



PRODUCT DRAWING

YORK INTERNATIONAL CORPORATION
P.O. Box 1592, York, PA 17405

Supersedes: Nothing

Form 160.55-PW6 (1199)

WIRING DIAGRAM – FIELD CONNECTIONS MILLENNIUM™ MODEL YT CHILLERS (STYLE J) WITH VARIABLE SPEED DRIVE

CONTRACTOR _____
ORDER NO. _____
YORK CONTRACT NO. _____
YORK ORDER NO. _____

PURCHASER _____
JOB NAME _____
LOCATION _____
ENGINEER _____

REFERENCE DATE _____

APPROVAL DATE _____

CONSTRUCTION DATE _____

JOB DATA:

CHILLER MODEL NO. YT _____ NUMBER OF UNITS _____

MOTOR/VARIABLE SPEED DRIVE POWER: 460 VOLTS, 3-PHASE, 60 Hz or 400 VOLTS, 3-PHASE, 50 Hz

NOTES:

- All field wiring shall be in accordance with the current edition of the National Electrical Code (N.E.C.) as well as all other applicable codes and specifications.
- Variable Speed Drive (VSD) shall be grounded in accordance with the 1999 N.E.C. (Paragraph 250-118) for equipment grounding. Flexible conduit is required for final connection to the VSD. When a separate grounding conductor is required, it must be a copper conductor only and sized per the N.E.C. (Table 250-122). Per N.E.C. (Paragraph 250-120(f)(1)), where multiple (parallel) conduits are used each must contain a grounding conductor. See Note 8 for grounding lug wire range.
- Wiring, electrical conduit, junction boxes, fused disconnect switches (FDS), or circuit breakers, starters (M), push-button stations (PB), manual-off-automatic switch (S), flow switch (FLS), and control relays furnished by others unless otherwise specified.
- Items marked * will be furnished by York International Corporation.
- Items marked ** available from York International Corporation at additional cost.
- Control power supply 115V – 50/60 Hz, 2.0/3.0 KVA capacity for control center only, is supplied by a control power transformer(s) (1T)/(2T) mounted inside the VSD (60 Hz chiller motor code CF-CT or 50 Hz 5CC-5CM) or outside the VSD (60 Hz chiller motor code CU-CB or 50 Hz 5CN-5CV) as shown. It is factory wired.
- VSD power conduit connection (cut holes to suit) locations per Product Drawing Form 160.55-PA1. Flexible conduit must be used for final connections to VSD. Multiple conduits shall contain an equal number of wires from each phase in each conduit to prevent overheating per 1999 N.E.C. (Paragraph 300-20(a)). Use copper conductors only; DO NOT USE aluminum conductors. See Note 8 for factory furnished VSD terminal lug wire ranges and conduit connection provisions.

- A removable cover plate with pilot knockouts is supplied for connection of power supply conduits.

Chiller Motor Code	No. of Conduits – Max Trade Conduit Size
CF-CN or 5CC-5CI	(2) 2-1/2 in.
CP-CT or 5CJ-5CM	(2) 3 in. or (3) 2-1/2 in.
CU-CB or 5CN-5CV	(4) 3 in.

The following terminal lugs are factory furnished for field wiring supply connections. All lugs are rated AL9CU.

Chiller Motor Code & VSD Crt. Brk. Rating	Line Side Lugs		Grounding Lug Wire Range, Quantity
	BBL Per Terminal	Wire Range	
CF - CN, 600A 5CC - 5CI, 600A	2	3/0-350 kcmil.	#6 AWG to 250 kcmil, two bbl.
CP - CT, 800A 5CJ - 5CM, 800A	3	3/0-500 kcmil.	#6 AWG to 250 kcmil, three bbl.
CU - CB, 1200A 5CN - 5CV, 1200A	4	3/0-500 kcmil.	#4 AWG to 500 kcmil, four bbl.

- Condenser water pump motor starter (3M) holding coil to be furnished for 115V – 50/60 Hz. The power requirements for the water pump starter (3M) must be a max. of 1 Amp holding and 10 Amps inrush. If power requirements exceed this value, furnish coil for line voltage, and control relay with 115V coil.
- Units shipped knocked down require field connection of harnesses to control center, power wiring between compressor motor and VSD, and oil pump starter to VSD. These harnesses and power wiring are furnished by York International Corporation for field assembly and consist of proper lengths of flexible conduit with necessary connectors, and contain the wires (shown in Note 13) properly terminated and marked.

