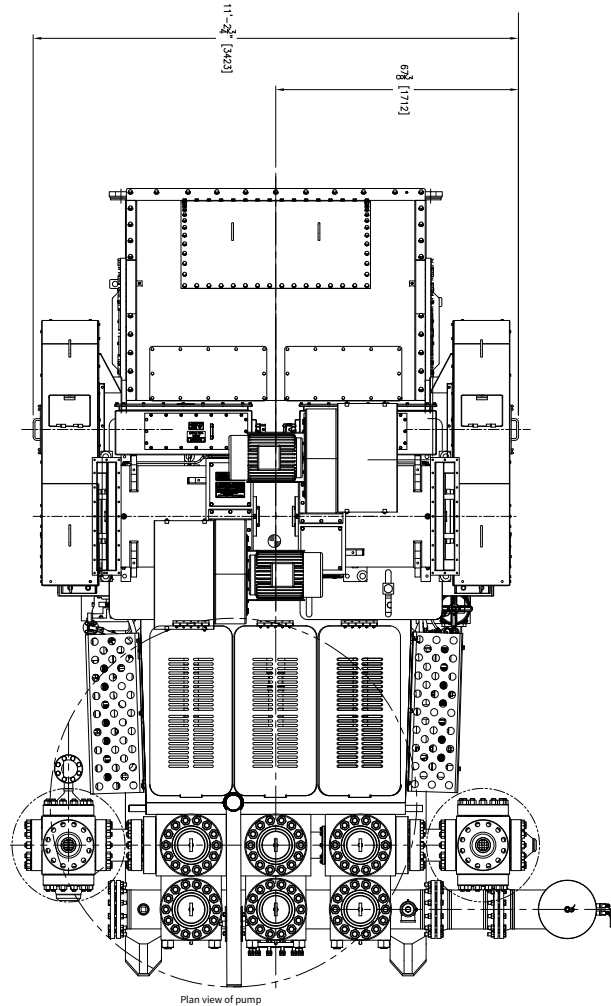
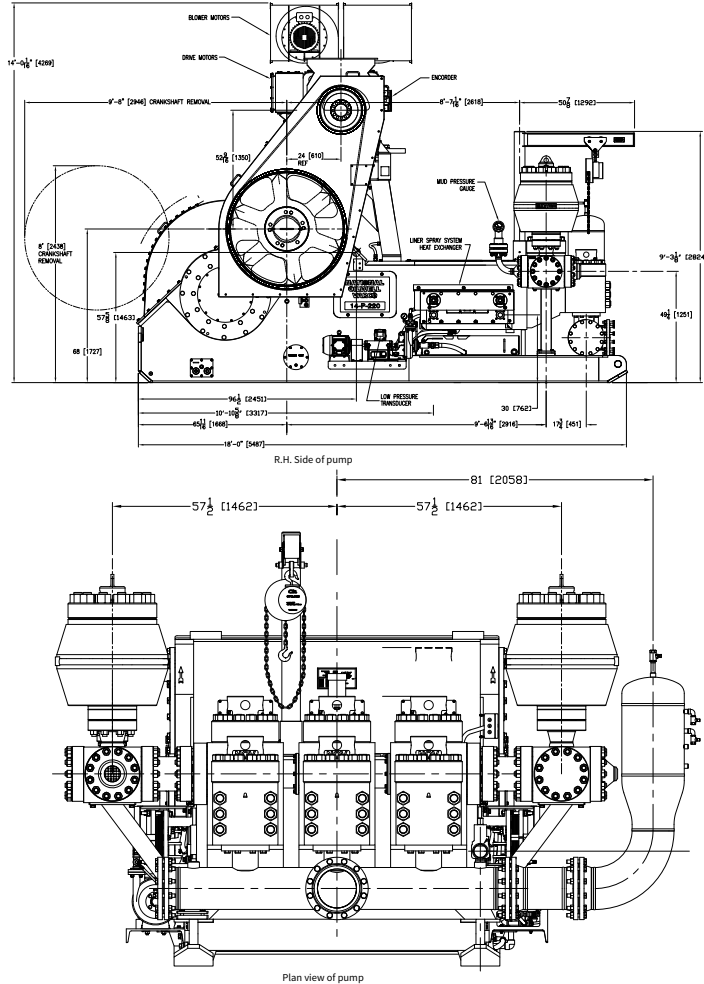




