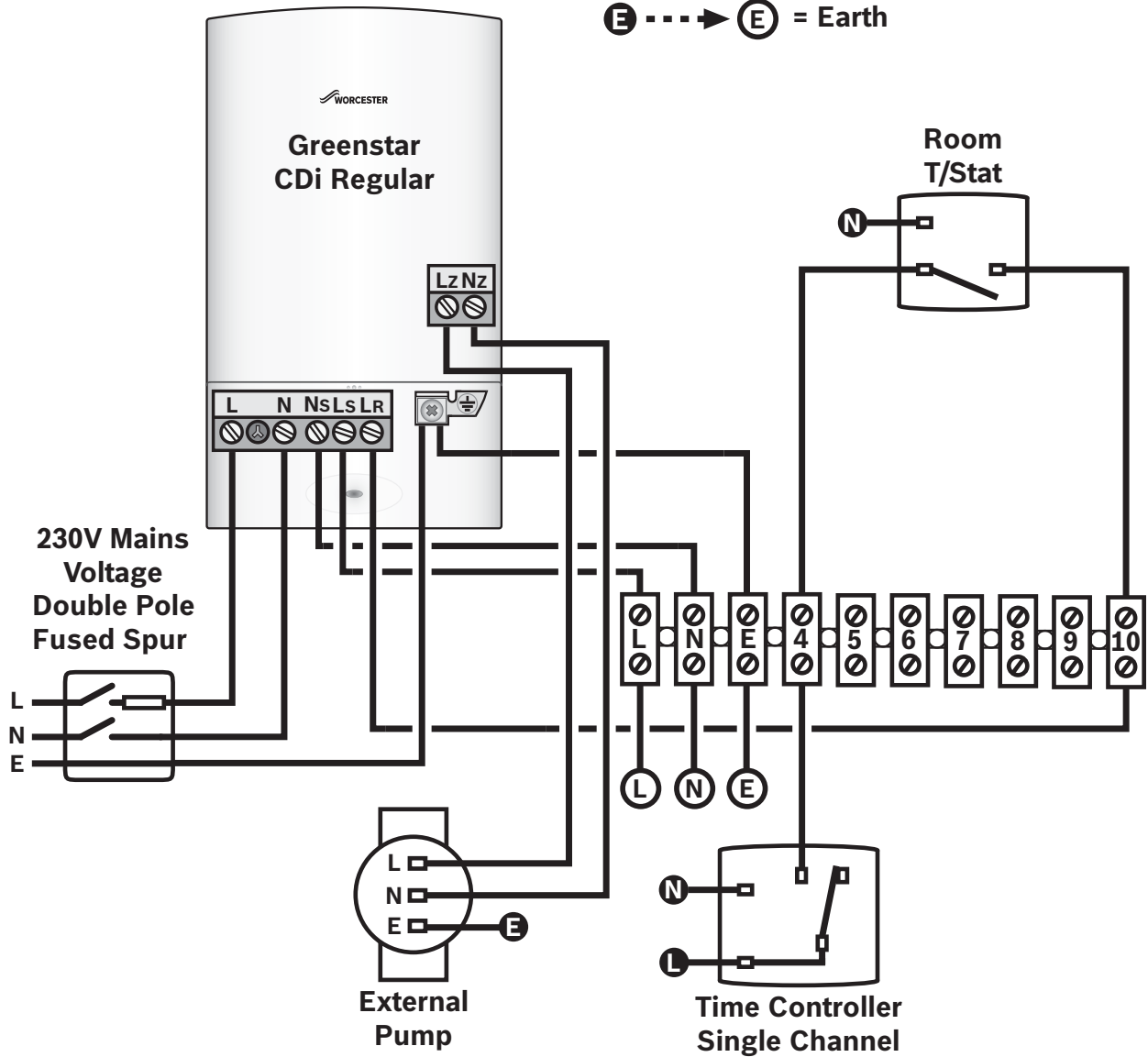
Greenstar CDi Regular Single Heating Zone



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth

Ⓛ → Ⓛ = Live
Ⓝ → Ⓝ = Neutral
Ⓧ → Ⓧ = Earth



Greenstar CDi Regular Grundfos Pump Plan

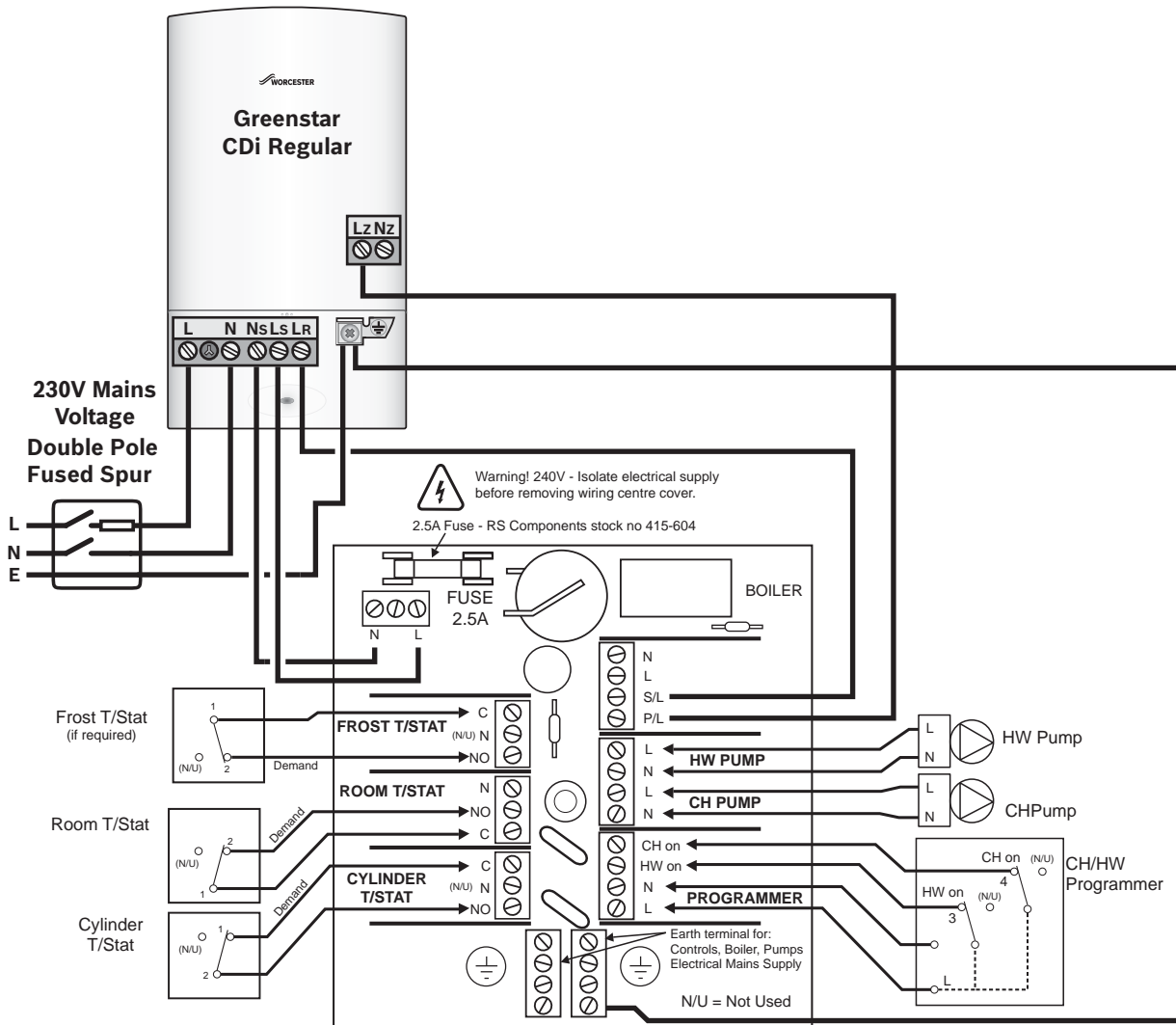


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● --- ● = Live ● --- ● = Neutral ● --- ● = Earth

IMPORTANT NOTE

The pump over-run of the pump plan controls, causes the hot water pump to run regardless of the hot water cylinder demand, to dissipate boiler heat. Worcester would only recommend the Grundfos pump plan system on a vented cylinder.



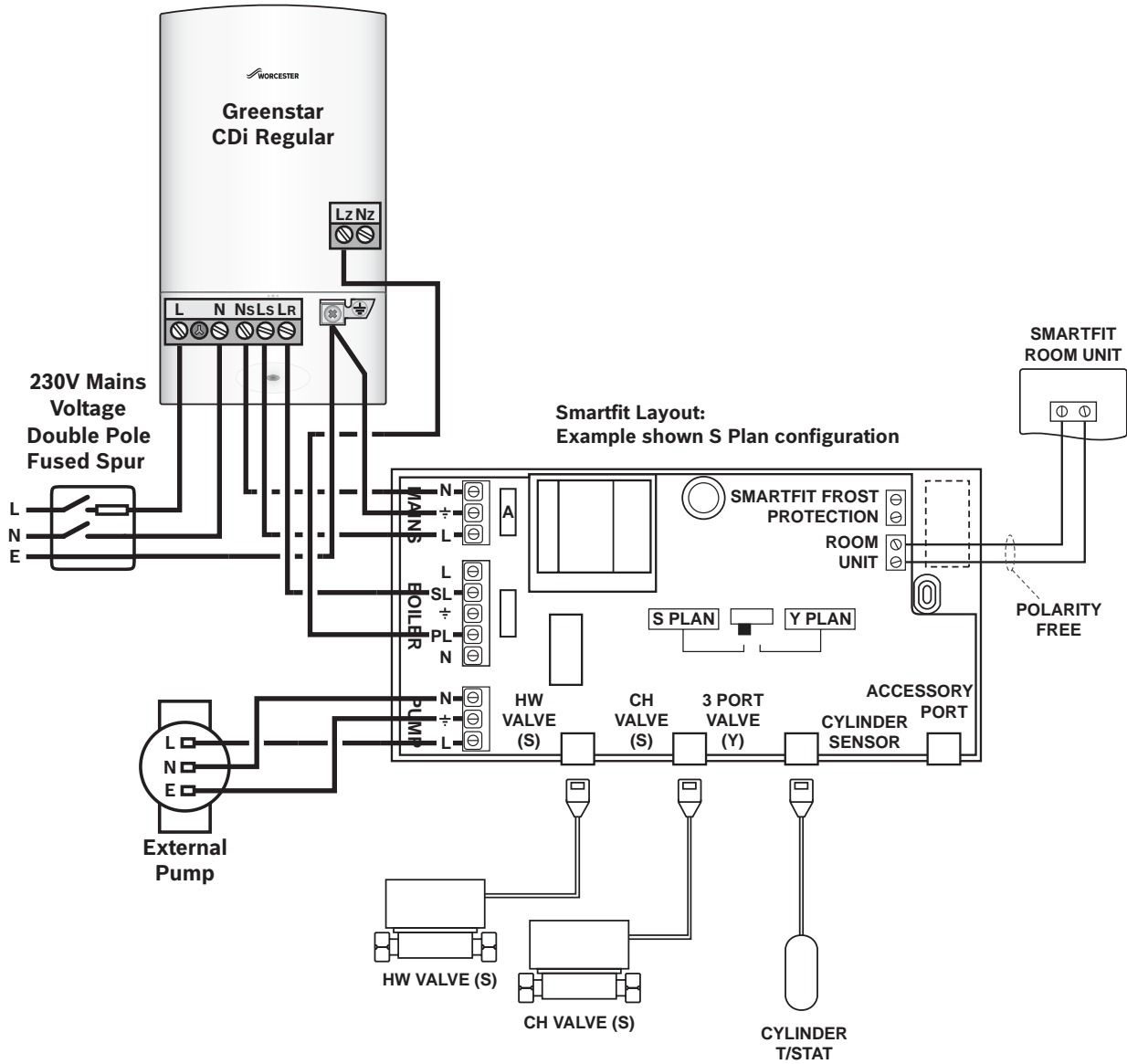
UPP 15-50 PUMP PLAN - WIRING CENTRE CONNECTIONS

Greenstar CDi Regular Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● --- ● = Live ● --- ● = Neutral ● --- ● = Earth



Greenstar CDi Regular

Cascaded boilers with low loss header



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

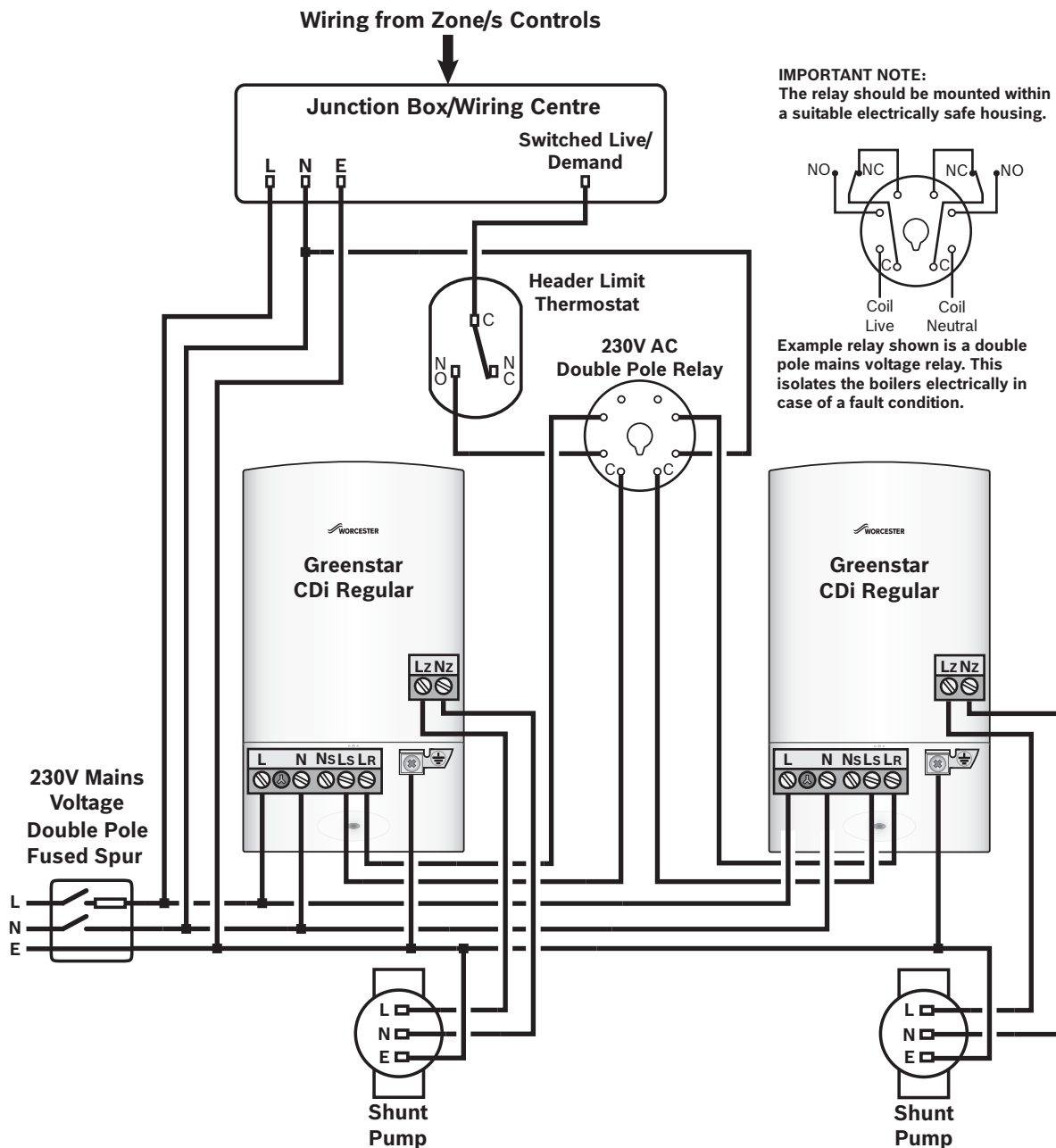
●---● = Live ●---● = Neutral ●---● = Earth

NOTE

A pump must be wired to each boiler for pump over-run function to dissipate heat from within the boiler. The connections are pump live to Lz, pump neutral to Nz and pump earth to the Earth point of each boiler.

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90°C.



Greenstar CDi Regular

Frost Protection



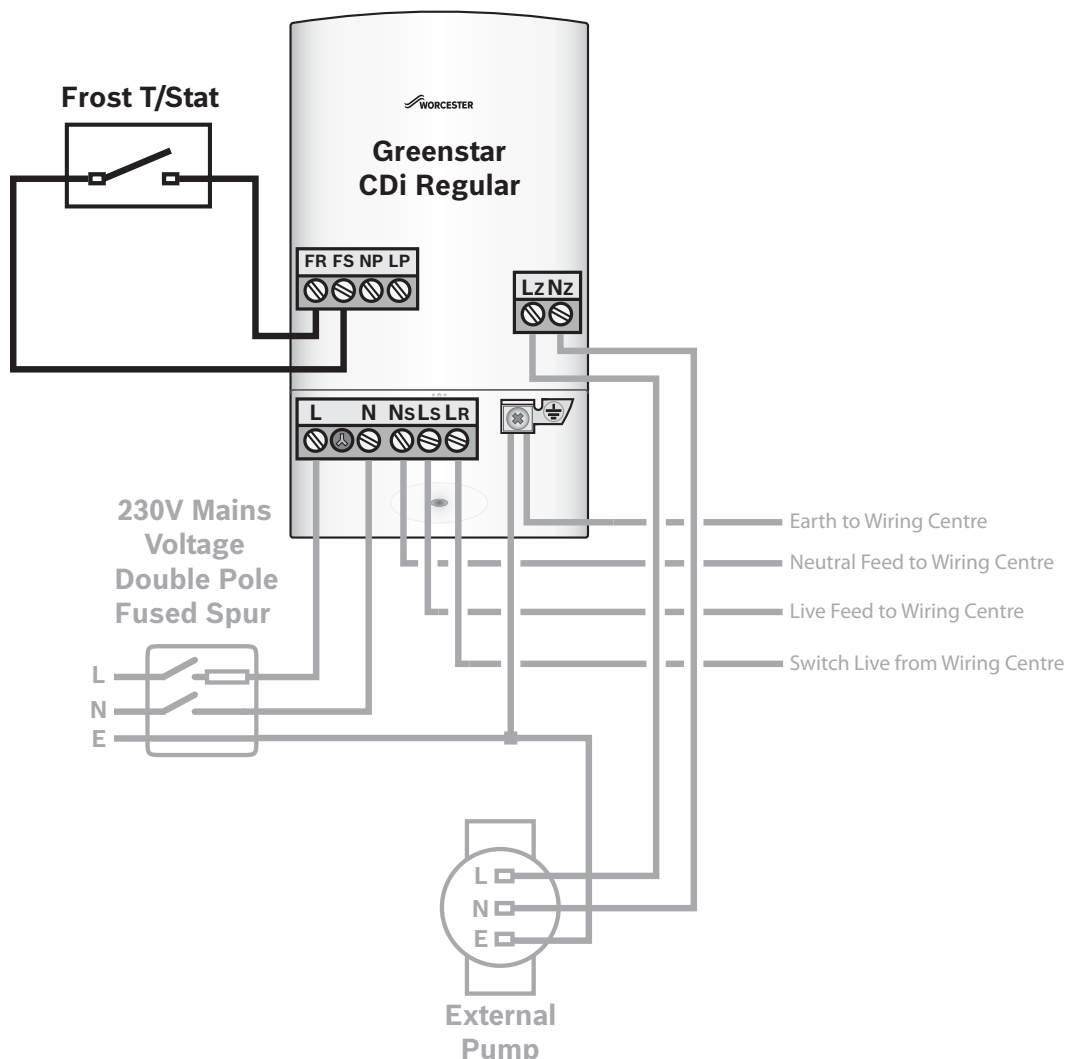
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When the temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.



Greenstar CDi System 2 x 2 Port Valves (S-Plan)

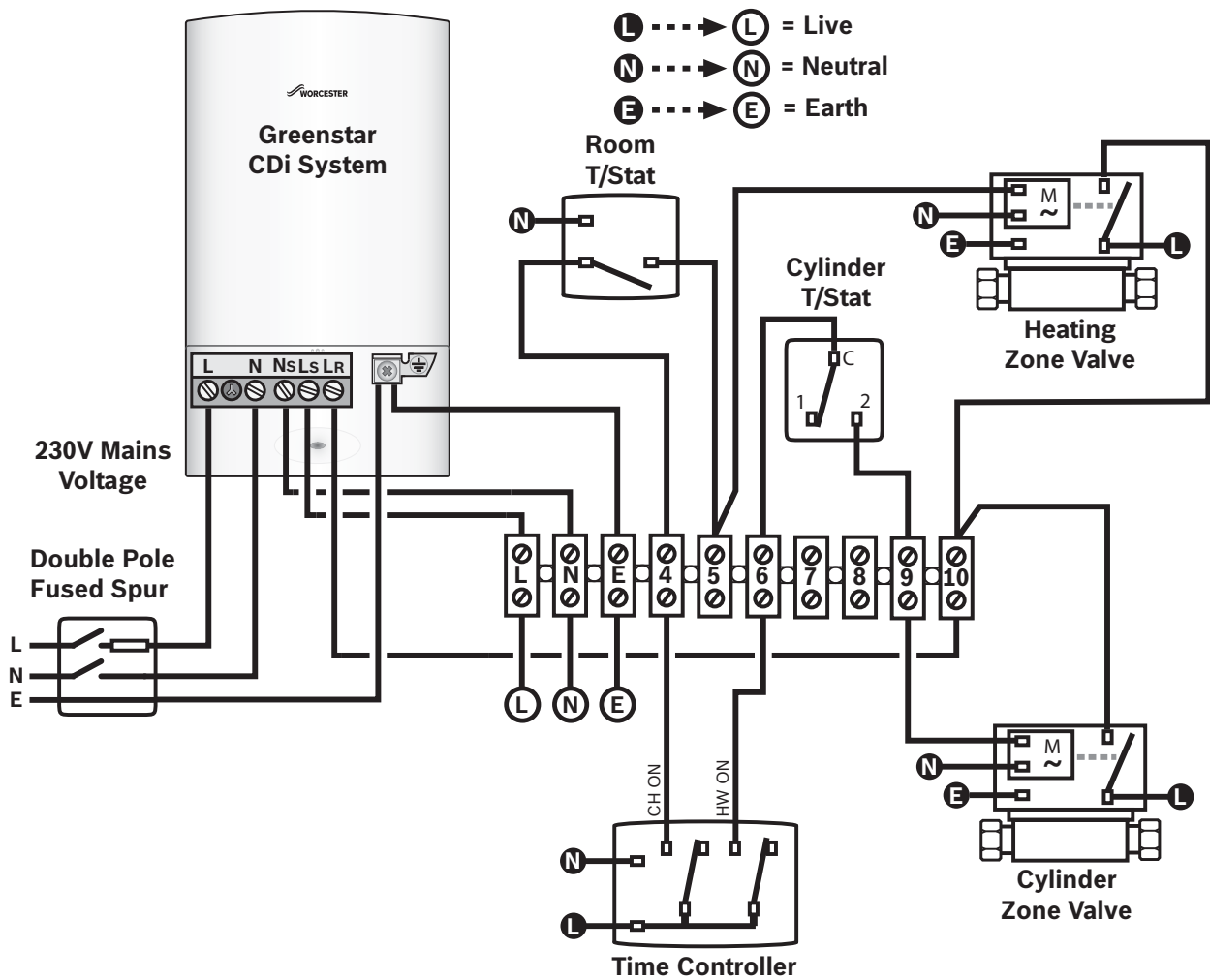


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L = Live

N = Neutral

E = Earth



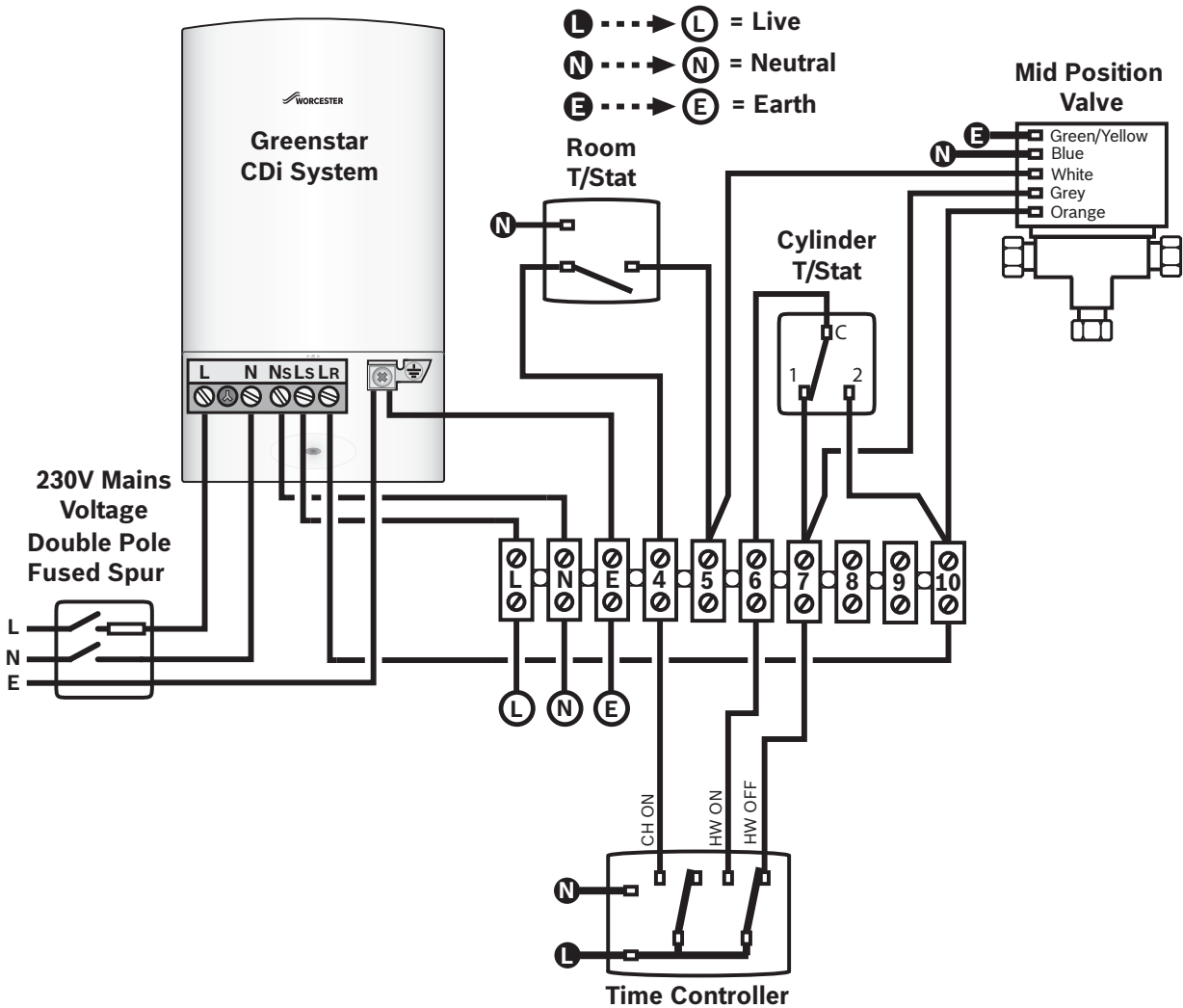
Greenstar CDi System Mid Position Valve (Y-Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

L → L = Live
 N → N = Neutral
 E → E = Earth



Greenstar CDi System

3 x 2 Port Valves (S-Plan Plus)



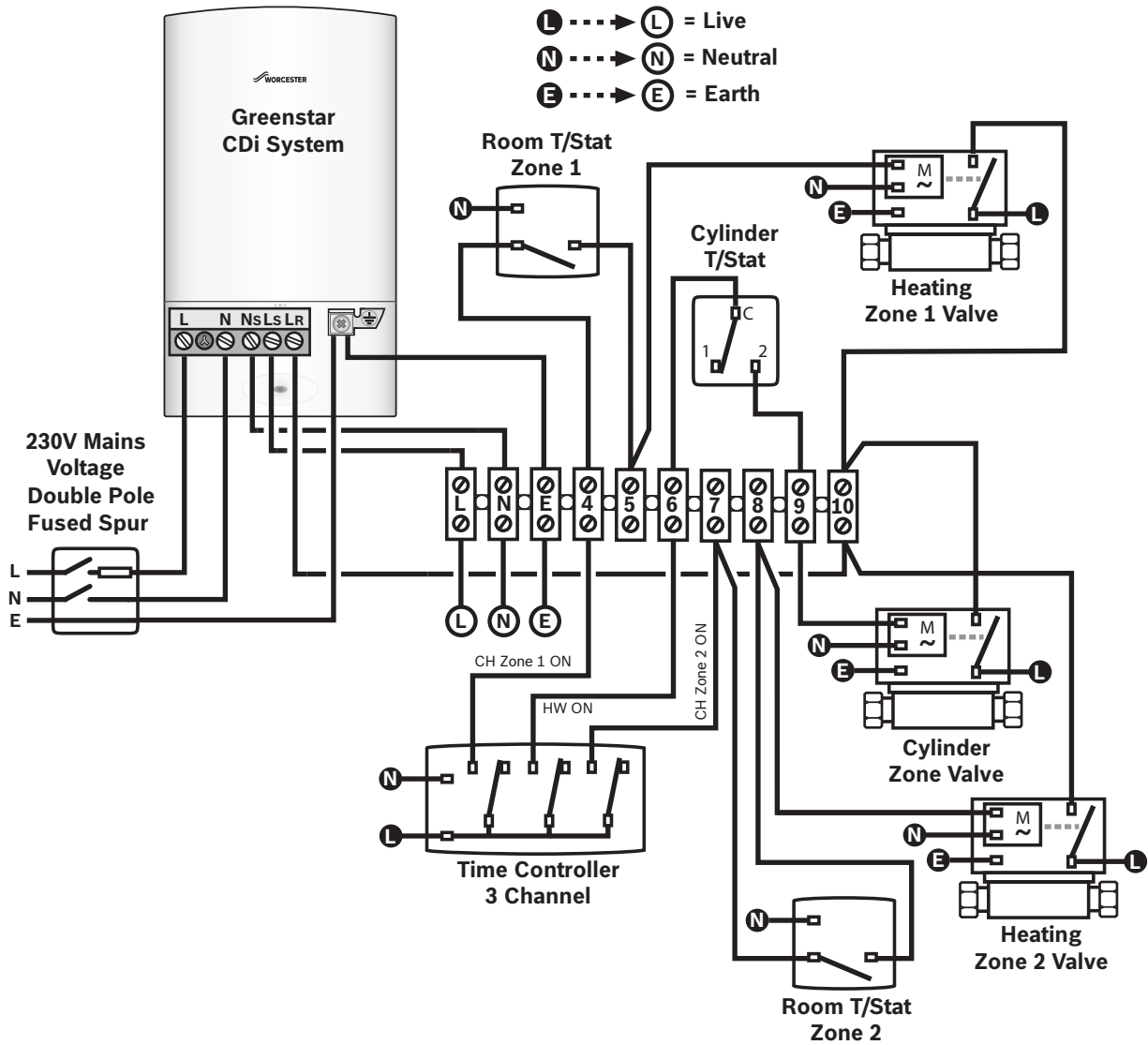
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar CDi System

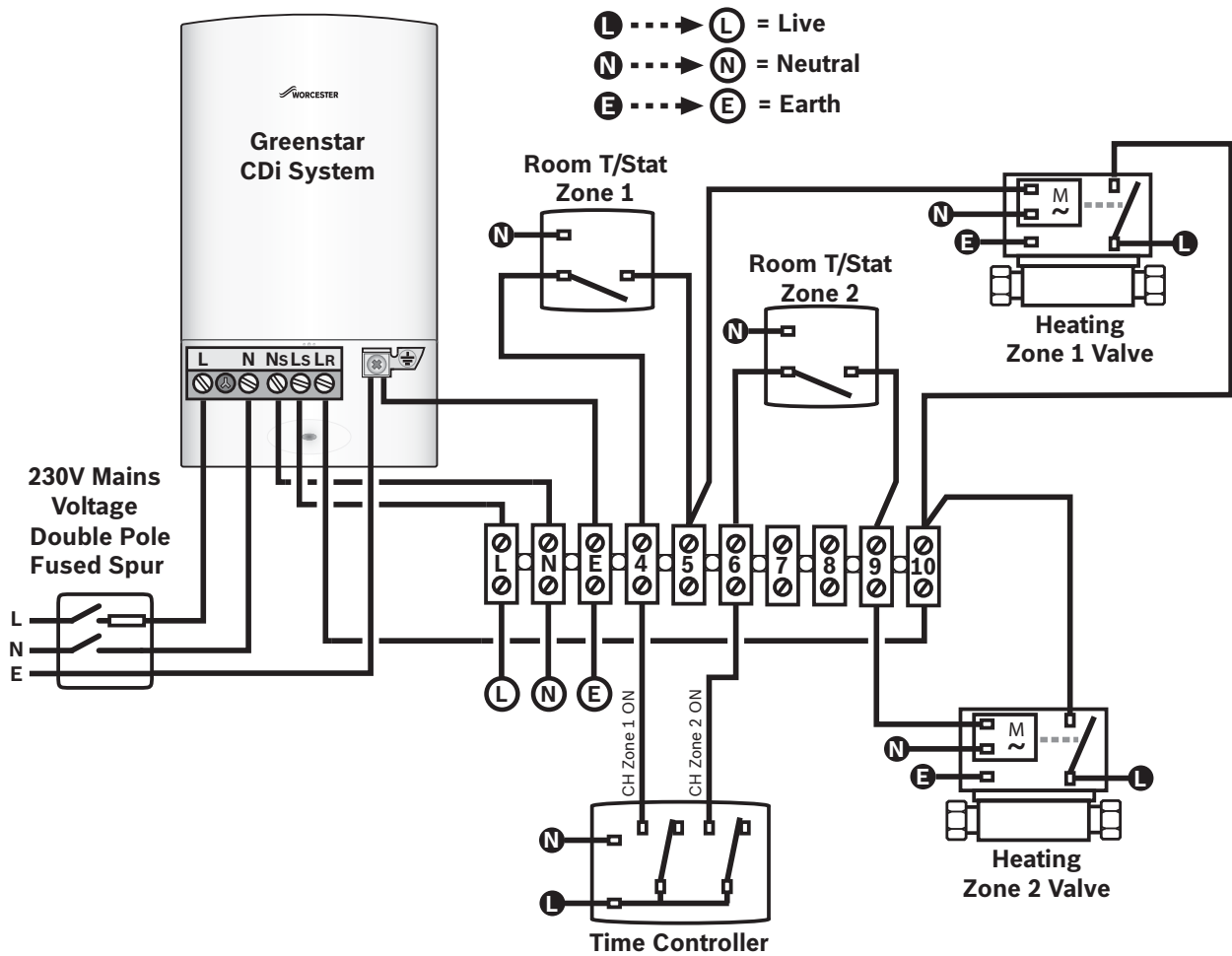
2 x Heating Zones



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral ⓔ → ⓔ = Earth



Greenstar CDi System

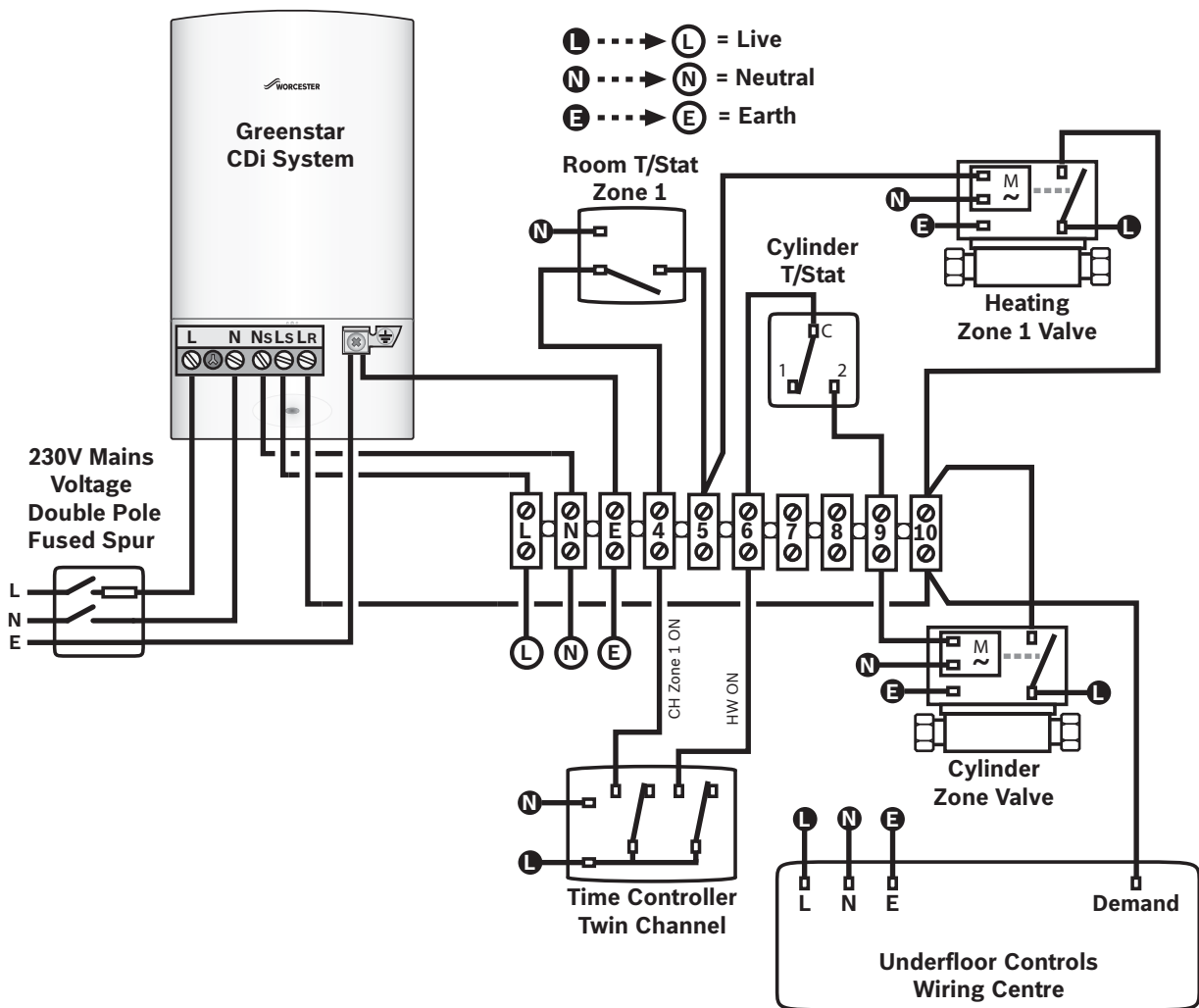
2 x 2 Port Valves & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

