



Model: N/A	October 19, 2012
Serial #: See below	
Product Bulletin # DC-002	

Combo HPU Kidney Loop Motor

Serial numbers

DC1041-DC1050, DC1052, DC1053, DC1055-DC1057, DC1062, DC1064, DC1068, DC1070, DC1072

Background

The Combo HPU Part Number AY17915 and AY17915-1 utilize a capacitive 2HP, 208-230V/1ph/60Hz motor in the kidney loop to drive the circulating pump for oil cooling and reservoir filling. When supplied with grid power, the motor operates normally during factory acceptance testing. However, when supplied with generator power, the generator output voltage often falls below the minimum supply voltage, causing the amperage draw to increase to the point that the circuit breaker is tripped before the motor can generate enough starting torque.

Recommendation

Replace the single phase 2HP motor with a 2HP/460V/3ph/60Hz motor. Install a Variable Frequency Drive (VFD) kit to convert single phase supply power from the lighting panel to three phase power supply.

Parts Required

Canrig Part Number AY18779 - VFD Installation kit with three phase 2HP motor. Contact RigLine 24/7™ Support to order the kit.

Reference Schematics

PACE_COMBO HPU_WRENCH_VFD

Tools Required

- Wire Cutters
- Wire Strippers
- Ratchet and Sockets
- Allen Wrench Set
- Flat Head Screwdriver
- Phillips Screwdriver
- 3 ft Black 18 ga. Wire

Determine Existing Configuration

Determine motor type currently installed and check power supply from lighting panel.

1. Lock out and tag out all power to the Driller's Cabin Lighting Panel and Combo HPU.
2. Remove the cover on the side of the HPU and check if the motor is single phase (See Figure 1) or three phase (See Figure 2).



Figure 1: Green- Weg # 00218ES1E145TC, single phase motor.



Figure 2: Blue- Weg # 00218ET3E145TC, three phase motor.

3. Check the Lighting Panel in the Driller's Cabin for a two pole (See Figure 3) or three pole breaker (See Figure 4).



Figure 3: Two pole breaker

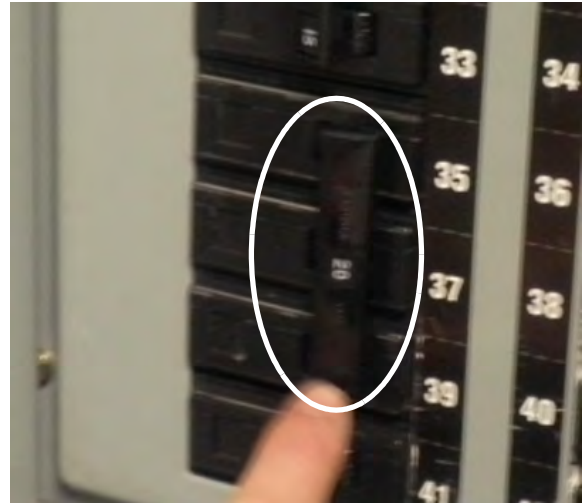


Figure 4: Three pole breaker

If the HPU has a three phase motor installed and the Driller's Cabin has a three pole breaker, then no further action is required.

If the motor is single phase and a two pole breaker is installed, follow the installation instructions below to install the three phase motor and VFD.

Install the Three Phase Motor and VFD



This procedure should only be performed by a trained technician as it requires programming of the VFD and involves voltages up to 230 VAC.

1. Lock out and tag out all power to the Driller's Cabin Lighting Panel and Combo HPU if not already performed prior to status check above.

