Safety Procedures

⚠ WARNING

Dangerous environment.

Highly flammable/explosive fuels and high voltage are present.

Failure to observe all safety precautions could result in serious injury or death.

Observe all safety precautions as outlined in Gilbarco® manuals.

Installation Procedures

1. Install a single EMERGENCY POWER CUTOFF control to remove AC power from the site dispensing the equipment.
Note: The control is an additional safety feature, and not a substitute for National Electrical Codes (NEC®)/National Fire Protection Association (NFPA) 30 circuit breaker requirements. Label the EMERGENCY POWER CUTOFF switch and instruct the owner and operator to keep the area clear of obstacles.

IMPORTANT INFORMATION

Devices such as Distribution Boxes (D-Boxes), PAM™ 5000, two-wire, and so on must be de-energized or have wiring disconnected from the dispenser by the emergency stop or equivalent mechanism.
Third-party devices such as those supplying power to any form of communication to a dispenser (intercoms, external devices connected to the Applause™ Media System (Encore®), third-party controllers and such) must also be de-energized or the wiring supplying that power be disconnected. Provision to accommodate this must not introduce noise [Radio Frequency Identifier Device (RFID) or electrical] into sensitive pump dispenser electronic field wiring circuits during normal pump/dispenser operation. De-energizing of the external equipment through the emergency stop or equivalent device is recommended.

2. Connect an insulated grounding conductor from the dispenser power panel to the site grounding electrode (size per NEC).

3. Only field wiring connections are shown in the Junction boxes (J-boxes). Cap all unused wires. Local and NECs may apply.

4. Install conduit per NEC for hazardous locations. Potting is required for conduit that passes within any portion of a hazardous vapor area to ensure vapor barrier integrity. For further potting information, refer to *MDE-3985 Encore® Installation Manual*.

5. Wires - All wires are 14 American Wire Gauge (AWG) copper stranded unless otherwise noted. Dispenser ground wire is 12 AWG (copper stranded).
Power loading and distance run may require larger wire size.
Wire all circuits NEC Class 1, except wiring to speaker (intercom) and call button, which must be NEC Class 2. Gilbarco two-wire is NEC Class 1 and may share the main power conduit.

6. Two-wire communication wiring (including Invenco Link or BRCM2): For installations with 'new' wiring, use Unshielded Twisted Pair (UTP) data wires. Shielded wire must not be used.
Wiring Specifications: Two-wire UTP with 10 to 12 twists per foot, stranded annealed copper tinned with 18 AWG minimum required for runs up to 1000 feet or 14 AWG minimum for runs up to 2600 feet. Do not daisy chain communications wiring.
Insulation Specifications: PVC insulation of type Thermoplastic Flexible Fixture Wire Nylon Jacketed (TFFN) or Machine Tool Wire (MTW), Underwriters Laboratories (UL®)-approved, gasoline- and oil-resistant. Refer to 300 V wire, manufactured by C&M Technologies Group Inc. 4057 Paysphere Circle, Chicago, IL-60674 Part #27525 (18 AWG) 105C or equivalent. Refer to *MDE-3802 Encore and Eclipse® Site Preparation Manual* requirements where 14 AWG may be required. For Invenco Link or BRCM2, use the same two-wire communication wiring.

6A. In Canada, installing communication circuits, such as data cables and AC cables in the same conduit as AC circuits is contrary to the Canadian Electrical Code (CEC) rule 60. New installations must have separate conduit for data/communication cables and power cables in the following circumstances (wiring for data communications, such as two-wire current loop, intercom, CAT5 Ethernet, BRCM2, InvencoLink, or other data wiring, must be in a separate conduit from the dispensers power and light conduit):
(i) All new installations of fuel dispensers or other electrical equipment, whether or not the raceways are exposed and made readily accessible as part of the installation process; or
(ii) In any event if the raceways are exposed and made readily accessible for any reason.

7. Consult manufacturer specifications for wire nuts to determine the maximum number of wires and wires sizes that may be used per nut.

8. For U.S. 240 V installations, wires labeled 'HOT' are to be connected to L1 and wires labeled 'NEUTRAL' are to be connected to L2.

9. Do not provide service loops or leave excess wire in electronics cabinet. Cut all wire lengths to a size sufficient to reach termination without stress or excess. Dress all wires neatly along surfaces so that they do not obstruct access to terminations and devices.

10. Install power breakers to each circuit leading to the dispensing unit and Submersible Turbine Pump (STP). They must be capable of simultaneously disconnecting hot and neutral conductors.
Note: In Canada, switching neutral is contrary to the CEC, reference part 1 rule 14-014.

For Encore 500 Ultra-Hi™ and Encore 500 Dispensers:

11. STP isolation relay boxes are required by NEC 514-6 to allow service of one unit safely without removing power from all dispensing equipment.

For Encore 500 Ultra-Hi Only:

12. If the unit is a Dual Master, then additional conduits and wiring are required to connect the side 2 Satellite. Units with main J-box can coexist with units without J-box. Use portion of wiring from the appropriate sheet to match your installation. Wires labeled with a prefix of 'A' signify side 1/front, a prefix of 'B' signify side 2/rear.

13. Simultaneous and independent operations are defined as:
A. Simultaneous - Both Master and Satellite can dispense fuel at the same time.
B. Independent - Master and Satellite can dispense fuel only one at a time. Satellite pump handle determines which unit can dispense fuel.

For Encore 500 Self-contained Pumps Only:

14. For three-phase systems, make appropriate connections to AC Hot and return service. Motors must rotate counterclockwise.

Reference Manuals

MDE-2755 STP Control and Dispenser Isolation Relay Box (PA0287)
MDE-3116 Distribution Box PA0306 Installation Instructions
MDE-3802 Encore and Eclipse Site Preparation Manual
MDE-3804 Encore and Eclipse Start-up/Service Manual
MDE-3985 Encore Installation Manual

For Diesel Exhaust Fluid (DEF) Dispensers Only

15. Ground Fault Interrupt (GFI) breakers are required for DEF only units installed on and with a skid tank platform because of no underground piping, AC power in potentially wet area, and a potential for earth ground to become broken if skid tank moves.

16. AC Neutral from pump must be run to neutral wire of STP control relay of skid tank for GFI breaker to operate correctly.

17. For DEF+1, the dispenser breaker supplies power to the unit and the heater. Therefore, no other options can be added to the unit that requires additional heaters without adding a breaker and conduit assembly to supply power to the DEF cabinet heater.

18. For Encore units with full cabinet heater, a breaker must be added to supply power to the heater in the DEF cabinet.

19. For NJ4 (Blender X + 2) Models Only:
- The NJ4 dispenser can support 2, 3, or 4 tank configurations.
- The NJ4 dispenser will always have four (4) inlets, right to left designated W, X, Y, and Z.
- The NJ4 dispenser will always have four (4) STP outlet relays to be wired.

The STPs must be wired to match the inlet configuration. If inlets are manifolded (sharing a tank), the matching STP connections in the J-box must be jumpered.

Electrical Rating

Includes all options except valance lights and motors.

12.0 AMP @ 120 VAC 60 Hz.
6.0 AMP @ 240 VAC 50 Hz.
Ultra-Hi 1+1 =12 AMP @ 120 VAC 60 Hz.

Use one 15 AMP switch neutral breaker per dispenser to power electronics and ensure proper lockout and tagout. Gilbarco® requires valance lights be placed on a separate 15 AMP breaker.

IMPORTANT INFORMATION

Sharing conduit to the dispensers with other non-Gilbarco devices is contrary to the installation and site preparation manuals and may void warranty. Doing so may result in incorrect/unreliable operation of the unit.

Motor Load Table - Full Load Ampere (A) for Encore 500 Self-contained Pumps

Domestic (60 Hz)
3/4 H.P. (Dual Rated): . . . . 115 VAC/1PH/12.8 A
230 VAC/1PH/6.4 A

International (50 Hz)
3/4 H.P. . . . . 115 VAC/1PH/13.0 A
3/4 H.P . . . . 220-230 VAC/1PH/6.5 A
3/4 H.P . . . . 380 VAC/3PH/1.5 A

International (50 Hz, not UL listed)
3/4 H.P. (Dual Rated): . . . . 220 VAC/3PH/2.5 A
380 VAC/3PH/1.3 A

Active STP Connections for Encore 500 Dispensers

The Encore	STP1	STP2	STP3	STP4
MPD® Three-grade	X	X	X	
MPD Four	X	X	X	
MPD Single-hose	X	X	X	
MPD Single-hose +1	X	X	X	X
Dual One-grade	X			
Quad Two-grade	X	X		X
Blender Six-hose	X	X		
Blender X+1	X	X	X	
Blender X+0	X	X		
Blender X+1+1	X	X	X	X
19. Blender X+2	X	X	X	X

Active STP Connections for Encore 500 Ultra-Hi

The Encore	STP1	STP2
One-grade	X	
Two-grade	X	X
DEF + 1	Diesel	DEF

20. For Dual DEF kits per dispenser option, a minimum of a 15 Amp breaker must be added to supply power to the heater in the second DEF cabinet.

Wiring Requirement

Wire dispensers, Point of Sale (POS), D-Boxes, etc., on a single phase in a dedicated electrical panel (recommended) and have other potentially noise sources, such as compressors, motors, and so on in a different electrical panel. Ensure proper care to minimize noise sources present on the phase that is used for dispensers and related equipment.
If multiple phases are required, use industry best practices to keep noise generating circuits as isolated as possible from fueling component circuits.

All equipment that is connected using communication connections, dispenser communications, and related power outlets and power sources for PIN pads, gas price signs, scanners, and so on must always be kept **on the same phase of power as the dispenser power**.
Notes: 1) Communication connections such as CAT-5/6,RS-485, and RS-232.
2) Dispenser communications such as Gilbarco two-wire to the fueling system including POS/Back Office System/Fuel Monitoring System/Network Communication/Dispenser Communication and Control System (Applause™ Media System or high speed data)/Other Payment, Loyalty Systems, and Car Wash Controllers.