L → L = Live
N → N = Neutral
E → E = Earth



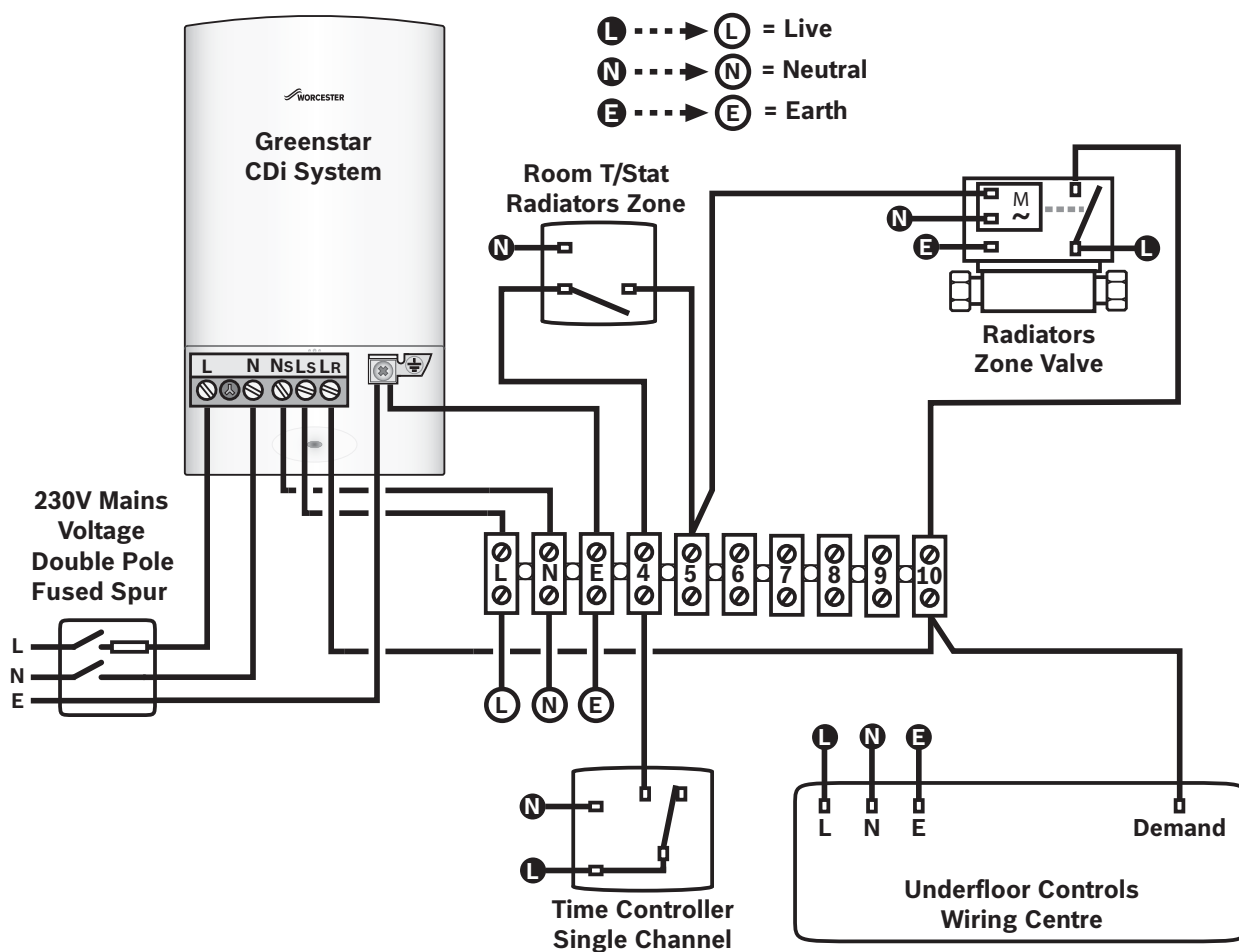
Greenstar CDi System

Zoned Radiator & Underfloor



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L L = Live
N N = Neutral
E E = Earth



Greenstar CDi System

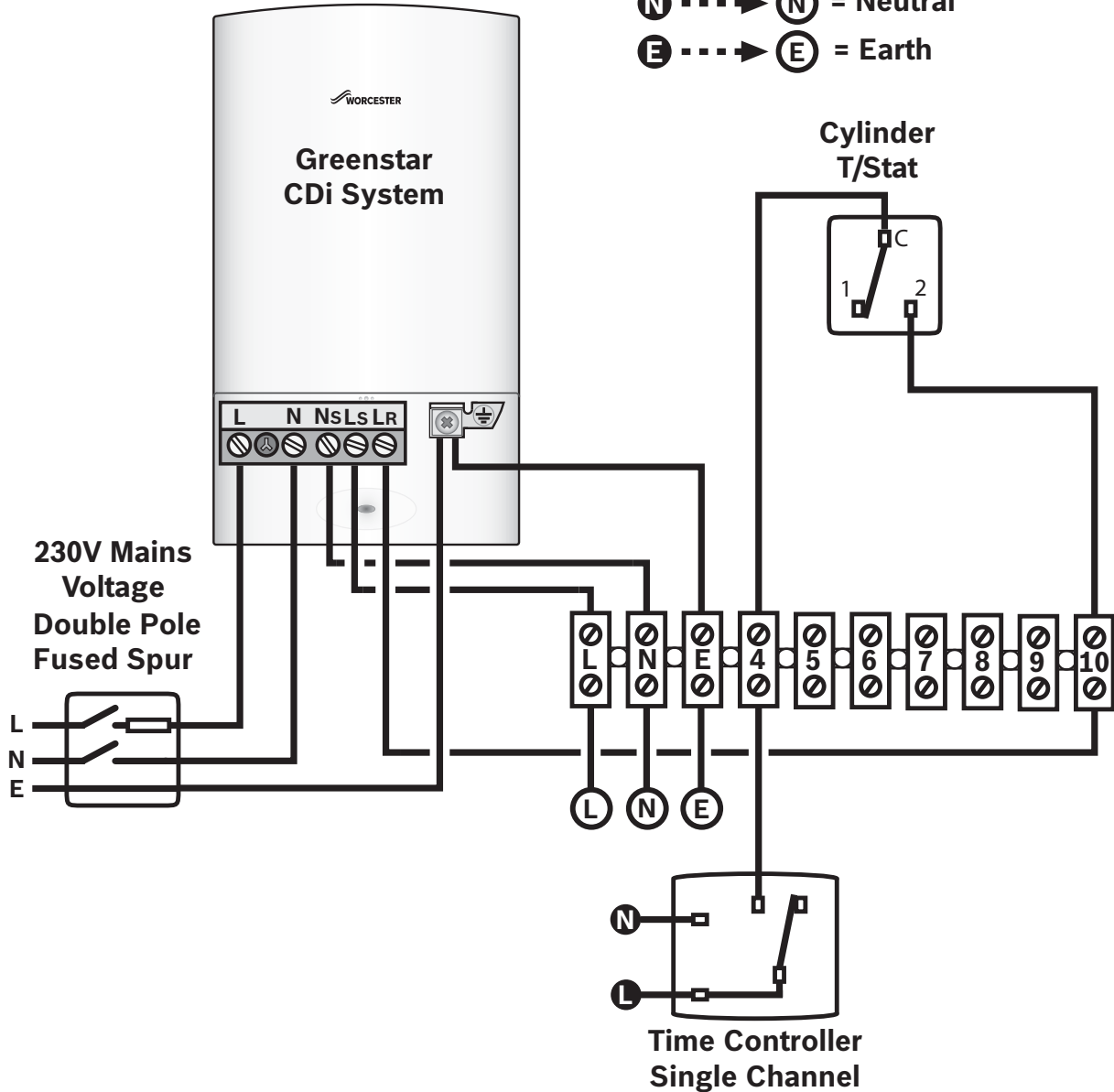
Single Hot Water Zone (Vented Cylinder)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth

Ⓛ → Ⓛ = Live
Ⓝ → Ⓝ = Neutral
Ⓧ → Ⓧ = Earth



Greenstar CDi System

Single Heating Zone

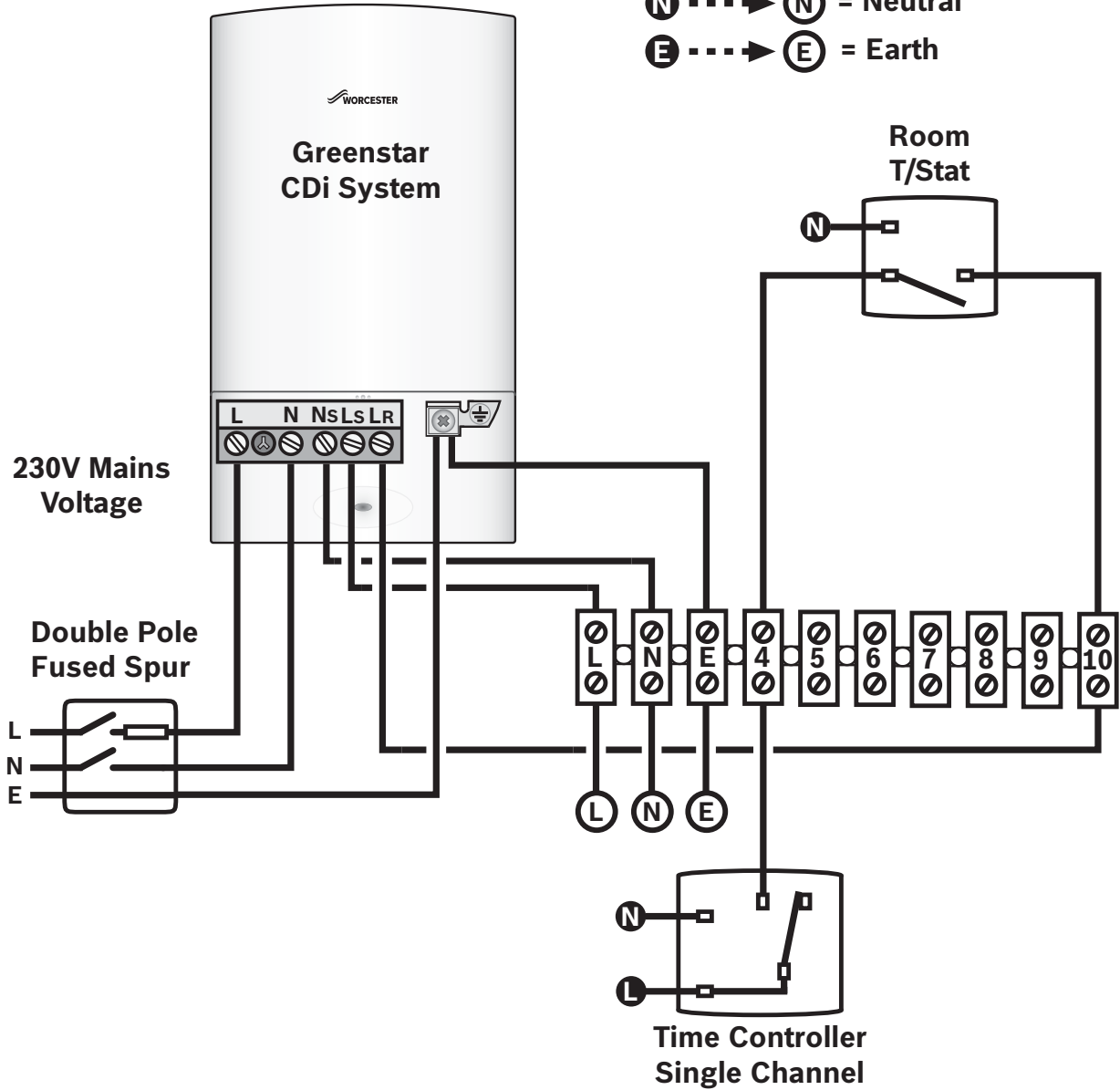


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Ⓛ → Ⓛ = Live
 Ⓝ → Ⓝ = Neutral
 ⓔ → ⓔ = Earth

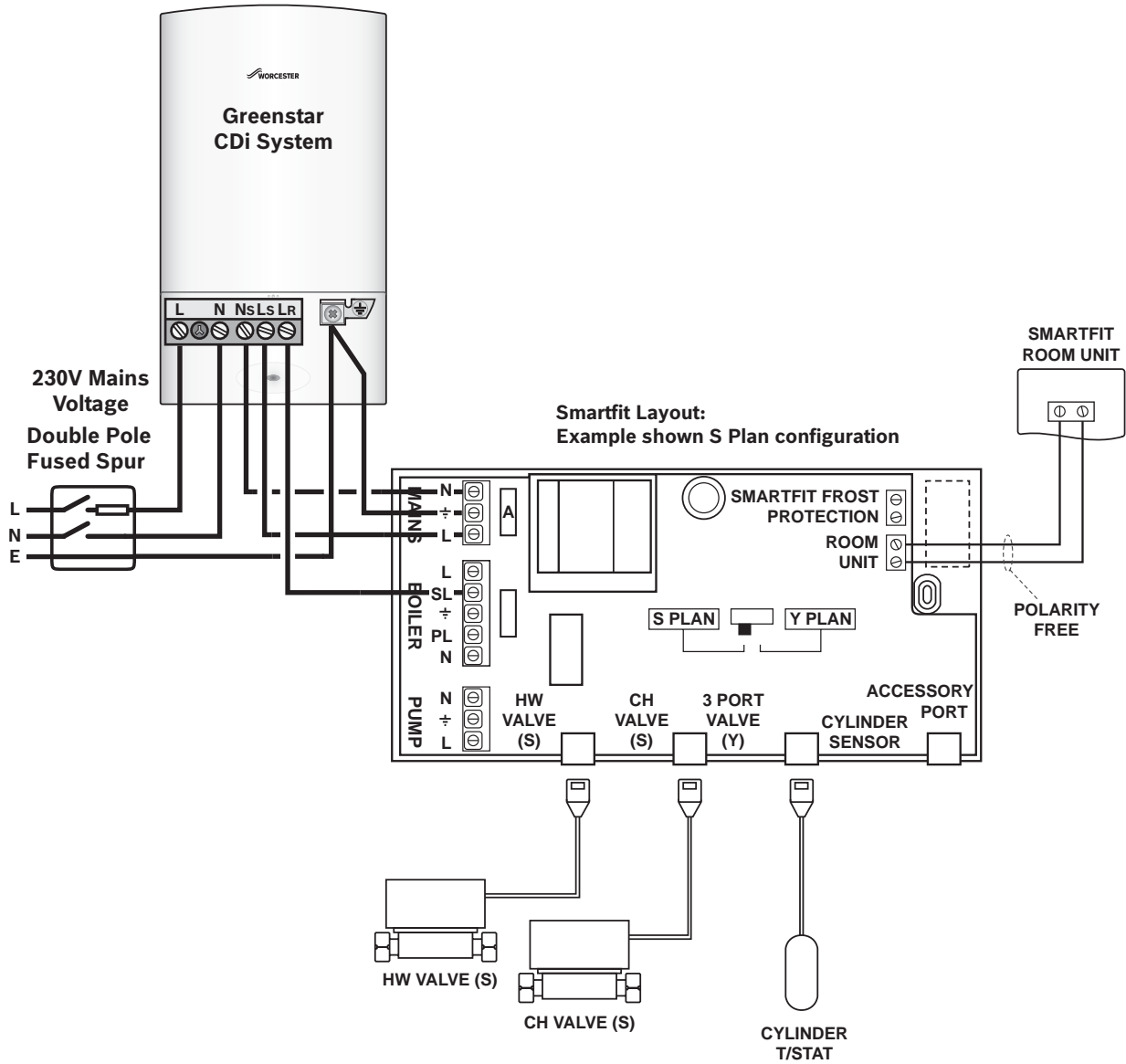


Greenstar CDi System Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth



Greenstar CDi System

Internal Diverter Valve, Worcester RF Controls & Unvented Cylinder



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
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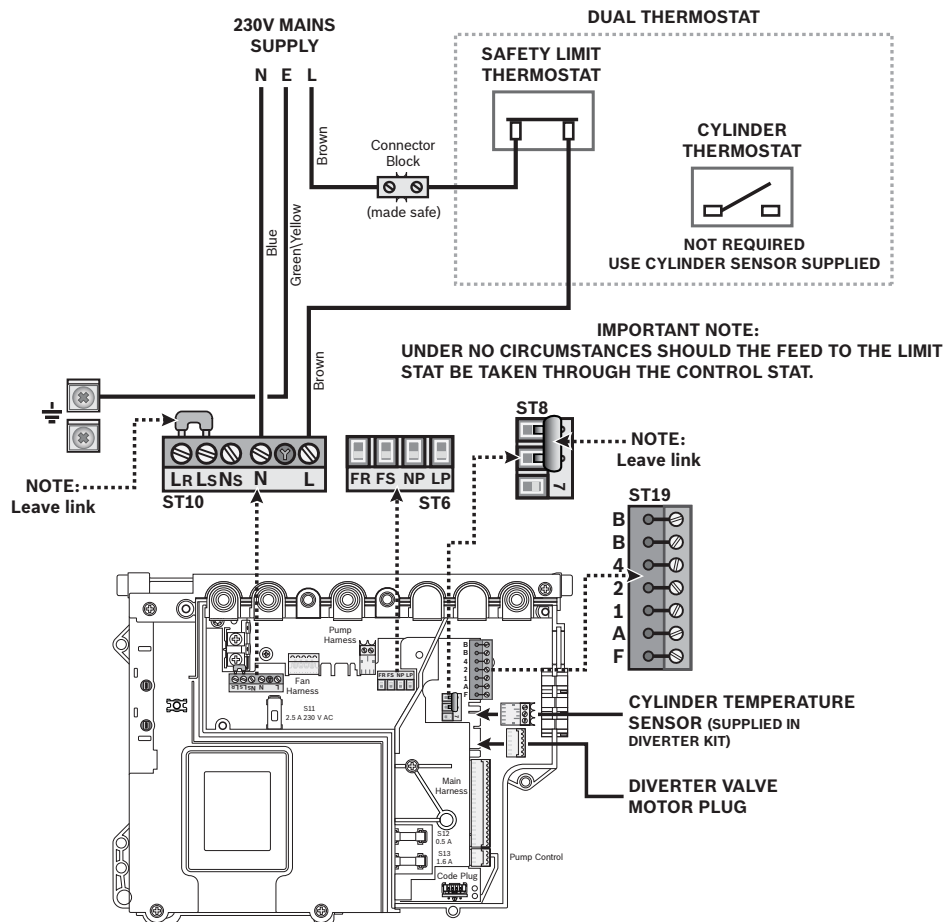
There is a unclarity within the Industry that in order to protect an Unvented Hot Water Cylinder from potentially dangerous high temperatures from the boiler circuit, a 2-port motorised valve must be installed. This is not the case, although it is the most common interpretation and approach.

FURTHER DETAILS

Building Regulation Approved Document G3, paragraph 3.6 states '...the non-self-resetting thermal cut out should be wired to a motorised valve or some other suitable device to shut off the flow to the primary heater...'. The latter part of this sentence can be interpreted to mean as long as we, as responsible Manufacturer's, are confident our method provides an equal amount of protection to the common approach, we may instruct installers of our equipment to follow a different approach. A summary is provided below.

- The installer will use the cylinder sensor supplied with the Integral Diverter Valve kit to control the hot water temperature.
- The installer, therefore, will NOT need to use the hot water control thermostat of the cylinder's dual thermostat.
- The installer may have to alter the wiring of the dual thermostat (depending on cylinder and thermostat manufacturer) to only use the high limit thermal cut-out of the dual thermostat.
- The high limit thermal cut out of the dual thermostat MUST be wired to interrupt the permanent live to the Greenstar CDi System Boiler.
- The 2-port valve supplied with the unvented cylinder will NOT be used. If it is already physically installed in the pipe work is should be removed and electrically disconnected from the wiring centre.

Below you will find an electrical diagram for this arrangement.



Greenstar CDi System

Internal Diverter Valve, Worcester FX Controls & Unvented Cylinder



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---N = Neutral ●---● = Earth

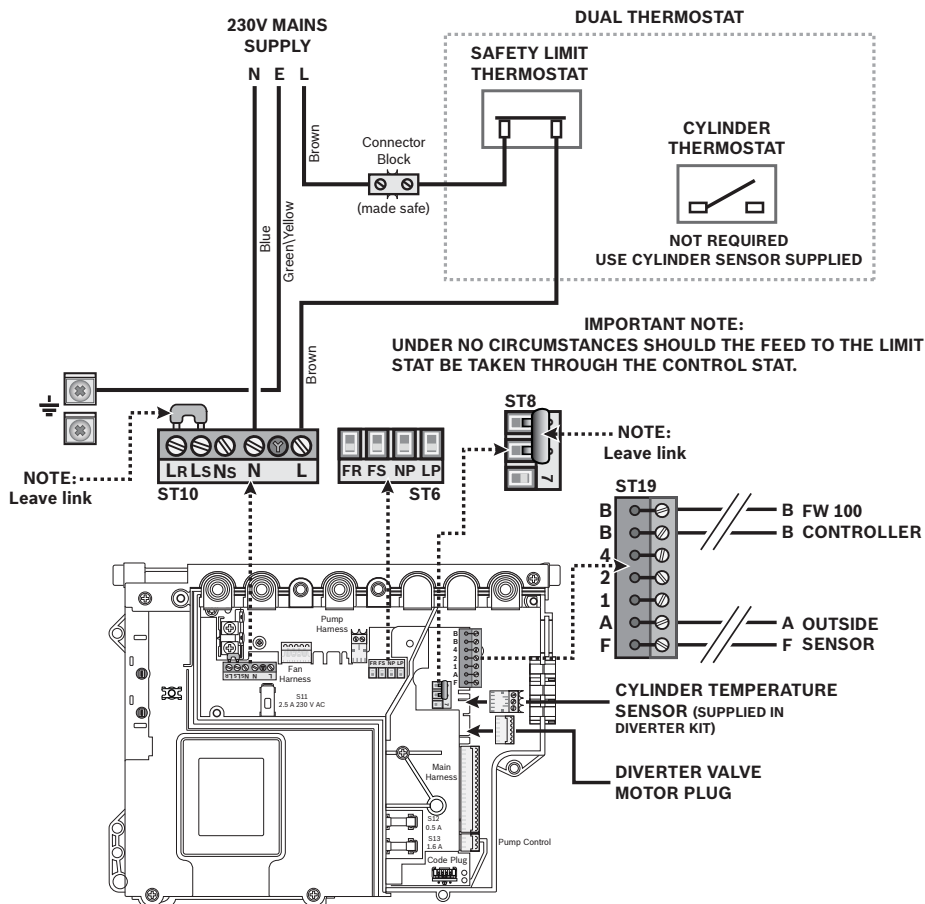
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Greenstar CDi System

Cascaded boilers with low loss header

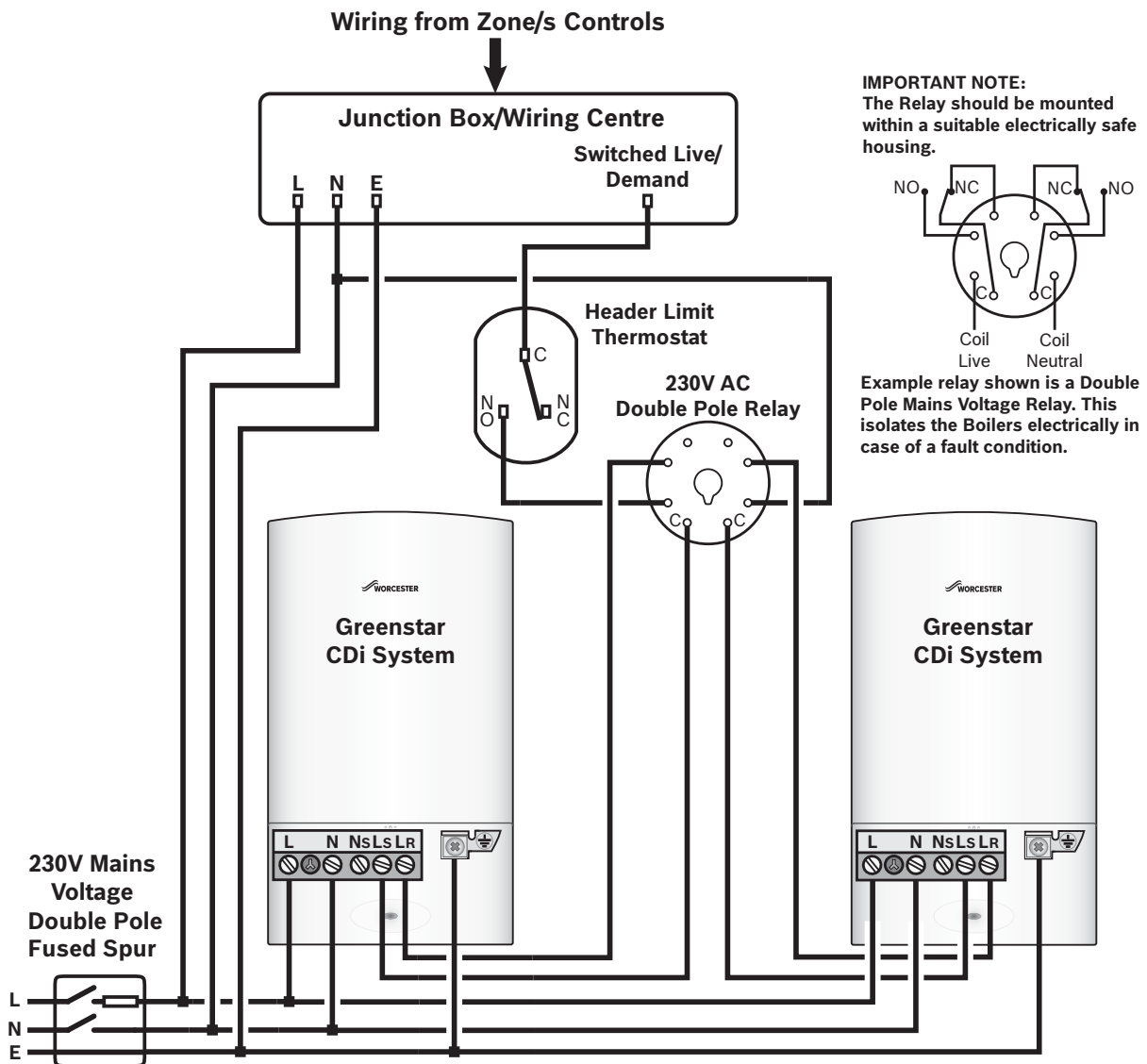


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---N = Neutral ●---● = Earth

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90° C.



Greenstar CDi System

Frost Protection



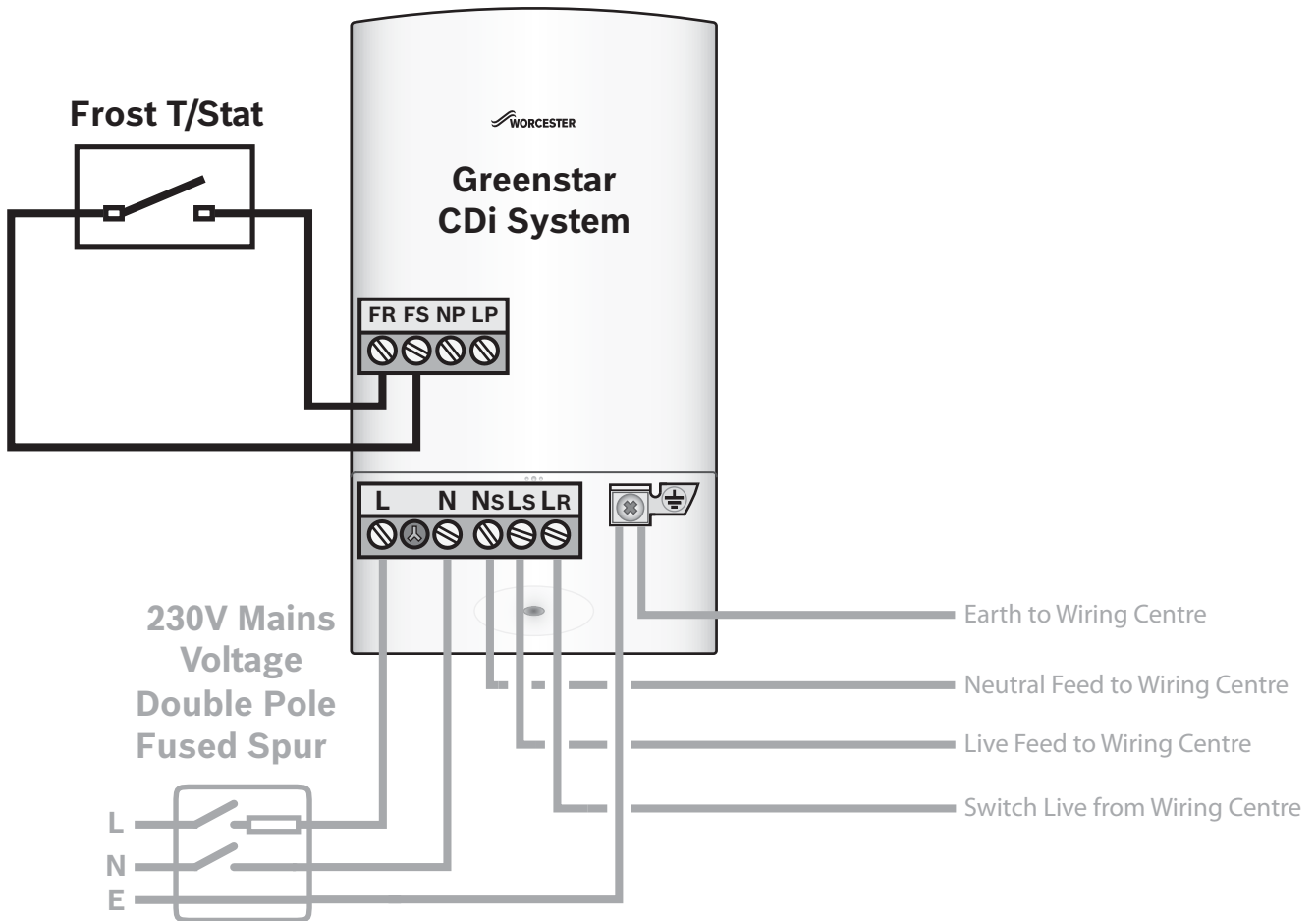
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---● = Neutral ●---● = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When then temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.



Greenstar CDi Combi

2 x 2 Port Valves (S-Plan)



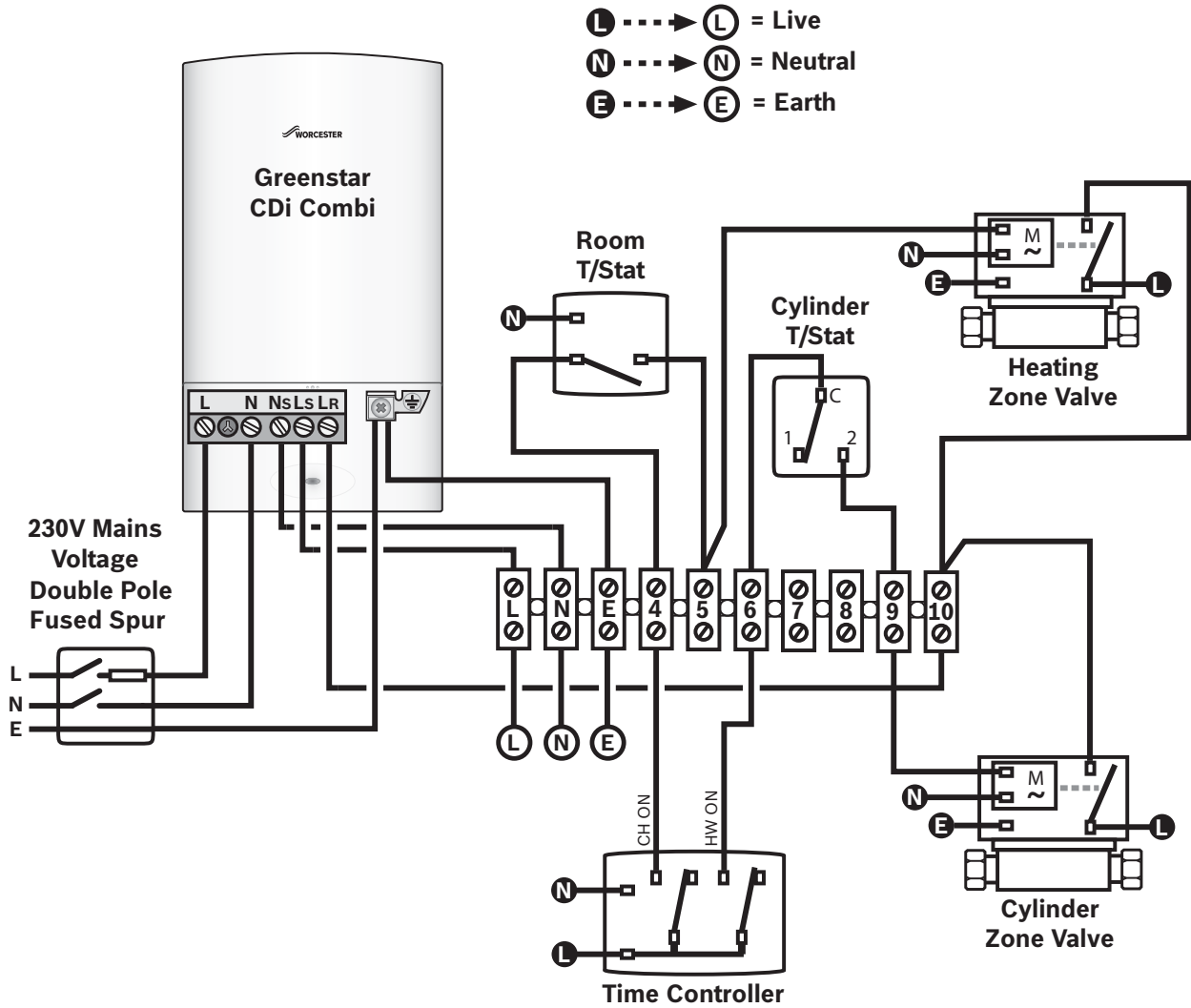
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar CDi Combi Mid Position Valve (Y-Plan)

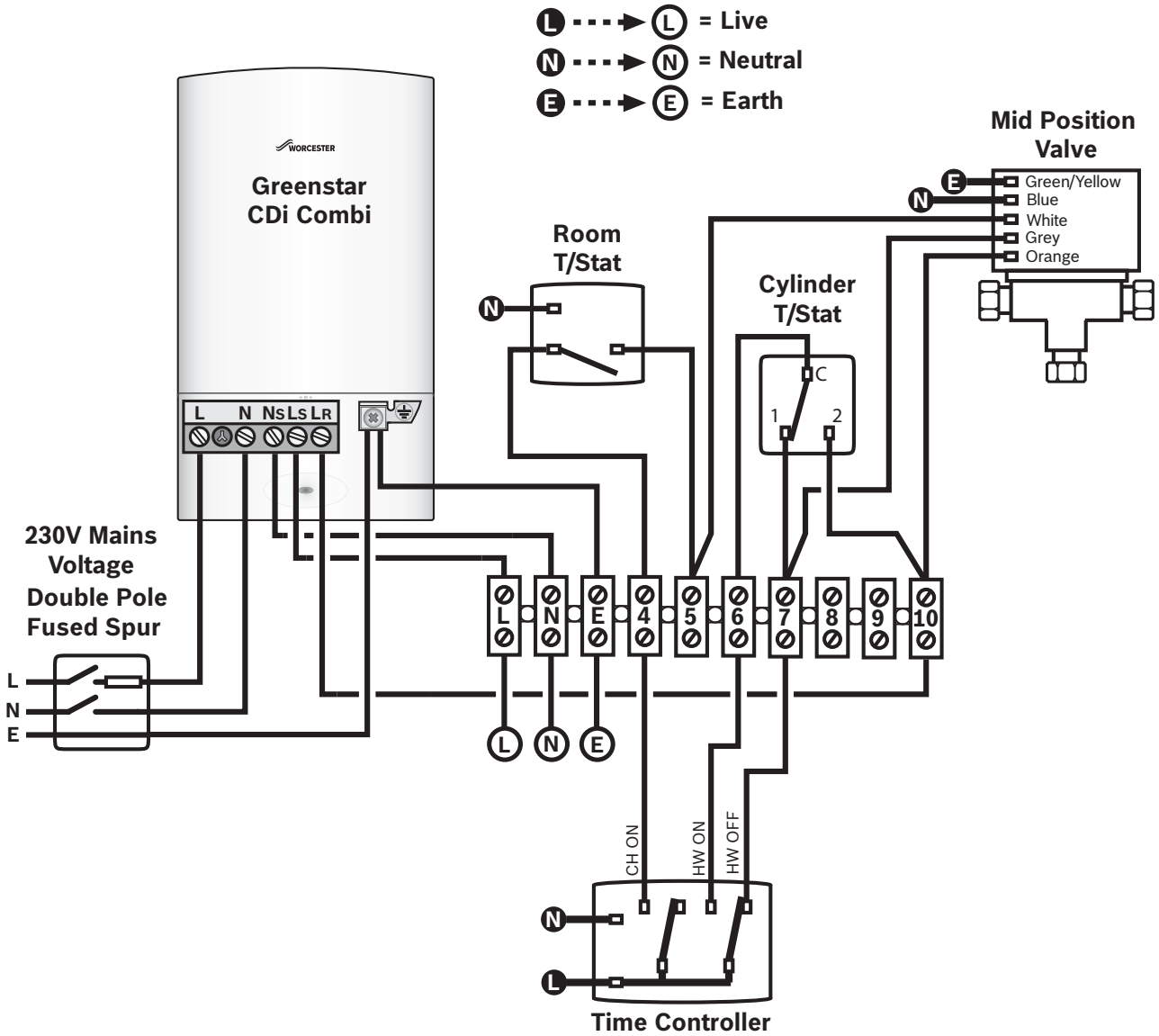


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar CDi combi 3 x 2 Port Valves (S-Plan Plus)

