

“At LONGCHAO , we care about the products we supply.”

RIG PARTS PRODUCTS

MUD PUMP EXPENDABLE PARTS LIST

EXPENDABLES

ACCESSORIES

FLUID END MODULES



Email: mudpumpparts@outlook.com

www.lcrigparts.com



Jinan Longchao Petroleum Machinery Co.,Ltd

We Provide Superior Value

- Forging Material
- Engineering Support
- Module Alliance
- Our Distribution Network
- Ultra Modern State of the Art Machining Centers
- Warranty - Only 4 year warranty in the industry.

Operation concepts

◇ Core Value

Assist the customers in achieving goals and creating values

◇ Enterprise Spirit

Learning Innovation Surpassing

◇ Enterprise Mission

To be a first-class international drilling equipment supplier

Nine Elements of Customer Satisfaction

- ◇ Delivery on time
- ◇ Supply products that work
- ◇ Provide quality service
- ◇ Price consistent with quality
- ◇ Honor commitments
- ◇ Respond with appropriate urgency
- ◇ Work with you to resolve problems
- ◇ Prevent surprises
- ◇ Make it easy to do business with us

Jinan Longchao Petroleum Machinery Co.,Ltd

Triplex Mud Pumps Manufacturers and Brands			
<u>NATIONAL</u>	<u>GD</u>	<u>EMSCO</u>	<u>OILWELL</u>
<u>7P50</u>	<u>PAH-275</u>	<u>F350/500/650</u>	<u>A350PT</u>
<u>8P80</u>	<u>PZ-7</u>	<u>F800</u>	<u>A560/600PT</u>
<u>9P100</u>	<u>PZ-8</u>	<u>F1000</u>	<u>A850PT</u>
<u>10P130</u>	<u>PZ-9</u>	<u>FB1300</u>	<u>A100PT</u>
<u>12P160</u>	<u>PZ-10</u>	<u>FB1600</u>	<u>A1400PT</u>
<u>14P220</u>	<u>PZ-11</u>	<u>FC2200</u>	<u>A1700PT</u>
IDECO	DRILLMEC	WEATHERFORD	BOMCO
T500	7TS500	MP-5	F500
T800	9T800	MP-8	F800/F1000
T1000	9T1000	MP-10	F1300
T1300	12T1600	MP-13/16	F1600
T1600	14T2200	E-447	F1600HL
		E-2200	F2200HL
TSC	EWCO	AMERICAN BLOCK	EWECO
WF-400	W-440	K-800	E-447
WF-700	W-446	K-1000	E-600
WF-1300	WH-1312	K-1300	E-800
WF-1600	WH-1612	K-1600	E-1100
WF-2000	W-1712		E-1300
WF-2200	W-2214/W-2215		E-1600
HONGHUA	LS NOV	WIRTH	Rongsheng
F500	3NB500C	TPK-1000	W440/446
F800	3NB800C	TPK-1600	F500
F1000	3NB1000C	TPK-2000	F800
F1300	3NB1300C	TPK-2200	F1000
F1600	3NB1600		F1600L
F1600HL/F2200HL	F-1600/F-1600L		
Other Mud pumps and Parts brands: Southwest, Mud King, Baker, Texma, Skytop, RG, Ellis Williams, Brewster			
Disclaimer: Jinan Longchao Petroleum Machinery Co.,Ltd is in no way affiliated with any of the reference manufacturers and company names and Brands and /or part numbers are for reference purposes only.			

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Jinan Longchao Petroleum Machinery Co.,Ltd