2. Remove the four bolts holding the coupler to the pump (Figure 5).

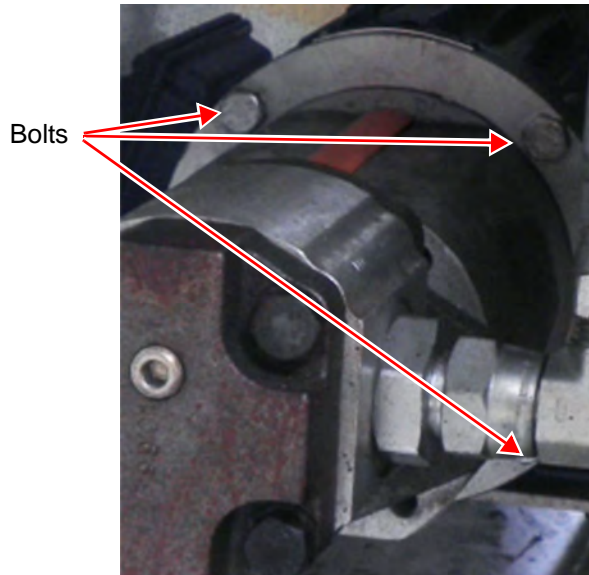


Figure 5: Coupler bolts (One not pictured)

3. Remove cable 257/PUMP and the four bolts securing the motor to the HPU (See Figure 6).

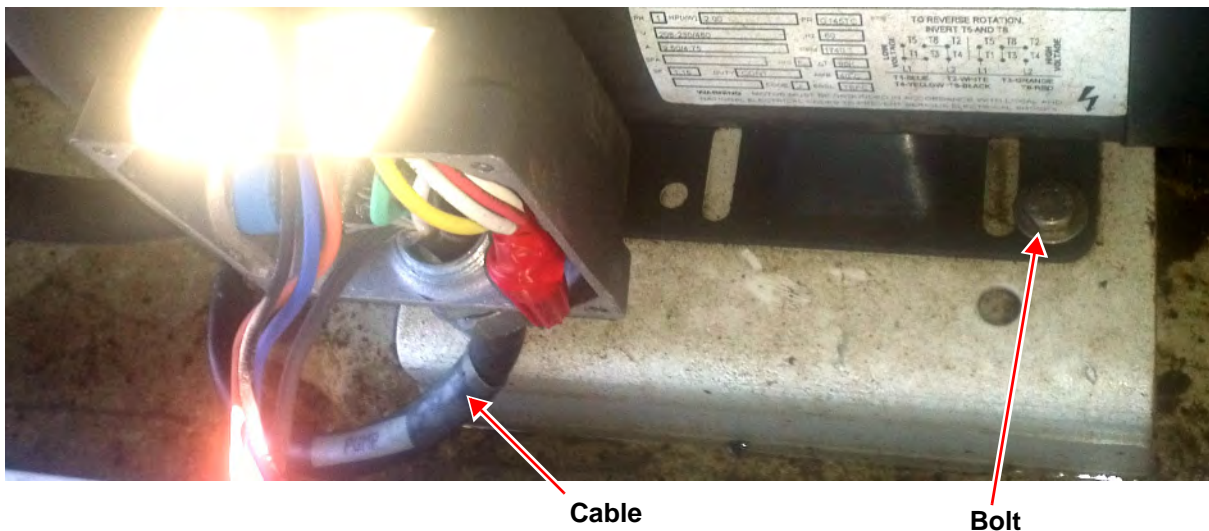


Figure 6: Cable and securing bolts for the HPU motor shown. (Three additional bolts not pictured)

- Note the position of the removed motor coupling and fix it to the new motor (See Figure 7).



Figure 7: Coupling on the removed motor

- Mate the new motor with the pump coupler using the four bolts removed previously. Then mount the motor back to the chassis.
- Remove the remaining cover and situate the VFD enclosure with the cable glands away from the temperature switch to get a reference on the mounting holes (See Figure 8).