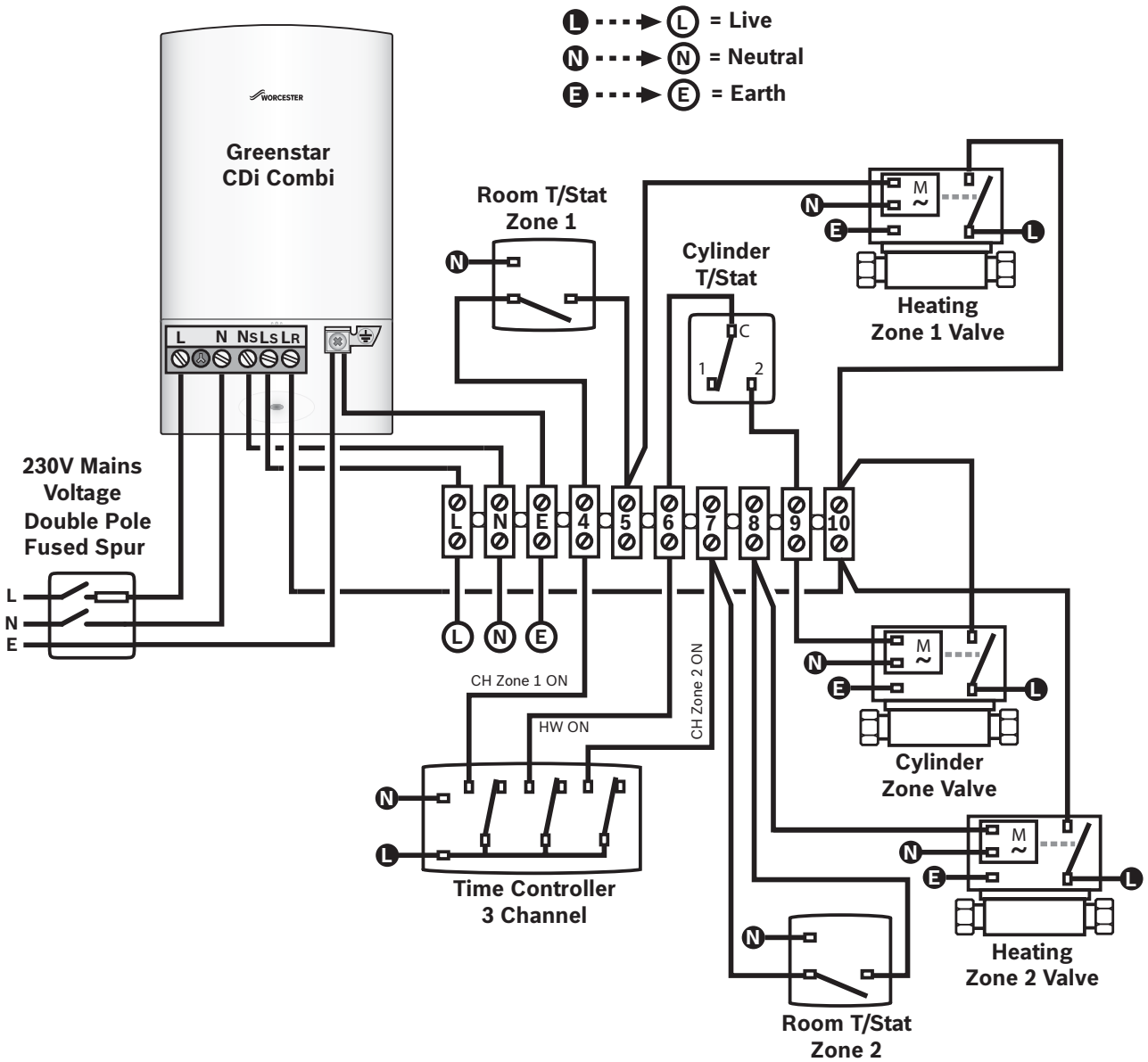


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar CDi combi

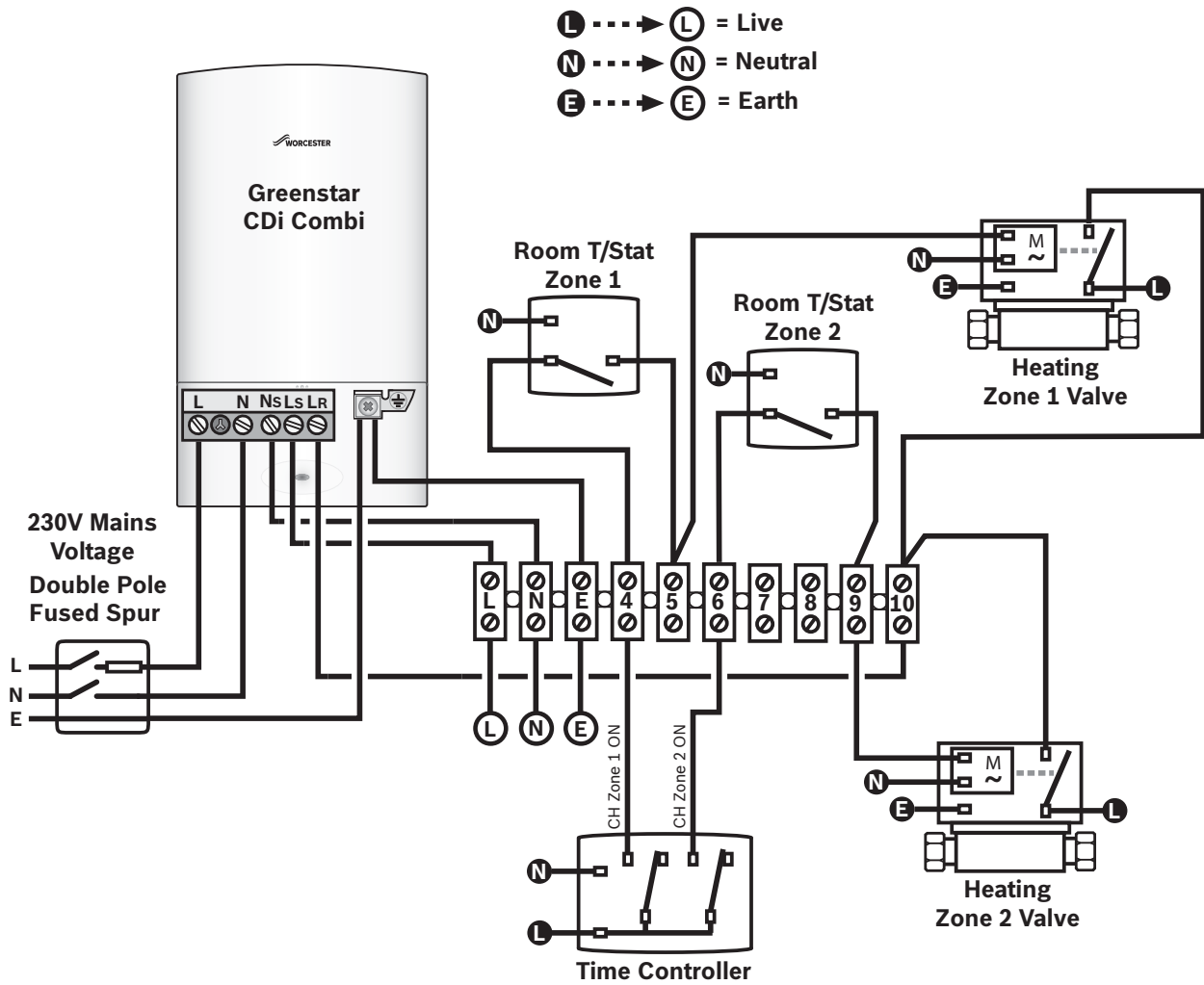
2 x Heating Zones



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

● --- ● = Live ● --- ● = Neutral ● --- ● = Earth



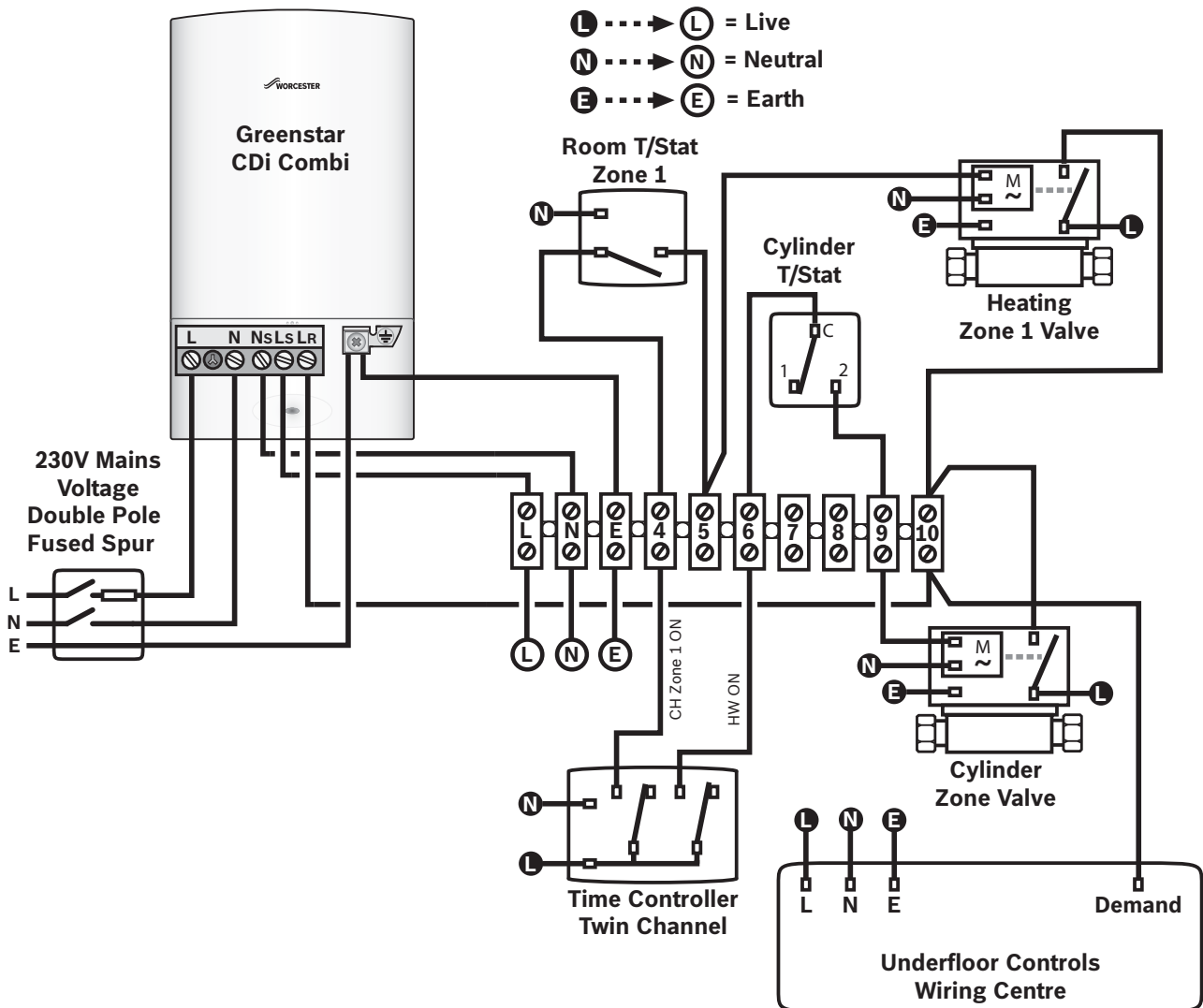
Greenstar CDi Combi

2 x 2 Port Valves & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ---> ● = Live ● ---> ● = Neutral ● ---> ● = Earth



Greenstar CDi Combi

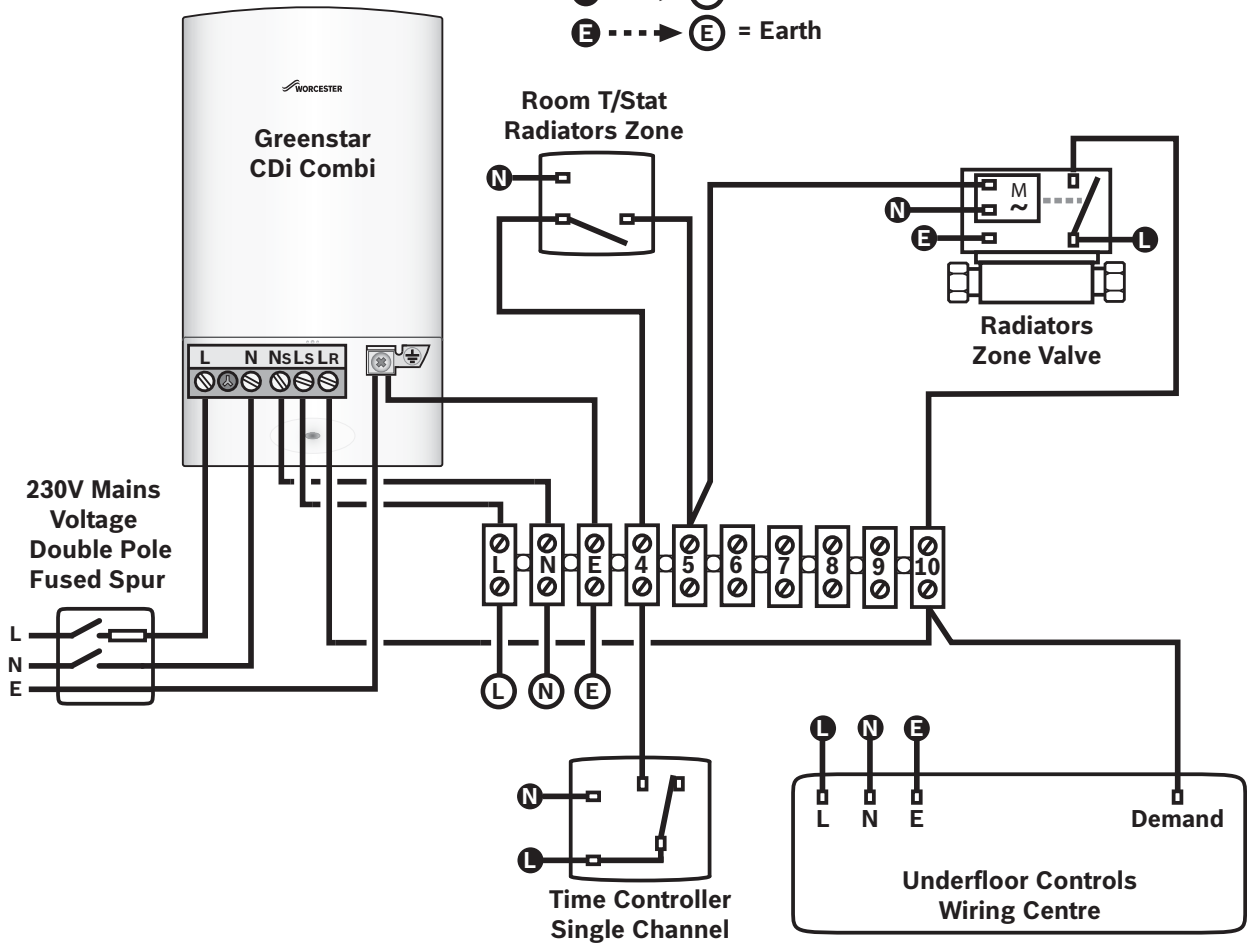
Zoned Radiator & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ --- Ⓛ = Live Ⓝ --- Ⓝ = Neutral ⓔ --- ⓔ = Earth

Ⓛ --- Ⓛ = Live
Ⓝ --- Ⓝ = Neutral
ⓔ --- ⓔ = Earth

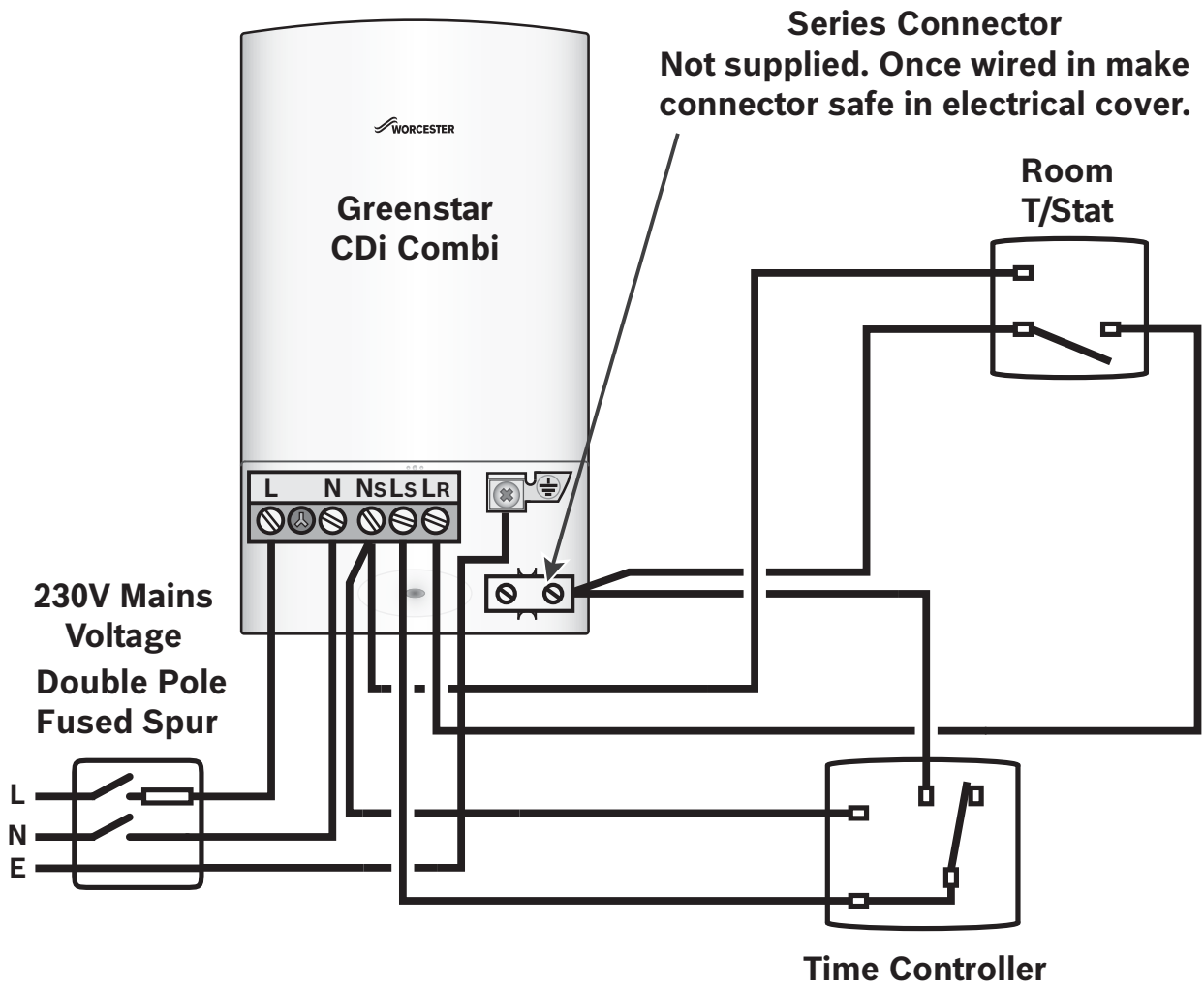


Greenstar CDi Combi separate Time Controller & Room Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

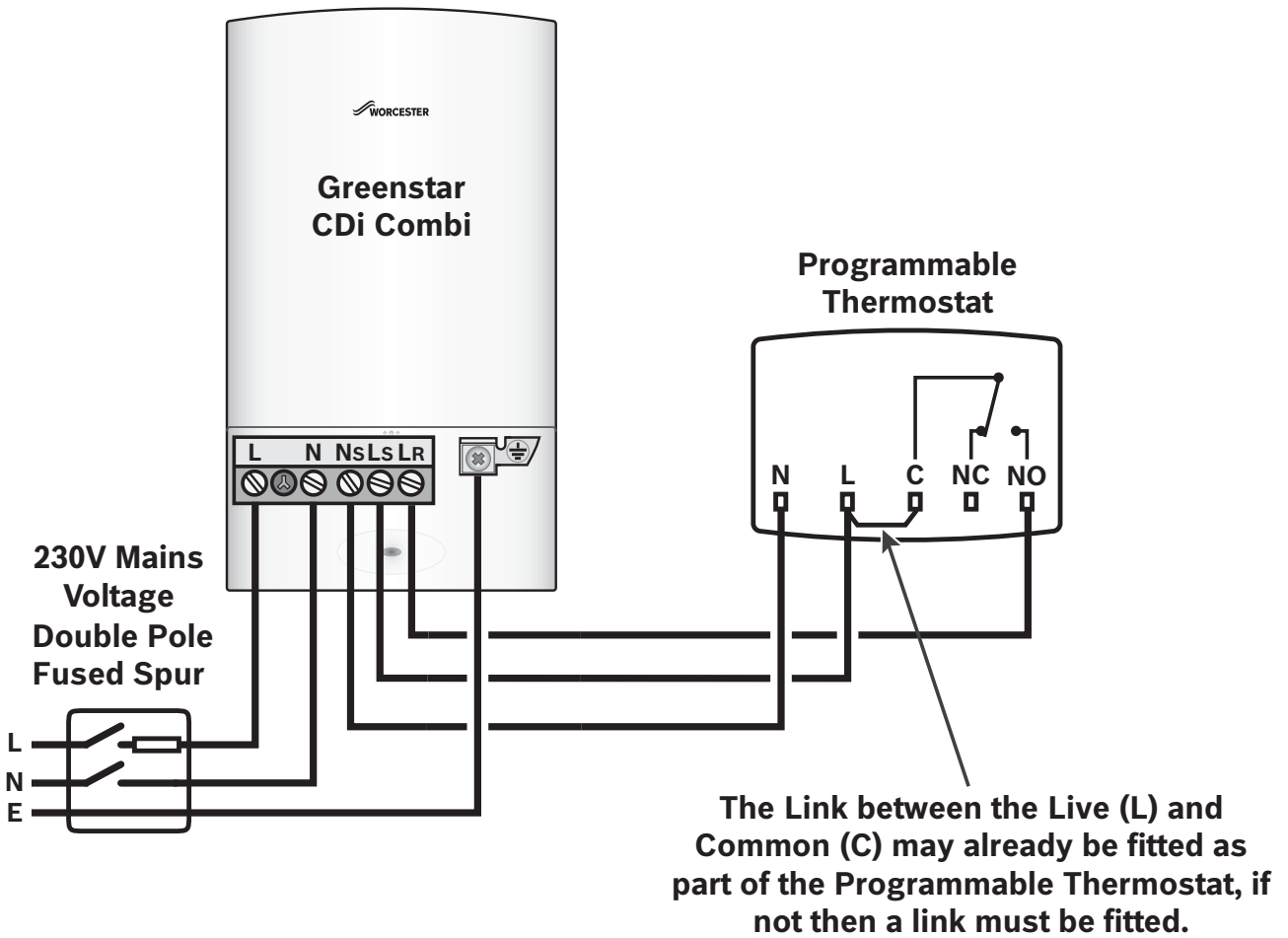


Greenstar CDi Combi Programmable Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth

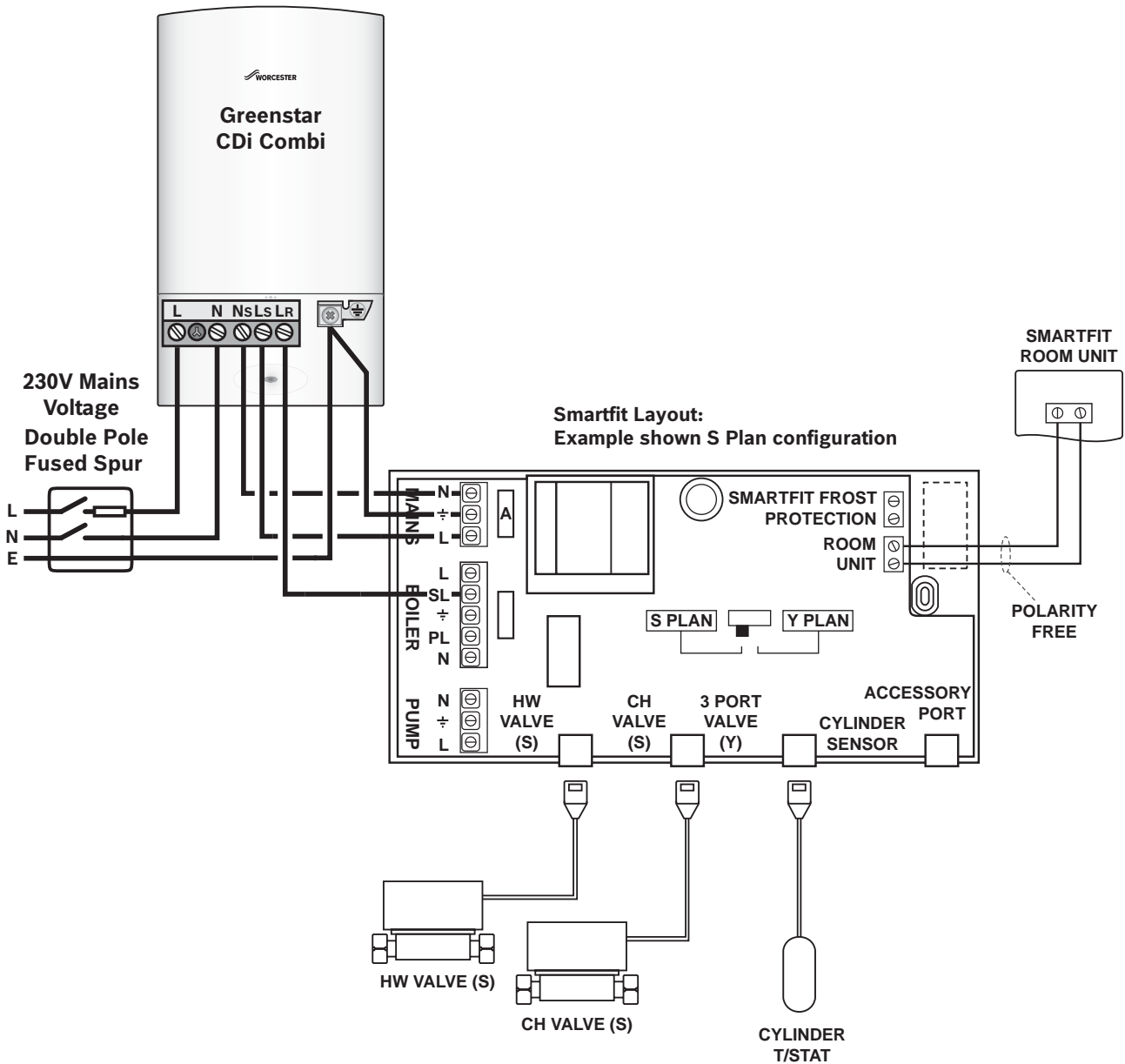


Greenstar CDi Combi Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth



Greenstar CDi Combi

Cascade boilers with low loss header



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

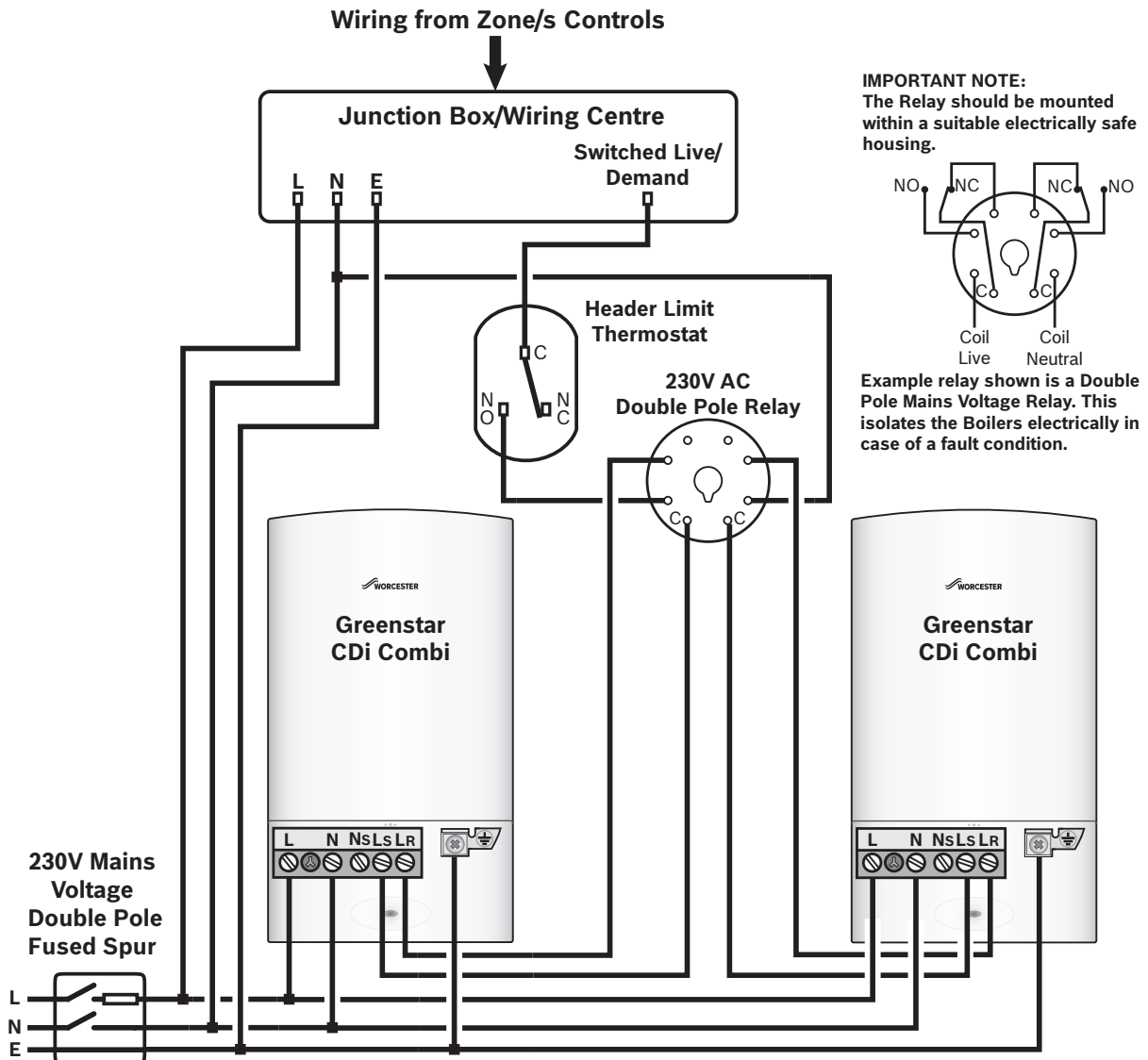
●---● = Live ●---● = Neutral ●---● = Earth

NOTE

A pump must be wired to each boiler for pump over-run to dissipate heat from within the boiler. The connections are pump live to Lz, pump neutral to Nz and pump earth to the Earth point of each boiler.

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90°C.



Greenstar CDi Combi

Frost Protection



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

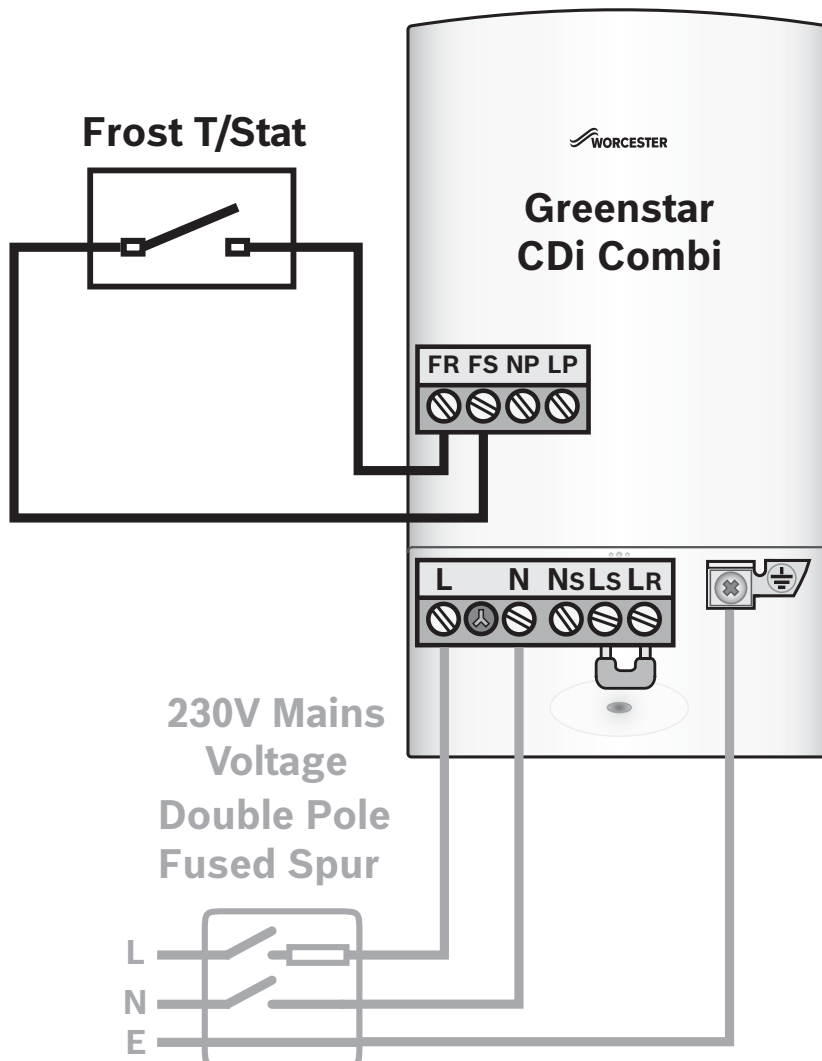
These connections are denoted as follows:

●---● = Live N---● = Neutral ●---● = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When then temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.