Contents

Symbols Chart

Symbol
Wire Nut
Earth Ground Screw Terminal
Earth Ground
No Connection
Connection
Crimp Connector

Wire Color Chart

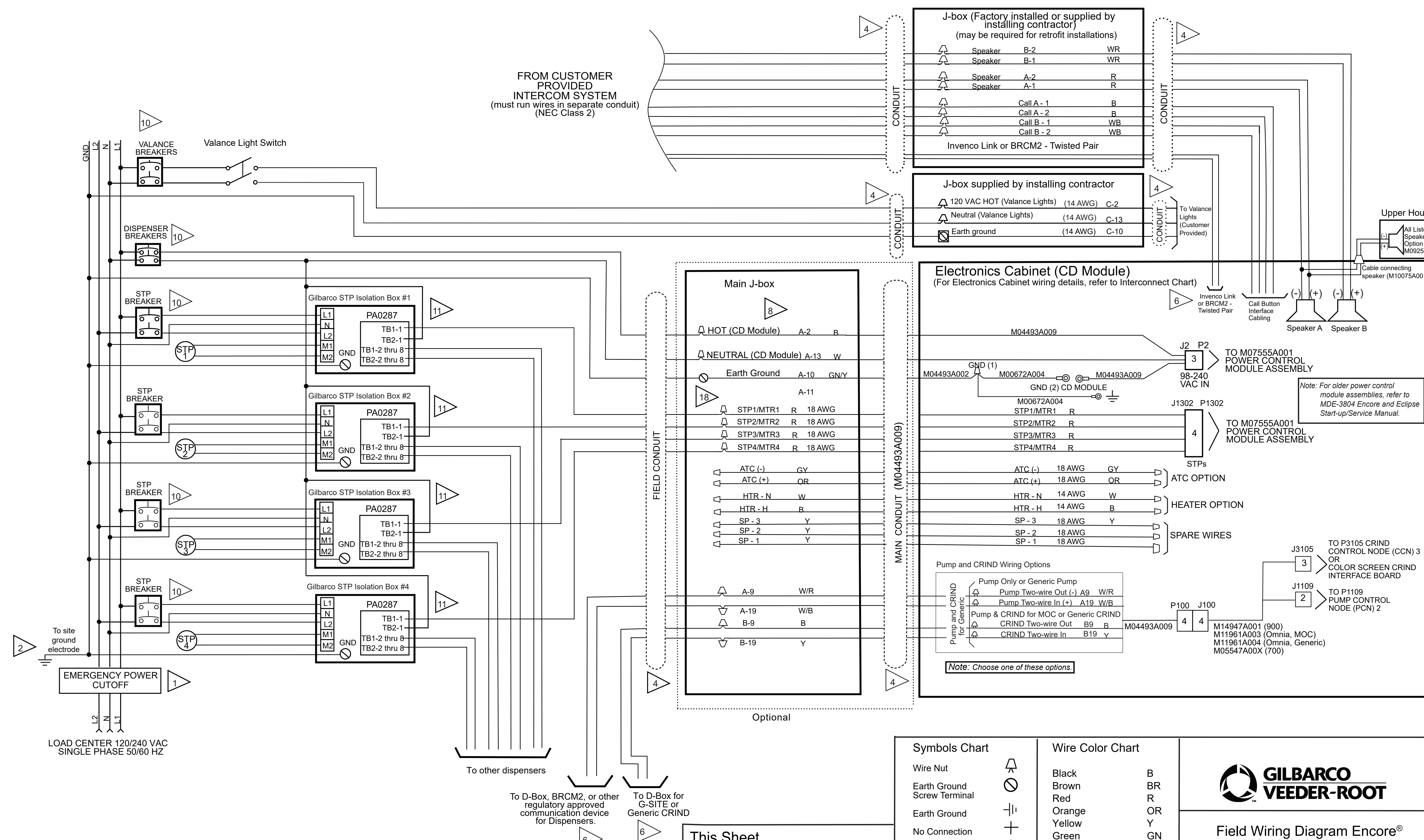
Color	Code
Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB

Used On
Encore 500 Dispensers with and without main J-box with M07555 Power Supply.
Encore 500 Self-contained Pump with J-box and M07555 Power Supply. Single-phase 115/120 VAC and three-phase 220/380 VAC units.
· Encore 500 Ultra-Hi Dispensers with or without J-box · Encore Ultra-Hi Satellite with or without J-box · Encore DEF Dispensers.

GILBARCO VEEDER-ROOT™

Field Wiring Diagram
Encore® 500/700/900
(M07555 Power Supply Only)
Sheet 1 of 11

12/23 | FE-363X



This Sheet

Encore 500 Dispensers with main J-box manufactured after November 2004 and Encore Dispensers.

Note: Some countries may not allow communication wiring in AC conduit. Check local regulations.

Symbols Chart

Wire Nut	
Earth Ground Screw Terminal	
Earth Ground	
No Connection	
Connection	
Crimp Connector	

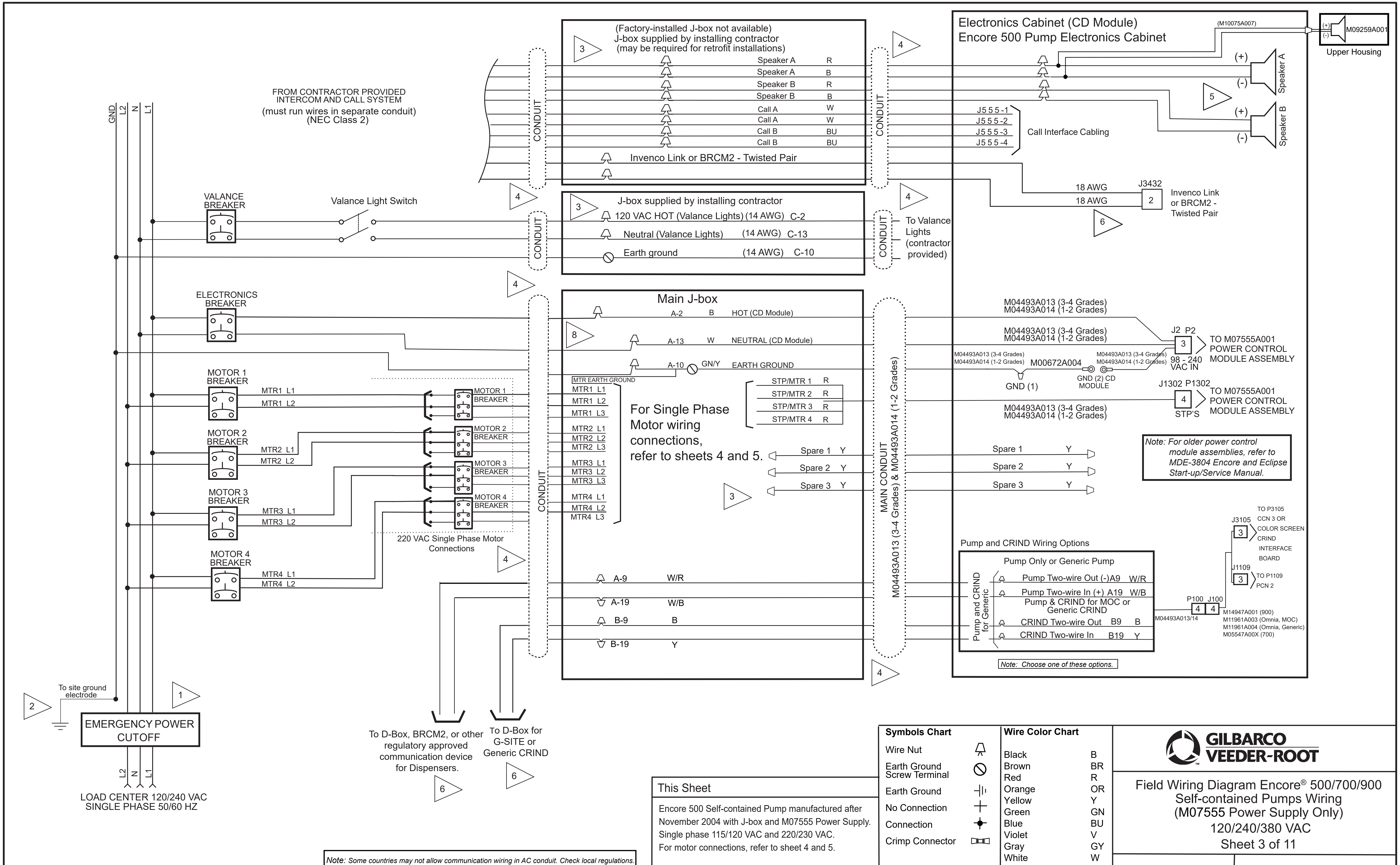
Wire Color Chart

Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® 500/700/900 Dispensers (M07555 Power Supply Only) Sheet 2 of 11

12/23	FE-363X



Symbols Chart

Wire Nut	
Earth Ground Screw Terminal	
Earth Ground	
No Connection	
Connection	
Crimp Connector	

Wire Color Chart

Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

This Sheet

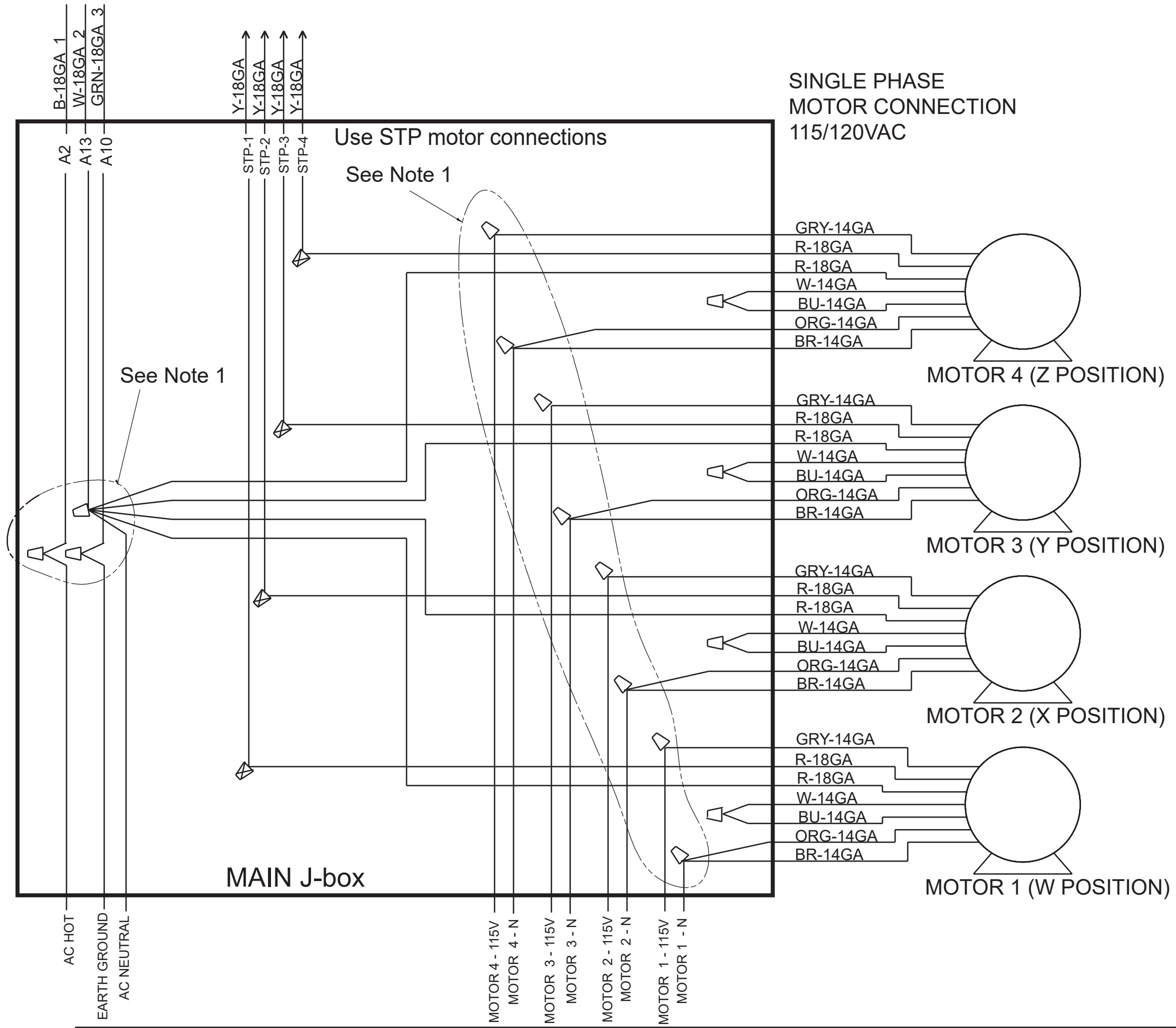
Encore 500 Self-contained Pump manufactured after November 2004 with J-box and M07555 Power Supply. Single phase 115/120 VAC and 220/230 VAC. For motor connections, refer to sheet 4 and 5.