National Oilwell Varco provides smooth Triplex performance and high efficiency from the 14-P-220 Mud Pump. Its compact engineering provides higher efficiency in less space. The pump's light weight and flexible design make it easily adaptable to a variety of rig configurations. This provides flexibility as drilling requirements and conditions change.



Power End

- Fabricated steel frame construction
- One-piece forged steel construction crankshaft, connecting rod and pinion shaft
- Adaptability to a variety of drive arrangements on either sides or on both sides
- Premium roller bearings to enhance smooth performance and efficiency

Belt Drive

- Belt life in excess of 10 years delivers an effective drive solution with the lowest cost of ownership in the industry
- No requirement for lube oil filter, cables, cable trays, MCC cubicles, starters

Forged steel crankshaft

- One piece forged steel crankshaft with pressed fit bearing journals
- Naturally balanced for smooth running
- No casting
- No welding

Optional Accessories

- HydrA-LIGN™ piston rod
- Blak-JAK™ liner retention system
- Blak-JAK™ Torque master quick change valve cover retention system
- Pneumatic pump rotation tool

Warranties

- The standard module carries a three-year, 100% warranty against cracking
- The premium module has a four-year, 100% warranty against cracking
- Crankshaft carries a seven year limited warranty

| AC drive motor* | |
|----------------------------------------------------|---------------------------------------------------|
| Motor type | Standard DM27 Drill Force AC Cage induction motor |
| Electrical rating | Continuous duty |
| Temperature ambient 600V - 1,150 HP (7,700 ft-lbs) | -40°C to 45°C |
| Temperature ambient 690V - 1,229 HP (7,550 ft-lbs) | -40°C to 45°C |
| Temperature ambient 600V - 1,075 HP (7,057 ft-lbs) | -40°C to 55°C |
| Temperature ambient 690V - 1,150 HP (7,064 ft-lbs) | -40°C to 55°C |
| Insulation | Class H, VPI form wound |
| External cooling requirements | 2,800 SCFM at motor inlet |
| Classification | ATEX, increased safety IECEx |
| Optional certification | ABS, DNV, CSA |
| Standard stator and Bearing RTD's | |

*Optional GEB-22 AC Cage Induction Motor

| Technical specifications | |
|--------------------------------------------------------------------|-----------------|
| Height, floor to center of front inlet suction, inches (mm) | 19 3/4 (505) |
| Height, floor to center of discharge, inches (mm) | 49 1/4 (1251) |
| Overall length over skids, inches (mm) | 218 1/4 (5544) |
| Width over frame, inches (mm) | 91 (2311) |
| Width over pinion shaft, inches (mm) | 125 3/4 (3194) |
| Height, floor to top of gear case, inches (mm) | 84 1/4 (2139) |
| Height over fluid cylinders, inches (mm) | 69 1/4 (1756) |
| Maximum input horsepower (kW) | 2200 (1640) |
| Rated pump speed, spm | 105 |
| Maximum fluid cylinder liner bore, inches (mm) | 9 (228.6) |
| Stroke, inches (mm) | 14 (355.6) |
| Hydrostatic test pressure of fluid cylinders, psi (kg/cm2) | 11,250 (776) |
| Gear ratio | 3.969 |
| Suction connection ASA-150 lb. R.J. flange, inches | 10" |
| Discharge connection, cross w/ API-10,000 psi. R.J. flange, inches | 5" |
| Valve pot, API number | MOD. 8 |
| Weight-complete, less sheave, lbs. (kg) | 86,000 (39,009) |
| Weight-complete, Mission L, lbs. (kg) | 96,000 (45,546) |
| Pinion Speed | 417 rpm |