Greenstar FS CDi Regular

2 x 2 Port Valves (S Plan)



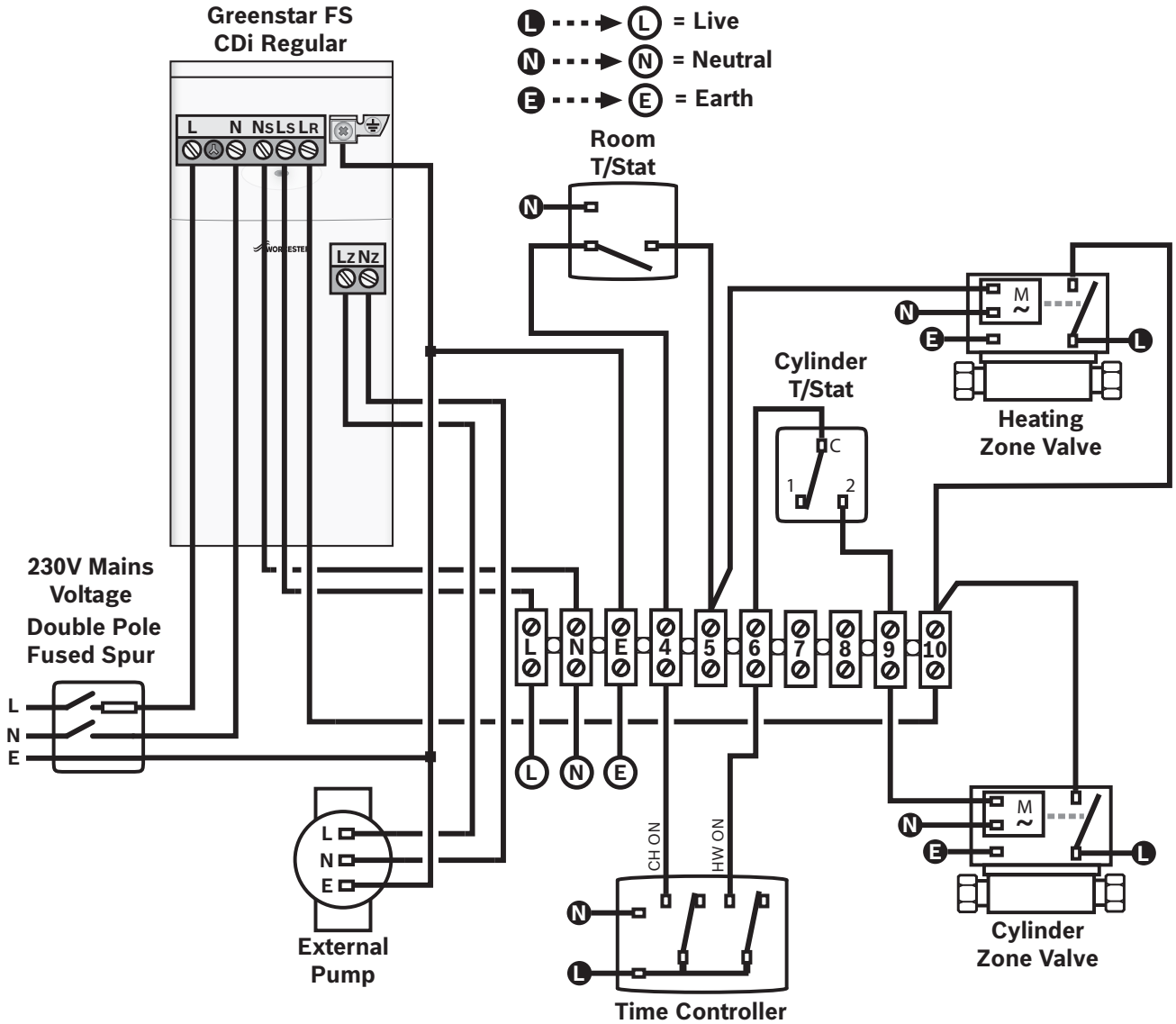
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

= Live

 = Neutral

 = Earth

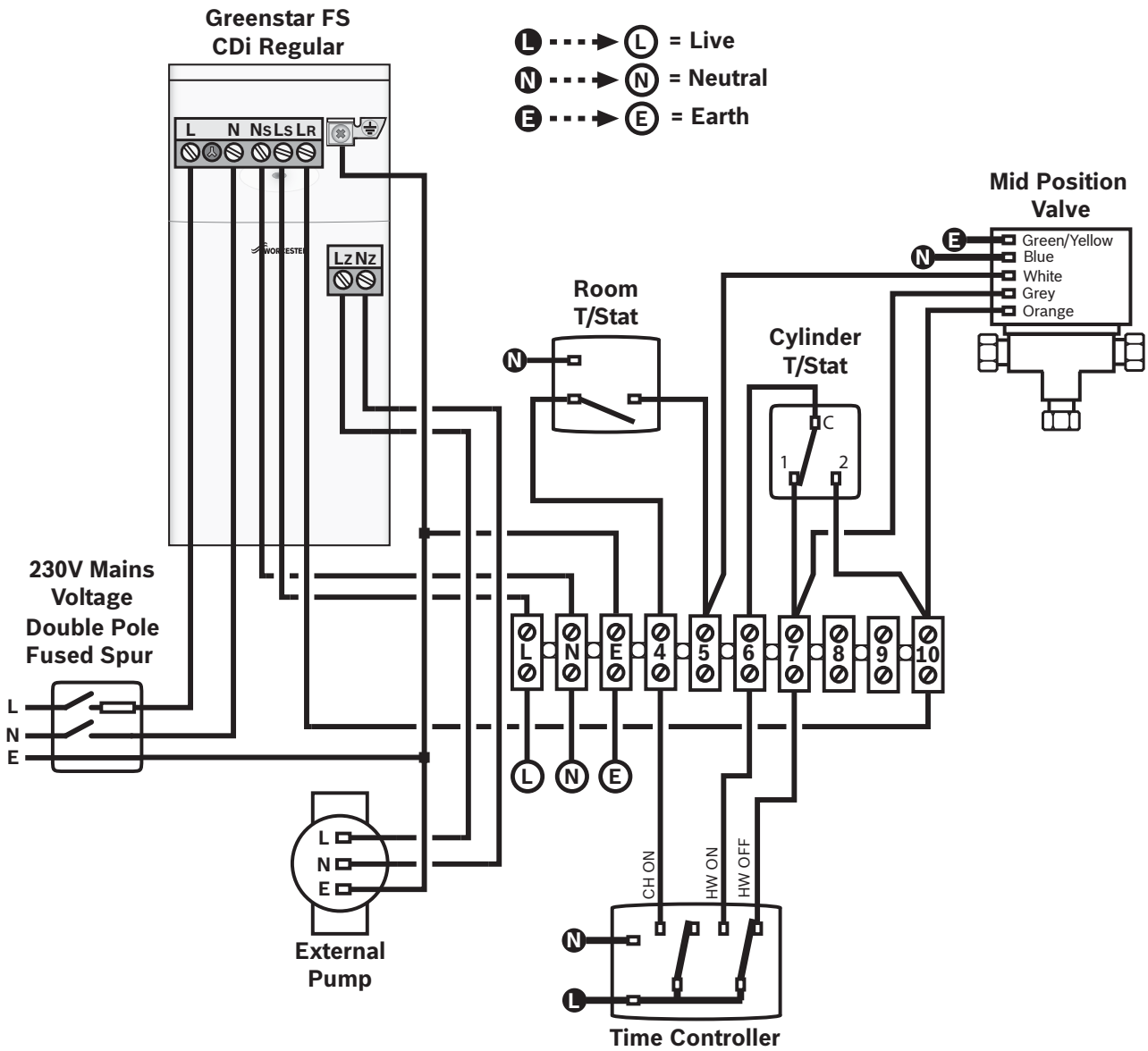


Greenstar FS CDi Regular Mid Position Valve (Y Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth



Greenstar FS CDi Regular

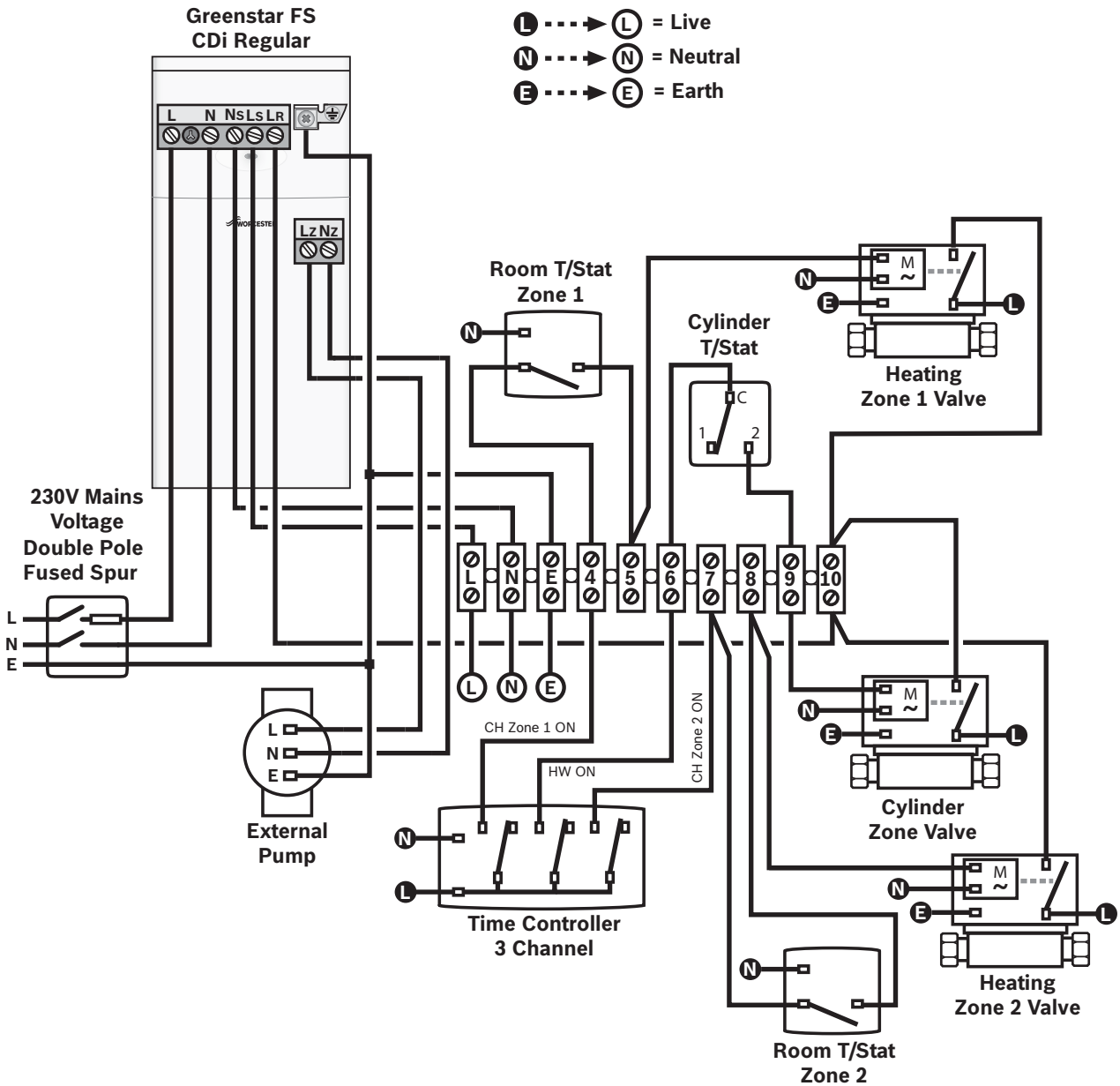
3 x 2 Port Valves (S Plan Plus)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

● ---> ● = Live ● ---> ● = Neutral ● ---> ● = Earth



Greenstar FS CDi Regular

2 x Heating Zones

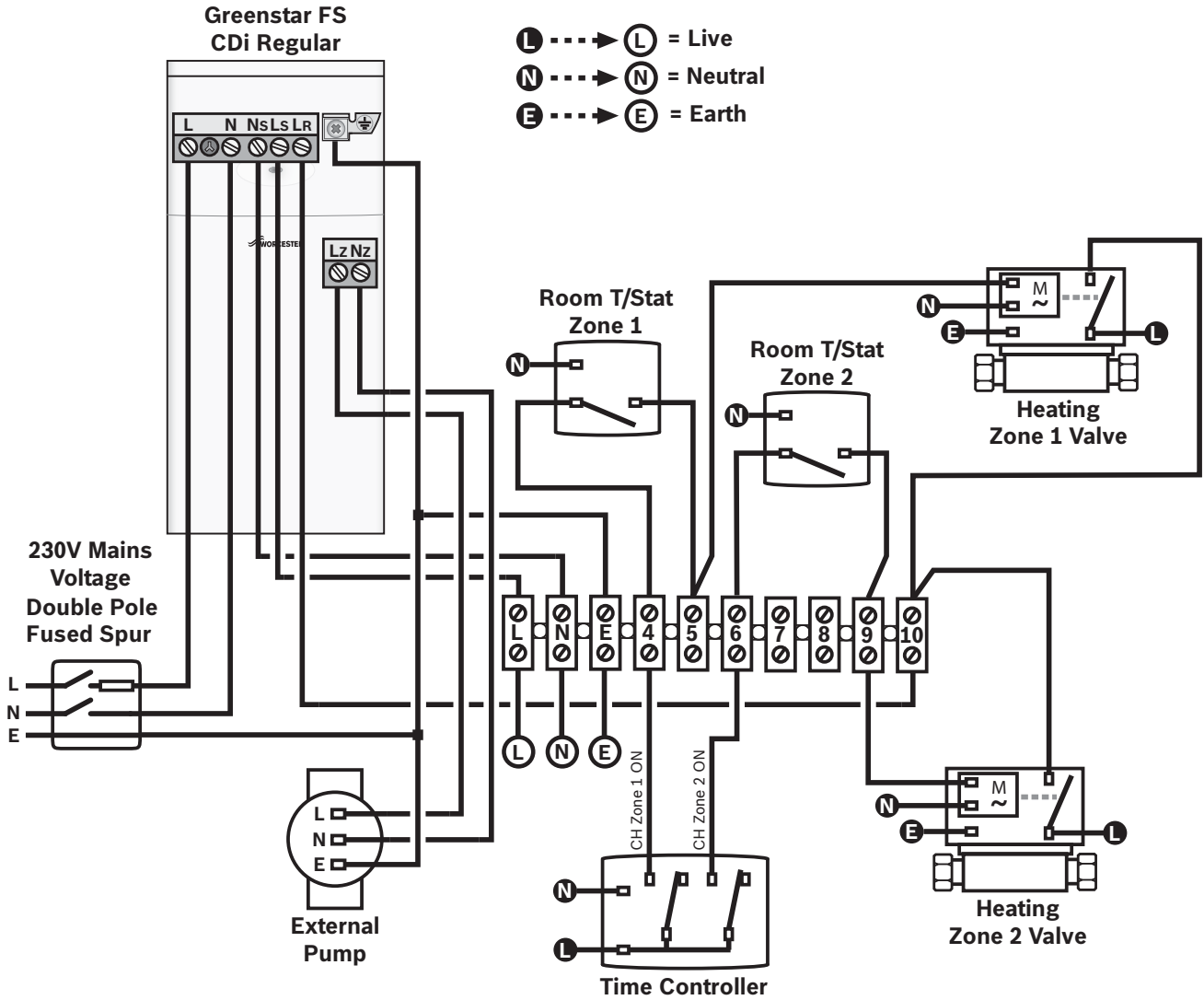


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar FS CDi Regular

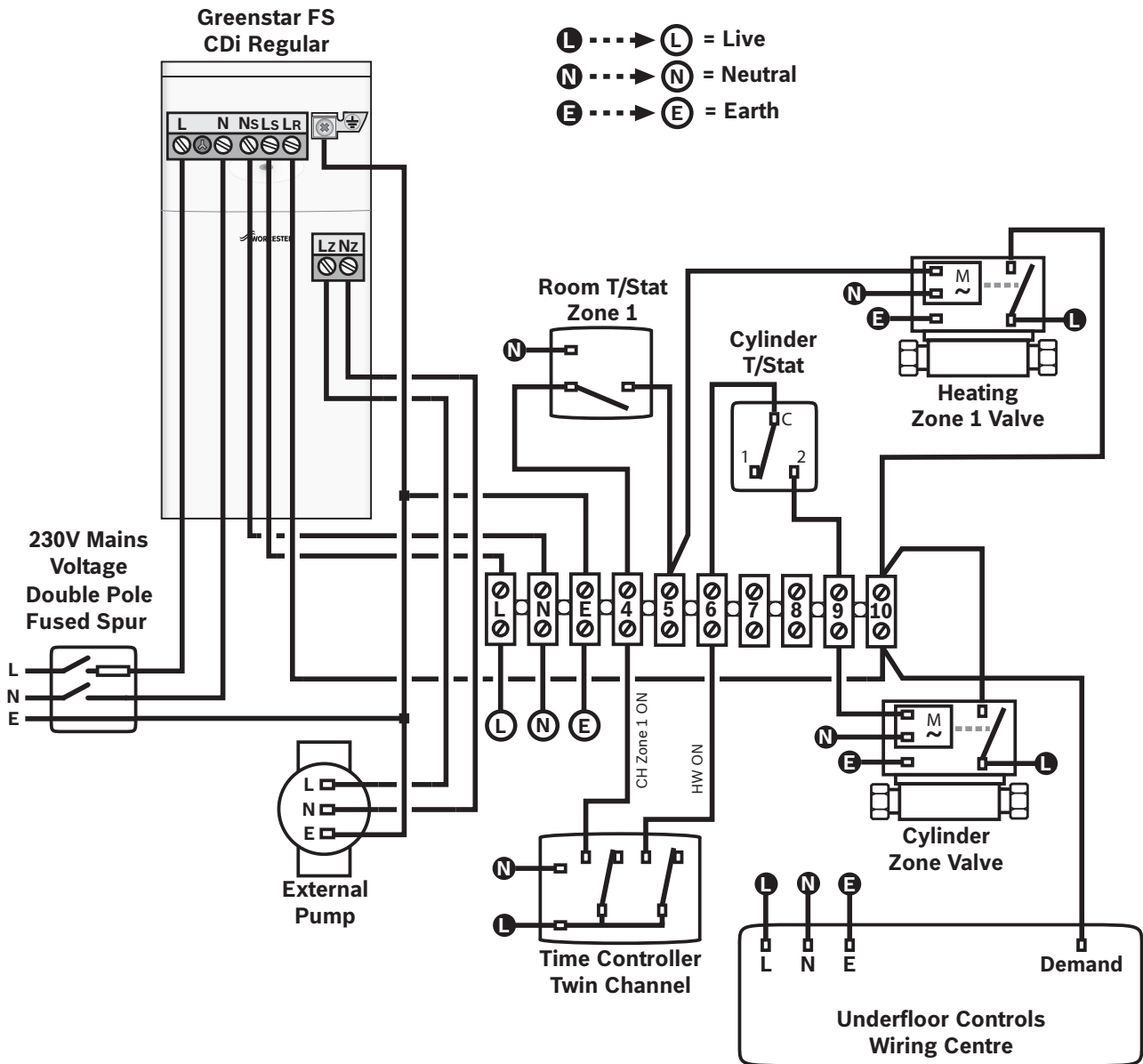
2 x 2 Port Valves & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

● ----> ● = Live ● ----> ● = Neutral ● ----> ● = Earth



Greenstar FS CDi Regular

Zoned Radiator & Underfloor Heating

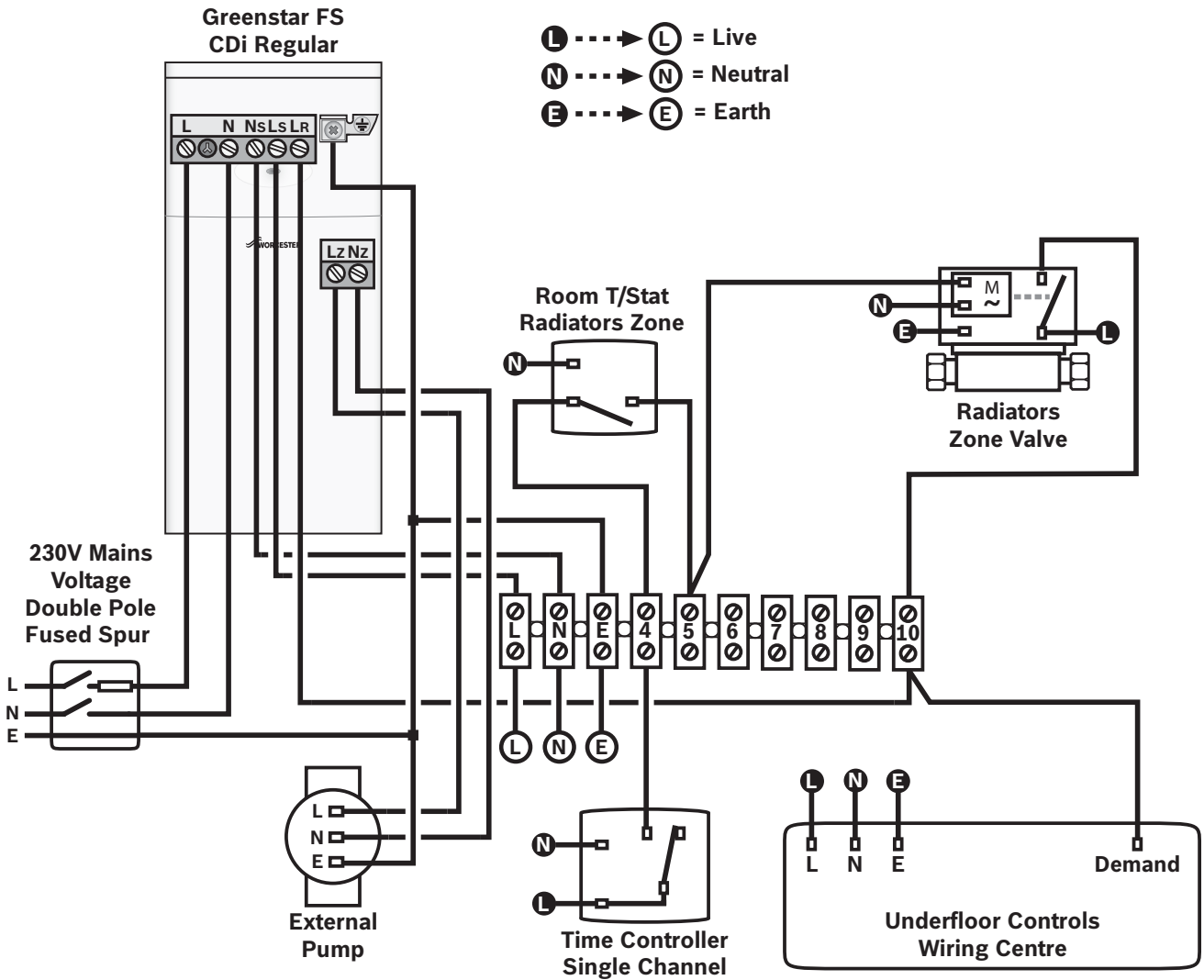


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



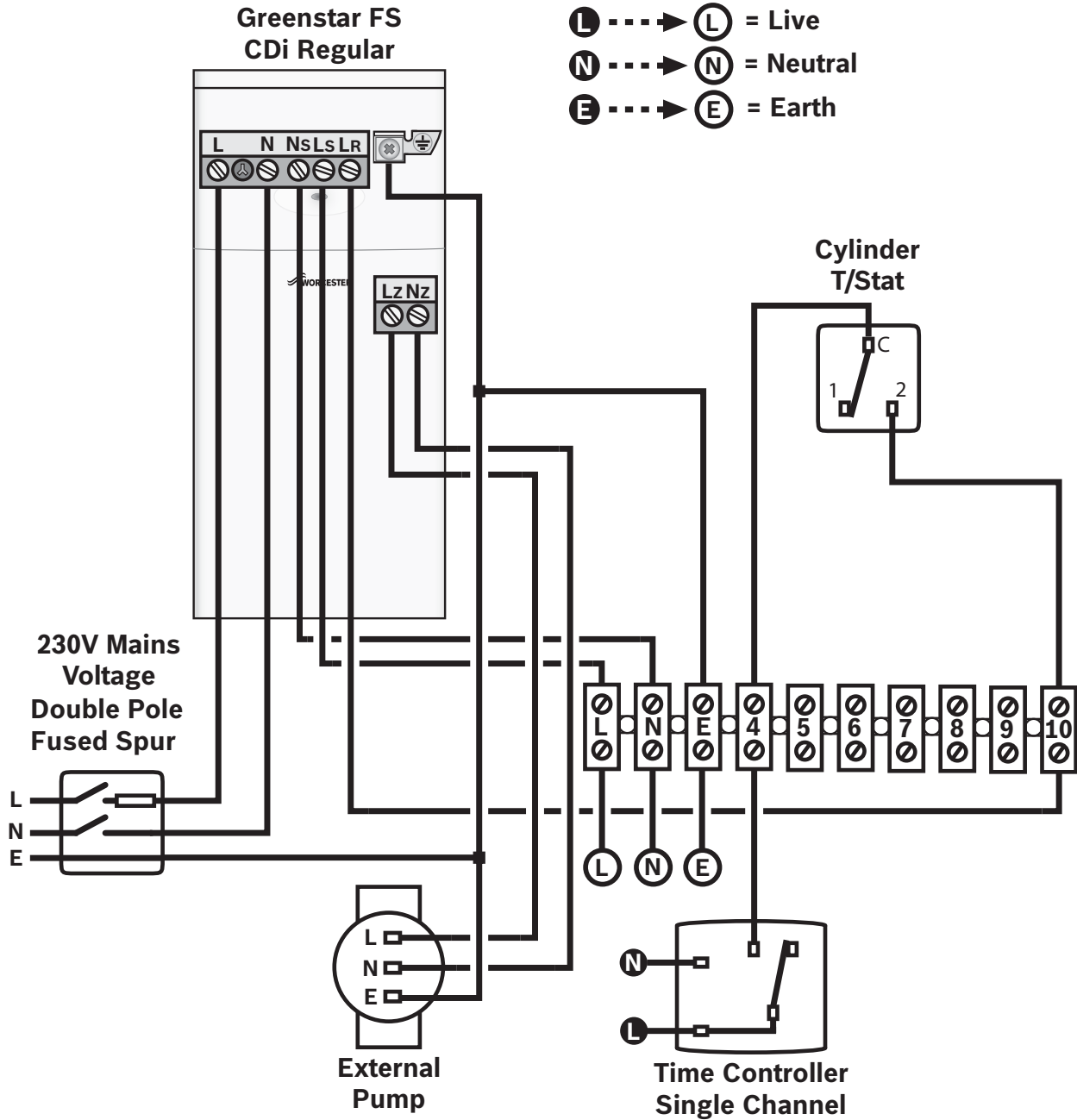
Greenstar FS CDi Regular

Single Hot Water Zone (Vented Cylinder)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ --- Ⓛ = Live Ⓝ --- Ⓝ = Neutral ⓔ --- ⓔ = Earth

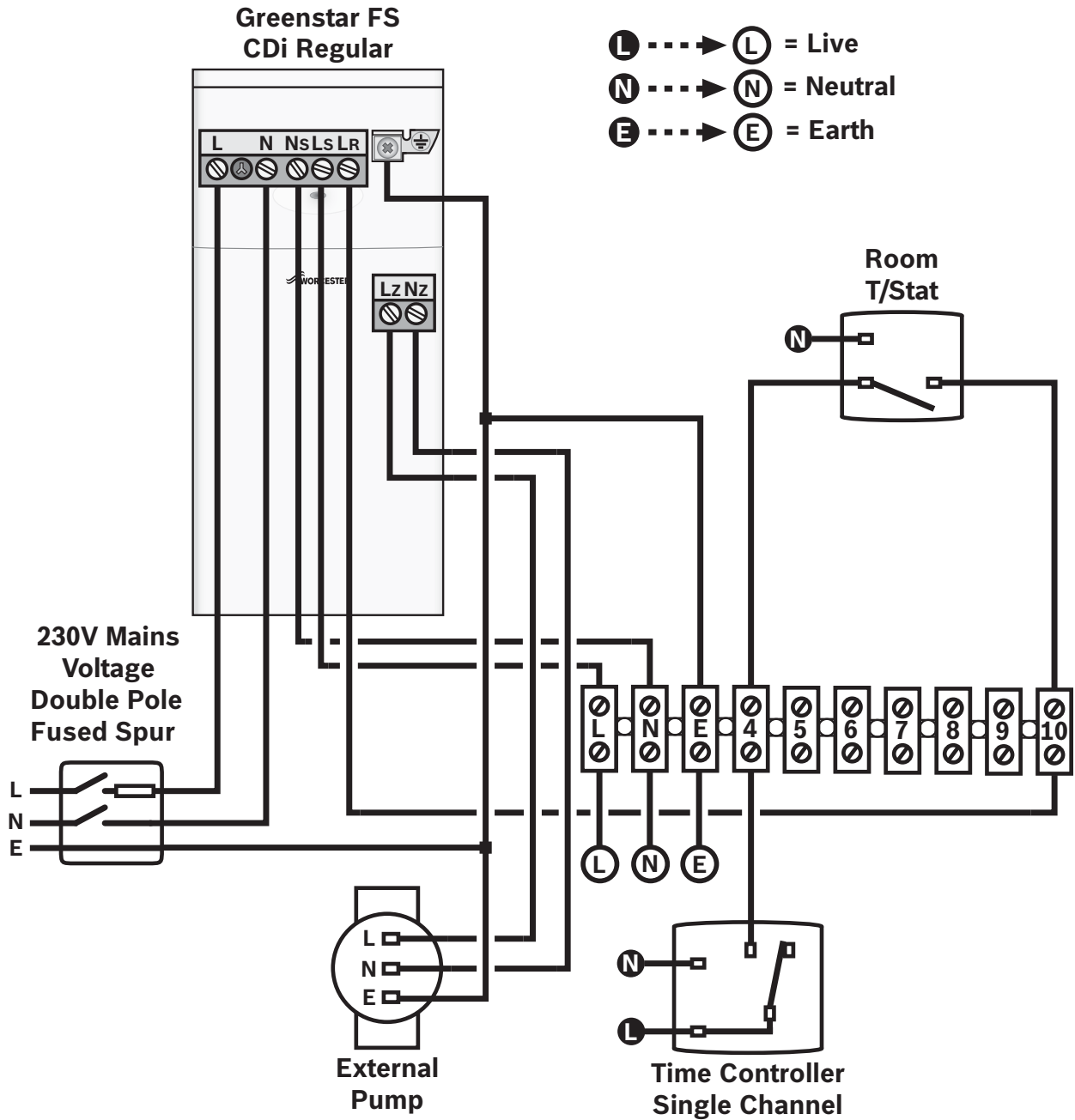


Greenstar FS CDi Regular Single Heating Zone



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral ⓔ → ⓔ = Earth



Greenstar FS CDi Regular Grundfos Pump Plan

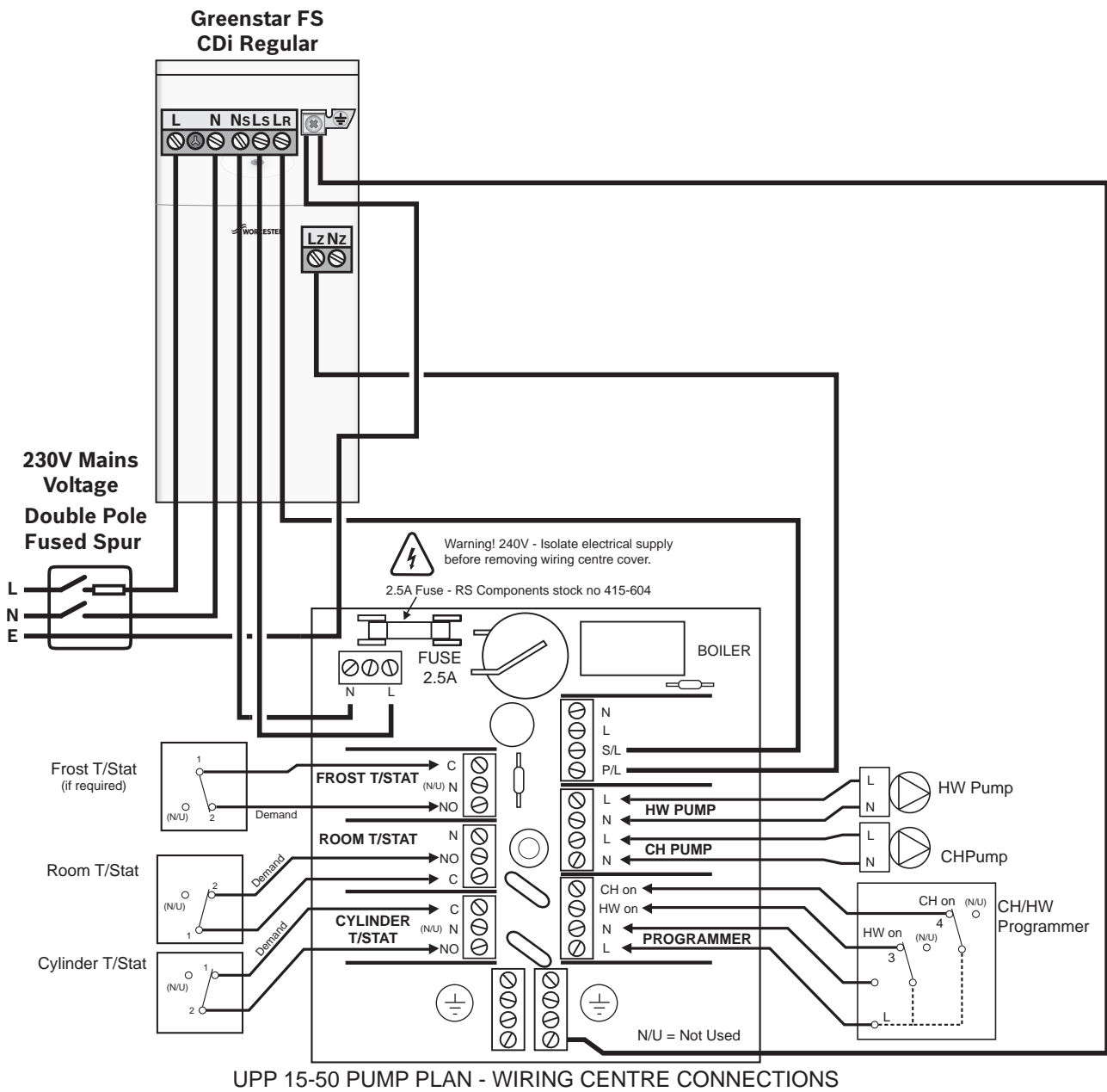


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

IMPORTANT NOTE

The pump over-run of the pump plan controls, causes the hot water pump to run regardless of the hot water cylinder demand, to dissipate boiler heat. Worcester would only recommend the Grundfos pump plan system on a vented cylinder.

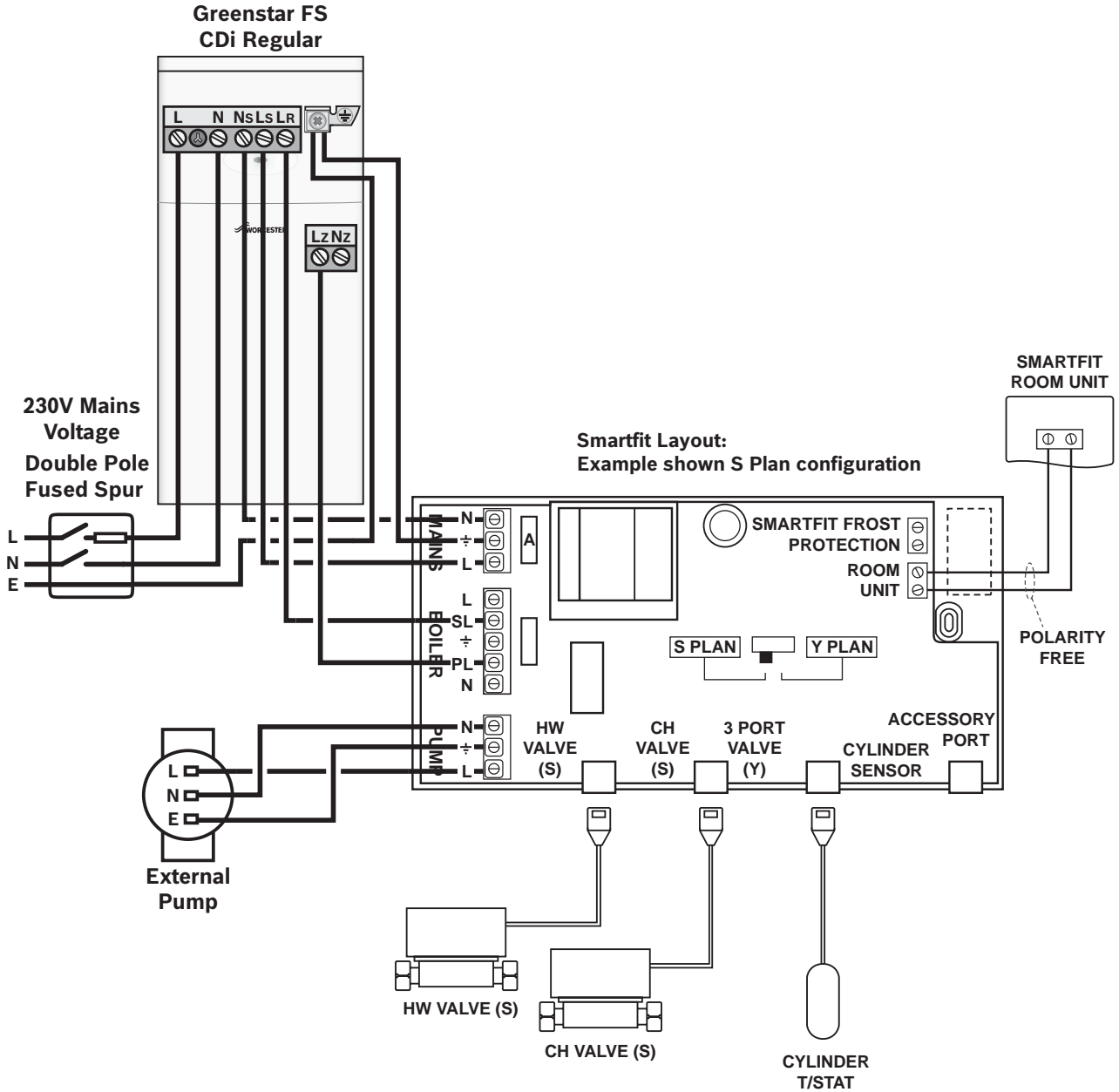


Greenstar FS CDi Regular Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth



Greenstar FS CDi Regular

Cascaded boilers with low loss header



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

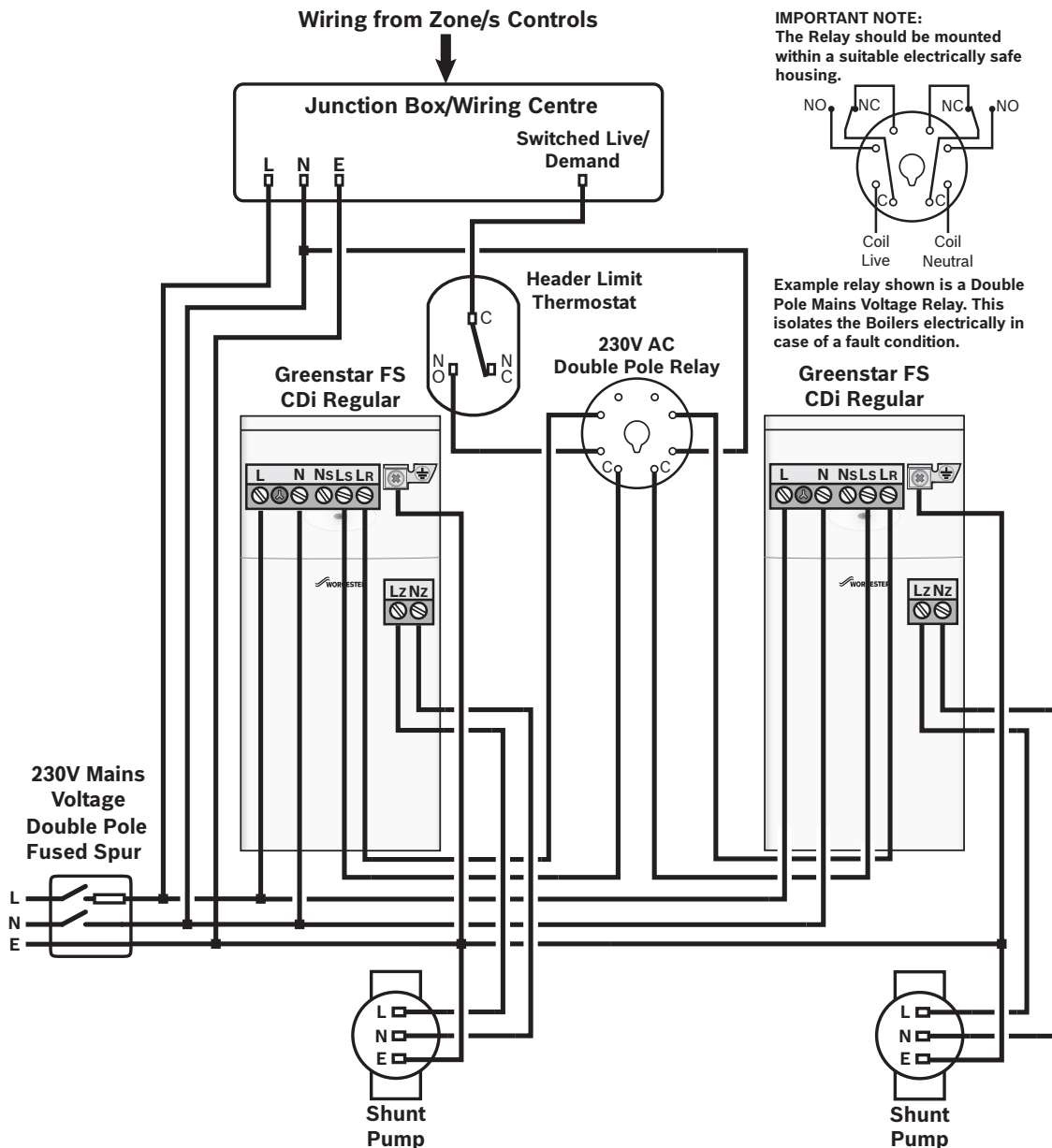
●---● = Live ●---● = Neutral ●---● = Earth

NOTE

A pump must be wired to each boiler for pump over-run to dissipate heat from within the boiler. The connections are pump live to Lz, pump neutral to Nz and pump earth to the Earth point of each boiler.

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90°C.