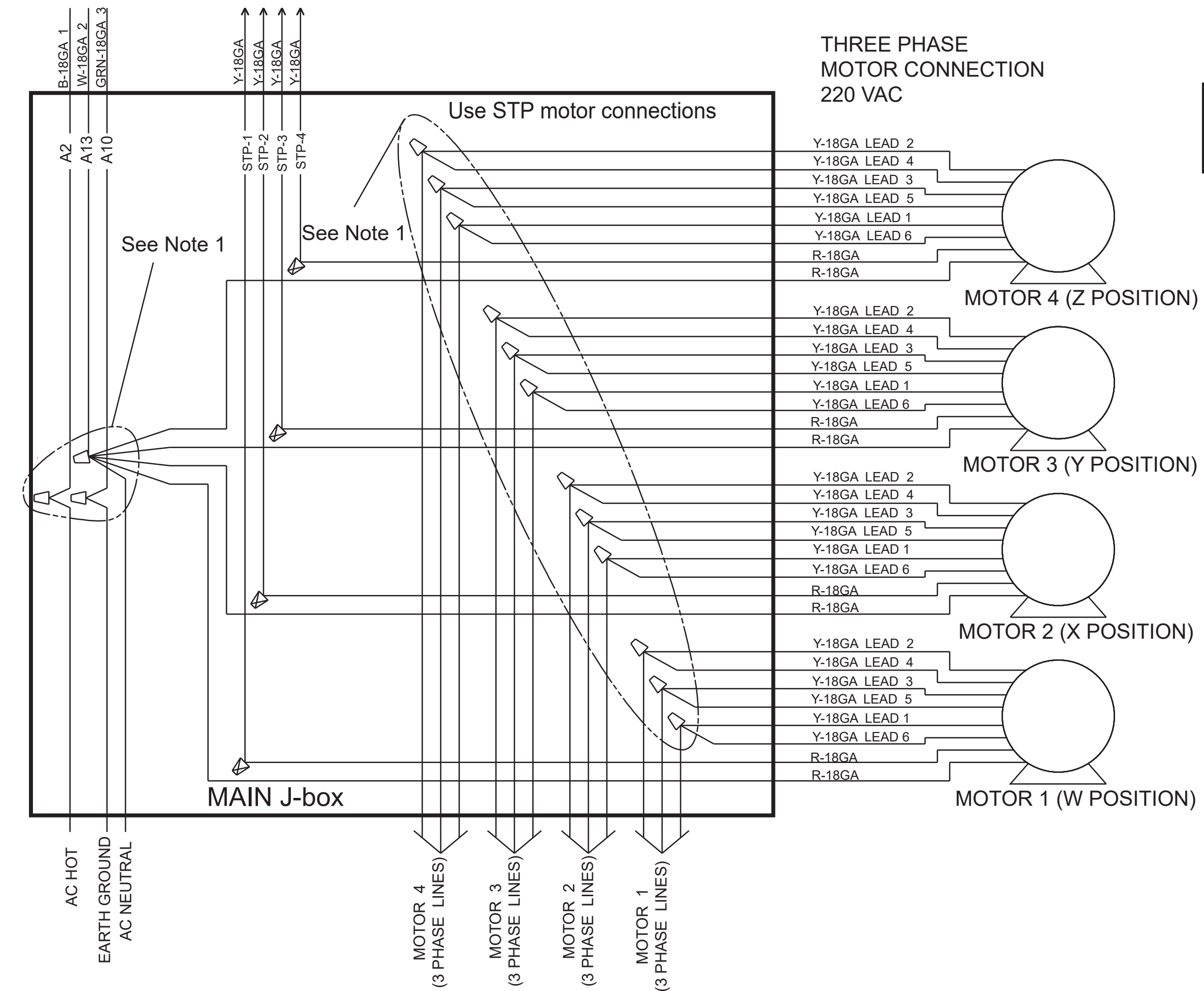
GILBARCO VEEDER-ROOT

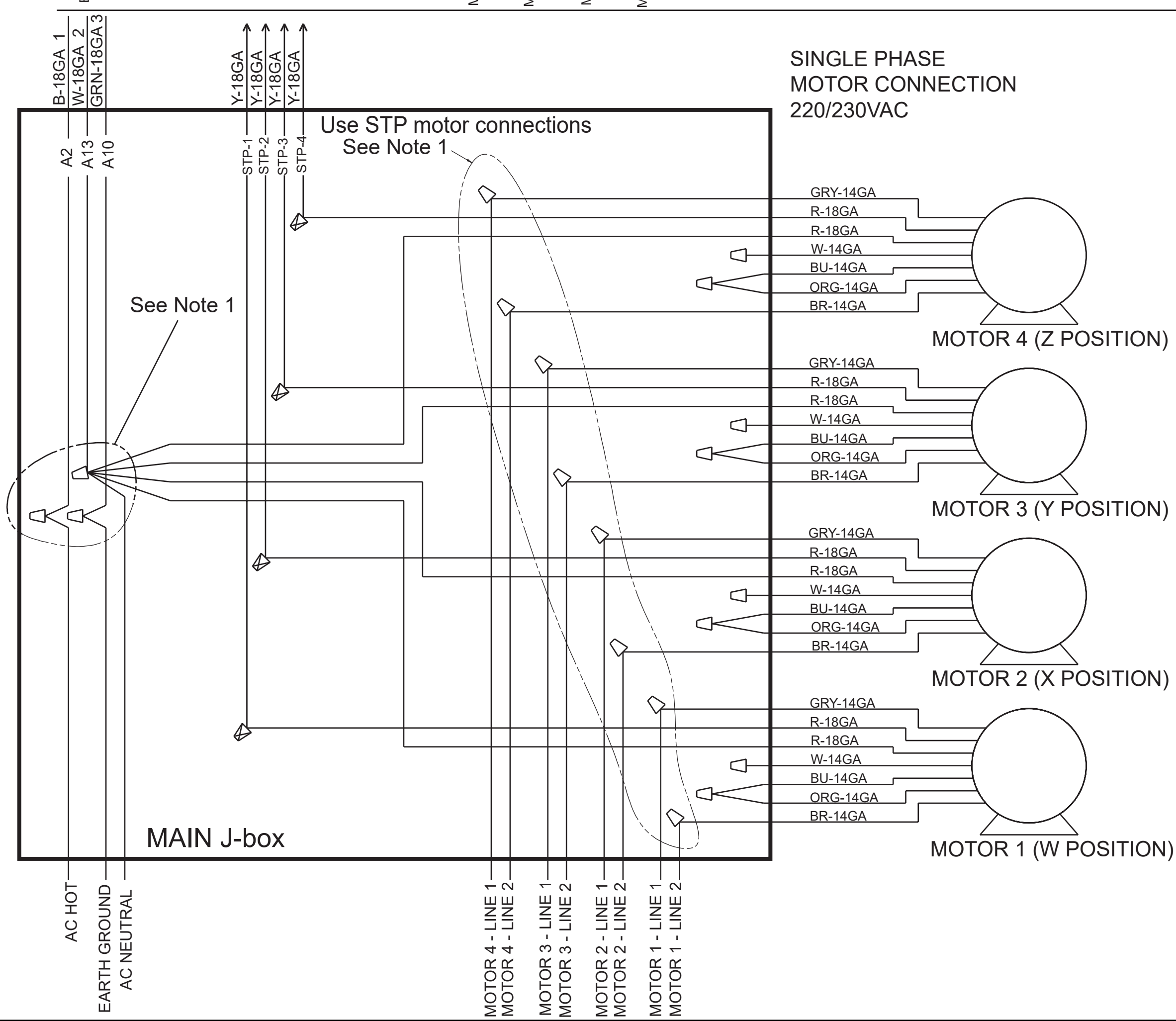
Field Wiring Diagram Encore® 500/700/900
Self-contained Pumps Wiring
(M07555 Power Supply Only)
120/240/380 VAC
Sheet 3 of 11

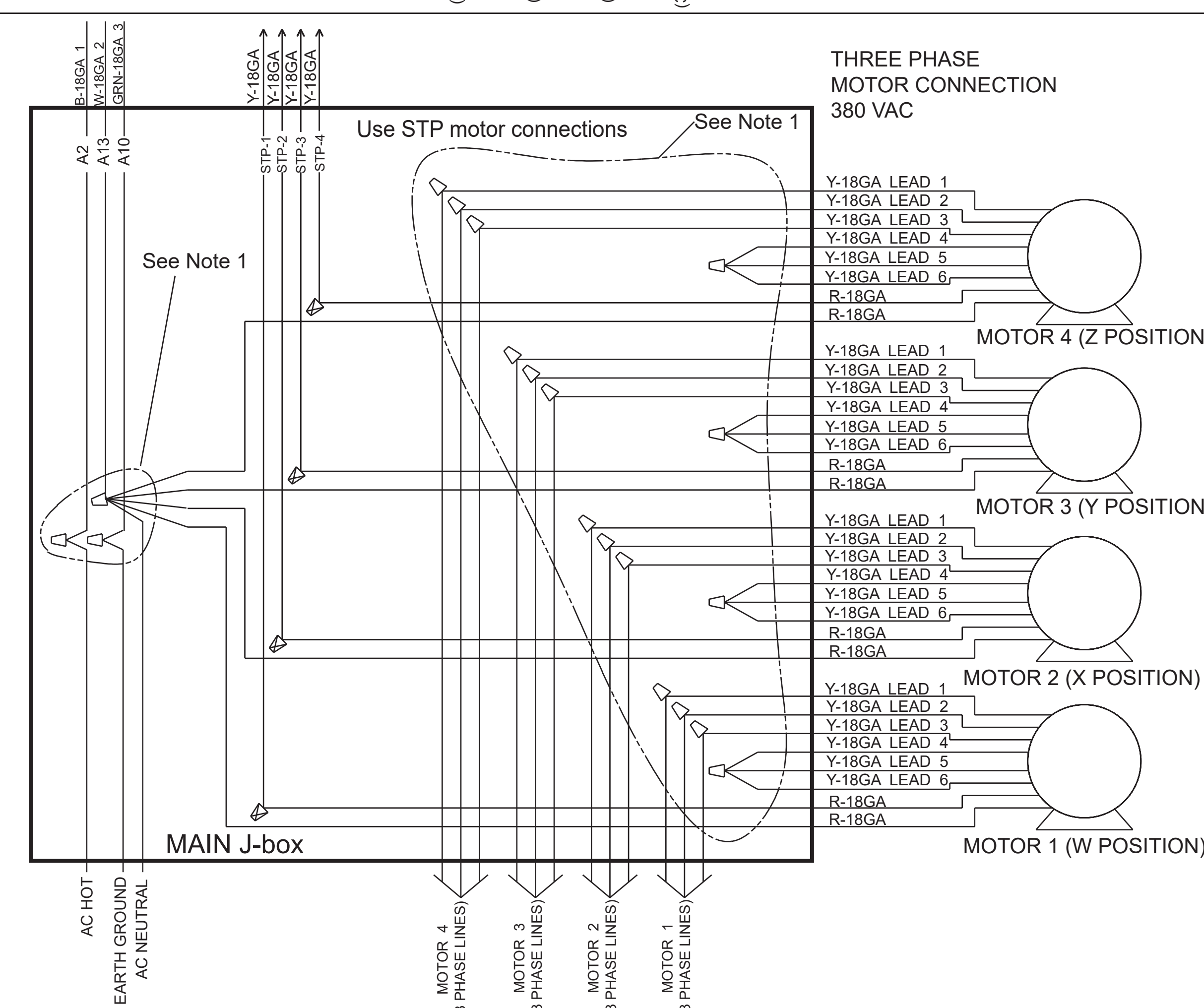
12/23 | FE-363X

Notes: 1) *Connections made in field.*
2) *Motors must rotate counterclockwise.*









Symbols Chart

Wire Nut	
Earth Ground Screw Terminal	
Earth Ground	
No Connection	
Connection	
Crimp Connector	