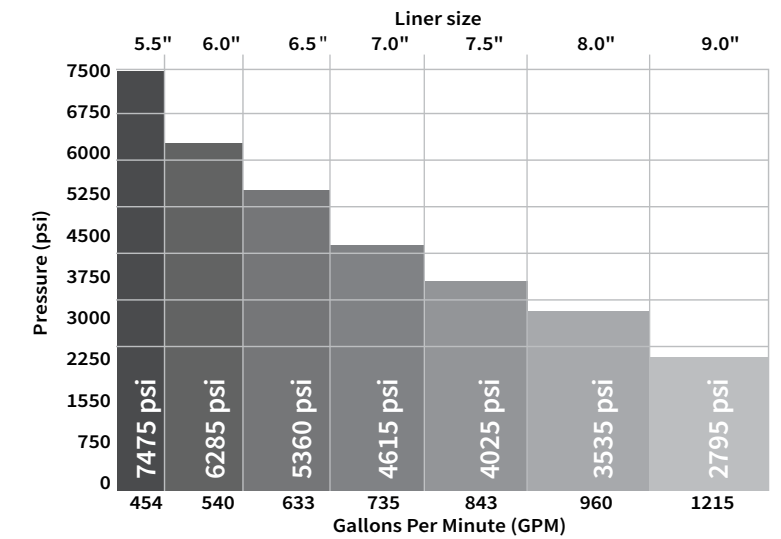
| Liner size, inches | 9' | 8 | 7 1/2 | 7 | 6 1/2 | 6 | 5 1/2 | | |
|-----------------------------------------------------------------------|----------|-----------|--------------------|------|-------|------|-------|-----|-----|
| Max. discharge pressure, psi of 14-P-220 with high pressure fluid end | 2795 | 3535 | 4025 | 4615 | 5360 | 6285 | 7475 | | |
| SPEED SPM | INPUT HP | HYD.** HP | GALLONS PER MINUTE | | | | | | |
| 105* | 2200* | 1980 | 1215 | 960 | 843 | 735 | 633 | 540 | 454 |
| 80 | 1676 | 1509 | 925 | 731 | 643 | 560 | 483 | 411 | 346 |
| 60 | 1257 | 1131 | 694 | 548 | 482 | 420 | 362 | 308 | 259 |
| 40 | 838 | 754 | 462 | 366 | 321 | 280 | 241 | 206 | 173 |
| VOLUME/STROKE (GALLONS) | 11.57 | 9.14 | 8.03 | 7.00 | 6.03 | 5.14 | 4.32 | | |

*Rated maximum input horsepower and speed

**Based on 90% mechanical efficiency and 100% volumetric efficiency

† 9 inch liner requires special liner bushing and liner cap

Performance 14-P-220



Fluid End Modules

NOV offers a choice of fluid end modules and valve covers for every P-Series pump model to select the fluid end module that exactly matches the drilling requirements. All pump models can be equipped with either the standard or premium forged, two-piece interchangeable fluid modules.

Fluid End key features

- Two-piece modular cylinder design is completely interchangeable between modules
- Fast Change™ screw-type valve covers, which facilitate quick removal and installation are currently standard
- Suction manifold can be equipped with front or side inlet connections
- Discharge piping connects from either side
- Piston and liner chambers are easily accessible and fully open
- Two-piece piston rod construction allows removal of piston without disturbing liner
- Easy-to-operate clamps give positive locking for liners and piston rod assemblies
- Spray system cools and lubricates piston and liner surfaces

Hybrid — Standard

- 7,500 psi operating pressure
- Modules are hydrostatically tested
- Available with ABS, DNV, and CCS certifications
- Utilize a tapered seal for valve covers
- Uses connectors between discharge modules to direct discharge flow

Mission L — Premium

- 7,500 psi operating pressure
- Modules undergo an autofrettage process
- Modules are hydrostatically tested
- Available with ABS, DNV, and CCS certifications
- Utilize a tapered seal for the valve covers
- Uses a discharge manifold to direct discharge flow