Greenstar FS CDi Regular

Frost Protection



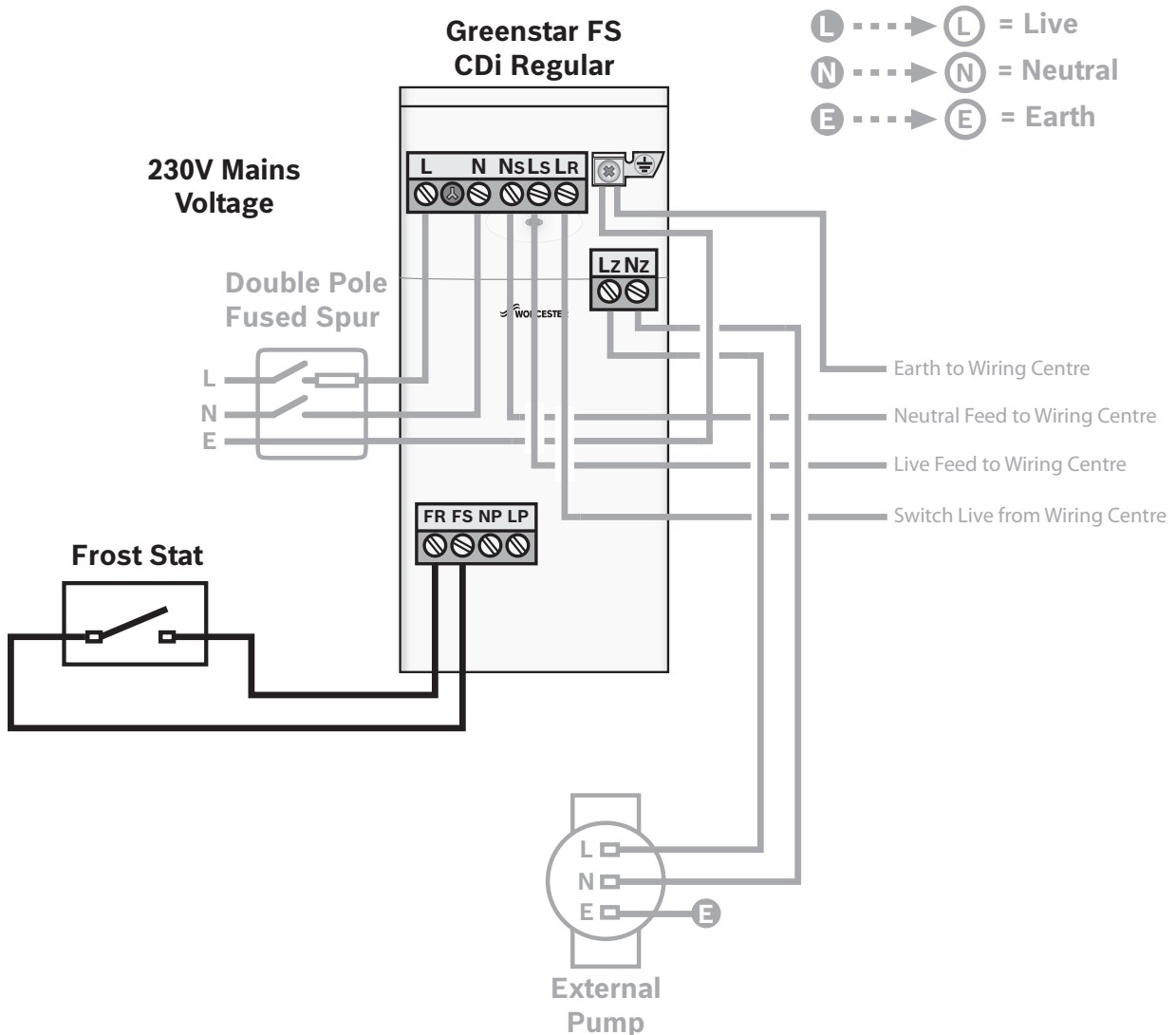
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ---> ○ = Live ● ---> ○ = Neutral ● ---> ○ = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When the temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.



Greenstar HF CDi combi

2 x Heating Zones

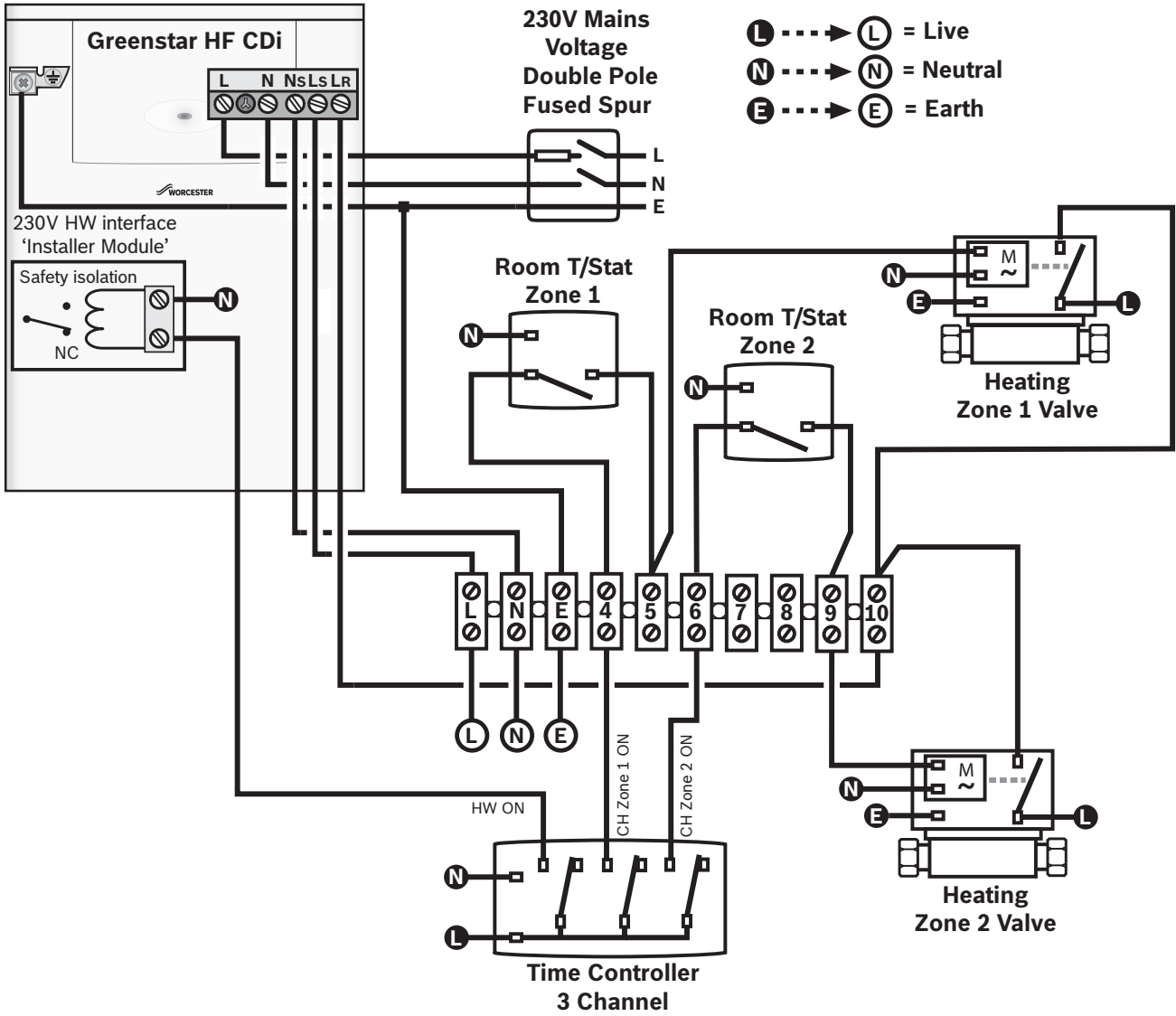


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L = Live

N = Neutral

E = Earth



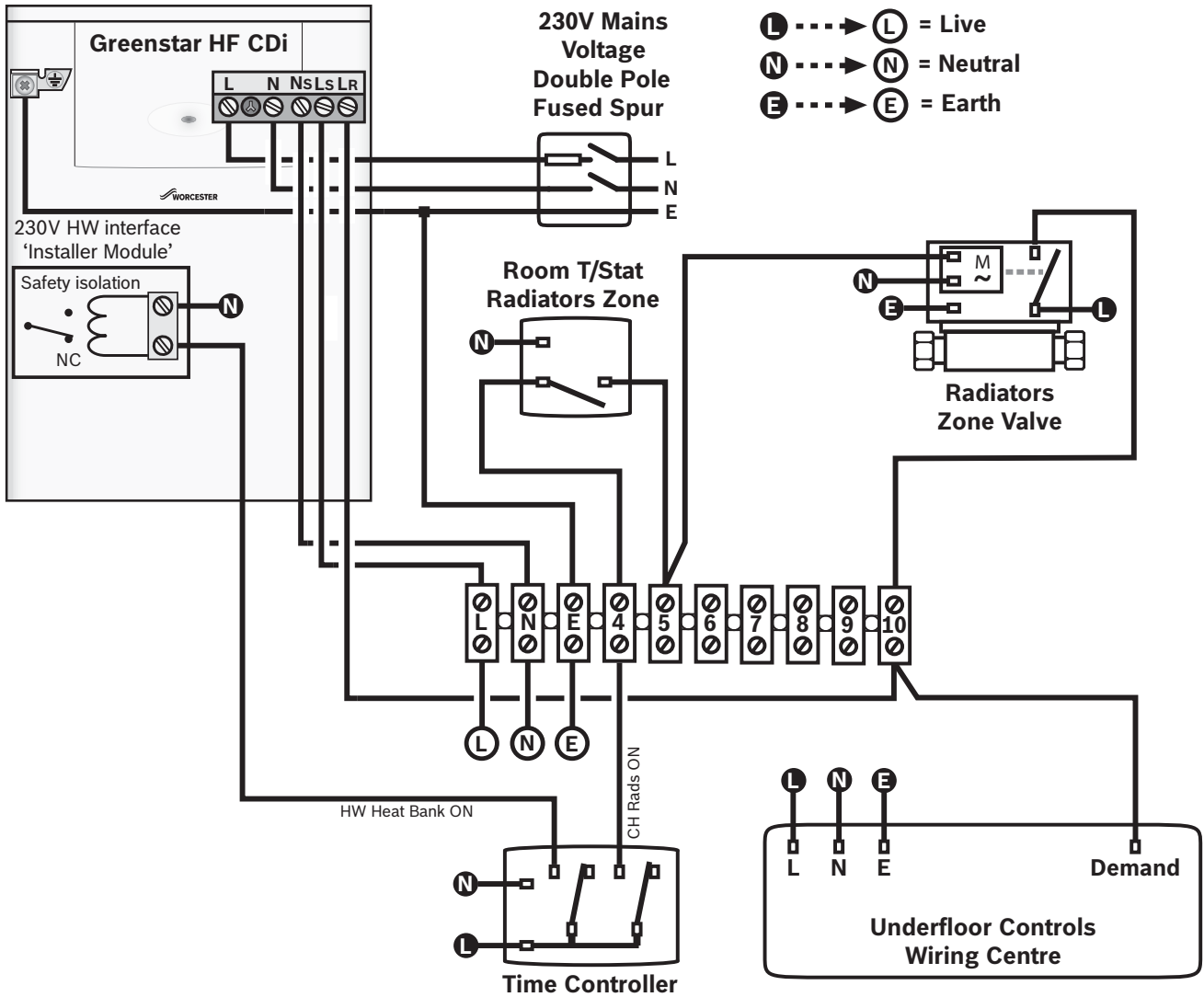
Greenstar HF CDi combi

Zoned Radiator & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L ----> L = Live
N ----> N = Neutral
E ----> E = Earth



Greenstar HF CDi combi separate Time Controller & Room Thermostat

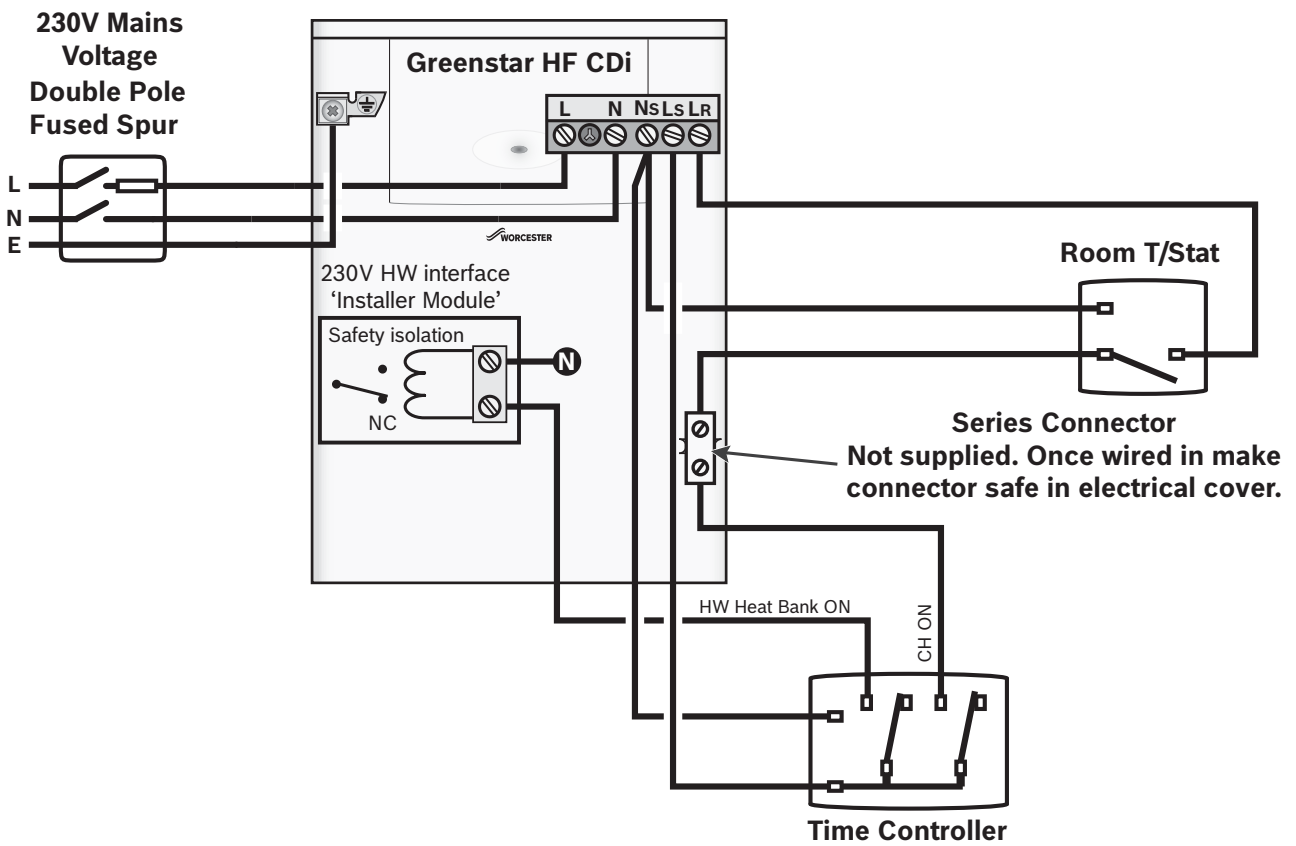


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth

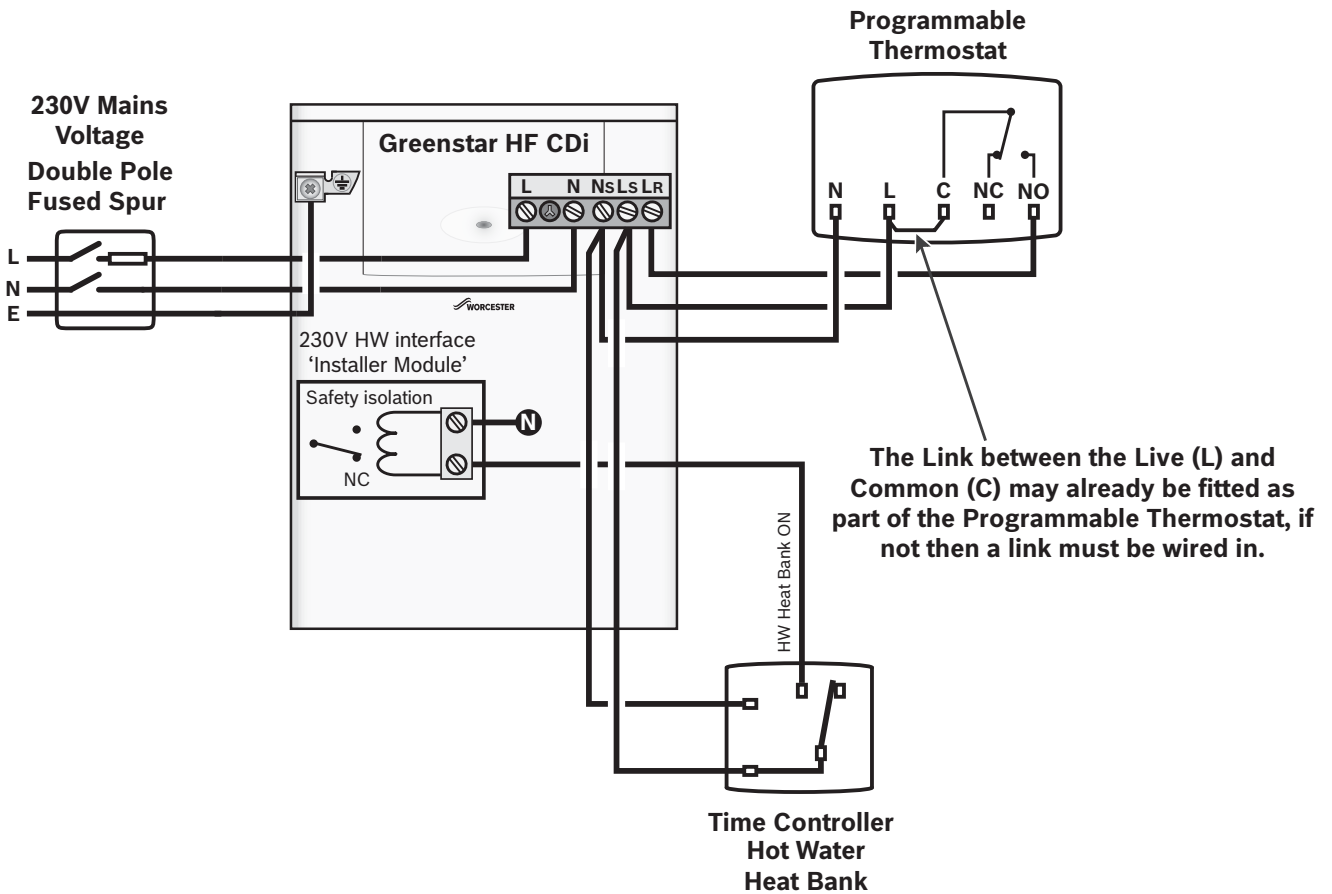


Greenstar HF CDi Programmable Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live
 = Neutral
 = Earth



Greenstar HF CDi combi

Large heating circuit with low loss header



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth

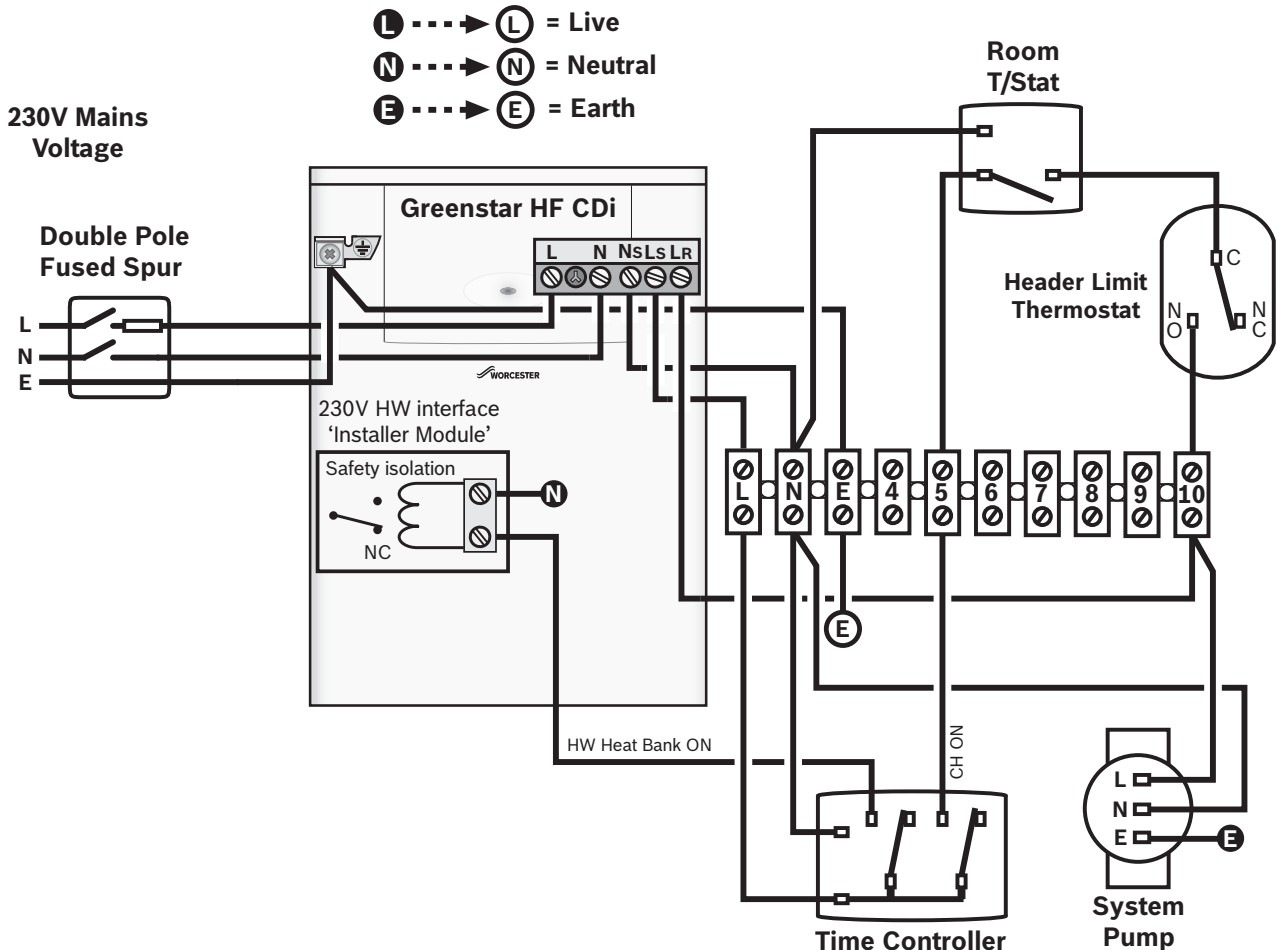
If the heating system requires a larger pump to circulate the water, then a header can be used to prevent the boiler and system pump from conflicting with each other.

NOTE

The system pump is wired with the heating demand so it will only activate when the heating is called for. Size the system pump according to system design specifications and water content.

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boiler in the event of excessive temperature within the header due to lack of circulation. Ideally this should be set to 90°C.



Greenstar HF CDi combi

Frost Protection



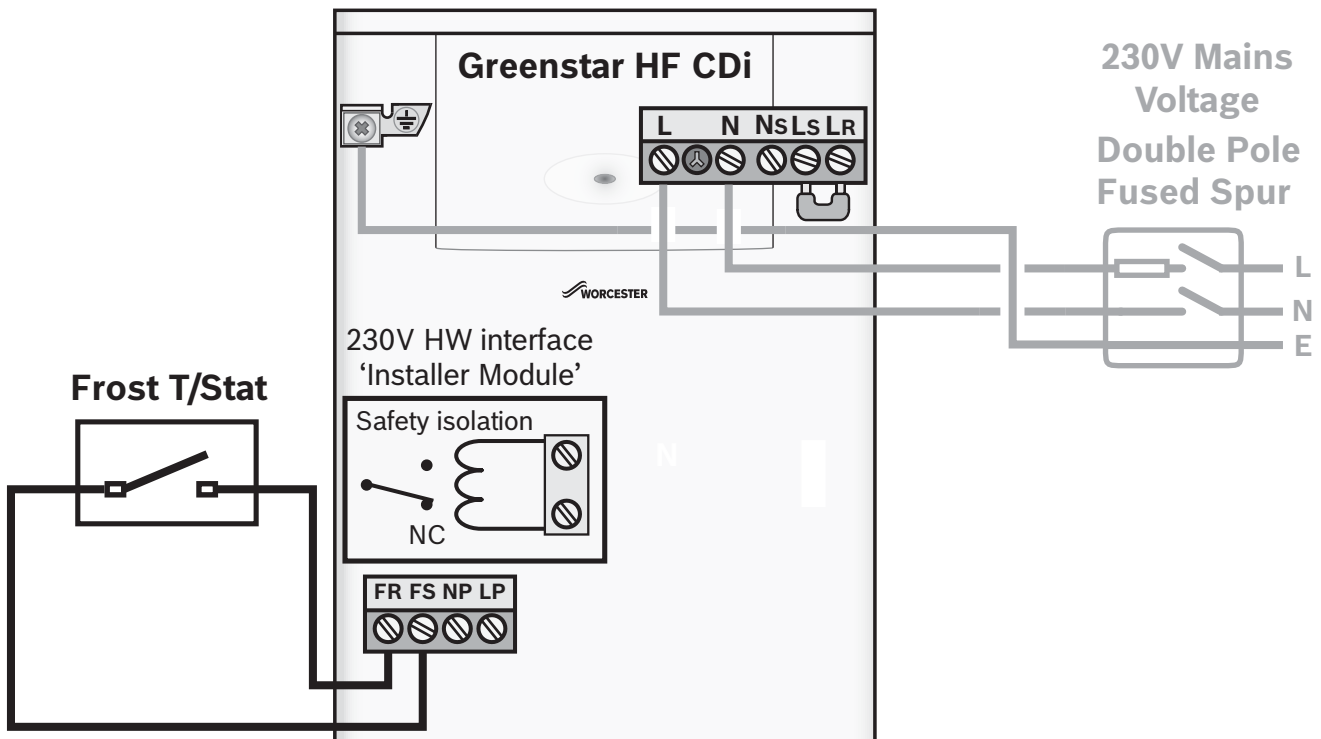
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---N = Neutral ⊕---⊕ = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When then temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.



Greenstar Si Combi

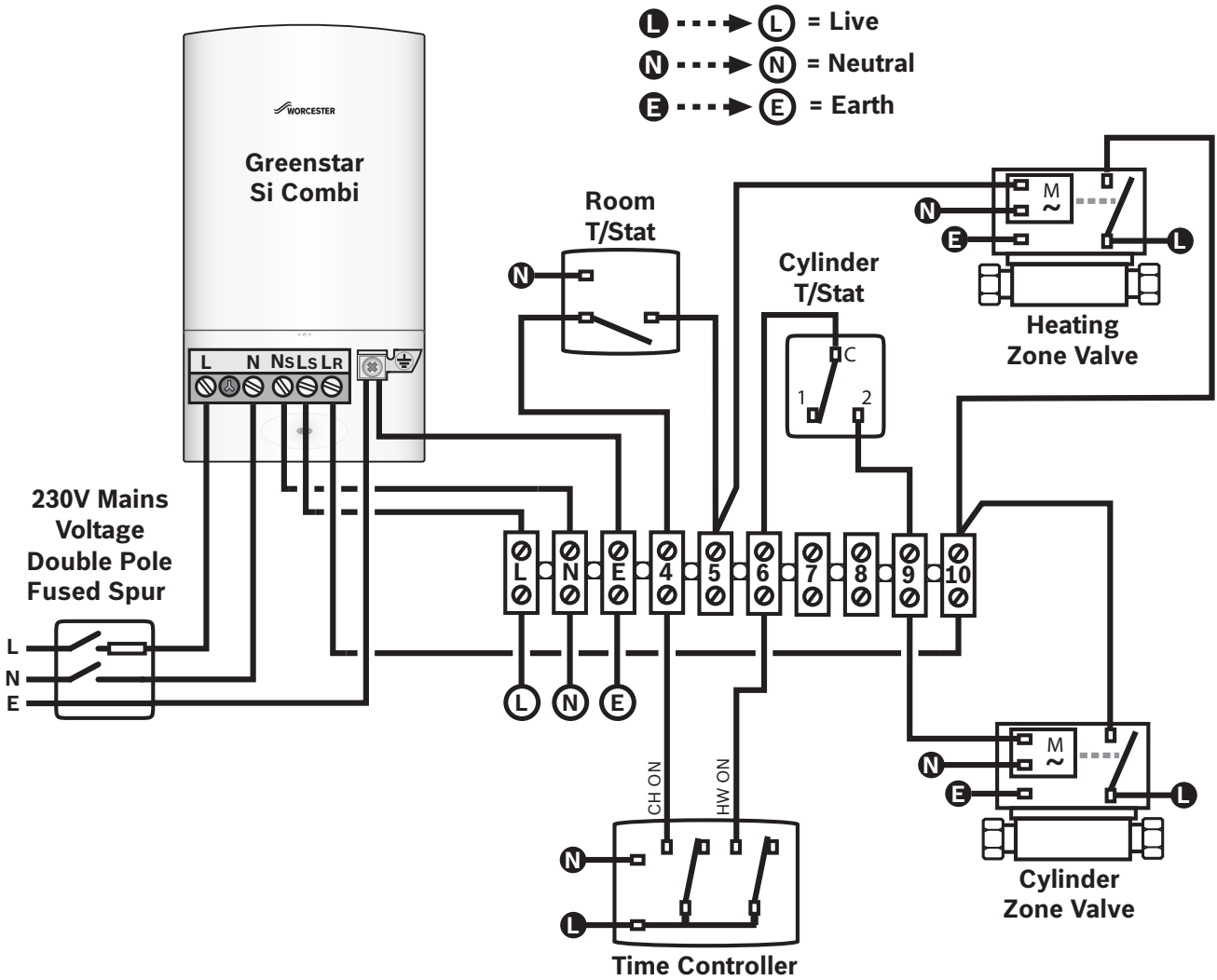
2 x 2 Port Valves (S Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

● ---> ○ = Live ● ---> ○ = Neutral ● ---> ○ = Earth



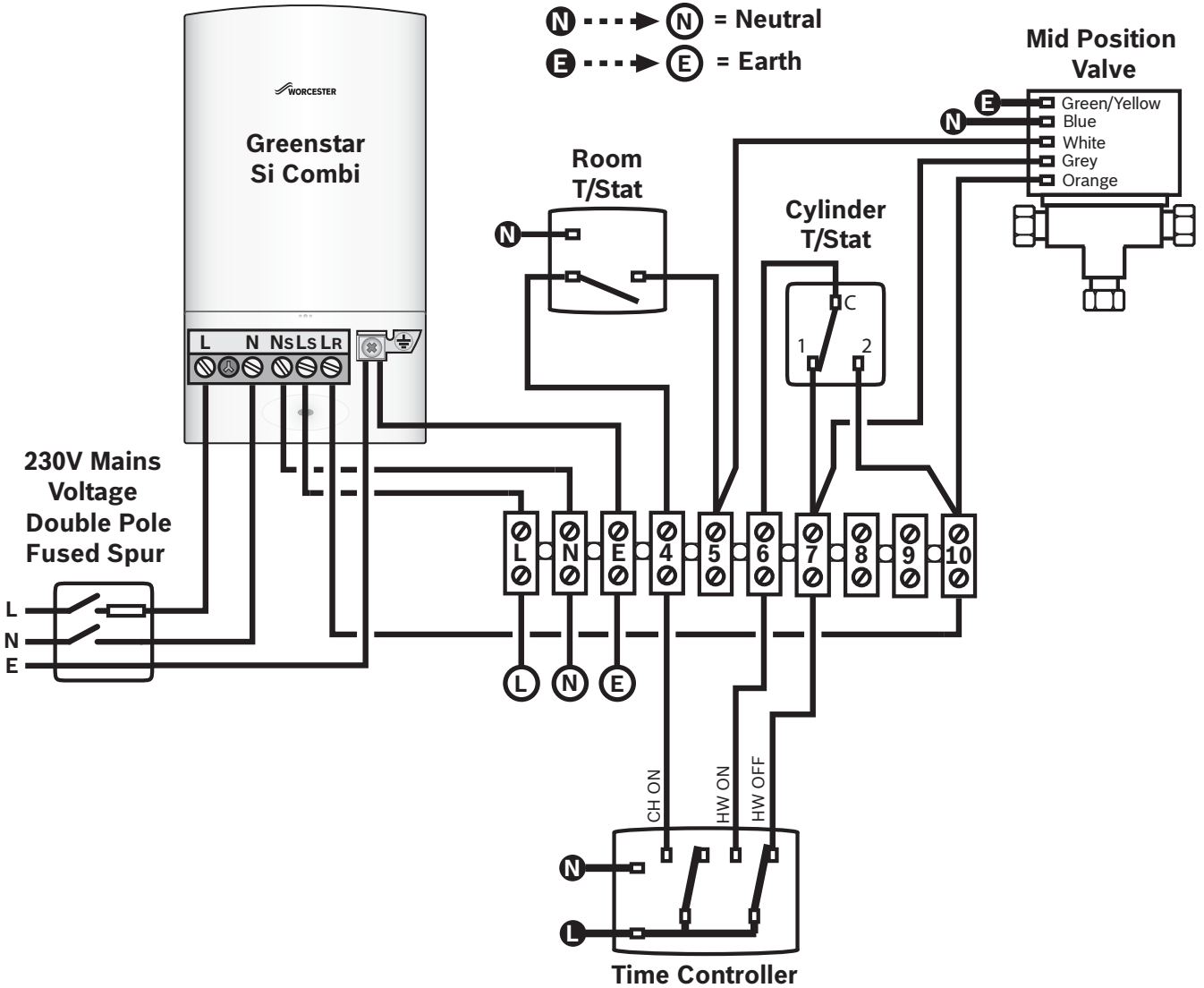
Greenstar Si Combi Mid Position Valve (Y Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral ⓔ → ⓔ = Earth

Ⓛ → Ⓛ = Live
Ⓝ → Ⓝ = Neutral
ⓔ → ⓔ = Earth



Greenstar Si Combi

3 x 2 Port Valves (S Plan Plus)

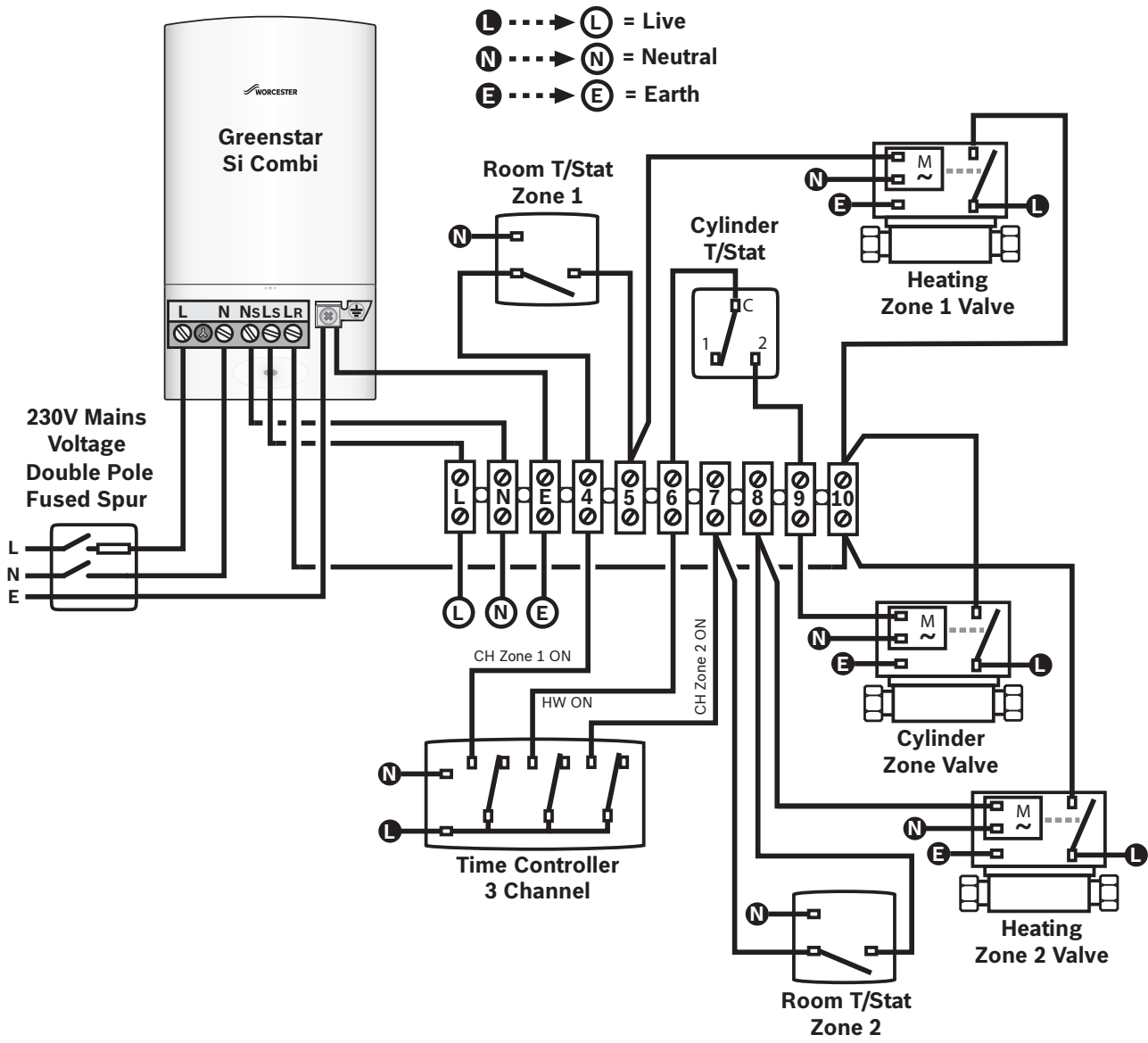


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



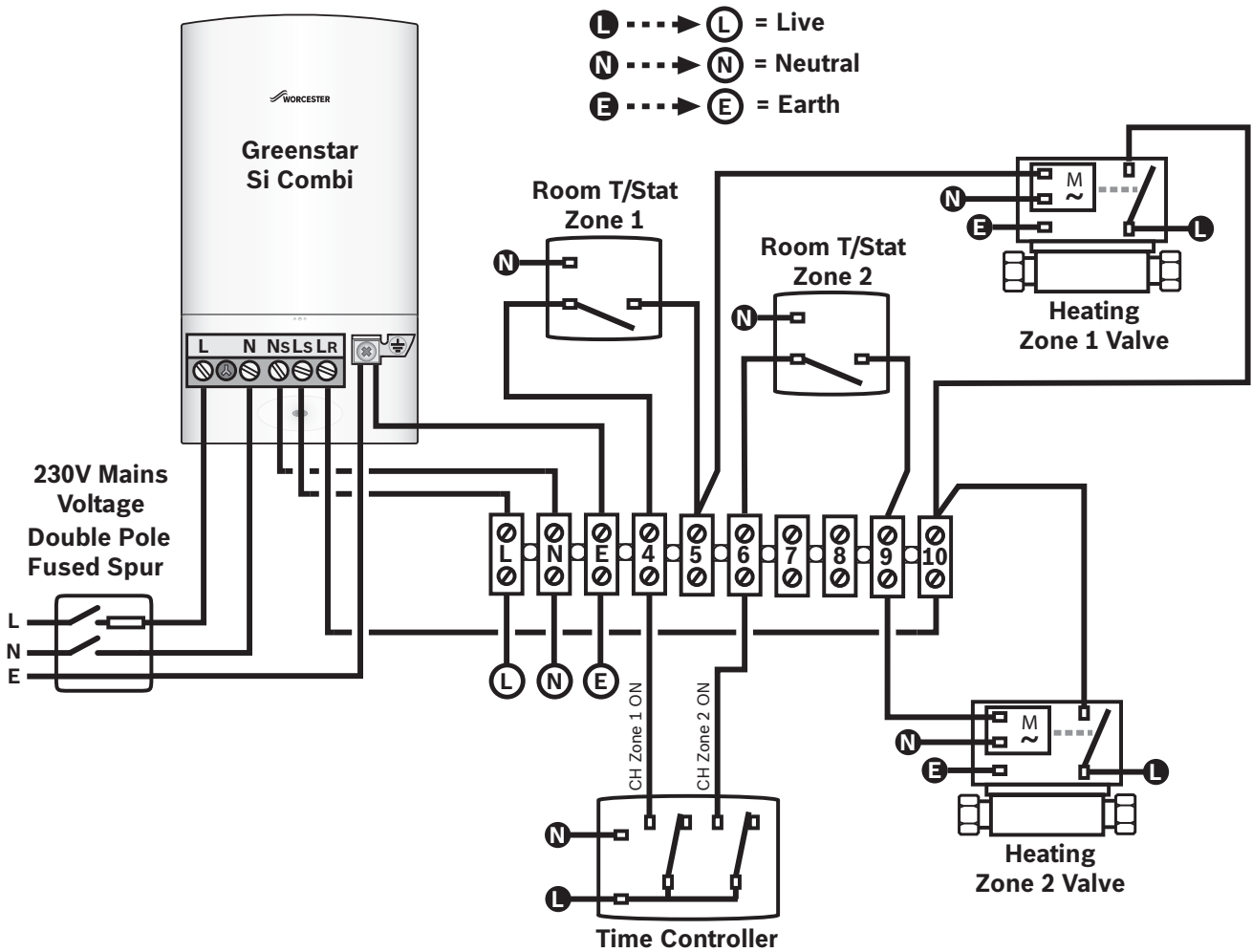
Greenstar Si Combi

2 x Heating Zones



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L → L = Live
N → N = Neutral
E → E = Earth