11. Wire #14 AWG copper for one way distance of less than 175 feet. Wire #12 AWG copper for one way distance of more than 175 feet, but less than 300 feet.
12. Wiring diagram for YORK control center Form 160.55-PW3. Field wiring modifications per Form 160.55-PW7. Wiring diagrams for YORK Variable Speed Drive Forms 160.00-PW1, 160.00-PW2 or 160.00-PW3.
13. The following interconnecting wires are factory supplied when a YORK Variable Speed Drive is used.
 - (a) VSD to control center – L, 2, 16, 24, 53; 3-conductor shielded cable; 4-conductor shielded cable (VSD harmonic filter option only).
 - (b) VSD to oil pump motor starter – 67, 68, 69.
14. 60 Hz oil pump motor for compressor codes B, C, & E is 3/4 HP, and compressor code F is 1 HP. Full load amperes for oil pump motor (furnished by York International Corporation with VSD factory wired) and 3.0 KVA or (2) 2.0 KVA control power transformer(s) (furnished by York International Corporation and factory wired) are:

3-Phase Voltage	Hz	Oil Pump Motor (Amps)		Control Power Transformer(s) (Amps)
		3/4 HP	1 HP	
440/460/480	60	1.8	2.3	6.5 (Motor Code CF-CT)
380/400	50	—	2.2	7.5 (Motor Code 5CC - 5CM)
440/460/480	60	1.8	2.3	8.7 (Motor Code CU-CB)
380/400	50	—	2.2	10.0 (Motor Code 5CN - 5CV)

15. The branch circuit overcurrent protection device for the YORK VSD must be a time delay type with a rating which is the standard fuse/circuit breaker size required to protect the field supply wiring conductors per the N.E.C.
16. The YORK Variable Speed Drive power supply wiring ampacity shall be calculated as follows.
Model YT minimum circuit ampacity:
Ampacity = 1.25 (Job FLA)
Where 125% factor per 1999 N.E.C. (Para. 440-33).
17. The VSD is equipped with a U.L. Listed ground fault sensing circuit breaker sized per the following table. Fast acting semiconductor fuses are employed after the circuit breaker to provide additional protection to the VSD. The ground fault sensor is factory set to trip instantaneously when a ground fault is detected.