Wire Color Chart

Black	B
Brown	BR
Red	R
Orange	OR or ORG
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY or GRY
White	W
White Black	WB
White Red	WR

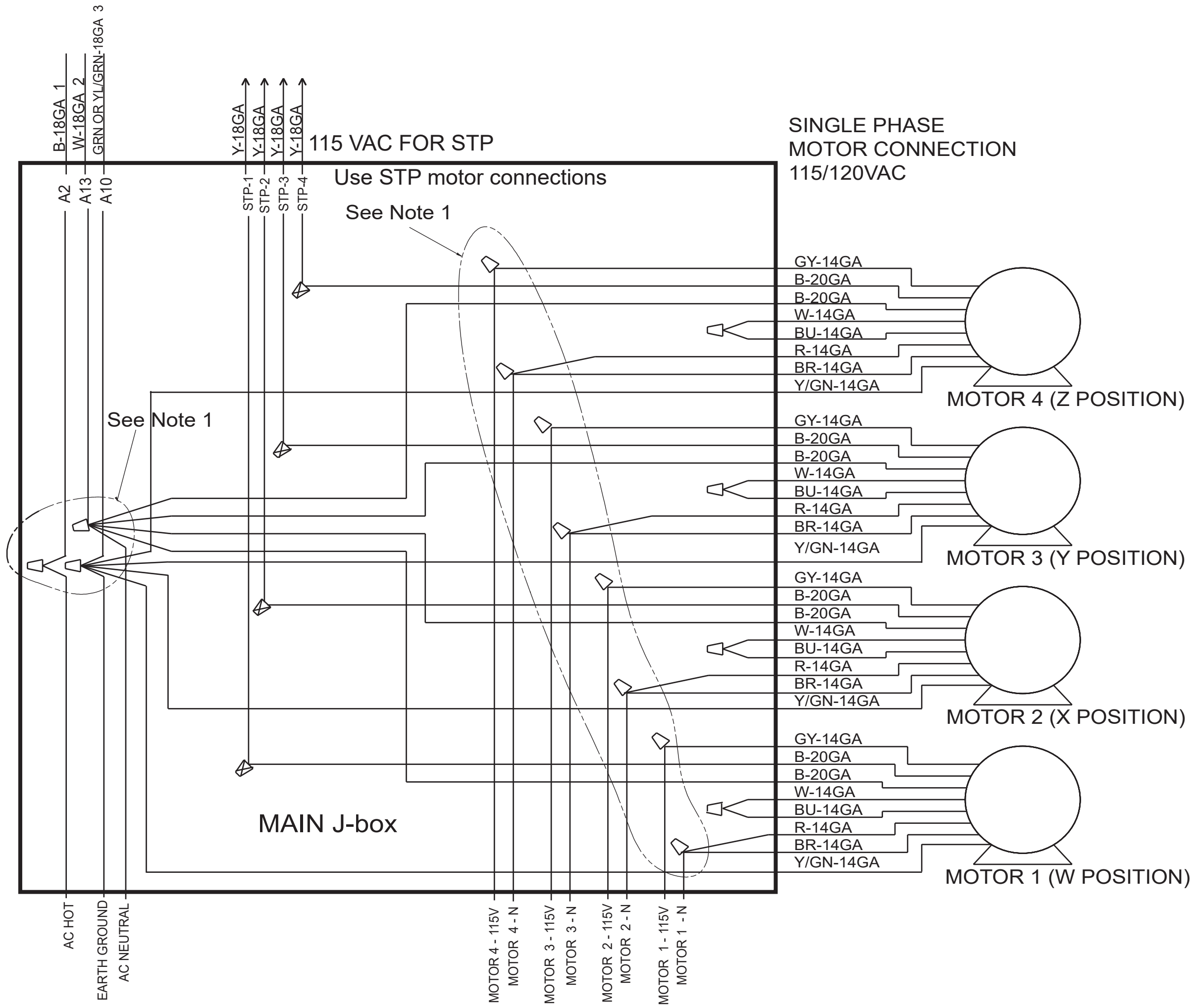
This Sheet

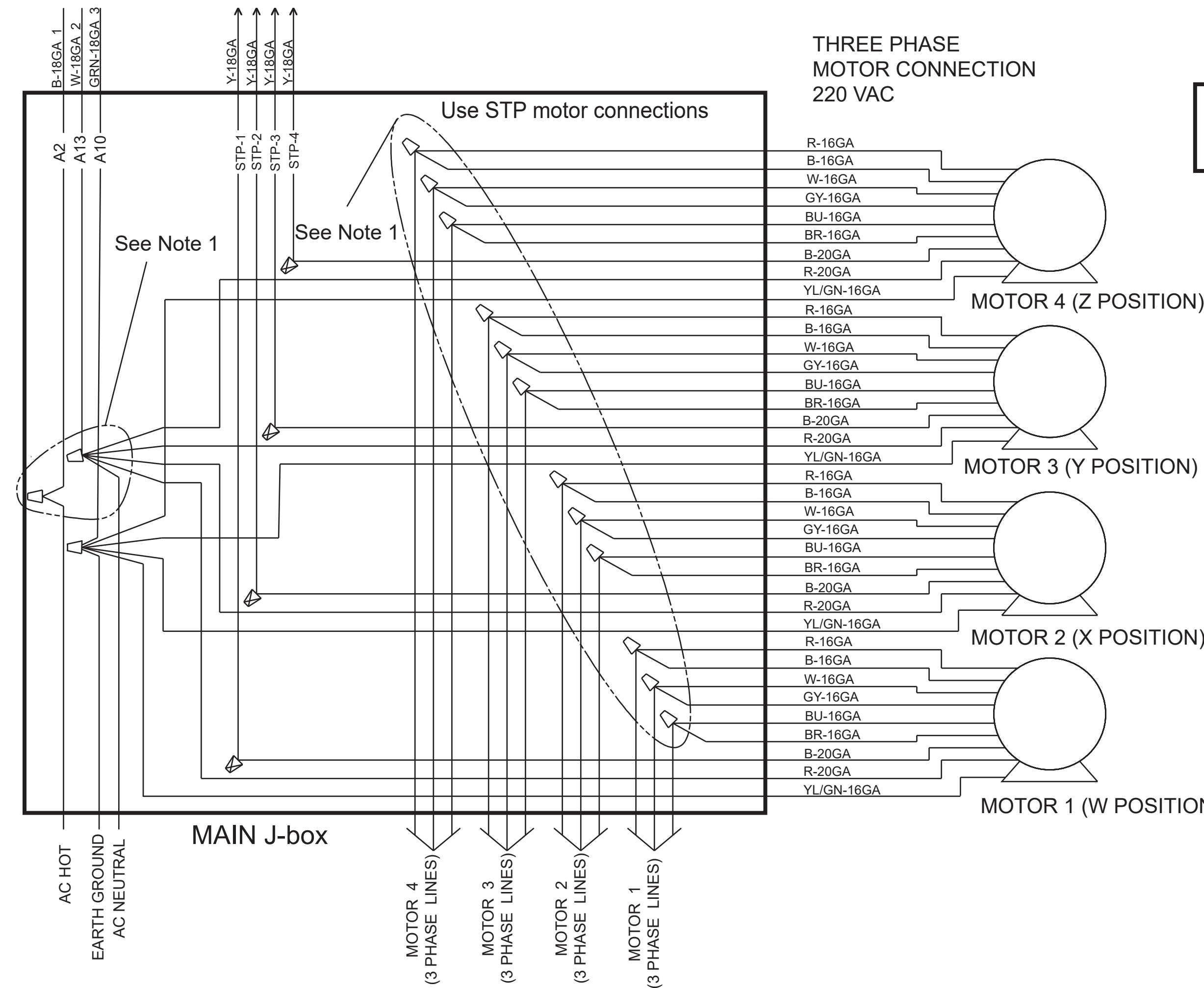
Encore 500 Self-contained Pump single phase motor connections 115/120 VAC, 220/230 VAC and three phase motor connections 220/380 VAC.

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® 500/700/900 Pumps (M01068) Motor Connections (M07555 Power Supply Only) 120/240/380 VAC

