SERVA cementer units and cementing components apply state-of-the-art mixing and automatic control. These systems are engineered to meet the most-demanding oil and gas cementing applications in the industry, and their compact, yet ergonomic designs promote safety and ease of maintenance.
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**EQUIPMENT**

- SERVA PCTLR-521A Double Pump Cementer
- SERVA PCTLR-721A Double Pump Cementer
- SERVA PCS-521B Double Pump Cementing Skid
- SERVA ACS-IV-300A Density Auto Control Mixing Skid
- SERVA BCS-300-100A Batch Mixer
- SERVA TPD-600 Triplex Pump
- SERVA TPH-400 Triplex Pump
Model PCTLR-521A Double Pump Cementer/Recirculating Mixing Trailer developed by is an advanced, accurate computer-controlled cement mixing system. The quality of design, component selection and quality manufacture make it a benchmark in the industry.

The high-energy mixing system can mix the most difficult slurries and the ACM automatic density control will provide superior density control. The twin pumping unit can be utilized for a variety of pumping services, including acidizing, cementing, pressure testing and fracturing within the limits of the available horsepower. The inline triplex pump installation makes the maintenance and service of pumps easier.
The PCTLR-521A trailer is comprised of high-pressure pumping system, high-energy recirculating mixing system and all required controls and instrumentation.

The high-pressure pumping system consists of two diesel engines, two automatic transmissions and two triplex pumps. The fluid handling system consists of centrifugal pumps for recirculation, boost and mix water. Manifold consists of necessary piping, valves and connections to perform cementing jobs.

Hydraulic system takes power from the auxiliary diesel engine, and drives fluid handling and mixing equipment, including three centrifugal pumps and agitators.

Triplex pumps are horizontal single-acting plunger pumps and consist of fluid end and power end. The fluid ends are made of three-piece forged steel and are recommended for pumping cement, acid, water, drilling fluids and other well service fluids. Fluid ends size: right pump 4" dia plunger; left pump 4.5" dia plunger.

**Weight**
- 26 t

**Dimensions**
- 11,250 mm (L) x 2,500 mm (W) x 4,000 mm (H)

**Maximum Pressure**
- 14,000 psi (96.5 MPa, w/4" fluid end)

**Maximum Flow**
- 2.7 m³/min (w/one 4" and one 4.5" fluid end)

**Density Range**
- 1.0~2.5 g/cm³ ±0.024 g/cm³

**Mixing Capacity**
- 0~14.5 bpm (0-2.3 m³/min)

**Working Temperature**
- -30°C~50°C

**Working Time**
- >2 hours (under maximum pressure)
- >3 hours (under maximum flow)
The PCTLR-721A Double Pump Cementing Trailer is a complete mixing and pumping unit that is trailer-mounted. This unit is state-of-the-art in mixing and automatic control. This system is designed for the most demanding oil and gas well cementing requirements. The quality of design, component selection and manufacture make it a benchmark in the industry. The high-energy mixing system can mix the most difficult slurries and the automatic density control provides superior density control. The 20 bbl averaging tank makes the operator’s job easier.
**MAJOR FEATURES**

- (1) SERVA TPD600 X 4.5" dia plunger triplex pump (left pump)
- (1) SERVA TPD600 X 3.5" dia plunger triplex pump (right pump)
- (2) Caterpillar C13 engines, 475 hp each
- (2) Allison 4700 OFS transmissions
- (1) 7 bbl mixing tank
- (1) 20 bbl averaging tank
- (1) 20 bbl displacement tank
- (2) SERVA 6 x 5 centrifugal pumps (slurry recirculation and transfer)
- (1) Mission 4 x 3 centrifugal pump (mix water or displacement fluid)
- (1) Density automatic control system (ACM-III) (density control)
- (1) Auxiliary power pack with closed-loop hydraulic system
- (1) Air reservoir, 40 gal
- Radiator cooling of engines and hydraulics