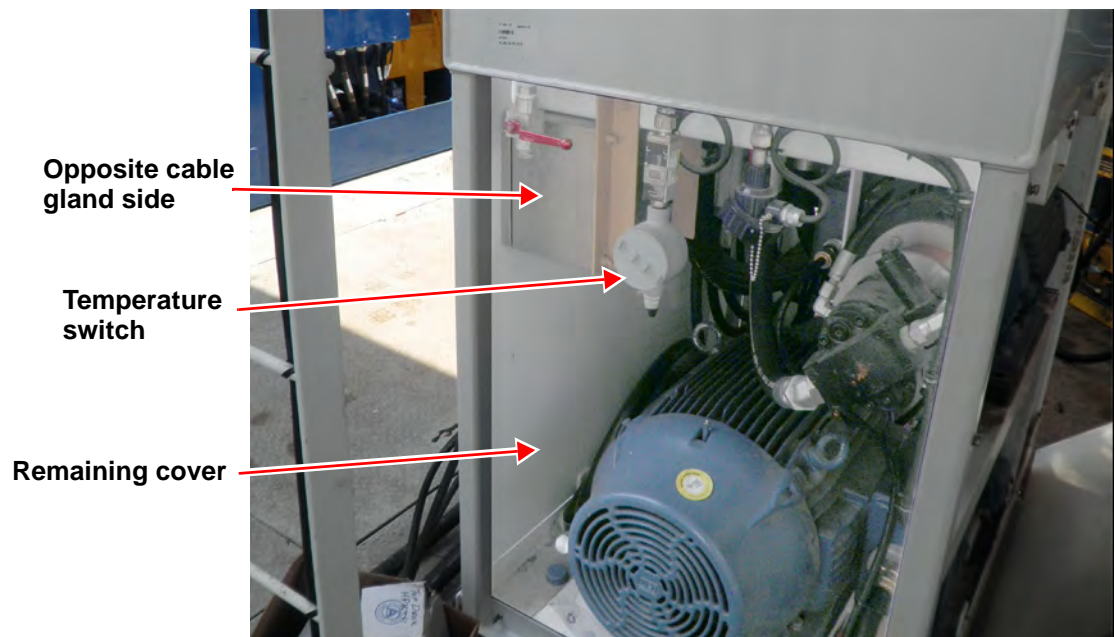


Figure 8: Opposite side cover and temperature switch

7. Mark the mounting holes at 9.25 inches back and 1.5 and 2.5 inches up on each side of the fork lift arm pocket (See Figure 9). Verify marks are aligned with holes in angle bracket and drill 7/16" holes at each mark. Install the angle brackets and enclosure using the 3/8" fasteners included with the kit.