12/23	FE-363X

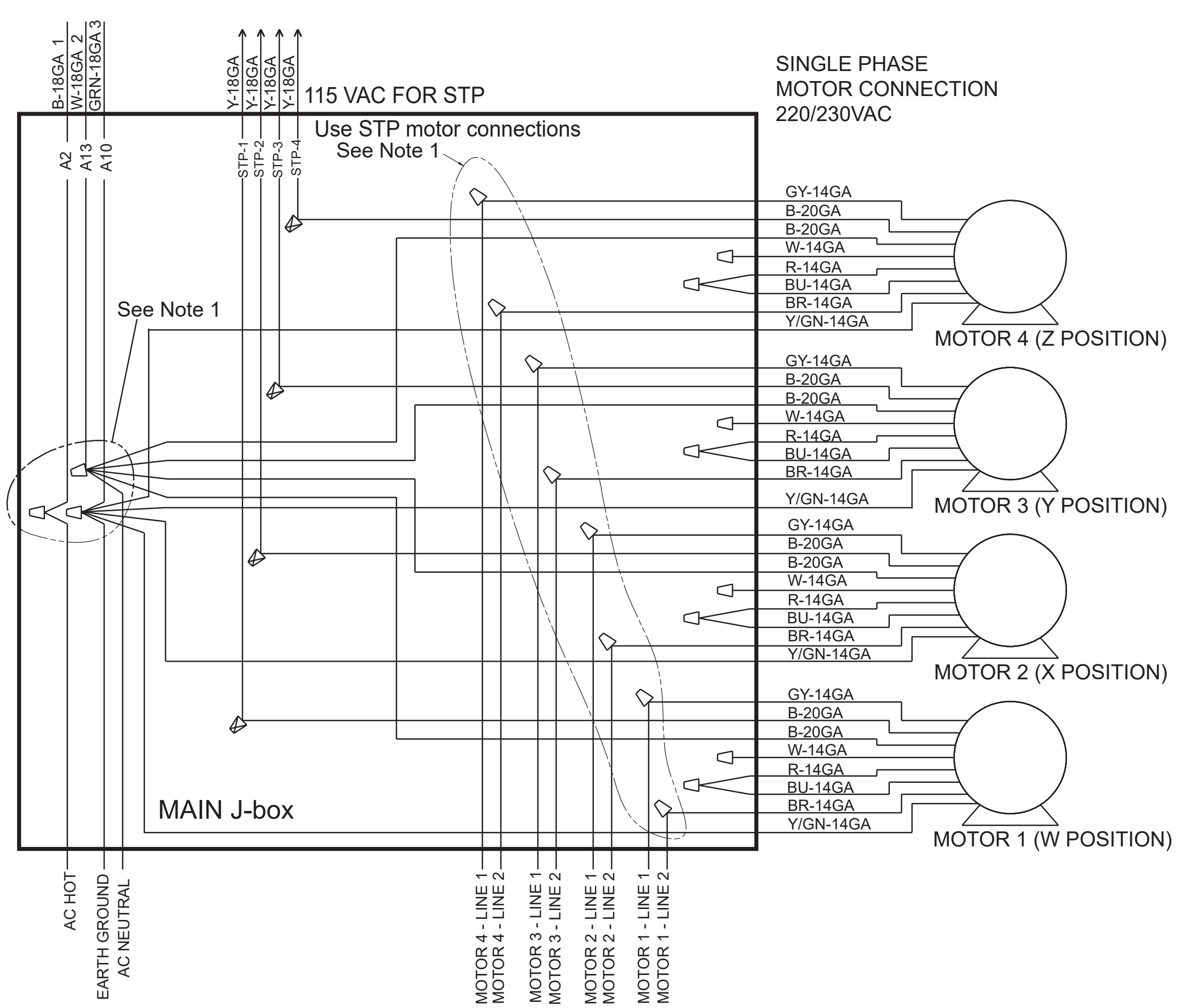


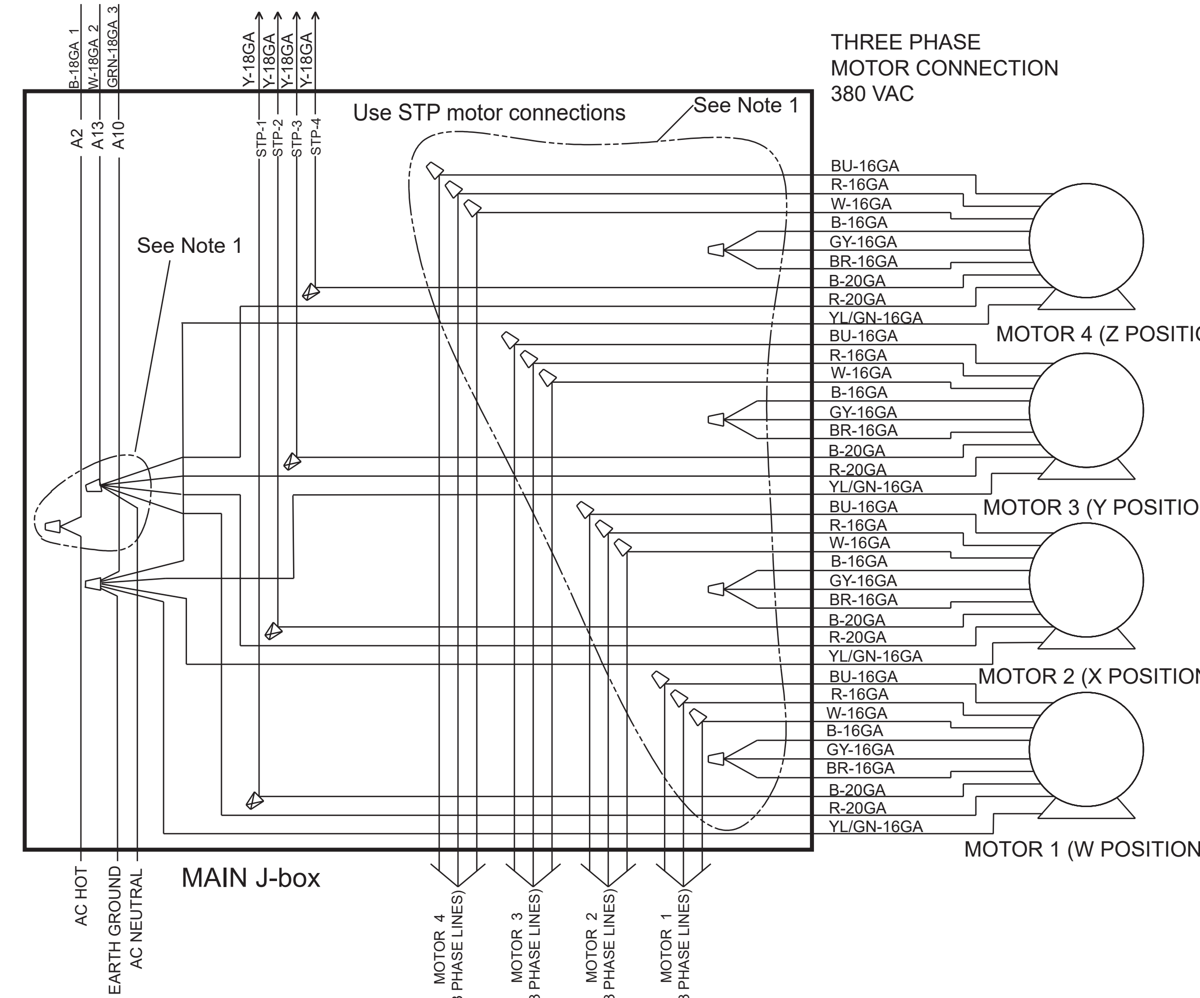


Notes: 1) Connections made in field.
2) Motors must rotate counterclockwise.

Symbols Chart

Wire Nut	
Earth Ground Screw Terminal	
Earth Ground	
No Connection	
Connection	
Crimp Connector	





Wire Color Chart

Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

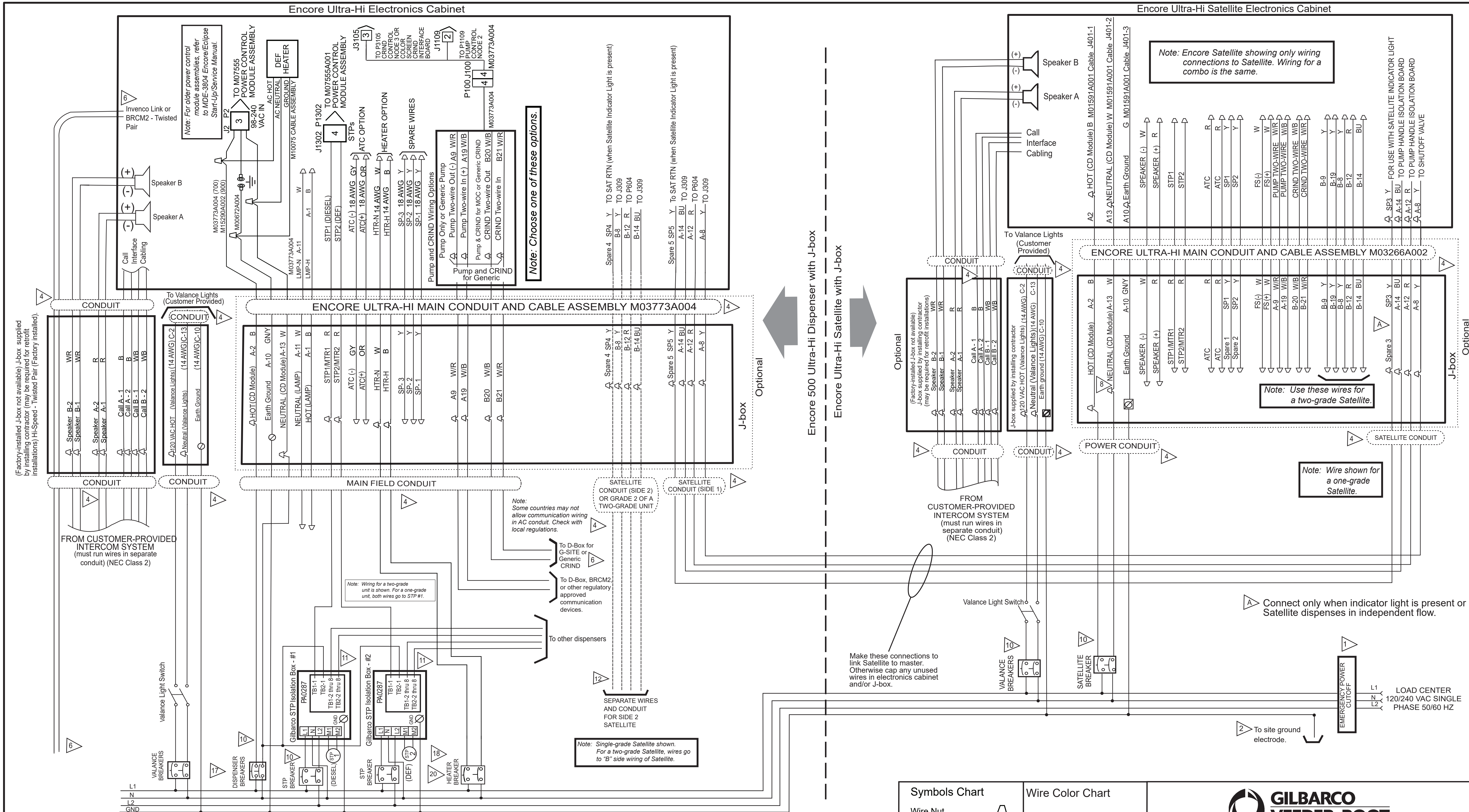
This Sheet

Encore 500 Self-contained Pump single phase motor connections 115/120 VAC, 220/230 VAC and three phase motor connections 220/380 VAC.

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® 500/700/900 Pumps (M13377) Motor Connections (M07555 Power Supply Only) 120/240/380 VAC

12/23	FE-363X



Notes: 1) For wiring of Satellite indicator light option units, refer to pages 7 and 8.
2) Depending upon the model of Ultra-Hi and Satellite, inlet and outlet conduit numbers related to Satellites may vary.

SIMULTANEOUS OPERATION
Both Master and Satellite can dispense fuel at the same time.

INDEPENDENT OPERATION
Master and Satellite can dispense fuel only one at a time. Satellite pump handle determines which unit can dispense fuel.

This Sheet

- Encore 500 Ultra-Hi Dispensers with J-box manufactured after November 2004
- Encore Ultra-Hi Satellite with J-box.