Greenstar Si Combi

2 x 2 Port Valves & Underfloor Heating

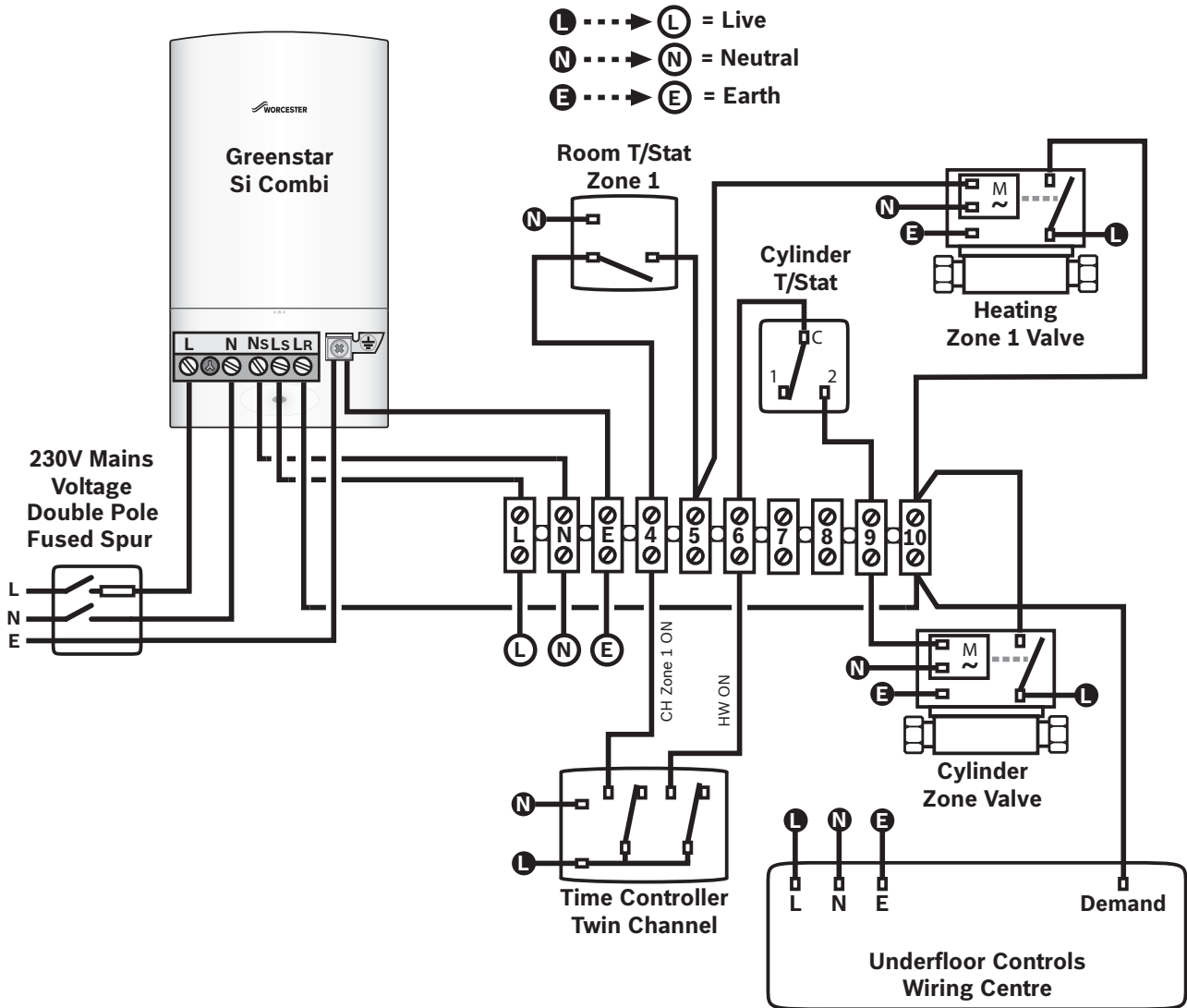


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar Si Combi

Zoned Radiator & Underfloor Heating

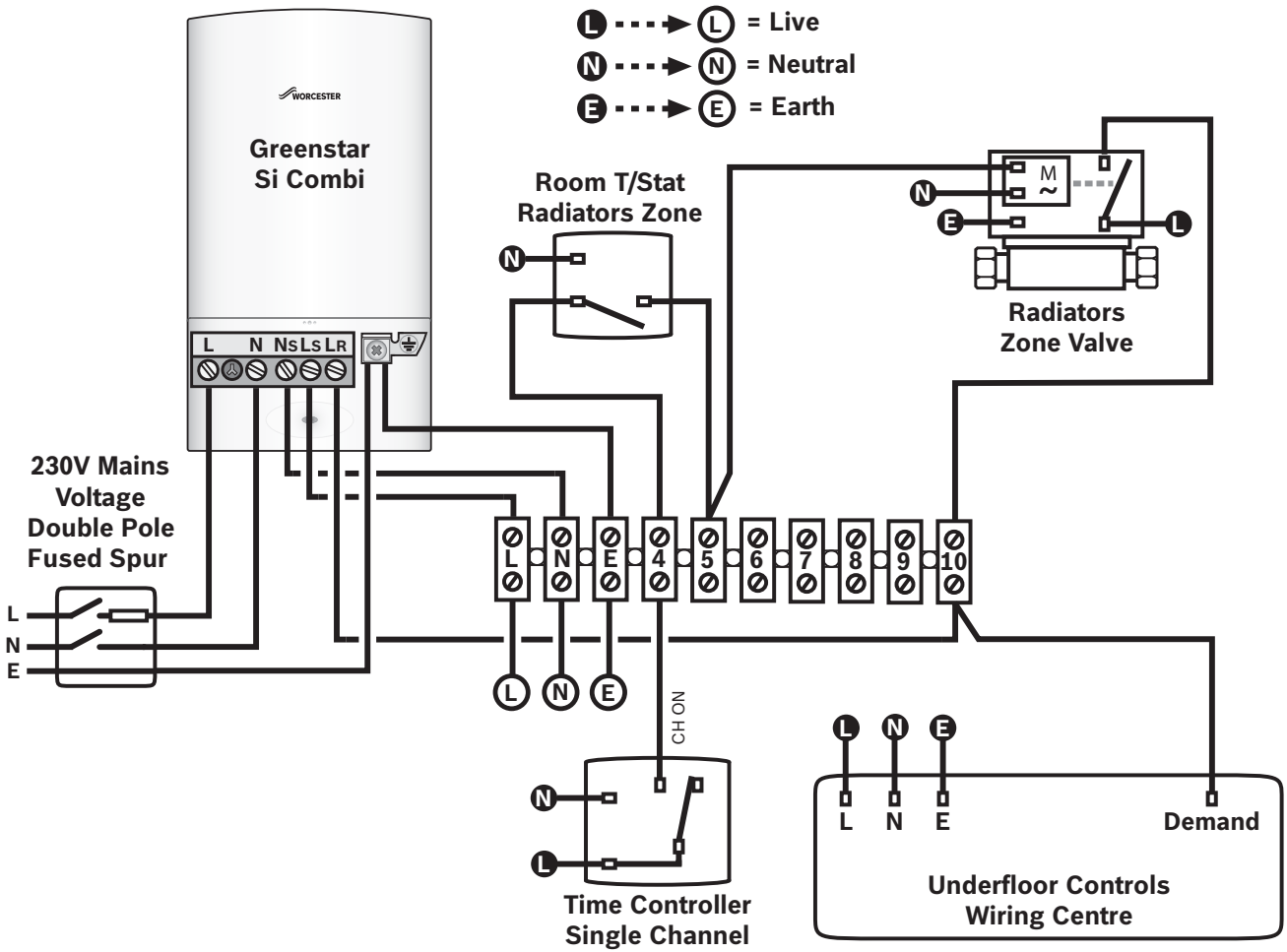


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth

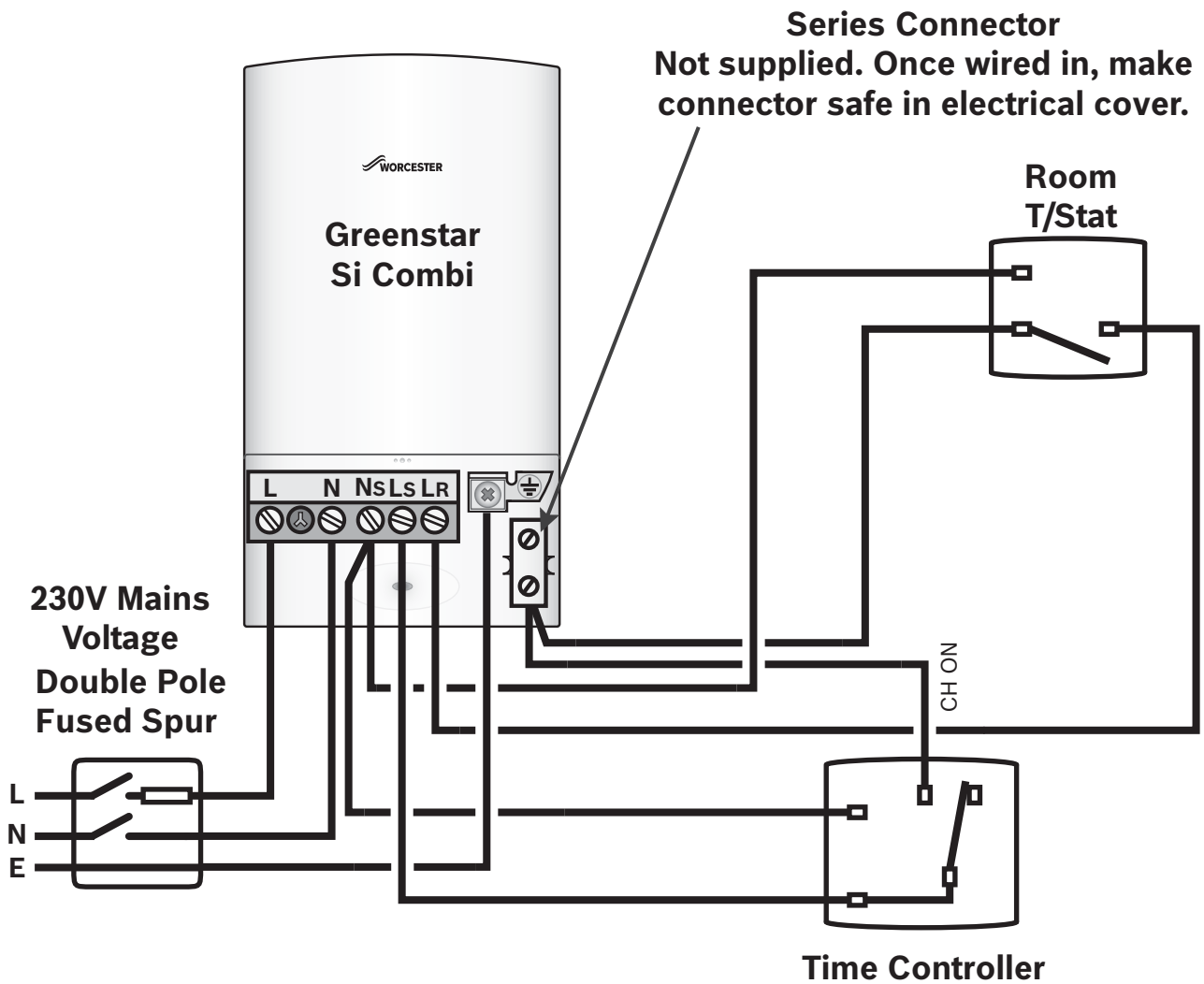


Greenstar Si Combi separate Time Controller & Room Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---N = Neutral ⊕---⊕ = Earth

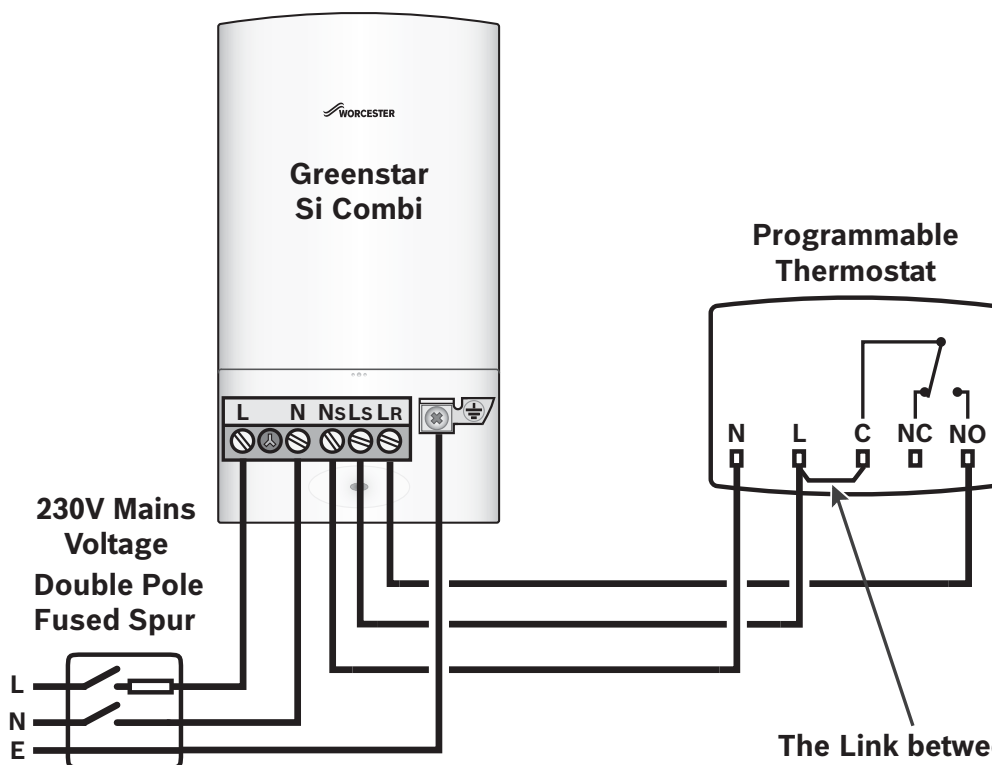


Greenstar Si Combi Programmable Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● → ● = Live ● → ● = Neutral ● → ● = Earth



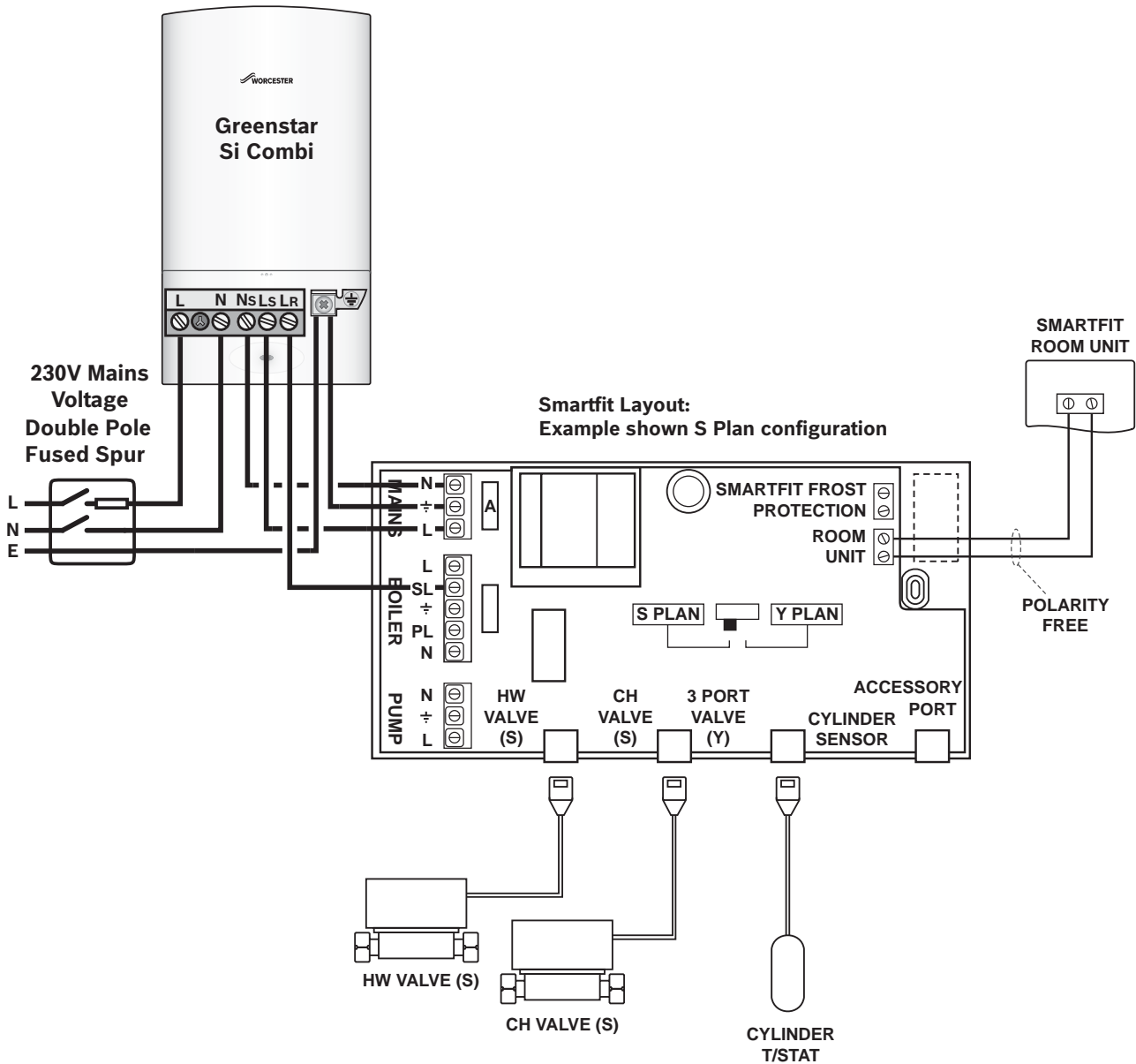
The Link between the Live (L) and Common (C) may already be fitted as part of the Programmable Thermostat, if not then a link must be wired in.

Greenstar Si Combi Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● --- ● = Live ● --- ● = Neutral ● --- ● = Earth



Greenstar Si Combi

Cascaded boilers with low loss header

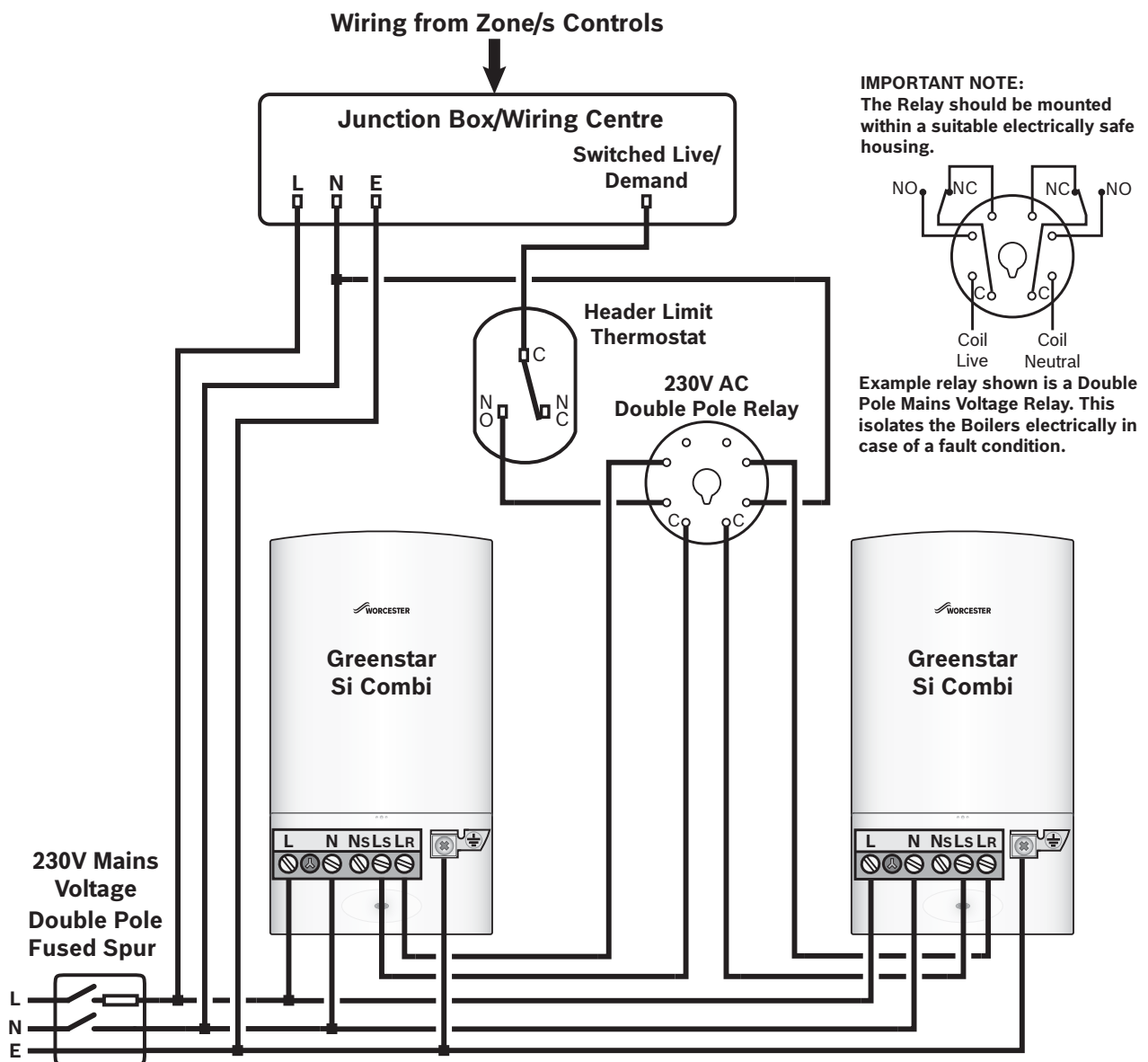


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90° C.



Greenstar Si Combi

Frost Protection



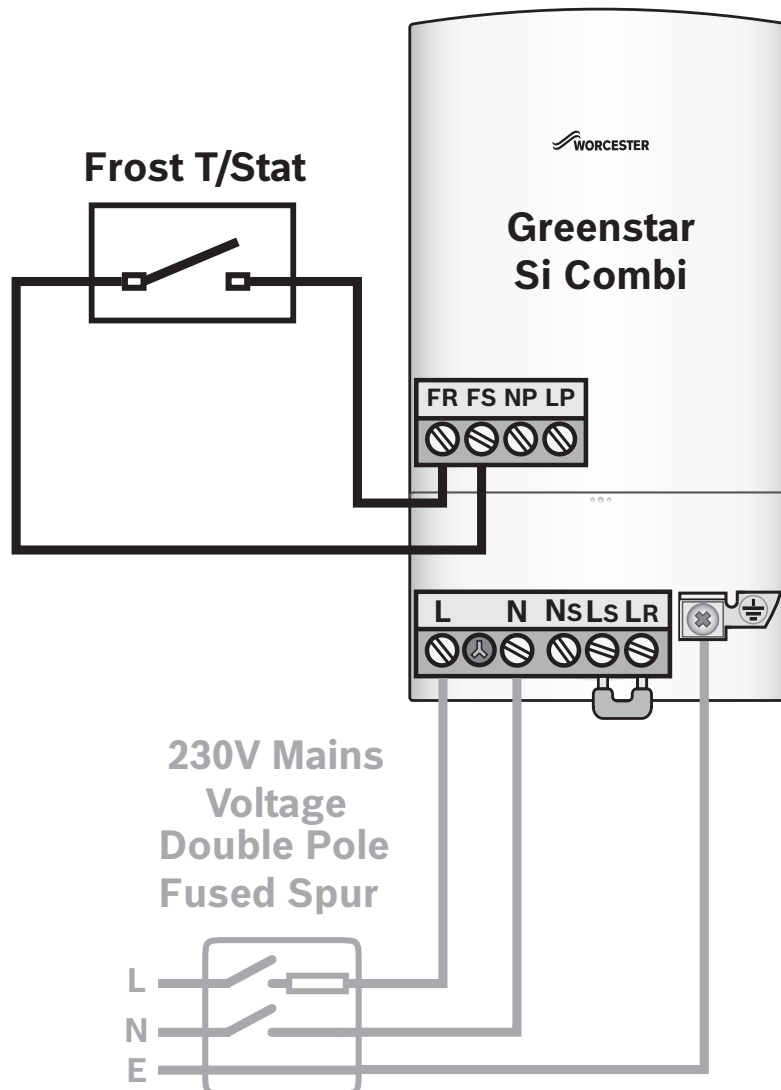
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---N = Neutral ⊕---⊕ = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When then temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.

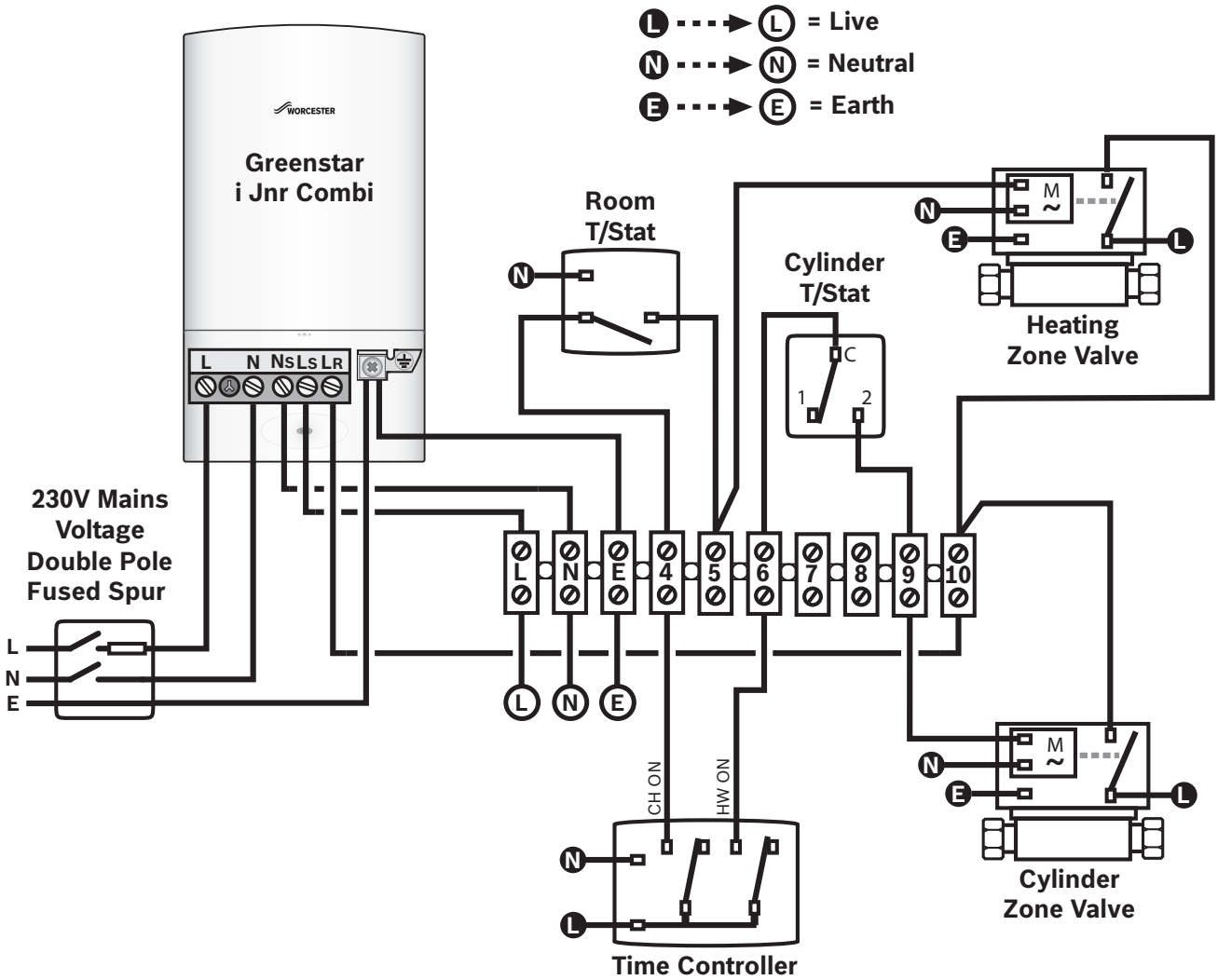


Greenstar i Junior Combi 2 x 2 Port Valves (S Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth



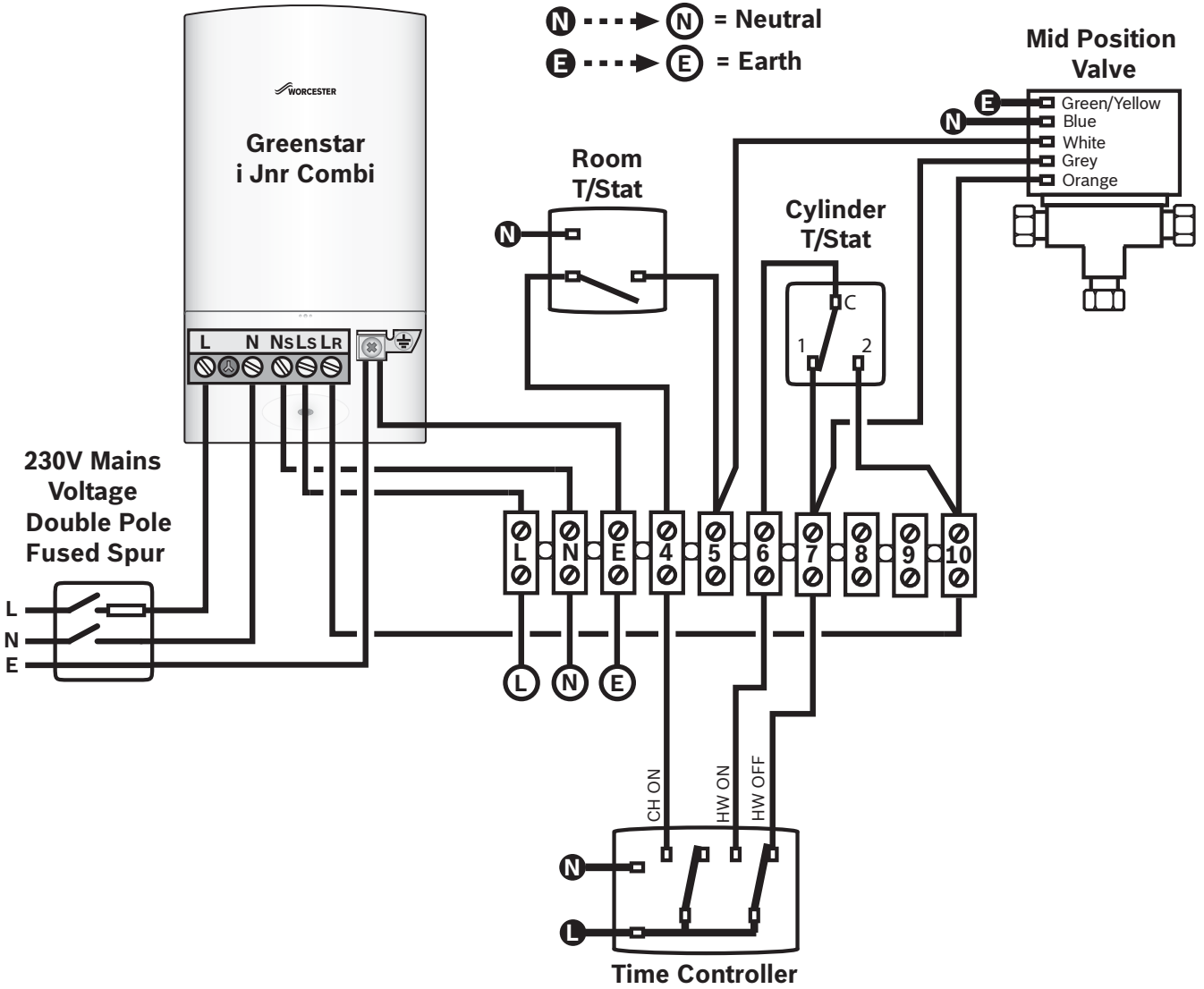
Greenstar i Junior Combi Mid Position Valve (Y Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral ⓔ → ⓔ = Earth

Ⓛ → Ⓛ = Live
Ⓝ → Ⓝ = Neutral
ⓔ → ⓔ = Earth



Greenstar i Junior Combi 3 x 2 Port Valves (S Plan Plus)

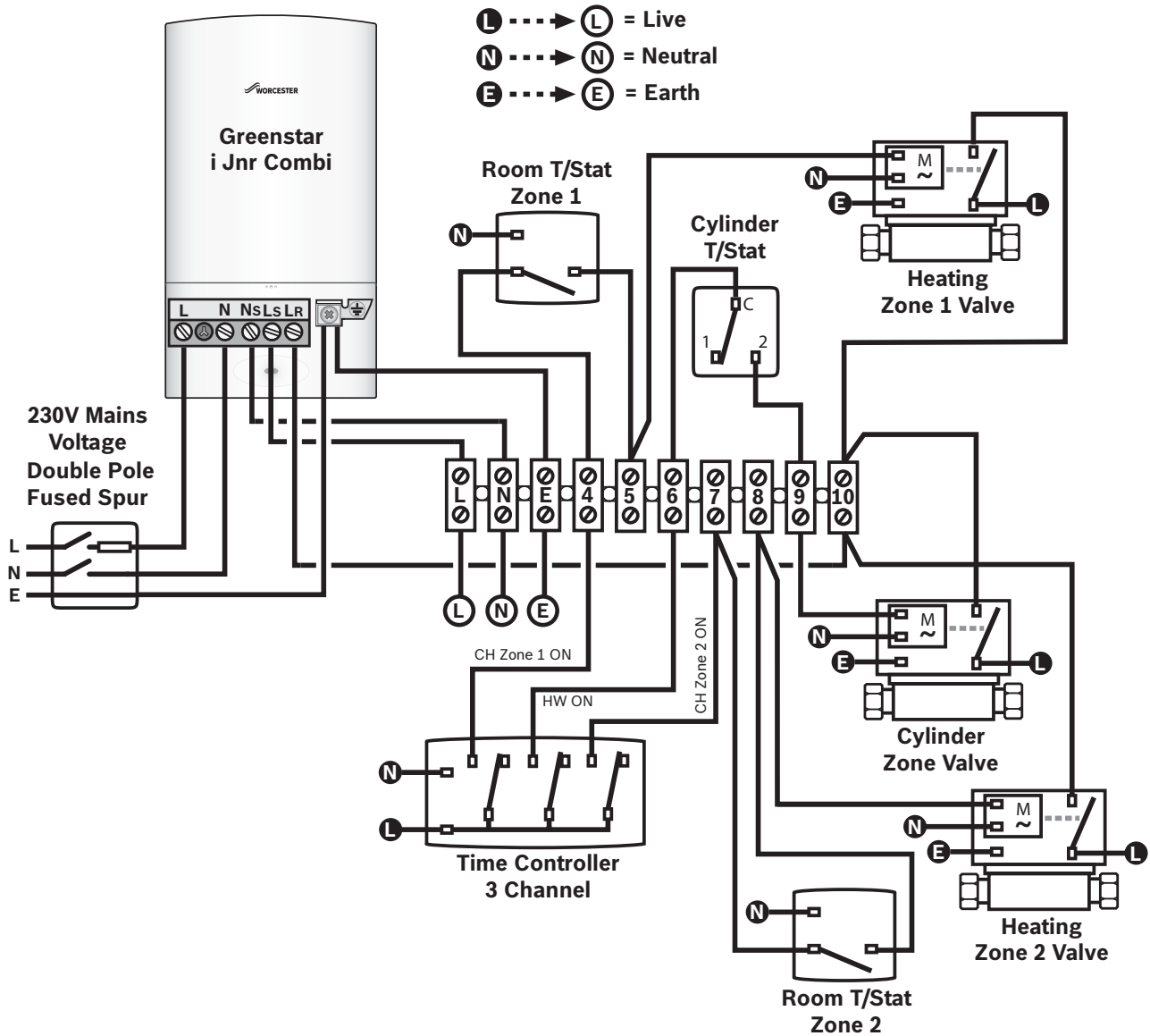


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



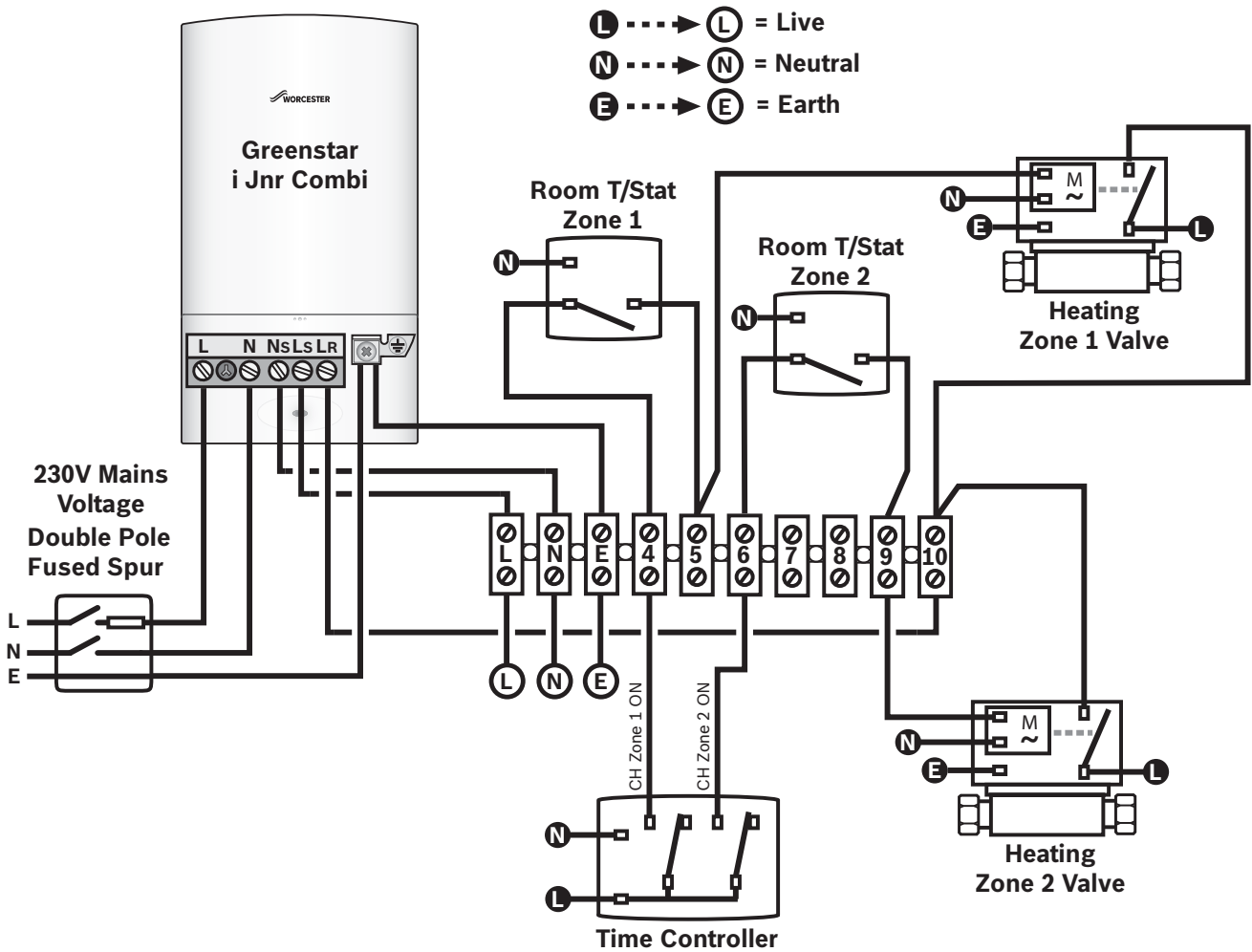
Greenstar i Junior Combi

2 x Heating Zones



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L → L = Live
N → N = Neutral
E → E = Earth