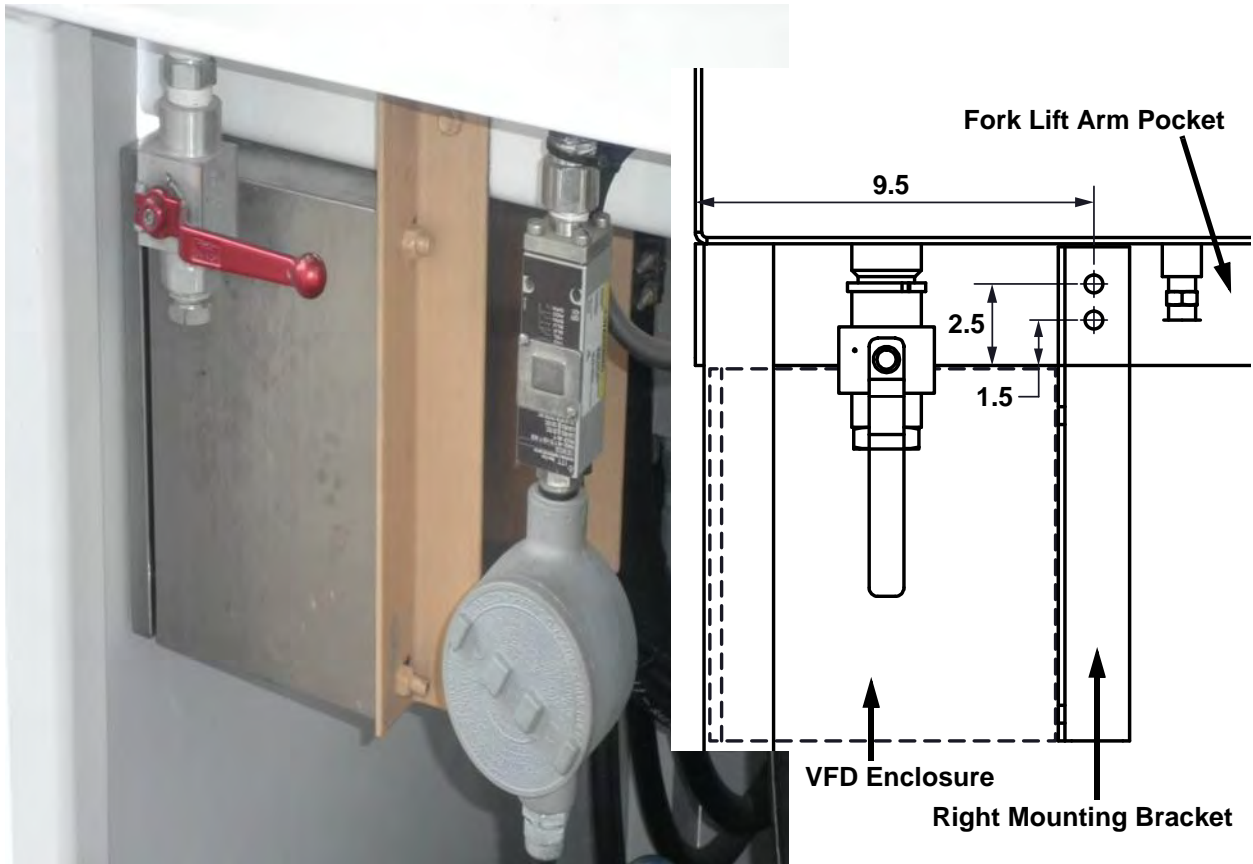


Figure 9: Installing the VFD enclosure support bracket

- Using an allen wrench, remove the valve handle and key (See Figure 10). Rotate key and replace valve handle to close in the opposite direction for proper clearance.