Symbols Chart

Symbol
Wire Nut
Earth Ground Screw Terminal
Earth Ground
No Connection
Connection
Crimp Connector

Wire Color Chart

Color	Code
Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® 500/700/900 Ultra-Hi™ Dispensers, DEF+1, and Satellites (M07555 Power Supply Only) 120/240 VAC

Sheet 6 of 11

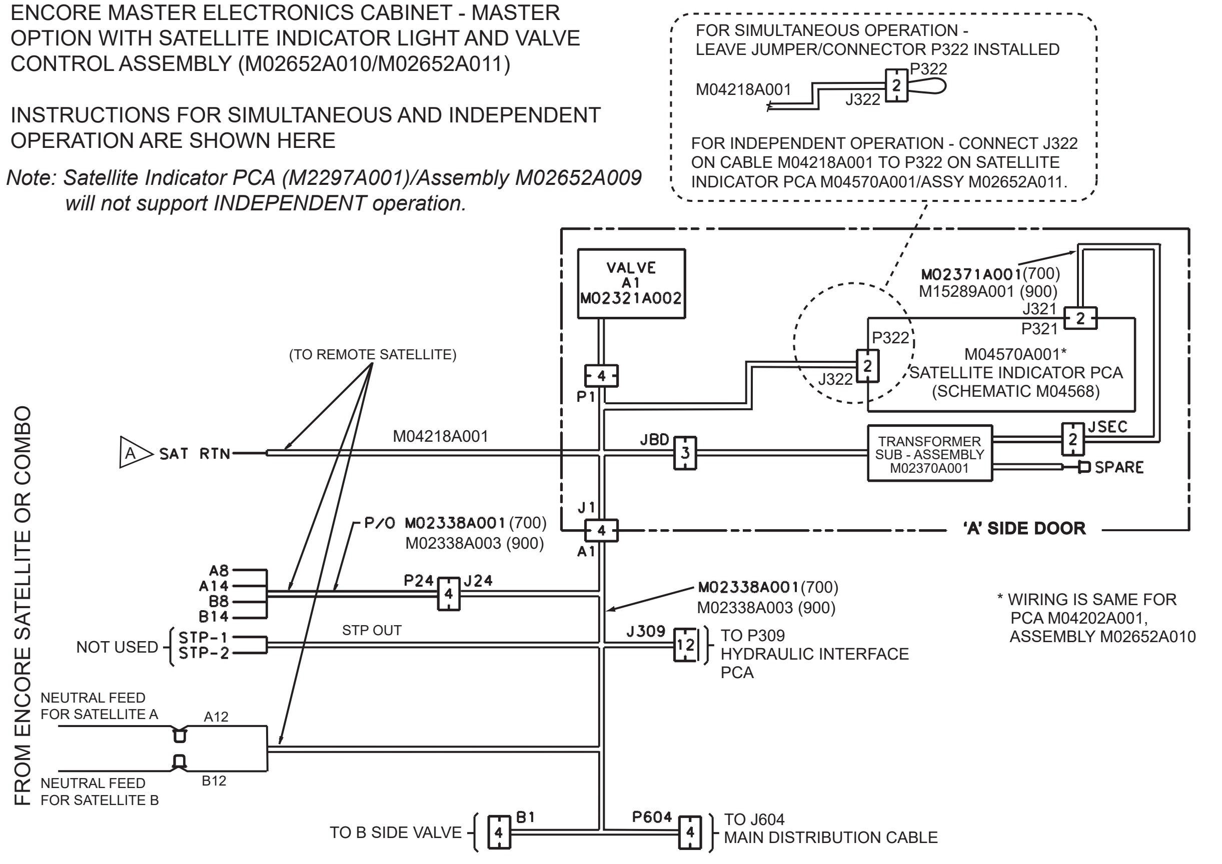
12/23

FE-363X

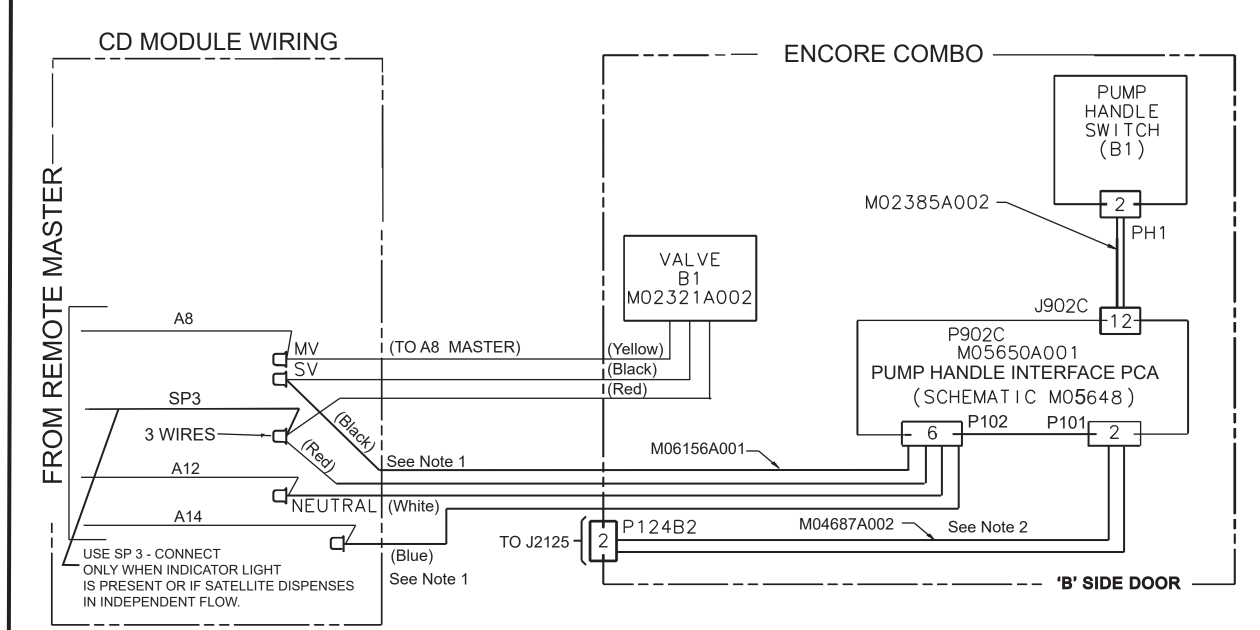
ENCORE MASTER ELECTRONICS CABINET - MASTER OPTION WITH SATELLITE INDICATOR LIGHT AND VALVE CONTROL ASSEMBLY (M02652A010/M02652A011)

INSTRUCTIONS FOR SIMULTANEOUS AND INDEPENDENT OPERATION ARE SHOWN HERE

Note: Satellite Indicator PCA (M2297A001)/Assembly M02652A009 will not support INDEPENDENT operation.



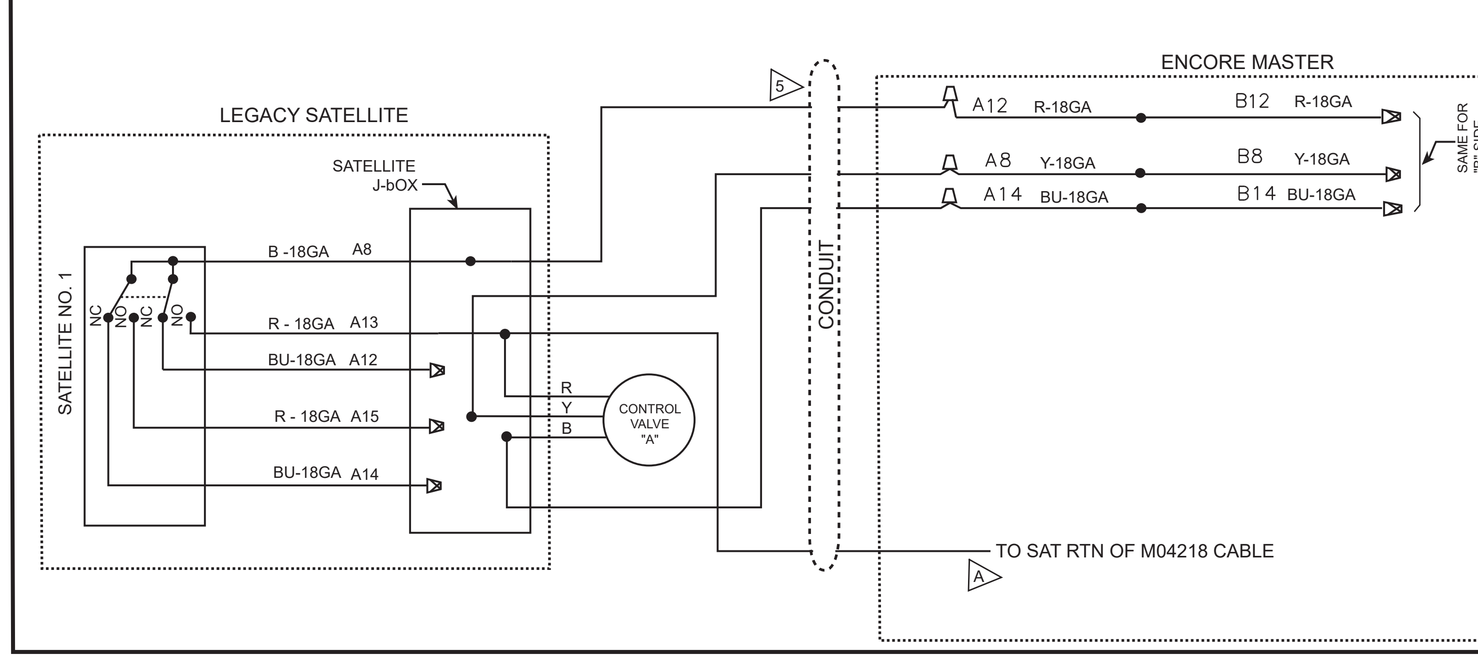
ENCORE MASTER ELECTRONICS CABINET - SATELLITE PORTION OF MASTER/COMBO OPTION



Notes: 1) The black and blue wires will only be present if the Pump Handle Interface Board PCA (M05650A001) is present. If Pump Handle Interface Boards M02325A003 or M04528A002 are used, only the red and white wires will be available.

2) The wiring for the Satellite is the same except that the Satellite will use M02802A001 Cable.

ENCORE MASTER/LEGACY SATELLITE - INDEPENDENT OR SIMULTANEOUS OPERATION (TWO-STAGE VALVE)



A Connect only when indicator light is present or if Satellite dispenses in independent flow.

SIMULTANEOUS OPERATION
Both Master and Satellite can dispense fuel at the same time.

INDEPENDENT OPERATION
Master and Satellite can dispense fuel only one at a time. Satellite pump handle determines which unit can dispense fuel.

This Sheet

Satellite signal wiring details for Encore Master with Encore Satellite and Encore Master with Legacy Satellite.

Symbols Chart

- Wire Nut
- Earth Ground Screw Terminal
- Earth Ground
- No Connection
- Connection
- Crimp Connector

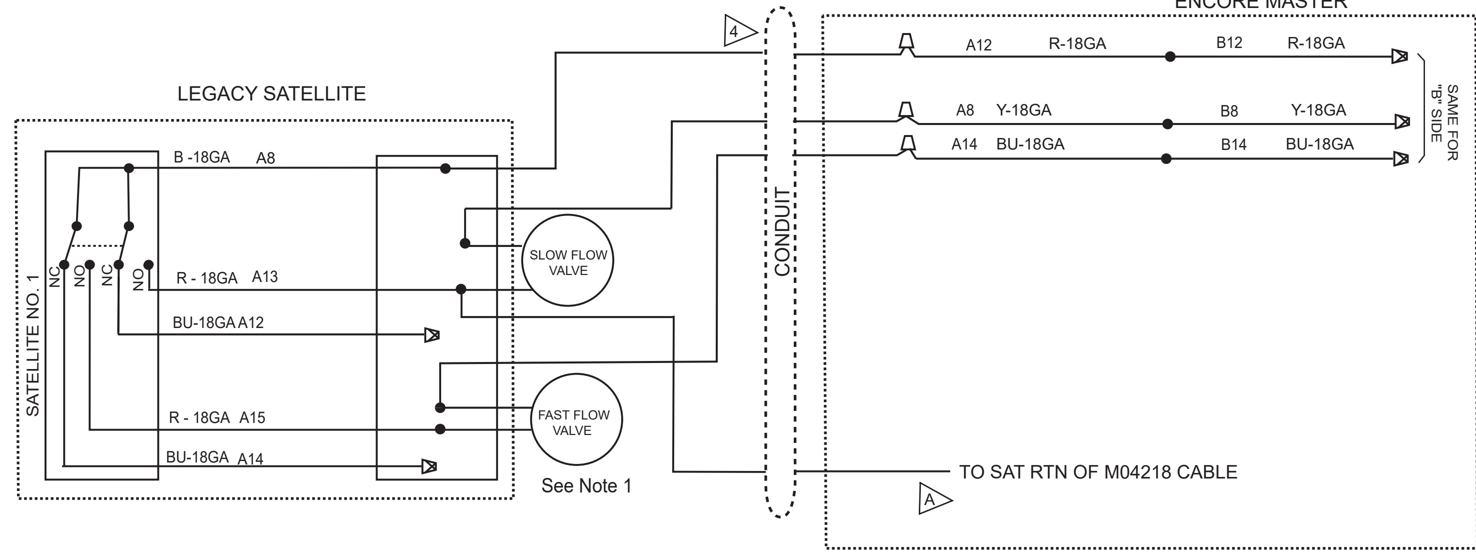
Wire Color Chart	
Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® 500/700/900 Ultra-Hi™ Dispensers Master and Satellite (M07555 Power Supply Only) 120/240 VAC
Sheet 7 of 11