Duplex/Well Services Mud Pumps Manufacturers and Brands

<u>Emsco</u>	<u>National</u>	<u>Oilwell</u>	<u>Ideco</u>
<u>D300</u>	<u>N1000-1600</u>	<u>6P-HD</u>	<u>MM300</u>
<u>D500</u>	<u>K380</u>	<u>8P-HD</u>	<u>MM500/500F</u>
<u>D550</u>	<u>K500</u>	<u>610P</u>	<u>MM700/700F</u>
<u>D700</u>	<u>K500A</u>	<u>212P</u>	<u>MM600/600F</u>
<u>D375</u>	<u>K700A</u>	<u>214P/14P</u>	<u>MM200</u>
	<u>C150/C150B</u>	<u>218P</u>	<u>MM300</u>
	<u>C250</u>	<u>18P</u>	
<u>Gasco</u>	<u>Gardner Denver</u>	<u>Gardner Denver</u>	<u>Ellis Williams</u>
<u>1563</u>	<u>5" x 6" FG FXG</u>	<u>7.5" x 8" FY FXX</u>	<u>15W600</u>
<u>1740-55</u>	<u>5" x 8" FD FXX</u>	<u>7.25" x 12" FZ FXZ</u>	<u>19W1000</u>
<u>2651</u>	<u>5.5" x 8" FD FXX</u>	<u>7.25" x 14" FXN</u>	
<u>2652</u>	<u>FC-FXX/FC-FXD</u>	<u>7.25" x 14" FK FXK</u>	
	<u>5" x 10" FD FXD</u>	<u>FQ-FXQ</u>	
	<u>5.5" x 10" FD FXD</u>	<u>7.25" x 10" FO FXO</u>	
	<u>7.5" x 10" FY FXD</u>	<u>4.5" x 6" FG FXG</u>	
<u>Drillmec</u>	<u>Russian</u>	<u>Gardner Denver</u>	
<u>10D2C</u>	<u>NB125</u>	<u>4x5 TEE Triplex</u>	
<u>8D1S</u>	<u>NB80</u>	<u>5-1/2x5 THE Triplex</u>	
	<u>NB50</u>	<u>5x8 PAH Triplex</u>	
	<u>NB32</u>	<u>PJ-8</u>	

The Spares for Above pumps:

* Liners

*Pistons

*Piston Rubber kits

*Piston rods

*Valves & Seats

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Mud Pump Liners

Longchao manufactures chrome alloy sleeved liners, hardened liners, hardened / chrome plated liners and Zirconia liners. Premium also supplies genuine U.S. made rubber and urethane liner seals. All our liner products are exchangeable with OEM products and meet or exceed API-7K standards.

All our liners are made with a high strength forged steel shell machined to fit triplex pumps and fitted with high pressure lip sleeve. The liner is precision machined to exact tolerances to keep the liner concentric. The sleeve is manufactured to the bore tolerances specified by API to provide longer life by reducing gaps between the liner bore and piston.

Zirconia Liner

Longchao's zirconia liner offers life time cost savings, significantly longer service, better performance and safer operation than those made of more commonly used alumina ceramic. Longchao's zirconia liner is a proprietary Zirconium-based matrix that has significantly improved mechanical characteristics.

◎ Zirconia has three important property advantages compared to alumina.

◎ Zirconia exhibits better impact strength.

◎ Zirconia is harder than alumina.

◎ Zirconia can be honed to finer surface finishes than alumina.

Finished to 4 RMS,

◎ Zirconia liners - provide a surface finish that's three to four times finer than alumina.

All three of these property advantages translate to lower ownership costs. The improved wear directly extends the service life of the sleeve, while the improved impact strength cuts down on the significant costs of replacing broken liners in the field. The surface finish improvements, meanwhile, have an indirect effect.

◎ HP design with shoulder-on-hull design to prevent sleeve slippage

◎ Reduced liner and piston wear

◎ Rated for all drilling operations up to 7500 PSI

◎ Bore hardness of 92-94 Rockwell

◎ ID tolerances of $+.010''$ / $-.000''$

◎ Surface finish of 4 - 8 RMS

◎ Hardness is HV 0.3 kg/mm – 1100/1200 (92 - 94 Rc)

◎ High pressure design to prevent slippage

◎ Liner sizes are available from 4½'' to 7'' for all popular mud pump



What is Zirconia?