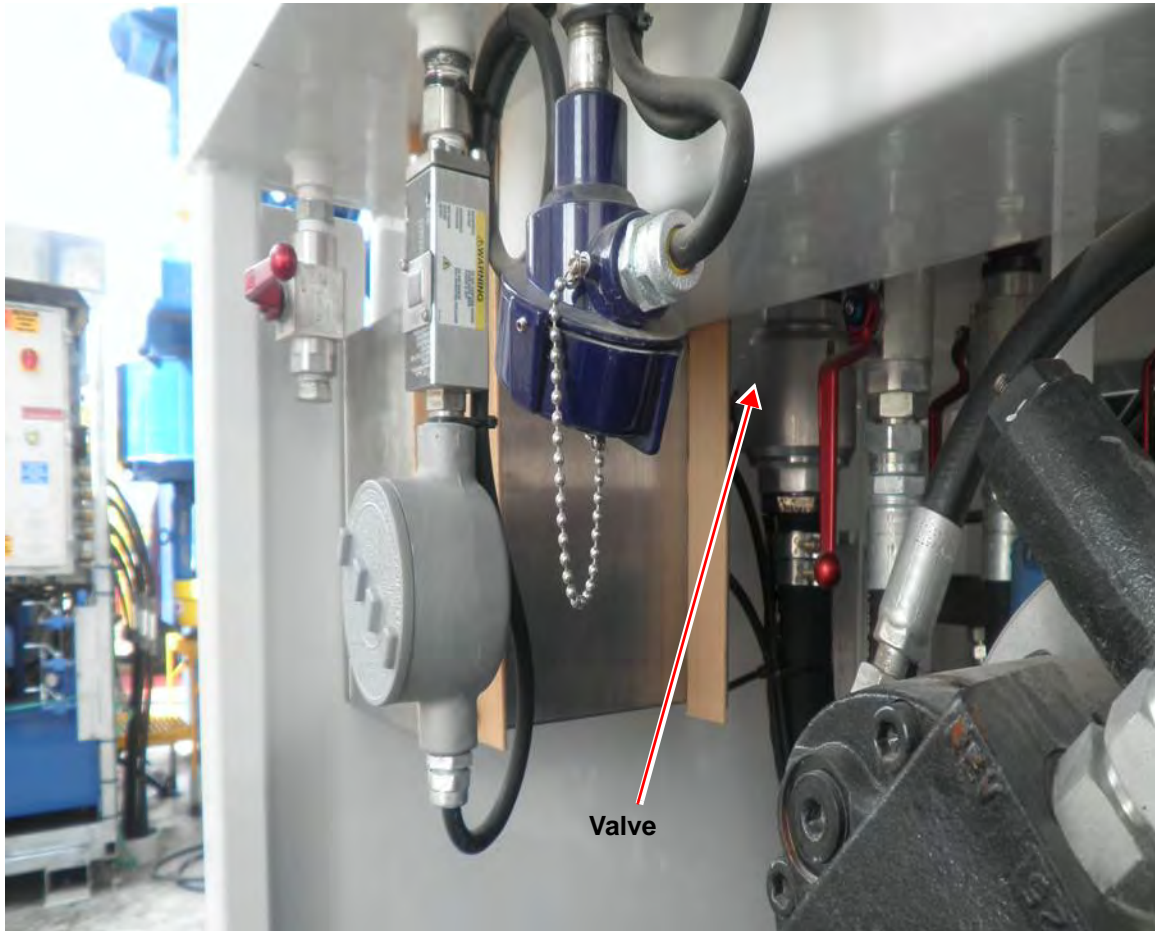


Figure 10: Valve

9. Route cable A to the junction box in place of cable 257/Pump. Connect the black wire to TB3.9 and the red cable to TB3.10 (See Figure 11).

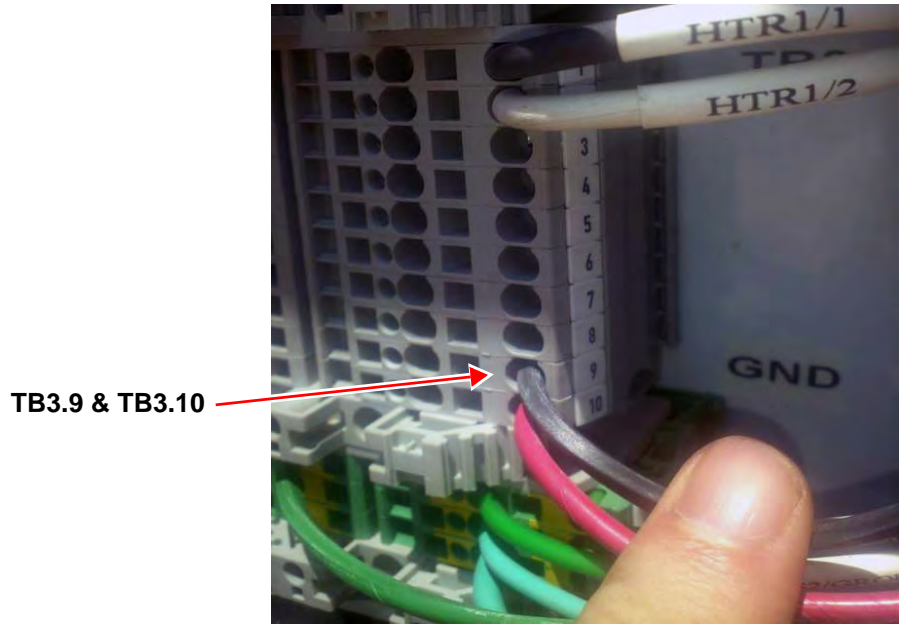


Figure 11: Terminal Block 3, 9 and 10

10. Connect the white wire to TB2.9 (See Figure 12). Ground the green wire to a free earth ground terminal. Jumper TB18.2 to an earth ground terminal.