12/23 | **FE-363X**

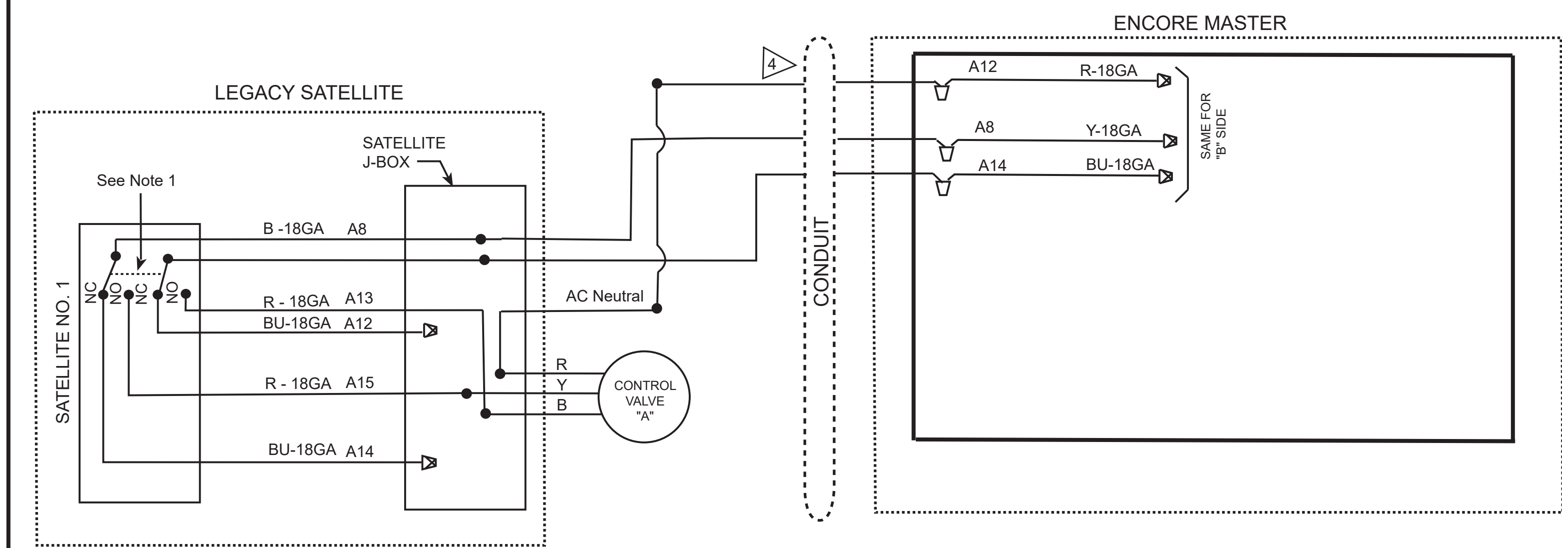
ENCORE MASTER TO LEGACY SATELLITES WITH TWO SINGLE-STAGE VALVES - INDEPENDENT OR SIMULTANEOUS OPERATION



Notes: 1) M04570A001 Satellite indicator must be used in Encore units in order to function in independent flow.
2) In single-stage valve, only the fast flow valve is present. This unit is not preset-capable.

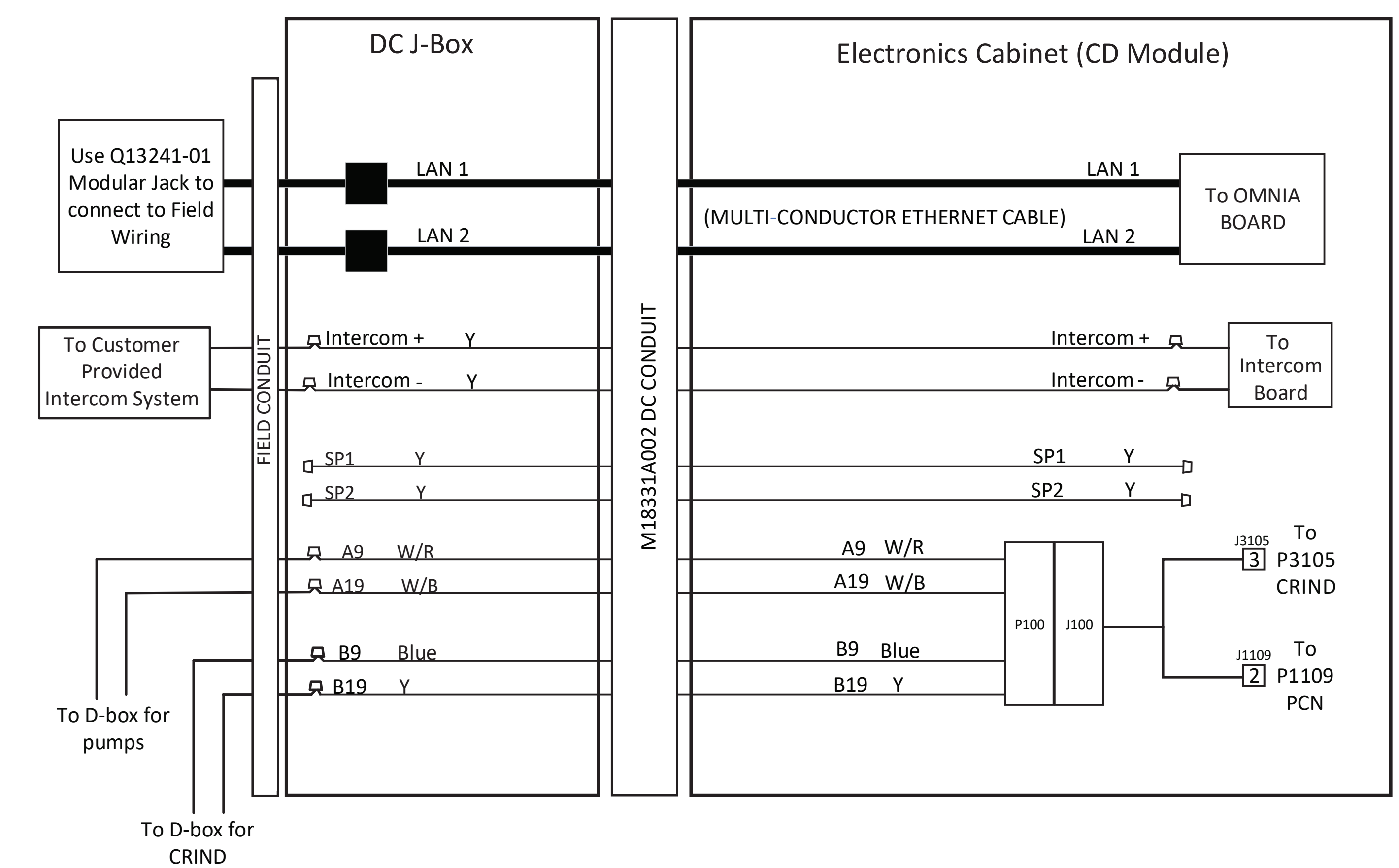
A Connect only when indicator light is present or if Satellite dispenses in independent flow.

ENCORE MASTER/LEGACY SATELLITE WITH J-BOX - SIMULTANEOUS OPERATION (TWO-STAGE VALVE) WITHOUT SATELLITE INDICATOR LIGHT ON MASTER



Notes: 1) For this option you will be modifying wiring at the handle switch of the Legacy satellite. You will be removing the A8 wire to the switch and connecting wires from the Encore Master valve to the inlets of the switch.
2) Alternative wiring method: This method of wiring is often required to allow Encore Master to hit presets. This method will not support independent operation or Satellite indicator light.

NEW CANADIAN DC CONDUIT



This Sheet
Satellite signal wiring details for Encore Master with Legacy Satellite.

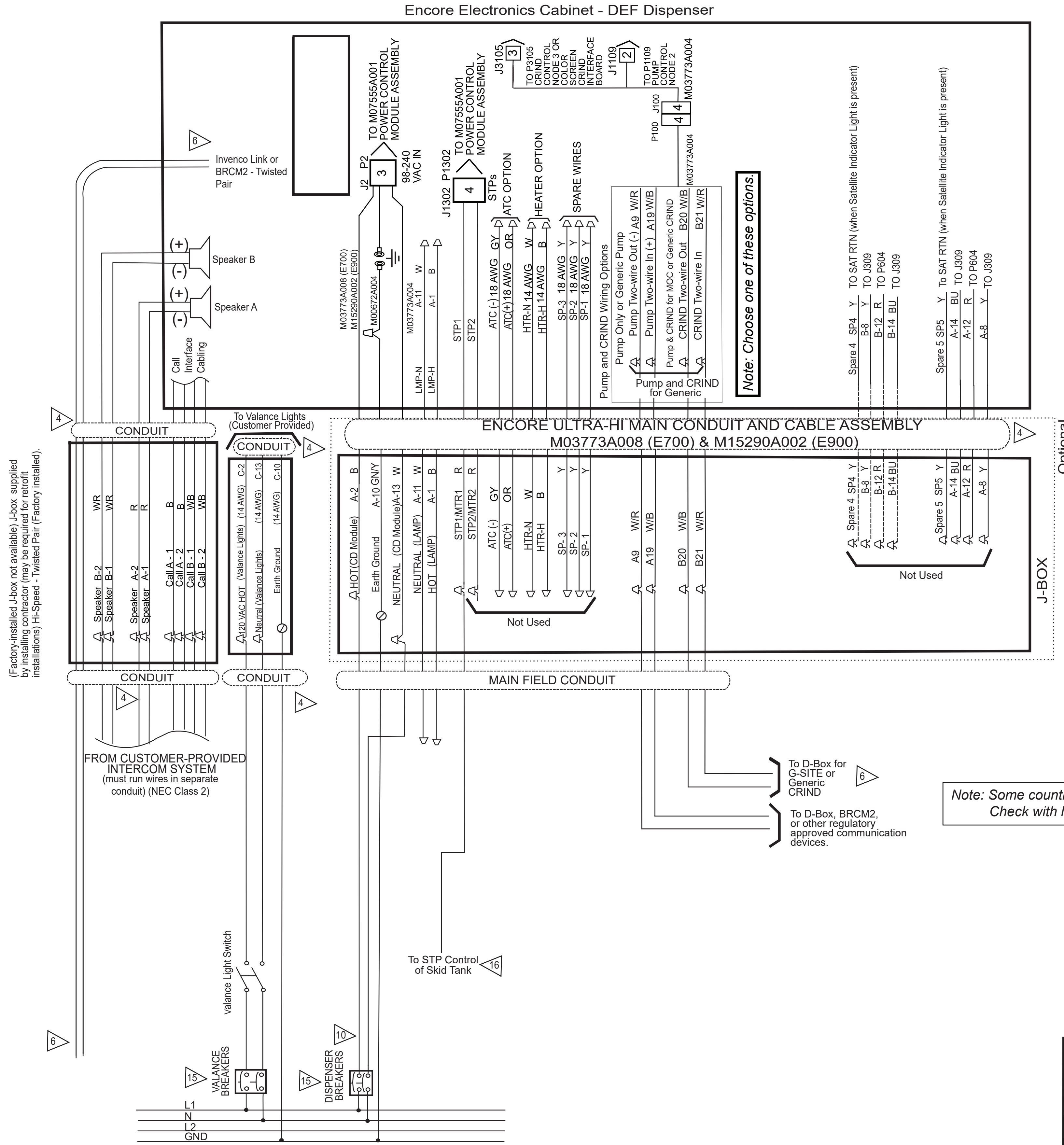
Symbols Chart	
Wire Nut	
Earth Ground Screw Terminal	
Earth Ground	
No Connection	
Connection	
Crimp Connector	

Wire Color Chart	
Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® 500/700/900 Ultra-Hi™ Dispensers Master and Satellite (M07555 Power Supply Only) 120/240 VAC

12/23	FE-363X



Note: For DEF+1 Units, refer to Field Wiring Diagram Encore 500 Ultra-Hi/700 Ultra-Hi Dispensers, DEF+1, and Satellites (M07555 Power Supply Only) 120/240 VAC on Sheets 6 and 10.

