



## Specification Sheet for C & A units

### Equipment List and Capability's:

#### Ken Worth Tri-Drive Body Job:

1. Model C500
2. Cat power 475 horse power that can be increased to 550 HP.
3. This unit has been fitted with an Allison Automatic transmission Model OFS4700

#### Operators Control cab:

1. This unit is equipped with an operators control cab where all pressures rates, volumes and densities can be run and monitored. It is equipped with Heat/AC and is pressurized from within. The cementing equipment can be run automatically or manually. All vital systems have backup manual systems in place.

#### Hydraulics:

1. The hydraulics on this unit have been scaled so that there is full hydraulic horse power available at very low RPM.
2. The hydraulic supplies power to 3 centrifugal mission pumps, 2 augers, 1 paddle agitator, 1 small Kerr triplex and a Blower.

#### High Pressure MSI Triplex Pump:

1. Break Horse power is 600
2. 4.0 Inch fluid end capable of 3.7 liters/rev (185 liters/min at 7958 psi) to (1660 liters/min at 2100 psi). Max rates at 0 psi are 1600 liters/min and Minimum rates at 0 psi are still to be determined.
3. This Fluid end can be changed with little down time to 3.5" or 4.5" depending on our rate volume and pressure needs.
4. This pump will be the main pump for pumping the bulk of the fluids.

The rate is monitored by the flow of fluid through a Magnetic meter that has been sourced for all conductive fluids including cement slurries. It has a backup counter that picks up counts of the drive shaft a Proximity Sensor (RPM Count)

5. The pressure from this pump is recorded on an electrical pressure transducer, it has a backup Martin Decker gauge with a read out inside the operators cab.

### **High Pressure Kerr Triplex Pump:**

1. Break Horse Power 40
2. 1.25 inch fluid end capable of 0.398 gal/rev 0-40 liters/min at 6400 psi
3. This pump is driven by hydraulics that is fine tuned and controlled with the help of a 5 turn hydraulic control modular helping the operator to maximize his ability to smoothly control the pump at variable rates and as slow as possible.
4. This pump will be used to acquire those ultra low rates that are sought after and are not able to be obtained by conventional pumps on all Cement squeezes and Acid squeezes.
5. This pump can also add fluids on the high pressure side like methanol on CO2 Squeezes and other chemicals that would be required to be added down stream of the large triplex pump. It will be used to do injection tests and low rate Mini Fracs.
6. The rate of this pump is monitored by a Coriolis Flow meter, installed on the suction.

### **Lubrication System (Groeneveld Automatic Grease System):**

1. CPL Lubrication System is designed to supply proper lubrication to the complete suspension system, steering components only while the equipment is in motion.
2. This system supplies lubrication to both triplexes, the augers, agitator, and all three centrifugal pumps, again only while they are in use and at specific injection volumes at 10 times the air pressure on the main chassis.
3. This system has a monitor that lets the operator know when it is operating correctly and when it is getting low on grease. It can be filled on the fly from a self contained grease applicator.

### **Slurry Centrifugal Mission Pump:**

1. This is a 6 x 5 with a 14 inch impeller which can run at speeds up to 1750 RPM. It is powered by hydraulics and is controlled with a 10 position switch with and rpm digital read out.
2. This pump rate and volume is monitored by a 4" Mag flow meter.
3. This pump is capable of pumping high viscosity fluids and very abrasive fluids.
4. It can supply 4.0 m<sup>3</sup>/min of fluid at 50 psi shut in pressure is 70 psi.
5. It has 2 liquid add ports on the suction side and 1 on the discharge side of this pump.
6. It's main purpose is to circulate cement slurry at high rates for the continuous dustless cementing system.
7. This pump can pick up suction from both sides of the C&A unit and can discharge off of both sides of the unit to feed other units during large jobs or where it is difficult to rig into fluid sources. It is also tied into the water centrifugal pump system

### **Water Centrifugal Mission Pump:**

1. This is a 4 X 5 with a 13 inch impeller which can run at 3500 RPM. It is powered by hydraulics and is controlled with a 10 position switch with an rpm digital read out.
2. This pump's rate and volume is monitored by a 3" Mag flow meter.
3. This pump is capable of pumping high viscosity fluids and very abrasive fluids.
4. It can supply 3.0 m<sup>3</sup>/min of fluid at 120 psi shut in pressure is 195 psi.
5. It has 2 liquid add ports on the suction and 1 on the discharge side.
6. It's main purpose is to supply water to the cement system for the continuous dustless cementing system.
7. This pump can pick up suction from both sides of the C&A unit and can discharge off of both sides of the unit to feed other units during large jobs or where it is difficult to rig into fluid sources. It is also tied into the Slurry centrifugal system.

### **Pre-charge Centrifugal Pump:**

1. This is a 4 X 5 with a 13 inch impeller which can run at 1750 RPM. It is powered by hydraulics, and is controlled with a 10 position switch with an rpm digital read out.
2. This pump is capable of pumping high viscosity fluids and very abrasive fluids.
3. It can supply 2.75 m<sup>3</sup>/min of fluid at 30 psi shut in pressure is 60 psi.
4. Its main purpose is to supply fluid to the large MSI triplex pump for a smooth pumping operation.
5. This pump can pick up suction from the main suction and discharges a constant supply of fluid to the triplex.

### **Piping and manifold:**

1. This unit has 6 inch suction lines to cut down on the friction loss of high viscosity fluids.
2. The piping has been set up to allow for continuous cement mixing and sand laden fluid to be batched during fracing operations and there is no fall out of particulars.
3. Load lines are 3" to allow for fast loading from tank trucks during high rate pump jobs.
4. The boost pumps can access fluid from either side of the unit and discharge off either side.
5. All fluid is monitored by Mag flow meters.
6. This unit comes with a high pressure CO<sub>2</sub> suction Manifold.