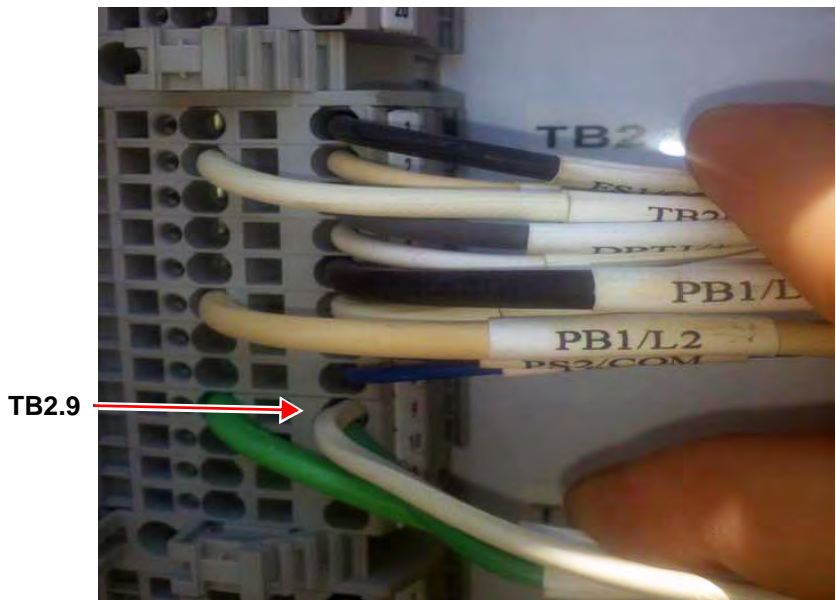


Figure 12: Connection point 9 in Terminal Block 2

11. Route cable B to the newly installed motor and wire it for 208-230 VAC three phase power supply (See Figure 13).

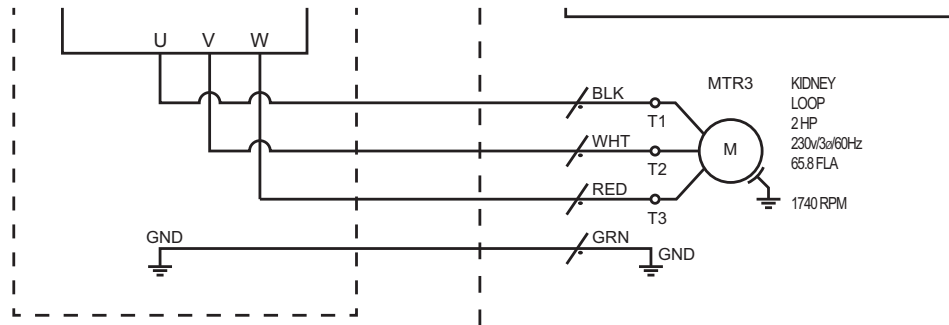


Figure 13: Newly installed three phase motor

12. In the Driller's Cabin Wrench PLC cabinet, disconnect M3, OL3, and CR1 (See Figure 14).



Figure 14: Driller's Cabin Wrench PLC cabinet

15. Turn the Lighting Panel breaker power back ON and program the BOP on the VFD using the parameters listed below (See Figure 17).

VFD PARAMETERS

P0010=1
P0100=1
P0304=230
P0305=5.22
P0307=2
P0310=60
P0311=1750
P0700=2
P1000=3
P1080=55
P1082=65
P1120=15
P1121=15
P3900=3

Figure 17: VFD parameters

16. Press and hold the auto-fill button to listen for motor start up. Refer to schematics if not functioning properly.

17. Turn the Wrench Driller's Console ON and go to the PLC test screen (See Figure 18). Press the Cooler Fan button and check for proper operation.



Figure 18: PLC test screen