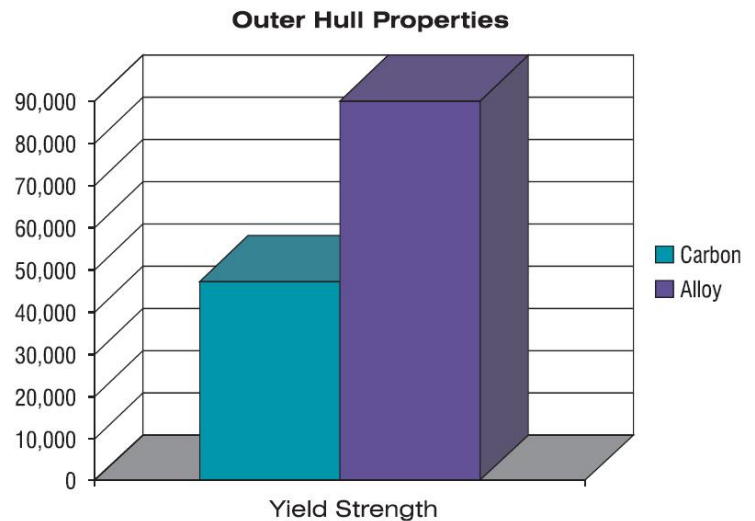
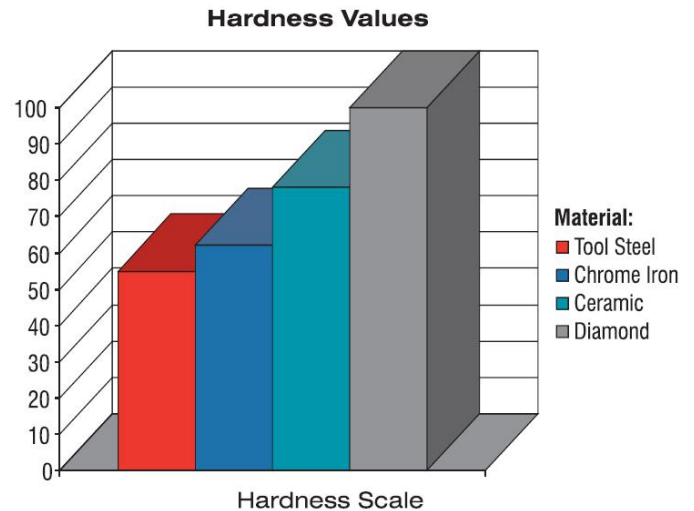
- Its great hardness, low reactivity, and high melting point have made it the oldest mineral that can be found on earth.
- Zirconium Dioxide (ZrO_2), also known as zirconia is a white crystalline oxide of the element zirconium (Zr).
- Exists naturally as the mineral Baddeleyite.
- One of the most studied ceramic materials.

Zirconia Case Study

- Conducted four year case study and collected over 12,000 pumping hours
- Pumps using Chromium Liners had expendable cost of \$47,000 vs. \$11,000 for Zirconia Liners
- Pump shutdowns were 4x higher (8 vs. 32) in chromium pumps compared to Zirconia
- Zirconia lined pumps used approximately 1/5 of the pistons compared to chromium lined pumps

Zirconia Benefits

- Ceramic Liners out perform steel Liners
- Zirconia is significantly stronger and tougher than Alumina in bending or tension, often by a factor of 4 or more
- Does not require self aligning piston rods
- Extended Life and less wear reduces overall expendable cost
- Traditional liner hourly cost is approximately \$1.05 per hour, while Zirconia Liners are approximately \$.23 per Hour



High Chrome Sleeve Liner

The outer hull, or body, of the liner is a high strength forging. **Longchao** uses forgings exclusively to ensure the consistent quality. The sleeve is centrifugally cast in the **Longchao** facilities by skilled craftsmen. It has the maximum amount of chrome for the base metal and **Longchao** adds molybdenum to increase the hardness depth. The sleeve is then inserted into the hull at a tightness that exceeds its counterparts. The liner is rated to match the pressure rating of the pump per liner size.

- Rated for all drilling operations up to 5,000 PSI and 7500 PSI
- Bore hardness is 62 - 69 Rockwell
- Flip design to prevent inner sleeve slippage
- Extremely long service life



Chrome Plated Liner

Longchao chrome plates the same outer hull in lieu of sleeve to a maximum thickness. It is then machined and polished to a mirror finish.

Features:

- Single high strength forged steel hull construction.
 - Optional chrome plating to reach hardness of 62 RC.
- Corrosion resistance, free deformation.



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Hardened Liner

Longchao Hardened Liner the same outer hull in lieu of sleeve to a maximum thickness. It is then machined and polished to a mirror finish.

Features:

- Single high strength forged steel hull construction.
- Inner bore is nitro carburized and quenched to reach hardness of 60 RC.
- Corrosion resistance, free deformation.