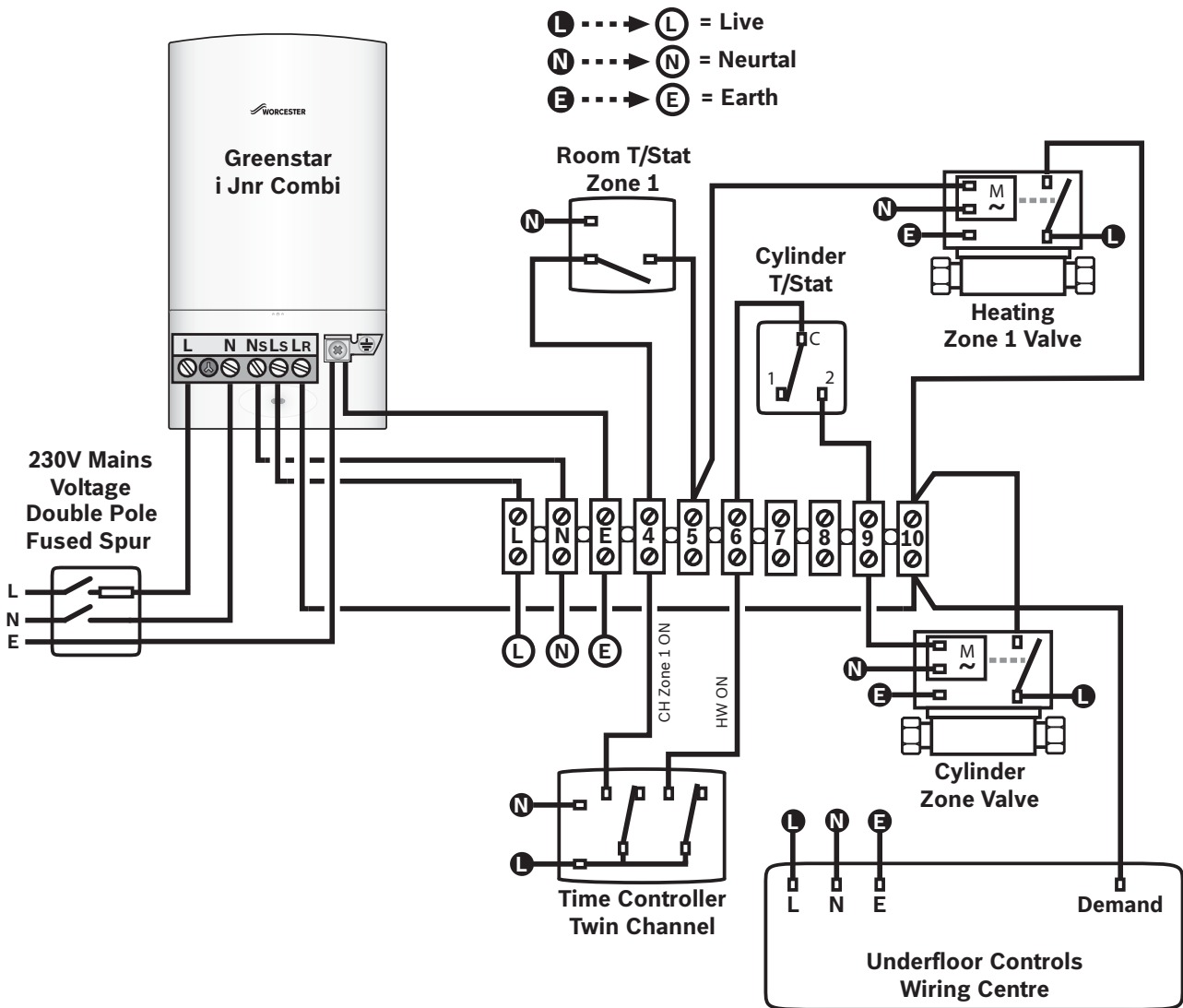
Greenstar i Junior Combi

2 x 2 Port Valves & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

L L = Live
N N = Neutral
E E = Earth



Greenstar i Junior Combi

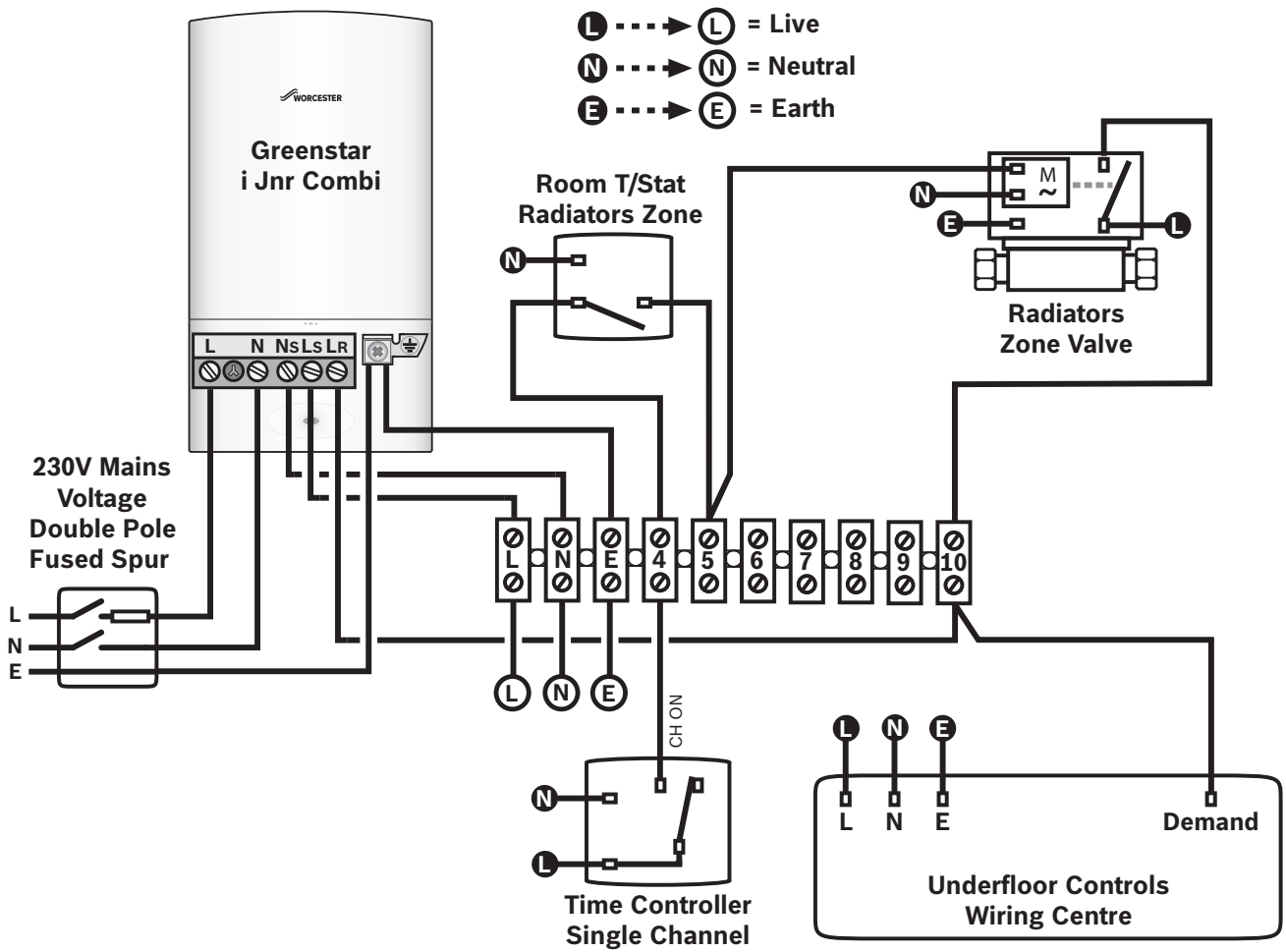
Zoned Radiator & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

● ----> ● = Live ● ----> ● = Neutral ● ----> ● = Earth

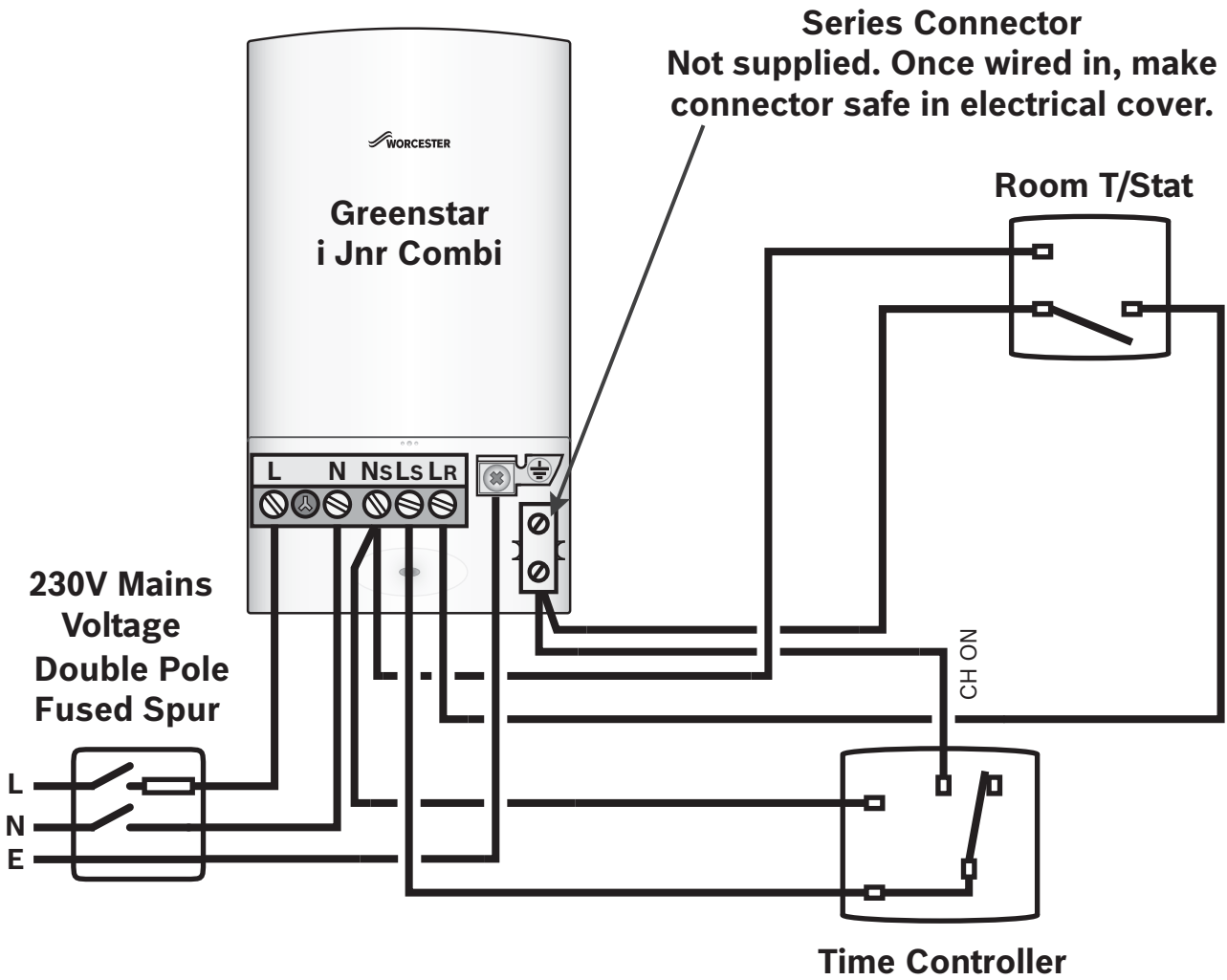


Greenstar i Junior Combi separate Time Controller & Room Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

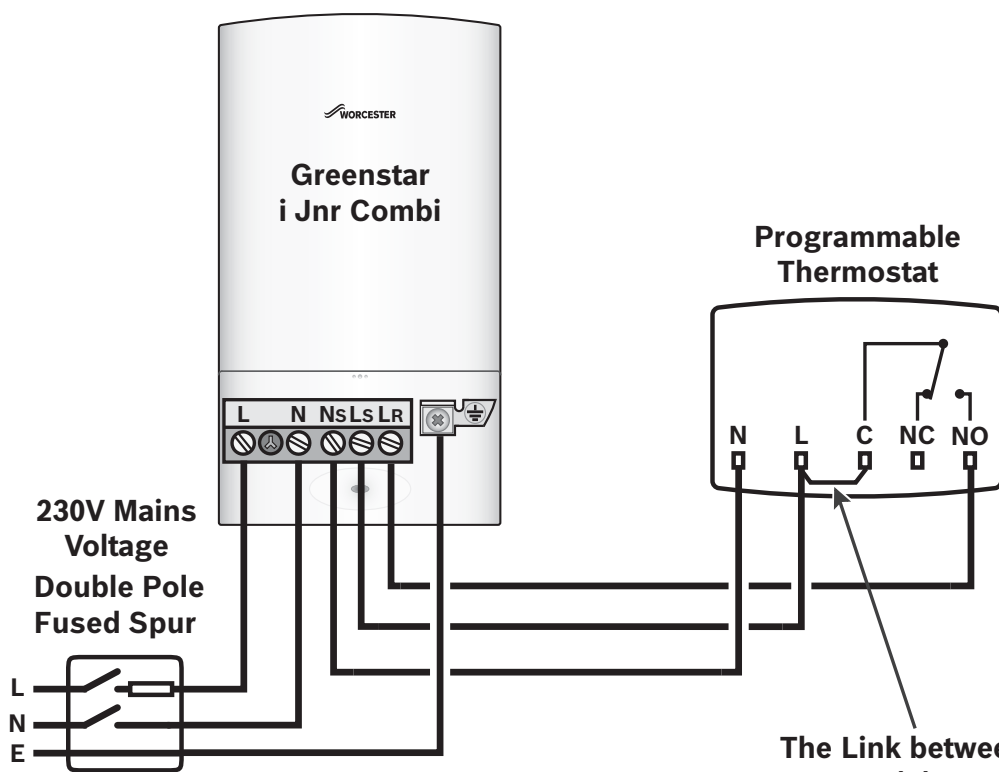


Greenstar i Junior Combi Programmable Thermostat



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth



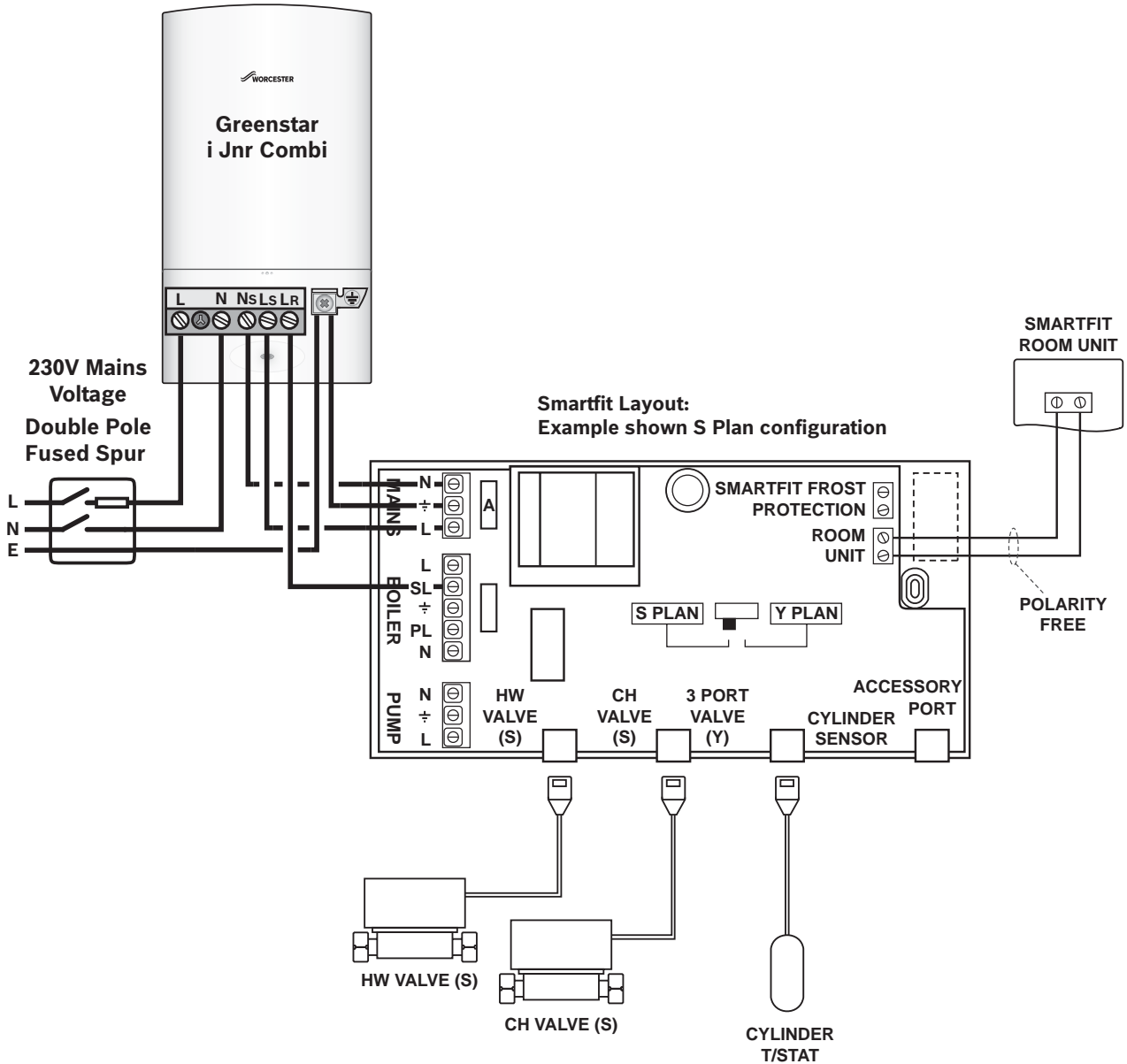
The Link between the Live (L) and Common (C) may already be fitted as part of the Programmable Thermostat, if not then a link must be wired in.

Greenstar i Junior combi Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live
 = Neutral
 = Earth



Greenstar i Junior combi Cascade boilers with low loss header

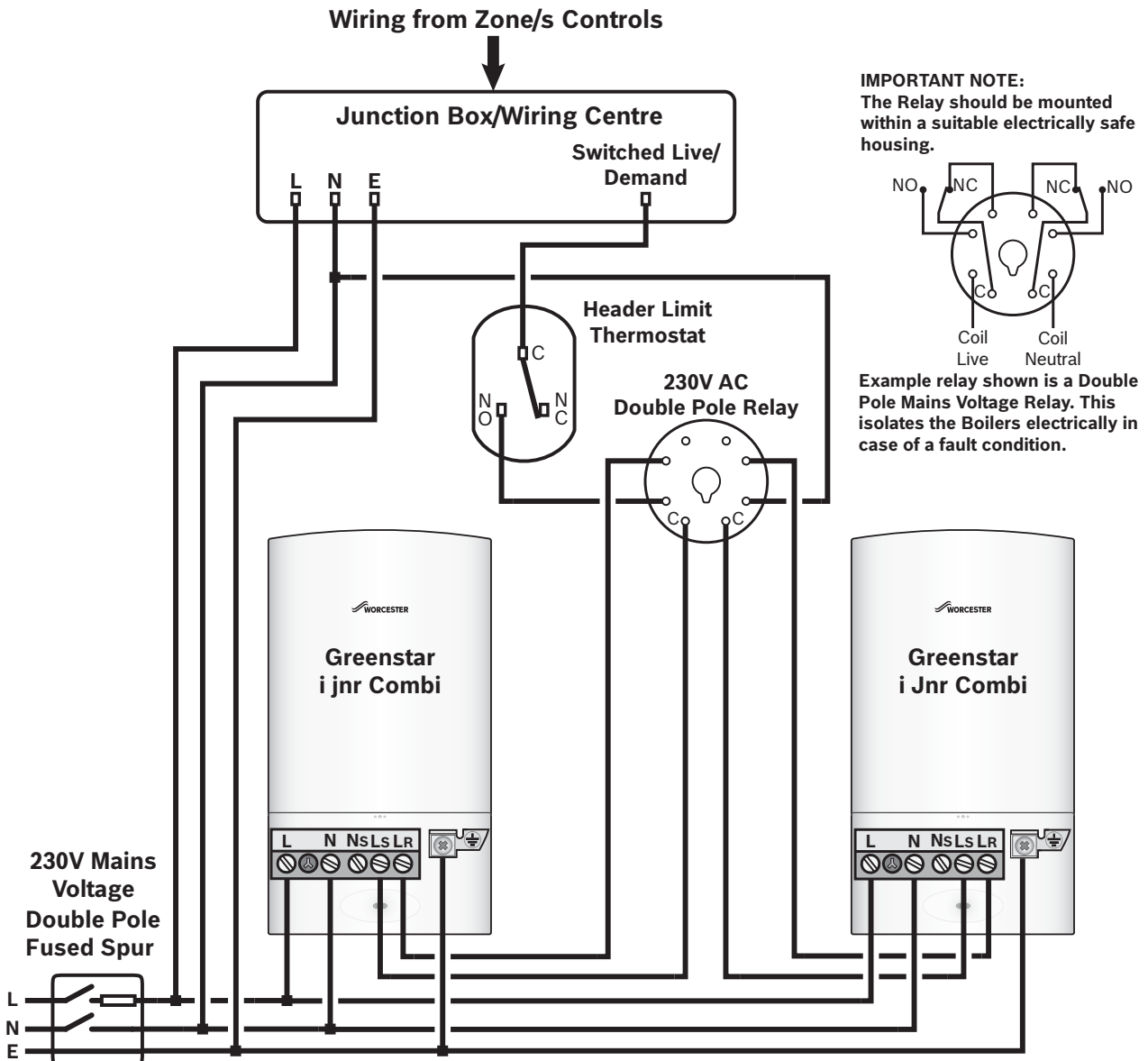


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90° C.



Greenstar i Junior combi

Frost Protection



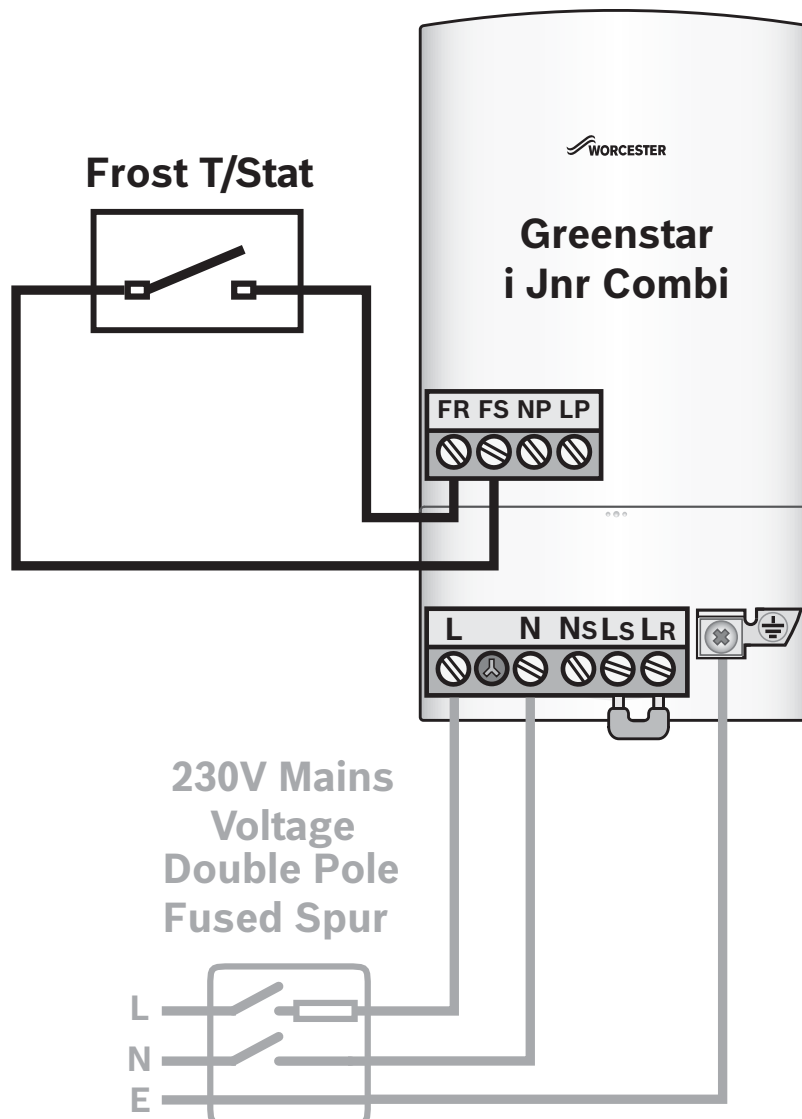
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---N = Neutral ⊕---⊕ = Earth

The boiler has inbuilt frost protection. When the primary temperature drops below 8°C the pump is switched on. When then temperature rises above 9°C the pump switches off after a 3 minute pump overrun. If the primary temperature drops below 5°C, a central heating demand is activated until the primary temperature rises above 12 °C. The demand switches off followed by the pump after a 3 minute overrun.

The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

If external frost thermostat is calling, i.e. temperature within frost thermostat below the set point, but the primary temperature of the boiler is above 5°C, the pump will run until the temperature within the frost thermostat rises above the set point. If external frost thermostat is calling and the primary temperature is below 5°C, a central heating demand is activated until primary temperature is above 12 °C. If the frost thermostat is still calling the pump will run until the temperature within the frost thermostat location rises above the set point.



Greenstar i System

2 x 2 Port Valves (S Plan)

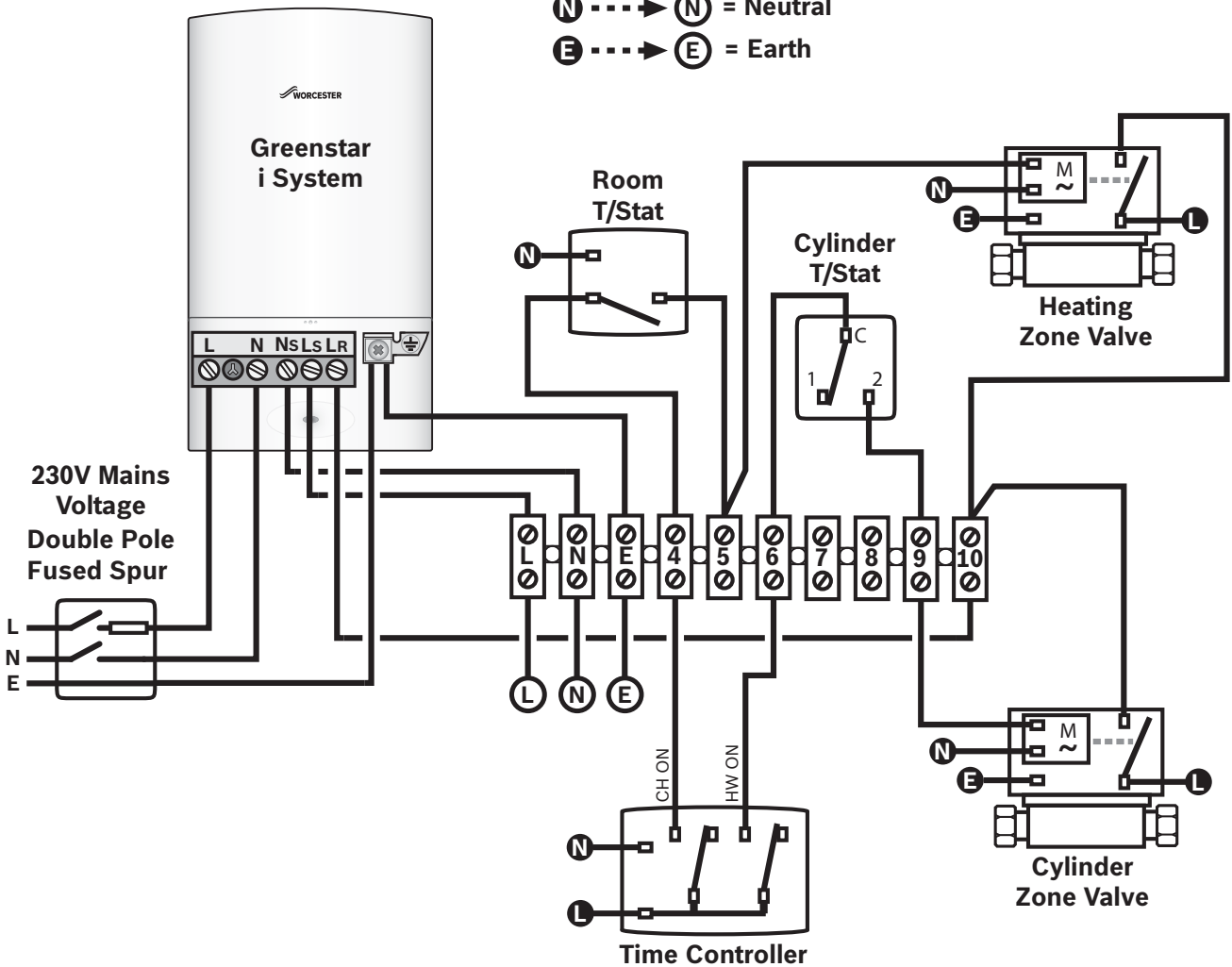


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

●---● = Live
 ●---● = Neutral
 ●---● = Earth



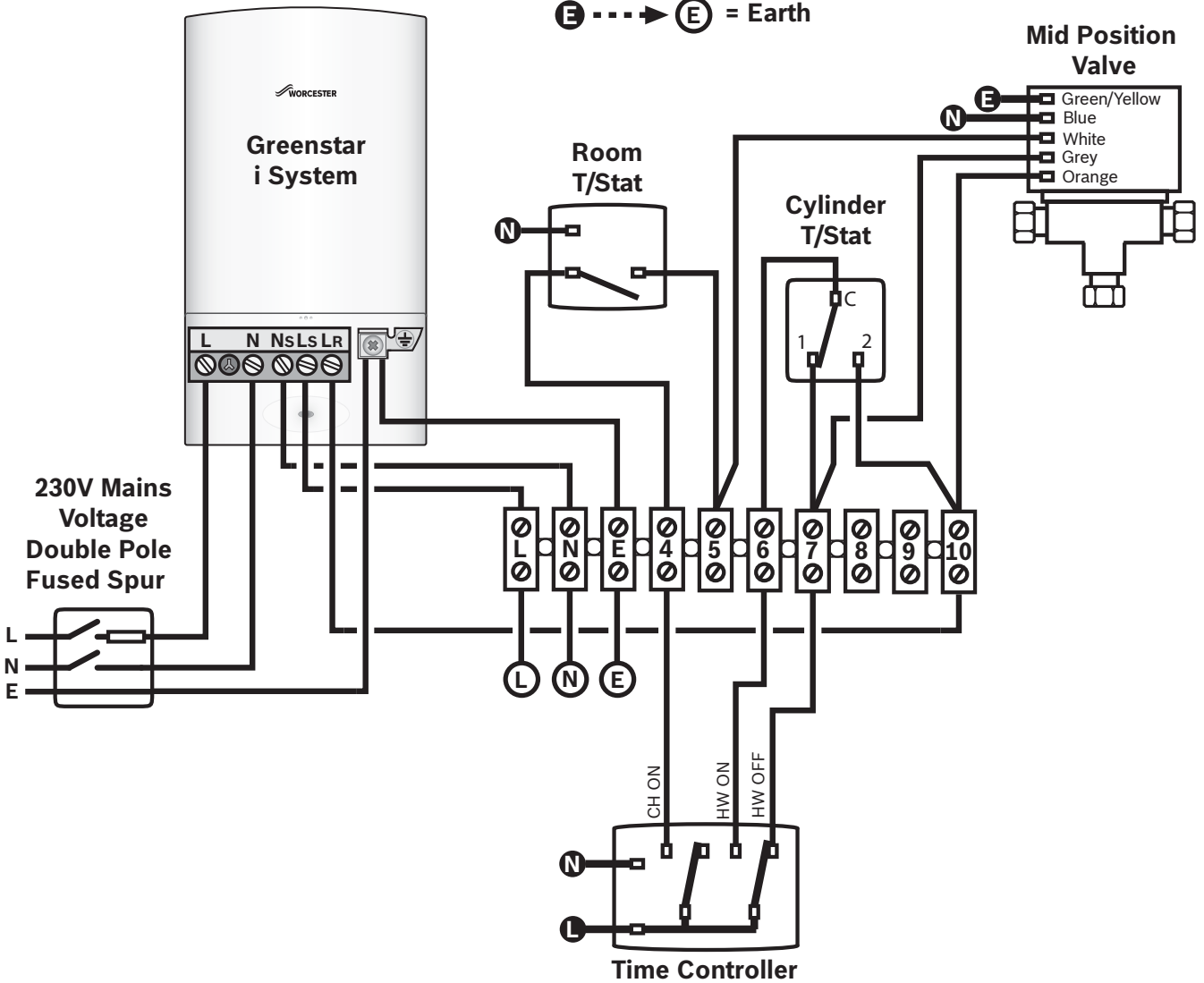
Greenstar i System Mid Position Valve (Y Plan)



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ---> ○ = Live ● ---> ○ = Neutral ● ---> ○ = Earth

● ---> ○ = Live
● ---> ○ = Neutral
● ---> ○ = Earth



Greenstar i System

3 x 2 Port Valves (S Plan Plus)