**SPECIFICATIONS**

**Temperature**
- Minimum operating: -25°C (-13°F)
- Maximum operating: 50°C (122°F)

**Triplex Pump Fluid Ends Size**
- Right pump: 3.5" dia Plunger
- Left pump: 4.5" dia Plunger

**Pressure Range**
- Maximum working
  - Pressure: 71.7 MPa (10,400 psi) w/3.5" Plunger pump

**Maximum Test**
- Pressure: 103 MPa (15,000 psi) w/3.5" Plunger pump

**Flow Rate**
- Maximum theoretical total flow rate: 3.3 m³/min (21 bpm)

**Density Range of Slurry**
- Maximum slurry weight: 1.0–2.7 g/cm³ (8.33–22.6 lb/gal)

**Slurry Mixing Capacity Range**
- Mixing range: 0–2.3 m³/min (0–14.4 bpm)

**Continuous Working Time**
- Rated WP at 70 MPa (10,200 psi): 2 hours
- Maximum flow rate: ≥1 hour

**Engine**
- Model: Caterpillar C13
- Rated power: 475 hp @ 2,100 rpm

**Transmission**
- Allison 4700 OFS automatic transmission with fill tube, dip stick gauge, torque converter and 1810 series output flange

**Trailer Dimensions and Weight**
- Gross weight with tractor and iron (estimate): 75,000 lbs
- Width: 102" (2,540 mm)
- Height (to top of valves on displacement tank): 152.5" (3.87 m)
- Trailer Single Drop: 34' or 38' (depending on averaging tank inclusion)

**Mixing Centrifugal Pump**
- 4 x 3

**Recirculating Centrifugal Pump**
- Dedicated 6 x 5

**Boost Centrifugal Pump**
- Dedicated 6 x 5
The Model PCS-521B system is a complete mixing and pumping unit that can be skid- or trailer-mounted. This unit is state-of-the-art in mixing and automatic control. This system is designed for the most demanding oil and gas well cementing requirements. The quality of design, component selection and quality manufacture make it a benchmark in the industry.
### MAJOR FEATURES
- Continuous high-energy mixing
- Auto density control
- Air inlet shutoff
- Overpressure shutdown
- SPS packing system
- Non-radioactive densimeter
- Stainless steel console
- Engraved stainless panels
- Dual-scale gauges
- Remote monitoring and data record system available
- Integral high-pressure iron

### SPECIFICATIONS
- Two (2) Caterpillar C13 engines, 475 hp each
- Two (2) Allison 4700 OFS transmissions
- Two (2) Spicer 1800 series drive shafts
- One (1) SERVA TPH400 X 4” dia Plunger Triplex pump
- One (1) SERVA TPH400 X 4.5” dia Plunger Triplex pump
- One (1) closed-loop hydraulic system
- One (1) 8 bbl mixing tank
- One (1) 2 x 10 bbl displacement tank
- Two (2) SERVA 6 x 5 centrifugal pumps (cement mixing recirculation and transfer to triplex pumps)
- One (1) SERVA 4 x 3 centrifugal pump (mix water and displacement fluid)
- One (1) high-energy mixing system
- Automatic mixing system (ACM-IV.1) for density control
- One (1) fuel day tank 900 L, separately placed
- One (1) air reservoir, 20 gal

**Weight**
- Approximately 22.5 t

**Dimensions**
- 7,300 mm (L) x 2,600 mm (W) x 3,100 mm (H)

**Maximum Pressure**
- 15,000 psi (w/4” fluid end)

**Maximum Flow**
- 2.7 m³/min (w/one 4” and one 4.5” fluid end)

**Density Range**
- 1.3~2.5 g/cm³ ±0.024 g/cm³

**Mixing Capacity**
- 2~14.5 BPM (0.3-2.3 m³/min)

**Working Temperature**
- -20°C~50°C
The Density Auto Control Mixer Model ACS-IV-300 system is the latest in mixing technology and density control. This system can be used for all cement, flush and spacer mixing operations. It is capable of operating in rough oilfield environments with a wide variety of ambient temperature ranges of -5°C to 48°C.

**Specifications**

**Power System**
- Model: Caterpillar C9
- Rated horsepower: 300 hp @ 2,200 rpm
- Starting: Electric starter
- Cooling: Heavy-duty radiator and suction fan
- Emergency kill for air intake shutdown
- Heavy-duty muffler with flexible stainless steel connection
- Other accessories: Air compressor, 24V DC alternator, 50 gal day fuel tank, etc.

**Weight**
- Approximately 6 t

**Dimensions**
- Approximately 5,200 mm (L) x 2,300 mm (W) x 2,500 mm (H) (transport height); 3,000 mm (working height)

**Density Range**
- 1.3~2.5 g/cm³ ±0.02 g/cm³

**Mixing Capacity**
- 2~14.5 BPM (1.3~2.3 m³/min)

**Working Temperature**
- -5°C~48°C
The BCS-300-100A batch mixer is comprised of one 300 BHP auxiliary power engine with closed-loop hydraulic system, two 50-bbl batch tanks each equipped with hydraulic-driven paddle agitator, two 6 x 5 centrifugal pumps for slurry recirculation and transfer, stainless steel control console and all required piping and manifold. All components and systems will be assembled in a manner that will provide easy access for maintenance. The unit is capable of mixing slurry 1.3–2.5 g/cm³.
SERVA TPD 600 Triplex Pump

SERVA TPD 600 Triplex Pumps are used for cementing and acidizing service. Its short length allows back-to-back placement of two pumps on the unit with less than 102” total width.