Longchao can make the following brand pump Chrome-Plated and Hardenedliners and more:

<u>Emsco</u>	<u>National</u>	<u>Oilwell</u>	<u>Ideco</u>
<u>D300</u>	<u>N1000-1600</u>	<u>6P-HD</u>	<u>MM300</u>
<u>D500</u>	<u>K380</u>	<u>8P-HD</u>	<u>MM500/500F</u>
<u>D550</u>	<u>K500</u>	<u>610P</u>	<u>MM700/700F</u>
<u>D700</u>	<u>K500A</u>	<u>212P</u>	<u>MM600/600F</u>
<u>D375</u>	<u>K700A</u>	<u>214P/14P</u>	<u>MM200</u>
	<u>C150/C150B</u>	<u>218P</u>	<u>MM300</u>
	<u>C250</u>	<u>18P</u>	
<u>Gasco</u>	<u>Gardner Denver</u>	<u>Gardner Denver</u>	<u>Ellis Williams</u>
<u>1563</u>	<u>5" x 6" FG FXG</u>	<u>7.5" x 8" FY FXX</u>	<u>15W600</u>
<u>1740-55</u>	<u>5" x 8" FD FXX</u>	<u>7.25" x 12" FZ FXZ</u>	<u>19W1000</u>
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<u>2652</u>	<u>FC-FXX/FC-FXD</u>	<u>7.25" x 14" FK FXK</u>	
	<u>5" x 10" FD FXD</u>	<u>FQ-FXQ</u>	
	<u>5.5" x 10" FD FXD</u>	<u>7.25" x 10" FO FXO</u>	
	<u>7.5" x 10" FY FXD</u>	<u>4.5" x 6" FG FXG</u>	
<u>Drillmec</u>	<u>Russian</u>	<u>Gardner Denver</u>	
<u>10D2C</u>	<u>NB125</u>	<u>4x5 TEE Triplex</u>	
<u>8D1S</u>	<u>NB80</u>	<u>5-1/2x5 THE Triplex</u>	
	<u>NB50</u>	<u>5x8 PAH Triplex</u>	
	<u>NB32</u>	<u>PJ-8</u>	

Mud Pump Pistons

Longchao Pistons are made to precise tolerances and include a variety of materials yielding extended service life. Piston materials include the following from 3" to 7-1/2" sizes to accommodate for all types of drilling conditions, mud properties and temperatures reaching up to 350°F.

Premium provides a full range of mud pump pistons for both triplex and duplex pumps. They are:

Replaceable Rubber Piston

Long Life Urethane Bonded Piston

High Temperature Bonded Piston

BullNose Piston

FlexLip Piston

Features:

Rated for all drilling operations

High tensile strength

Maximum operating temperature is 350°F

High pressure mud pump service

Extended service life



Urethane Bonded Piston

These pistons are constructed of urethane, bonded to a solid metal hub. Double durometer urethane is designed to provide optimum performance in oil base or water base mud and high drilling pressures.

Features:

- Rated for all drilling operations
- Maximum operating temperature is 180°F
- High pressure mud pump service
- Extended service



Replaceable Rubber Piston

Longchao's replaceable rubber pistons are made with nitrile rubber to resist extrusion and abrasion. These pistons are fully interchangeable with most other manufactures products. Available sizes are from 3" through 7½" and series are A, B, K and L. If flange is not worn past these marks, rubber kit can be installed

Fabric anti-extrusion device reduces extrusion of the rubber even at maximum pressure rating

Features:

- High tensile strength
- Rated for all drilling operations
- Maximum operating temperature is 250°F
- Extended service life



Green Duo piston

The Green Duo piston is a bonded dual durometer piston that is highly resistant to abrasion and tear. The bonded construction resists extrusion under pressure and restricts movement to reduce the build-up of heat.

The Green Duo piston is recommended for systems with oil or synthetic based mud. It is also recommended for water based muds when weights are 11 lb/gal or over. The Green Duo piston is not recommended for clear water or seawater pumping due to the lack of lubricity of these fluids. As in all urethane pistons, the backflush requirement is recommended at 14 gal/min or greater for each piston.

Features:

- Temperature resistance up to 180°F (82°C)
- Can be operated in pressures up to 6300 psi
- Backflush requirement is 14 gal/min or greater for each piston
- Not recommended for clear water or seawater pumping due to lack of lubricity of these fluids



Blue Lightning Piston

Super premium bonded polyurethane piston designed for operation in extreme drilling environments.