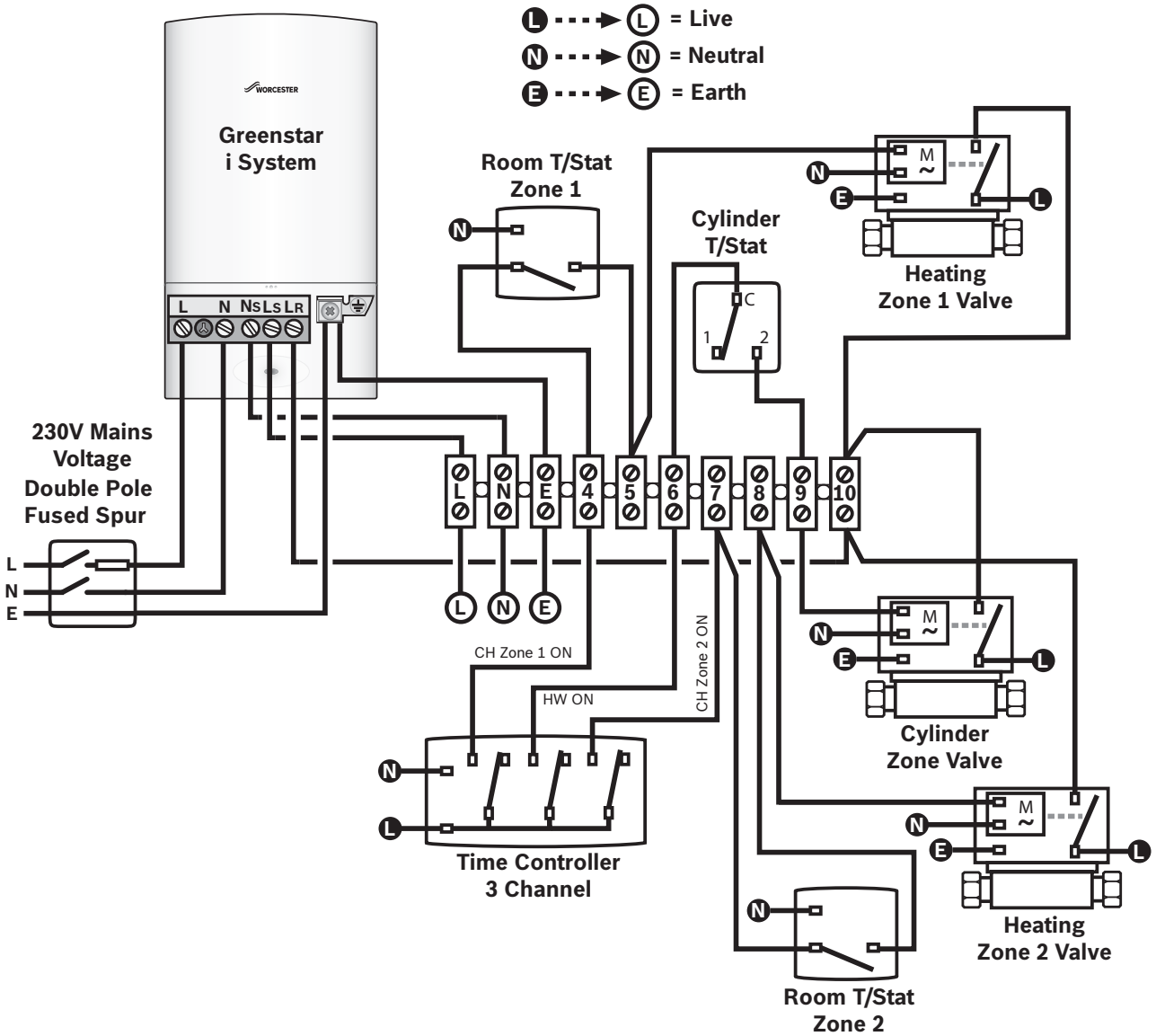


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar i System

2 x Heating Zones

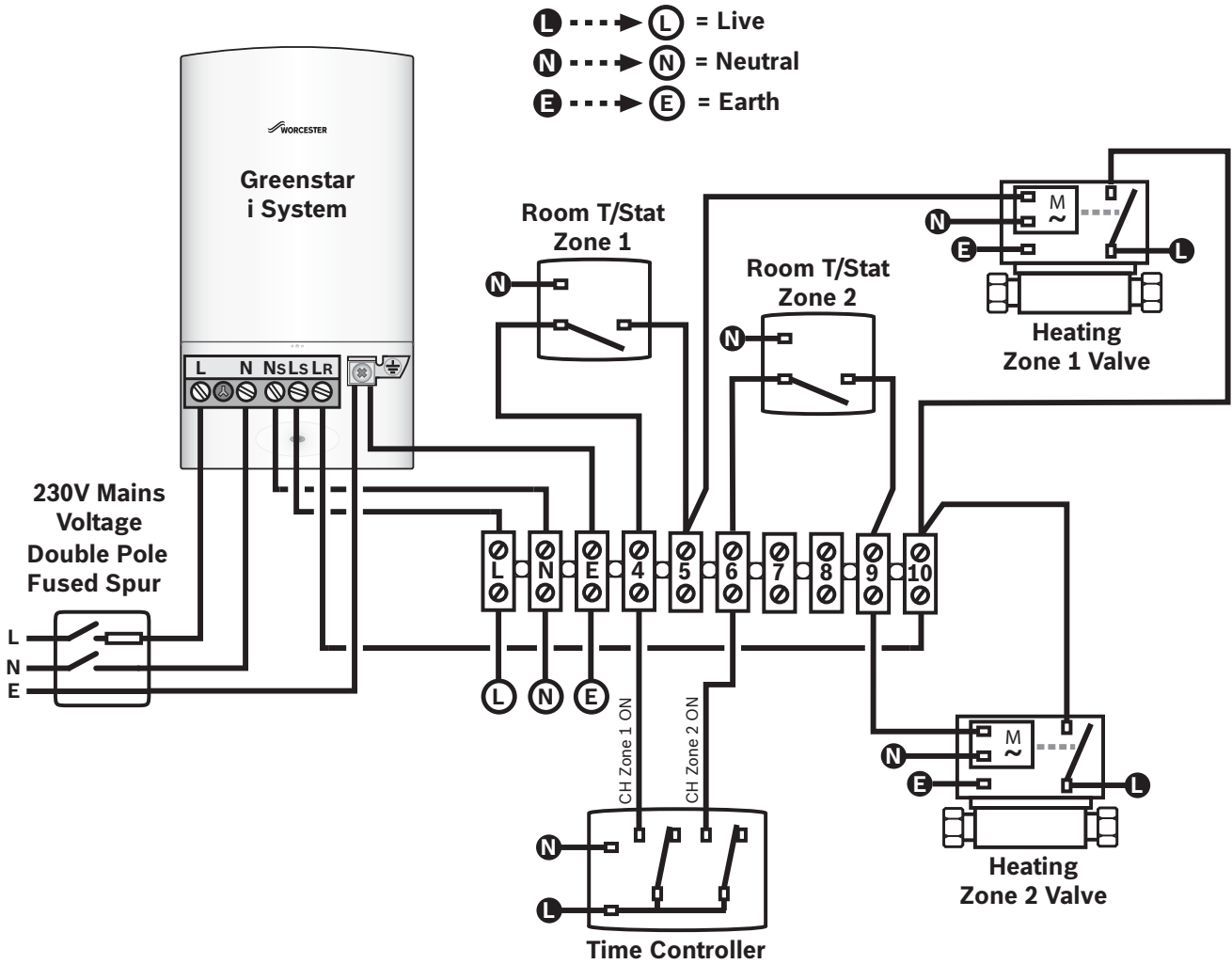


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar i System

2 x 2 Port Valves & Underfloor Heating

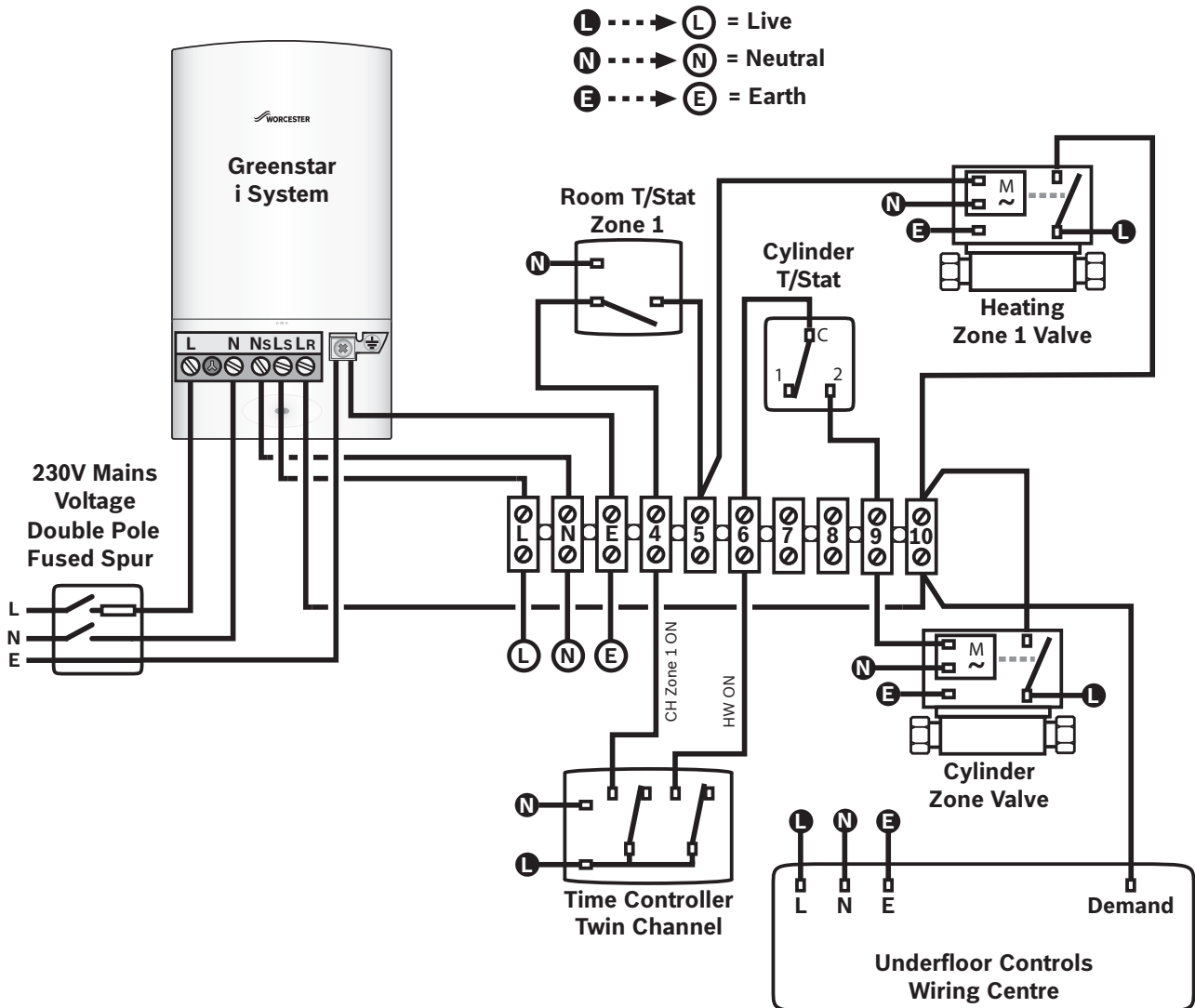


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

= Live

 = Neutral

 = Earth



Greenstar i System

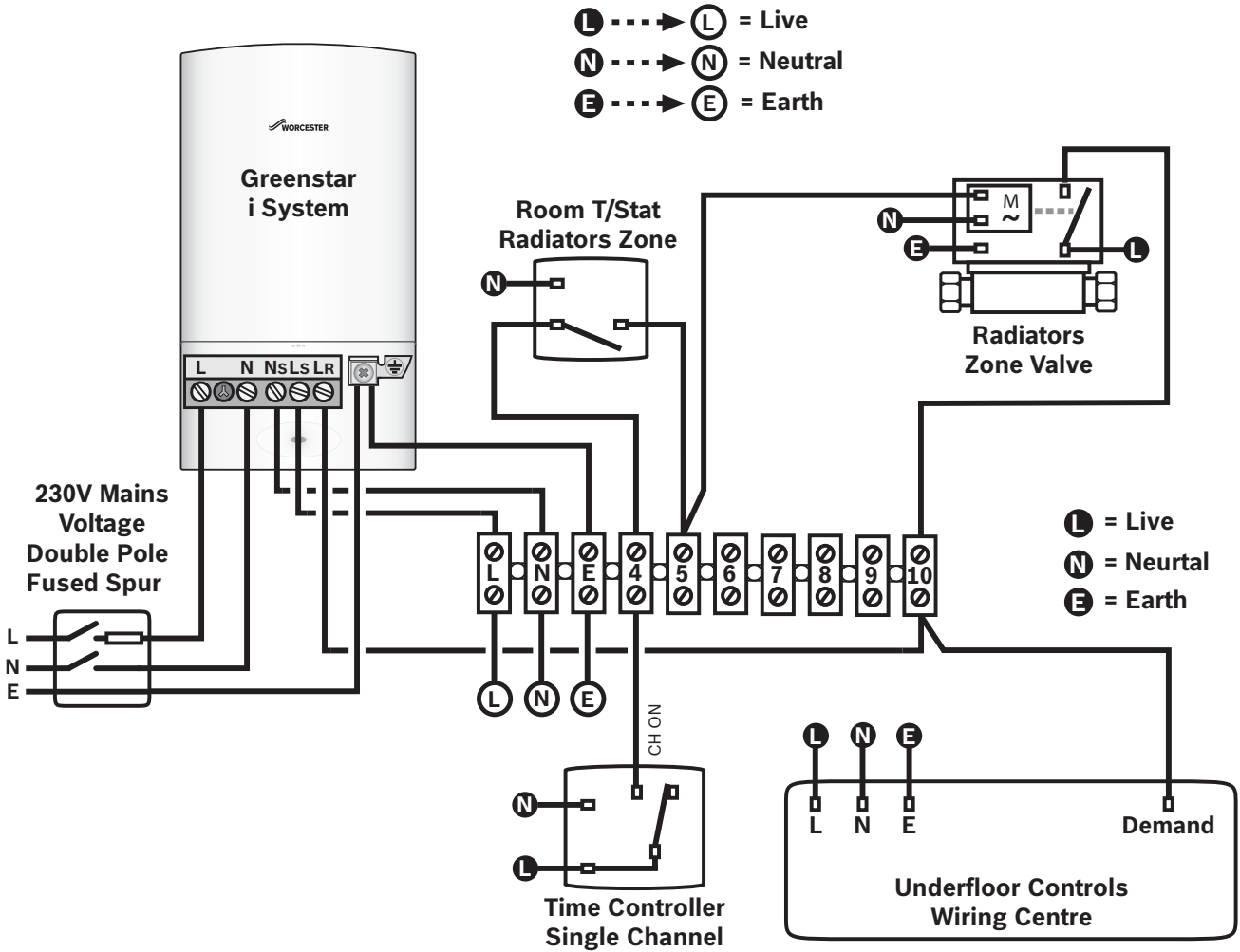
Zoned Radiator & Underfloor Heating



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

● ---> ○ = Live ● ---> ○ = Neutral ● ---> ○ = Earth

● ---> ○ = Live
● ---> ○ = Neutral
● ---> ○ = Earth



Greenstar i System

Single Hot Water Zone (Vented Cylinder)

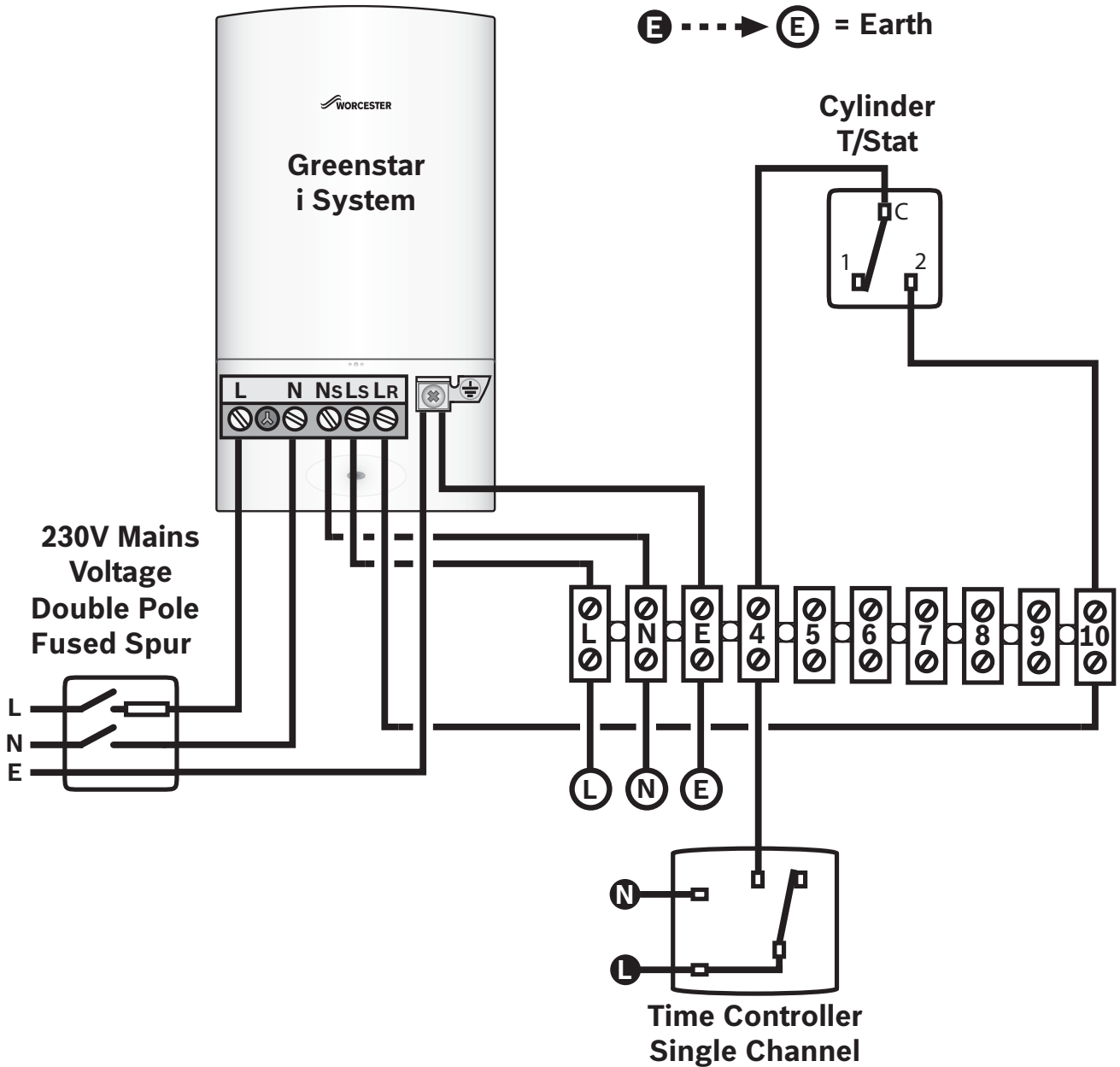


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.

These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth

Ⓛ → Ⓛ = Live
 Ⓝ → Ⓝ = Neutral
 Ⓧ → Ⓧ = Earth



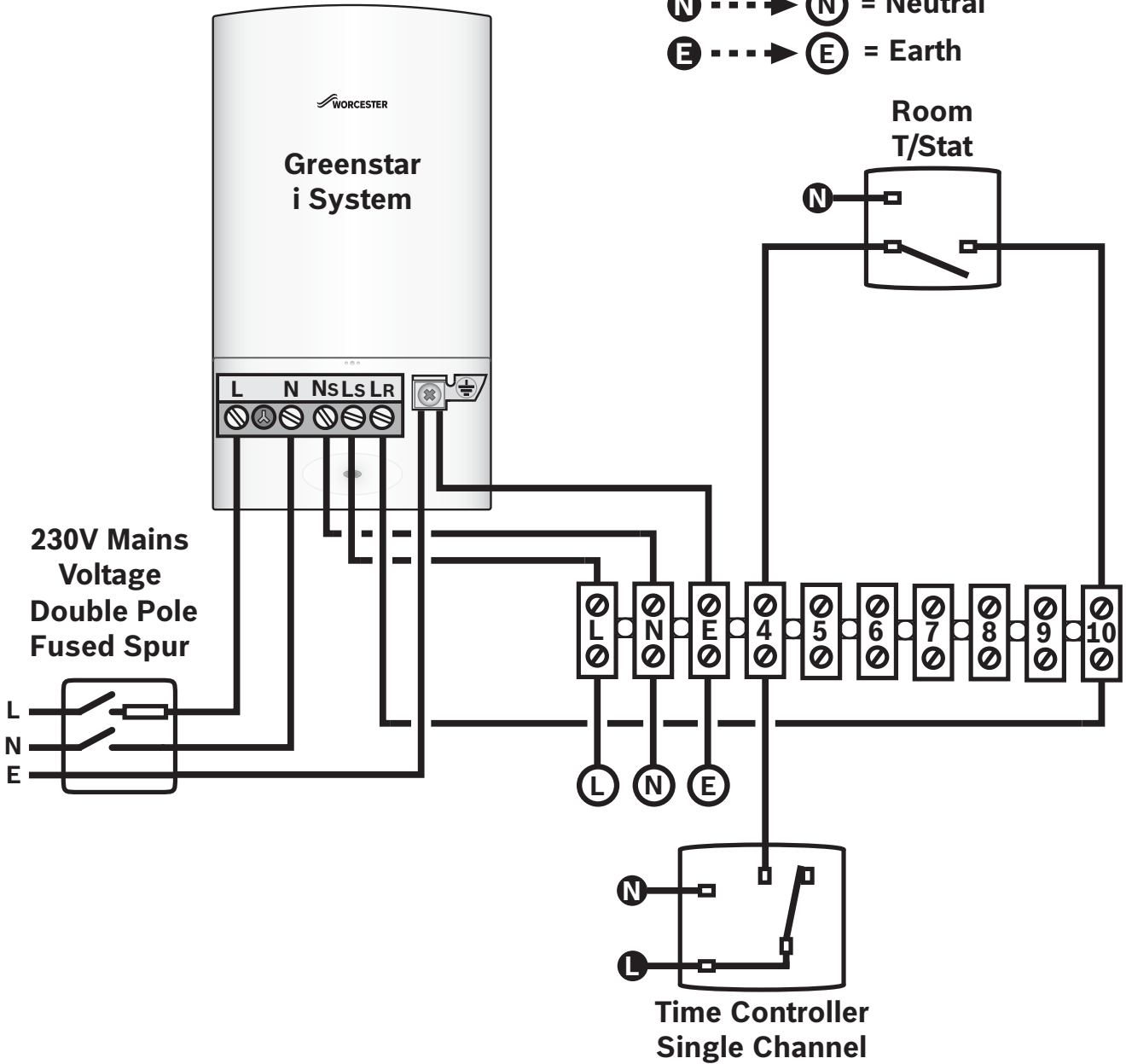
Greenstar i System Single Heating Zone



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

Ⓛ → Ⓛ = Live Ⓝ → Ⓝ = Neutral Ⓧ → Ⓧ = Earth

Ⓛ → Ⓛ = Live
Ⓝ → Ⓝ = Neutral
Ⓧ → Ⓧ = Earth

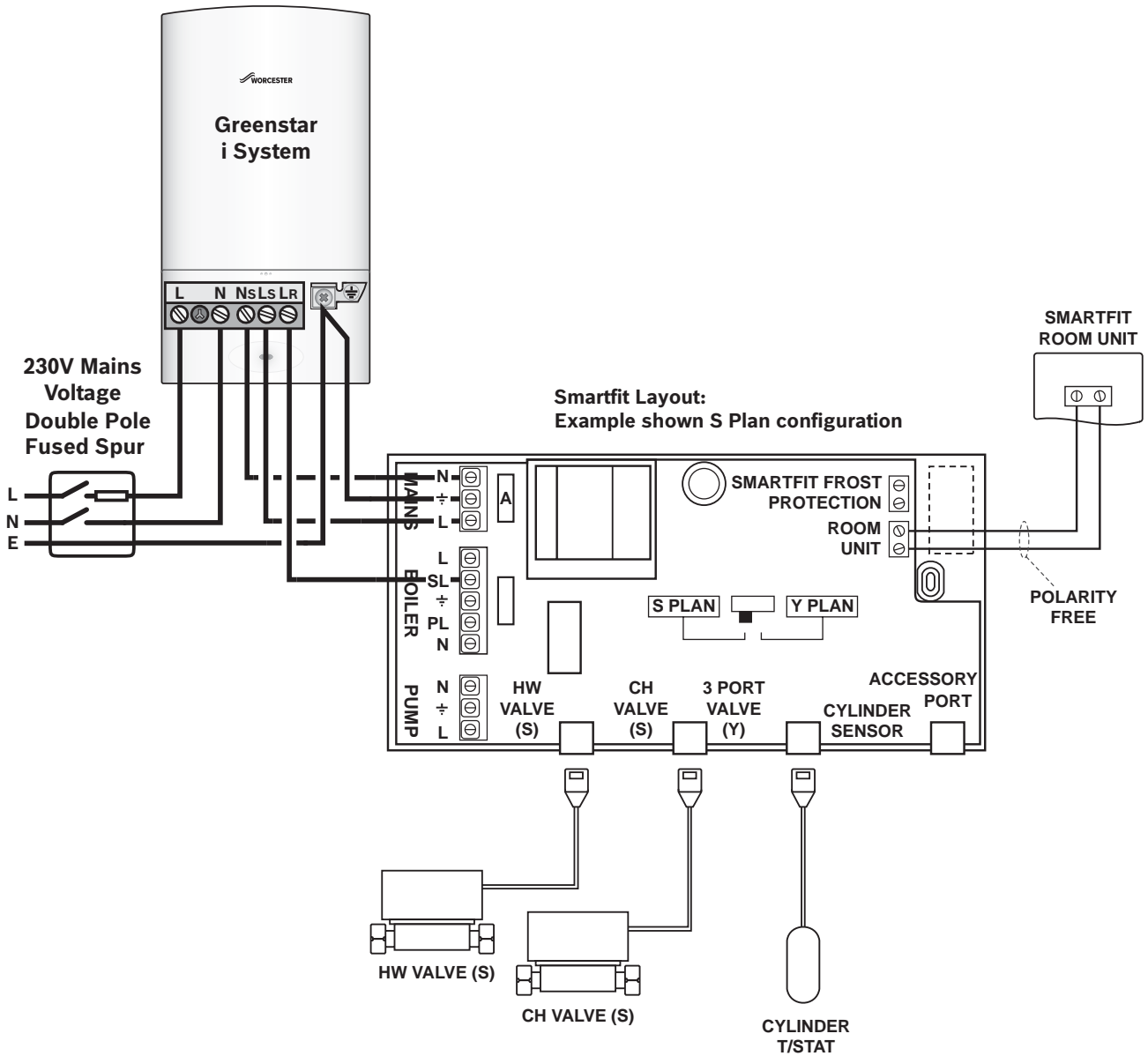


Greenstar i System Smartfit Control Pack



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth



Greenstar i System

Internal Diverter Valve with Worcester Controls & Unvented Cylinder



The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live N---● = Neutral ●---● = Earth

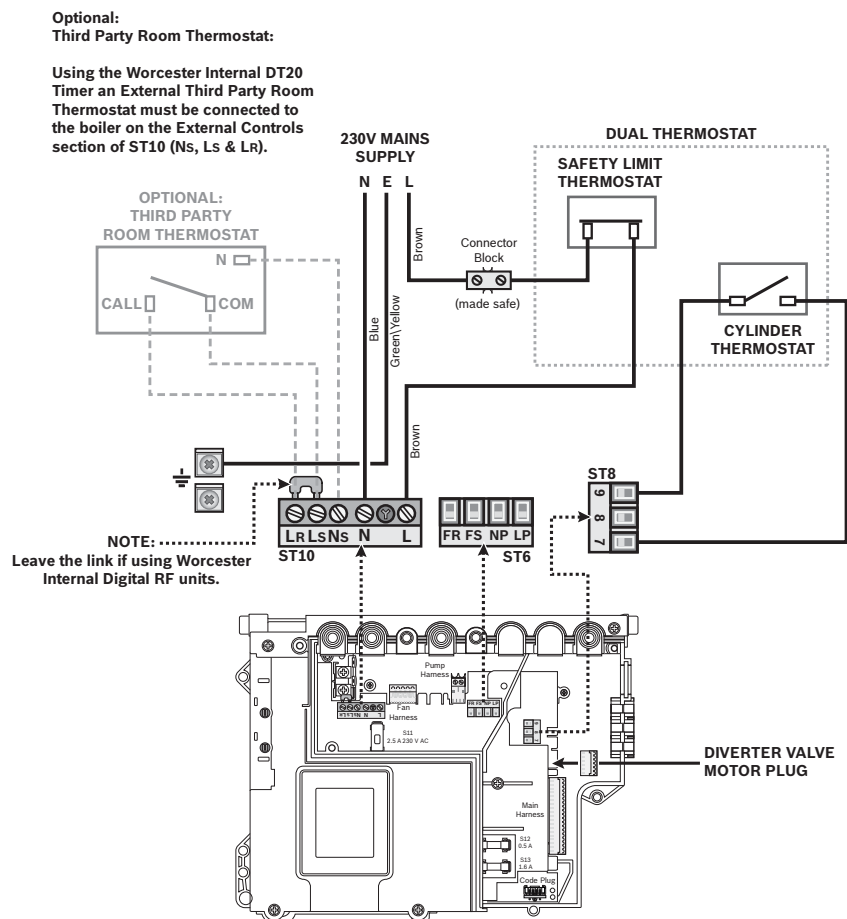
There is a unclarity within the Industry that in order to protect an Unvented Hot Water Cylinder from potentially dangerous high temperatures from the boiler circuit, a 2-port motorised valve must be installed. This is not the case, although it is the most common interpretation and approach.

FURTHER DETAILS

Building Regulation Approved Document G3, paragraph 3.6 states '...the non-self-resetting thermal cut out should be wired to a motorised valve or some other suitable device to shut off the flow to the primary heater...'. The latter part of this sentence can be interpreted to mean as long as we, as responsible Manufacturer's, are confident our method provides an equal amount of protection to the common approach, we may instruct installers of our equipment to follow a different approach. A summary is provided below.

- The installer will use the cylinder sensor supplied with the Integral Diverter Valve kit to control the hot water temperature.
- The installer, therefore, will NOT need to use the hot water control thermostat of the cylinder's dual thermostat.
- The installer may have to alter the wiring of the dual thermostat (depending on cylinder and thermostat manufacturer) to only use the high limit thermal cut-out of the dual thermostat.
- The high limit thermal cut out of the dual thermostat MUST be wired to interrupt the permanent live to the Greenstar CDi System Boiler.
- The 2-port valve supplied with the unvented cylinder will NOT be used. If it is already physically installed in the pipe work is should be removed and electrically disconnected from the wiring centre.

Below you will find an electrical diagram for this arrangement.



Greenstar i System

Cascade boilers with low loss header

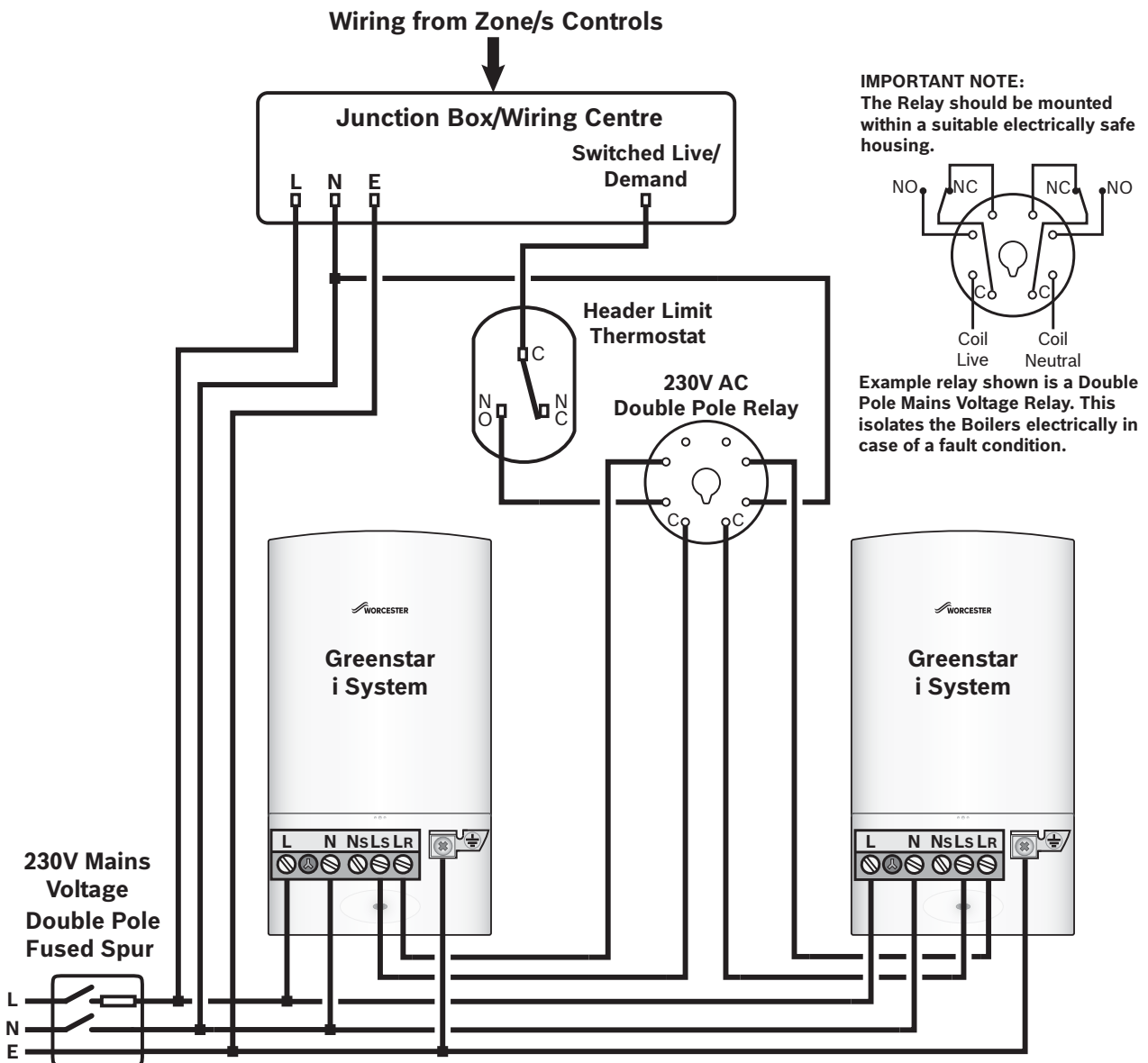


The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
These connections are denoted as follows:

●---● = Live ●---● = Neutral ●---● = Earth

HEADER LIMIT THERMOSTAT

This cuts the Demand to the boilers in the event of excessive temperature within the Header due to lack of circulation. Ideally this should be set to 90° C.



Greenstar i System

Frost Protection



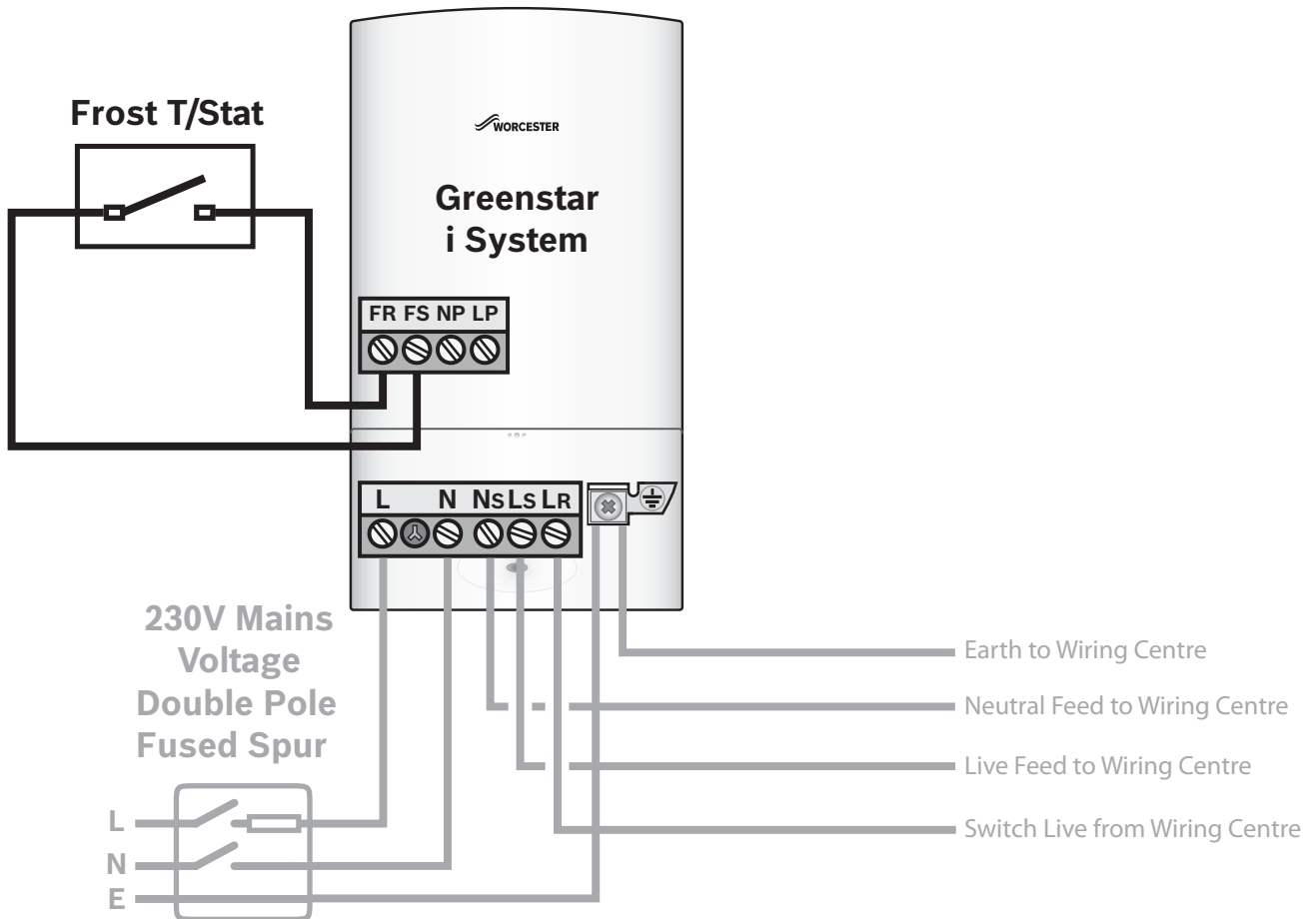
The generic Live, Neutral and Earth feed/s to equipment must return to the respective connection on the wiring centre.
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The boiler has the facility to connect an external frost protection device to protect in “at risk areas” (terminal block ST6, contacts FS and FR). This is used if the boiler is not located in the area needing protection i.e. boiler in kitchen but pipe work in the garage that needs frost protection.

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Useful Numbers

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Tel: 01905 752640
sales.mailbox@uk.bosch.com

Spare Parts

Tel: 01905 752576
spares.mailbox@uk.bosch.com

Training

Tel: 01905 752526
training@uk.bosch.com

Literature

Tel: 0844 892 9800
literature@uk.bosch.com
or download instantly from our website

Contracts

Tel: 0844 892 2332
service-contract.worcester@uk.bosch.com

Contact Centre

Tel: 0844 892 3000
general.worcester@uk.bosch.com
Monday – Friday 7.00am – 8.00pm
Saturday 8.00am – 5.00pm
Sunday 9.00am – 12 noon

Technical Support

Tel: 0844 892 3366
technical.enquiries@uk.bosch.com
Monday – Friday 7.00am – 8.00pm
Saturday 8.30am – 4.00pm

www.worcester-bosch.co.uk

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6 720 646 965 Issue A (09/11)



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