Note: Some countries may not allow communication wiring in AC conduit. Check with local regulations.

This Sheet
Encore DEF Dispenser.

Symbols Chart

Symbol	
Wire Nut	
Earth Ground Screw Terminal	
Earth Ground	
No Connection	
Connection	
Crimp Connector	

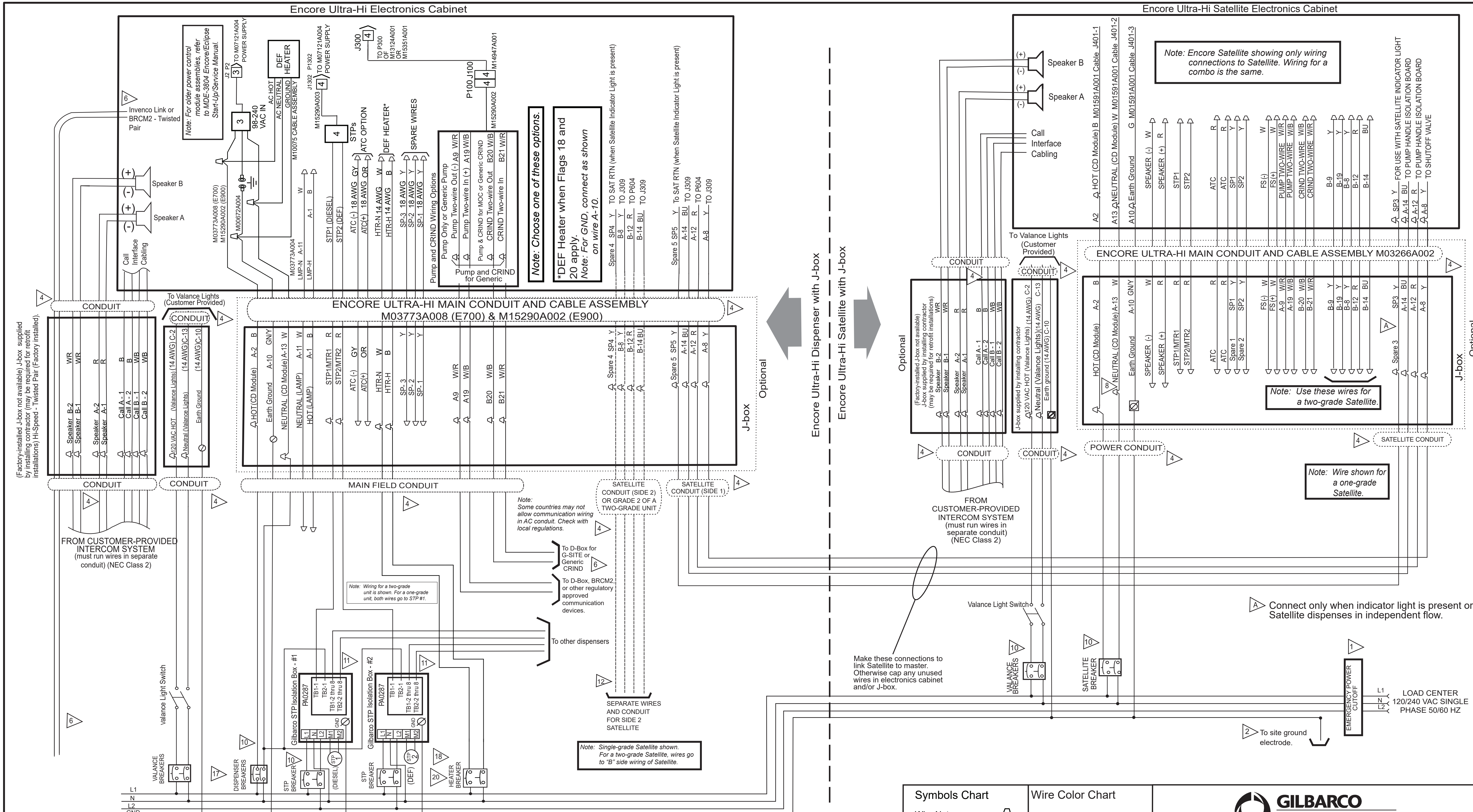
Wire Color Chart

Color	Code
Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® DEF Dispensers (Single-grade DEF only)

12/23 | FE-363X



Notes: 1) For wiring of Satellite indicator light option units, refer to pages 6 and 7.
2) Depending upon the model of Ultra-Hi and Satellite, inlet and outlet conduit numbers related to Satellites may vary.

SIMULTANEOUS OPERATION
Both Master and Satellite can dispense fuel at the same time.

INDEPENDENT OPERATION
Master and Satellite can dispense fuel only one at a time. Satellite pump handle determines which unit can dispense fuel.

This Sheet

Encore Ultra-Hi Satellite with J-box.

Symbols Chart

- Wire Nut
- Earth Ground Screw Terminal
- Earth Ground
- No Connection
- Connection
- Crimp Connector

Wire Color Chart

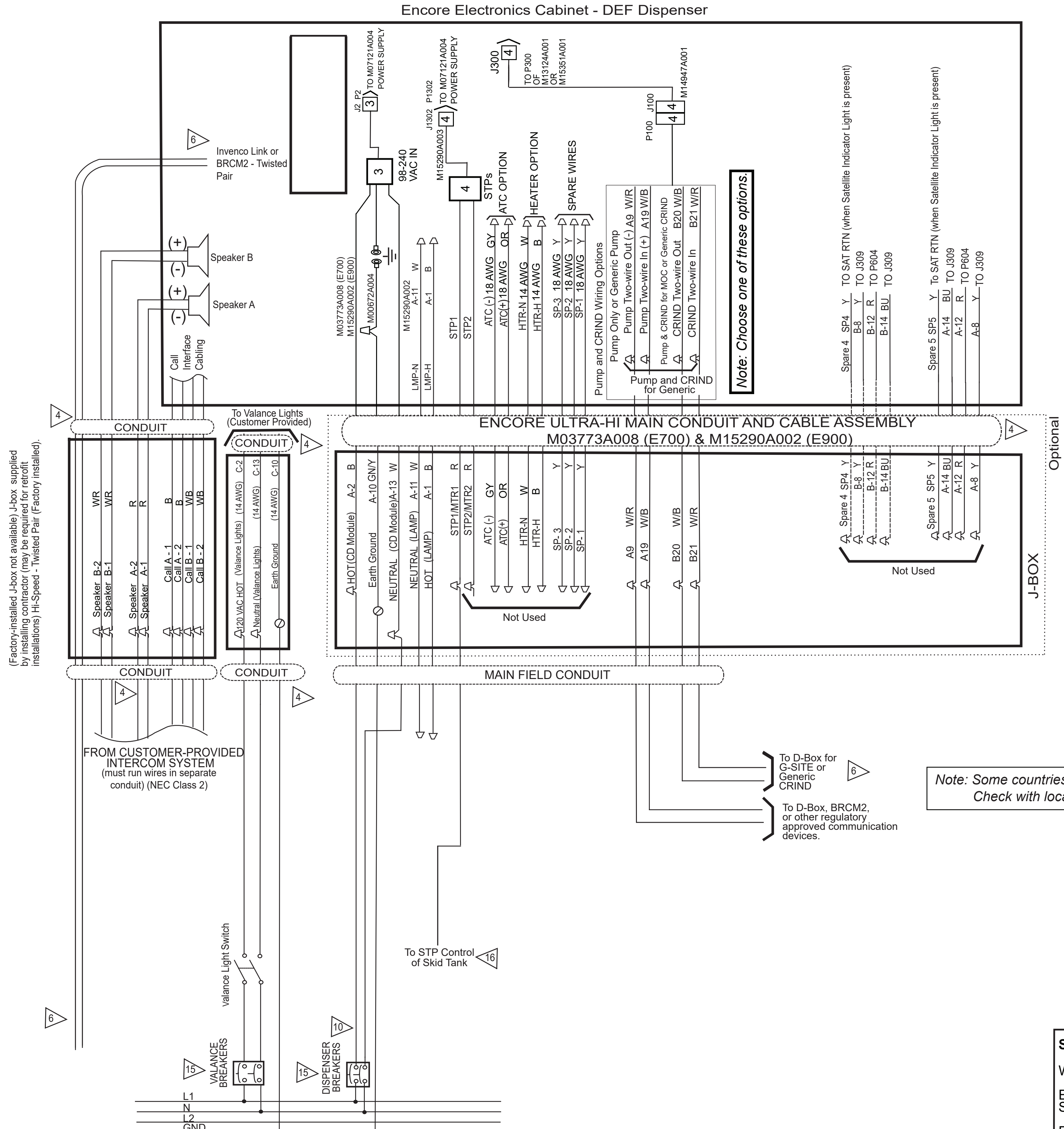
Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® Ultra-Hi™ Dispensers, DEF+1, Satellites, and Dual DEF Dispenser
Ultra-Hi or 500/700/900 Dispensers
120/240 VAC
Sheet 10 of 11

12/23

FE-363X



Note: For DEF+1 Units, refer to Field Wiring Diagram Encore Ultra-Hi Dispensers, DEF+1, and Satellites (M07555 Power Supply Only) 120/240 VAC on Sheet 6 and 10.

Note: Some countries may not allow communication wiring in AC conduit. Check with local regulations.

Symbols Chart

- Wire Nut
- Earth Ground Screw Terminal
- Earth Ground
- No Connection
- Connection
- Crimp Connector

Wire Color Chart

Black	B
Brown	BR
Red	R
Orange	OR
Yellow	Y
Green	GN
Blue	BU
Violet	V
Gray	GY
White	W
White Black	WB
White Red	WR

This Sheet

Encore DEF Dispenser.

GILBARCO VEEDER-ROOT

Field Wiring Diagram Encore® DEF Dispensers (Single-grade DEF only)

Sheet 11 of 11

12/23

FE-363X