The Blue Lightning piston is manufactured from an engineered elastomeric compound that delivers excellent resistance to tear, abrasion and extrusion while maintaining high mechanical properties. A unique anti-extrusion feature, coupled with a premium elastomer, improves service life while reducing downtime and allowing for reduced pump maintenance.

Anti-Extrusion Feature

The anti-extrusion feature is a significant feature of the Blue Lightning. Manufactured from a proprietary bearing material that expands upon installation, this feature reduces friction by reducing or eliminating contact between the steel piston body and the liner wall. Additional benefits include reduced extrusion of the urethane and dramatically increased run times, even in pressures above 5000 psi. The bearing even reduces liner wear and liner damage over other piston designs. The Blue Lightning can be operated in pressures of up to 7500 psi.



White Lightning bonded piston

Super premium bonded polyurethane piston designed for operation in extreme drilling environments.

The White Lightning bonded piston is manufactured from an engineered elastomeric compound that delivers excellent resistance to tear, abrasion, chemical attack and extrusion while maintaining high mechanical properties.

Features/Benefits

- Increased run times up to 7500 PSI
- Consistent run times
- Reduced cost per operating hour
- Reduced maintenance and downtime
- Flex Lip design for decreased liner wear

Elastomer compound which provides:

Increased resistance to water, oil, and aggressive synthetic drilling fluids

Temperature resistance up to 230o F (110 o C)

Increased abrasion and particle embedment resistance



Bull nose Piston

Manufactured from highly engineered premium urethane homogenous compound, Bull nose Piston outperforms all other polyurethane pistons on the today's market. The compound provides superior resistance to tear, abrasion, and extrusion, and is capable of operating in fluid temperature from -20°F up to 225°F . It is compatible with water, oil and synthetic designed piston head is composed of two different urethane compounds bonded together for superior performance.

Features:

- The piston body, while made of high strength alloy steel, is compatible with existing piston rods
- Resistant to high pressure, abrasion, heat and extrusion
- Averages 30%+ longer life than offer mud pump pistons
- Dual-durometer bonded urethane allows for longer piston life
- "Bull nose" lip design provides better sealing to reduce flush system contamination



Bull nose Extreme Piston

Designed to preform in the harshest of drilling conditions, its oil-resistant high-temperature premium urethane homogenous compound has excellent abrasion resistance, low friction surface, and high tensile strengths. It is compatible with all applications and mud types and will withstand operating temperatures from -20°F up to 350°F with pressures up to 7500psi.

Superior design and ultra-durable quality adds value through increased run times in extreme conditions, reduced maintenance, and reduced cost per pumping hour.

Features:

- Wide Temperature Range, -20°F to 350°F , 7500 psi.
- "Bull nose" lip design provides better sealing to reduce flush system contamination
- Fully compatible with all types of drilling and mud during any point of the drilling process



Mud Pump Valves & Seats

Longchao manufactures a wide variety of valves and seats, for the following applications, among others: workover pumps; high pressure well service fracturing pumps; cementing pumps; and mud pumps.

Cross Arms/4-Web Valve & Seat

The Cross Arms Valve is a 4-Web Center Guided Valve System. This Valve has a replaceable Insert that is retained by a screw on plate with hammer lugs. Available in heavy duty standard temperature and high temperature versions. Oxide coated to fight corrosion while in storage. Available with standard API seats and “modified” API seats.

Design Benefits:

- Large metal-to-metal seat bearing area, longer wear life for metal wear areas
- 4-Web Seat Design Maximizes Bearing Area and makes Seat Pulling easier
- This stem guided valve and seat assembly weightless and provides a reasonable value at an economical price.

Operating Temperature:

- Standard Insert – Temperature Up to 160°F (71°C)
- High temperature (HC) Insert - 200°F (93°C)



Bonded Valve

Longchao introduces a new and improved full open valve with bonded insert. The bonded valve has replaced the slip-on insert to provide a tighter fit. This design is permanently bonded to the valve body. This reduces the tendency for fluids to penetrate between the polyurethane insert and the valve body; preventing failure. This bonded polyurethane insert is also used to minimize shock when the valve closes. The full open design of this bonded valve provides maximum fluid flow, and has a longer operation life due



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to its increased structural strength. This is the result of using a forged solid body instead of a two piece design. This is done to provide durability at high pressures. The large metal- bearing area on the valve seat surface promotes a longer service life.