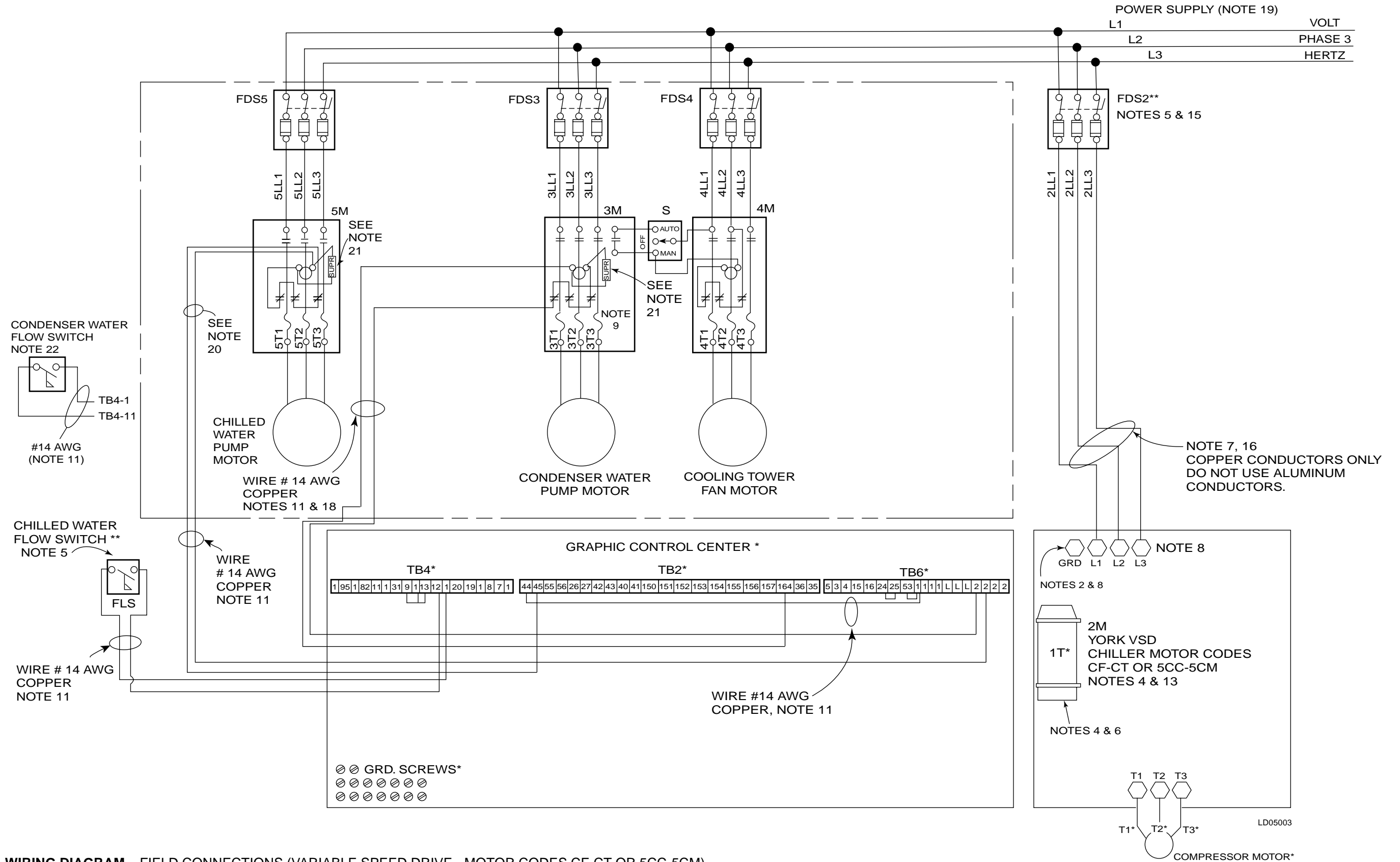
Chiller Motor Code	VSD Circuit Bkr. Rating (Amps) @ 480 VAC, 60 Hz or 400 VAC, 50 Hz		Semiconductor Fuse Rating (Amps) @ 700 VAC	Ground Fault Trip (Amps)
	Trip	Interrupting		
CF-CN or 5CC - 5CI	600	65,000*	500	120
CP-CT or 5CJ - 5CM	800	65,000*	700	160
CU-CZ or 5CN - 5CS	1200	65,000*	1100	240
Chiller Motor Code	VSD Circuit Bkr. Rating (Amps) @ 480 VAC, 60 Hz or 400 VAC, 50 Hz		Semiconductor Fuse Rating (Amps) @ 660 VAC	Ground Fault Trip (Amps)
	Trip	Interrupting		
CA - CB 5CT - 5CV	1200	100,000*	1600	240

* Per U.L. Listing of VSD

18. Control circuit wiring for 3M condenser water pump motor starter is shown for cooling only application.
19. The main power transformer should be adequately sized such that the transformer voltage drop does not exceed 10% during unit start-up. The supply voltage, at VSD input terminals, during start-up must be maintained above 391 volts for 60 Hz units and 323 volts for 50 Hz units. The allowable supply voltage range during normal operation is 414 to 508VAC, 3-Phase, 60 Hz or 342 to 423 VAC, 3-Phase, 50 Hz.
20. Automatic control of the chilled water pump by the control center is shown. Chilled water pump motor starter (5M) holding coil to be furnished for 115V – 50/60 Hz. The power requirements for the water pump starter (5M) must be a maximum of 1 Amp holding and 8 Amps inrush. If power requirements exceed this value, furnish coil for line voltage, and control relay with 115V coil (see Note 21).

The pumps operate during oil pump prerun, during compressor operation & during cycling shutdown.

For manual chilled water pump control, connect a manual start/stop switch as shown in the Field Connections diagram on page 3 or 5 for 115VAC coils only.
21. Each 115VAC field-connected inductive load, i.e. relay coil, motor starter coil, etc. shall have a transient suppressor wired (by others) in parallel with its coil, physically located at the coil. Spare transient suppressors are factory supplied in a bag attached to the keypad cable clamp in the Graphic Control Center.
22. The Condenser Flow Switch is optional. If not present, a jumper must be installed between TB4-11 and TB4-1.



WIRING DIAGRAM – FIELD CONNECTIONS (VARIABLE SPEED DRIVE - MOTOR CODES CF-CT OR 5CC-5CM)