**MAJOR FEATURES**

**Fluid End**
- Forged alloy steel mono-block fluid end with removable stuffing box
- Valve-over-valve fluid end
- Left- or right side suction and discharge connections
- Suction manifold with Victaulic connections
- Hard-coated plungers
- High-performance header-ring style packing
- Center-gauge connection
- Fabricated steel suction manifold
- Replaceable alloy steel wing-guided valves
- Replaceable urethane valve inserts

**SPECIFICATIONS**

**Power End**
- Rated max brake horsepower .......................... 600 bhp
- Maximum rod load ....................................... 100,000 lbs
- Stroke length ................................................ 6”
- Gear ratio .................................................... 4.6:1
- Plunger ...................................................... 3” to 4.5”
- Pump weight .............................................. 4,600 lbs

**Power End Features**
- Crankshaft construction
- Pressure-lubricated wrist pins through crankshaft
- Ground, honed crosshead guides
- Proprietary crosshead coating
- Left or right gear box mounting
- 16 input drive positions
SERVA TPH 400 Triplex Pump

SERVA TPH 400 Triplex Pumps are good for high-pressure well service. Each pump is equipped with an integral gear reduction box. The Triplex Pumps are designed to pump cement slurries, sand-laden fluids, crude oil, acids, mud and other oil well servicing fluids.

MAJOR FEATURES

- Gear train: Steel worm and bronze ring w/8.6:1 ratio (standard)
- Crankshaft: Forged steel, four main bearings
- Connecting rods: Forged aluminum, split caps and insert bearings
- Crossheads: Cast steel
- Case: High-strength steel weldment
- Bearing type: Roller and race
- Oil system: Gear pump driven off worm (std) or remote
- Oil filter: Replaceable elements and magnetic strainer
- Oil capacity: 22 USG
- Oil pressure: 80 to 100 psi

SPECIFICATIONS

**Power End**
- Companion flange....................... 1800 Series Spicer
- Input spline ........................................3"–10 (7.62 cm)
- Input speed w/8.6:1 gears ........... 2,400 rpm maximum
- Maximum input torque.................. 7,215 ft-lb
- Maximum input horsepower............... 600 hp
- Maximum rod load....................... 175,800 lbs

**Fluid End**
- Fluid-end type............................... Three-piece forged steel
- Plunger type................................. Hard-surfaced
- Valve type................................. Double stem guided, carburized
- Valve seats ....................................... Carburized
- Pressure packing ..................High-performance packing
- Discharge flange ............ (1) Blank, straight with one outlet or (2) ell with two outlets
From the Siberian tundra to the north China Sea to the Middle East, to Africa and all across the Americas, SERVA is defining this century’s model of oil and gas production, onshore and offshore, with vision, innovation, manufacturing and resources to serve the growing demands of progress and opportunity.
Today, an evolving energy landscape is opening a world of possibilities in oil and gas development. And one company at the center of this energy revolution is uniquely equipped with the know-how and ingenuity to make those possibilities happen—SERVA.

**SERVA PRODUCT**
SERVA designs, manufactures and markets a diverse line of specialized products to surround the well with cementing, stimulation, coil tubing applications, ancillary pumps, well-servicing pumps, fluid ends, downhole tools, software and controls and more—for the most demanding environments on- and offshore.

**SERVA LEADERSHIP**
SERVA is the one company with leadership at the heart of oil and gas development for decades, building one-of-a-kind customer relationships and comprehensive on-site expertise.

**SERVA ENGINEERING AND TESTING**
One company with the most extensive testing facilities, hundreds of engineers and rigorous processes and controls. It’s here that SERVA demonstrates its ingenuity, commitment to quality and in-field performance.

**SERVA GLOBAL RESOURCES**
As part of the EnTrans family of companies, SERVA joins Kalyn Siebert and Heil Trailer International in surrounding the well pad not only with stimulation and completion equipment, but also with oil and gas transportation—a comprehensive, pad-to-pump partnership to optimize even greater efficiencies and value.
SERVA
Well served.

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