Design benefits include:

- Very high tensile strength
Enhanced Sealing Capabilities
- Improved Shock Absorption
Premature sealing failure prevention



Double Angle Valve

The Double Angle Valve is a 3-Web Center Guided Valve System. This Valve has a replaceable “Snap-In” Insert, available in standard temperature and high temperature versions. Oxide coated to fight corrosion while in storage.

Available with standard API seat and “modified” API seats.

Design Benefits Include:

- Large metal-to-metal seat bearing area, longer wear life for metal wear areas.
- 3-web seat design maximizes bearing area and makes seat pulling easier.
- Lightweight design for stable operation at high pump speeds.



Operating Temperatures:

- Standard Insert – Temperature Up to 160°F (71°C)
- High temperature (HC) Insert - 200°F (93°C)

Full Open Mud Pump Valves & Seats

Longchao is the leader in full open valve and seat supply; the first valves and seats in the industry rated for continuous service at 7500 psi. The Premium design incorporates many of the features proven in the Premium Well Service Valves & Seats



Made Strong To Last Long

The **Heavy Duty Valve** is a bonded urethane valve that will hold up to the most hostile drilling environment. The HD Valve will withstand High Pressure, High Temperature and High Solids.

Superior Performance, Long Run Life, Excellent Abrasion Resistance and Sealing Surface coupled with the highest rated chemically resistant urethane make the HD Valve an excellent choice for any drilling application.

Features :

- Unique urethane bonding anchor
- Reliable with the highest quality control
- High Temperature Urethane
- Excellent extrusion and abrasion resistance
- The strongest urethane bond of any valve for increased service life and a stronger seal
- Excellent chemical resistance
- 7500+ psi rated
- 300°F rated urethane
- Carburized and heat treated



Southwest ND Style Valve

The ND (Roughneck Style) Valve is a full open type valve that is fully interchangeable with Roughneck valves and seats. The full open design of the seat promotes even loading of the seat deck in the fluid end module. This valve is available with a standard polyurethane insert or a high temperature insert (add "HC" to the end of the valve part number. Ex: ND-7V2HC)

Design benefits include:

- Two piece welded design is better for high pumping speeds.
- Balanced insert and seat area for better sealing & loading characteristics
- Standard Insert – Temperature Up to 160°F (71°C) with Max Pressure of 7500 PSI
- High Temp. (HC) Insert - Temperature 300°F (149°C) with Max Pressure of 7500 PSI



Well Service Pump Valve

SPM Well Service Pump Valve is designed for maximum flow characteristics. SPM Well Service Pump Valve combines the strength of a forged alloy steel upper body with precision casting to minimize flow restriction and fluid turbulence.

- Low cost and superior performance
- Increased resistance to abrasion and extrusion



Fluid End Modules

Longchao's high-strength, triple reduction, forged steel triplex fluid end modules are made from 4135 alloy steel, heat treated for a long working life, machined to perfection and packaged for delivery with anti-corrosion protection. The precision-made jewelry, like the exterior finish, reflects the superior quality inside.

Features:

- Completely interchangeable with OEM
- Premium forged alloy steel
- Made on CNC boring mills
- Strict computer controlled heat treat procedures
- Rigid inspection
- Rated for all drilling operations up to 7,500 psi

Longchao offers a complete line of interchangeable fluid end modules and accessories for triplex mud pumps. Fluid ends and components are interchangeable to OEM's such as **National, Emsco, Gardner Denver, Bomco, Ideco, Weatherford, Drillmec, Ewco, Eweco, Baker, Texma, Mud King, Honghua, RG, RS, GPM, LS-NOW, Wirth and Oilwell**. We offer both standard OEM style replacement parts and Two piece "L" Shaped fluid ends. Manufactured to the highest quality, our products offer the best performance and durability. 5000psi & 7500psi available.



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Part Number List for Popular Model Pumps

Mud Pump Models	Module with Stud	Module No Studs
Continental Emsco F-800 / 1000	6999-0086-02	6999-0087-02
Continental Emsco FB-1300 / 1600	6316-0357-00	6316-0356-00
Gardner Denver TEE	200PJH029B	200PJH029B-NS
Gardner Denver PAH	200PJH029B	200PJH029B-NS
Gardner Denver PZ-7/8/9	205PZL029D	205PZL029D-NS
Gardner Denver PZ-10/11	202PZL029B	202PZL029B-NS
Ideco T-800 / 1000	551-458	551-458-NS
Ideco T-1000 / 1300	551-122-01	551-122-01-NS
Oilwell A-850-PT / A-1100-PT	10300181	10300181 NS
Oilwell A-1400-PT / A-1700-PT	10300181	10300181 NS
Mud Pump Models	Module with Stud	Module No Studs
National 8-P-80 Discharge	1291280	1291281
National 8-P-80 Suction	1290338	1290339
National 9-P-100 Discharge	1293240	1293241
National 9-P-100 Suction	1290338	1290339
National 10-P-130 Discharge	1290335	1290336
National 10-P-130 Suction	1290338	1290339
National 12-P-160 Discharge	1292240	1292241
National 12-P-160 Suction	1292243	1292244
National 14-P-220 Discharge	1295601	1295602
National 14-P-220 Suction	1295604	1295603

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The Material Properties of the Module

AISI 4130 LOW ALLOY STEEL FORGING API 6A 90K

- I. Forgings shall comply with ASTM A 322, Grade 4130 and ASTM A 788 general requirements for steel forgings
- II. Chemical composition

<u>Element</u>	<u>Weight Percent</u>
Carbon (C)	0.28 – 0.33
Manganese (Mn)	0.40 – 0.80
Phosphorus (P)	0.025 Maximum
Sulfur (S)	0.025 Maximum
Silicon (Si)	0.15 – 0.35
Copper (Cu)	0.35 Maximum
Nickel (Ni)	0.50 Maximum
Chromium (Cr)	0.80 to 1.10
Molybdenum (Mo)	0.15 – 0.25
Vanadium (V)	0.03 Maximum
Aluminum (Al)	0.05 Maximum
Iron (Fe)	Base

- III. Heat Treatment
 - A. Heat treatment shall conform to specifications required by latest revision of API 6A.
 - B. Required Mechanical Properties

Tensile Strength	110,000 psi (758 MPa) Minimum
Yield Strength, 0.2% Offset	90,000 psi (621 MPa) Minimum
Elongation, 2 inches	18 % Minimum
Reduction of Area	35 % Minimum
Hardness Range	229 – 255 HBN
Charpy Impact Test Temperature	- 20°F (- 29°C)
Charpy Absorbed Energy	20 Ft. - Lbs (27 J) Minimum Average
Longitudinal Direction 10 mm x 10 mm x 55 mm	14 Ft. - Lbs (19 J) Single Minimum

- IV. Material Testing and Traceability
 - a. Material Test Report required
 - b. Tests to be performed in accordance with ASTM A 370
 - c. Ultrasonic examination to be performed per ASTM A 388 on each forging
 - d. Forging to be free of cracks, voids, laminations, or other defects
 - e. Heat identification number to be steel impression stamped on each forging, see forge drawing for location

Warranty of Longchao Modules

Longchao warrants only to original purchaser from Premium or an Authorized Distributor, that if any Premium Triplex Mud Pump Fluid Module is found to have a crack or defect due to faulty material or workmanship, it will be replaced at no charge, FOB point of manufacture per the following : Warranty period begins at date of purchase.

STANDARD MODULES ARE WARRANTED 100% AGAINST CRACKS FOR 2 YEARS.

PREMIUM MODULES ARE WARRANTED 100 % AGAINST CRACKS FOR 3 YEARS

THIS WARRANTY SPECIFICALLY EXCLUDES:

- 1.) Normal wear and wash-outs in gasket areas and valve seat areas.
- 2.) Cracks or defects in any area which develop because of improper repairs by customer or customer representative(s).

Module Serial numberxxxxxxxxxx

Longchao Part Number:xxxxxxxxxxxxxxxxxxxxxx

Customer:xxxxxxxxxx

Effective Date: December 10, 2008

By: _xxxx_____

Longchao Provides Superior Value

Forging Material

Engineering Support

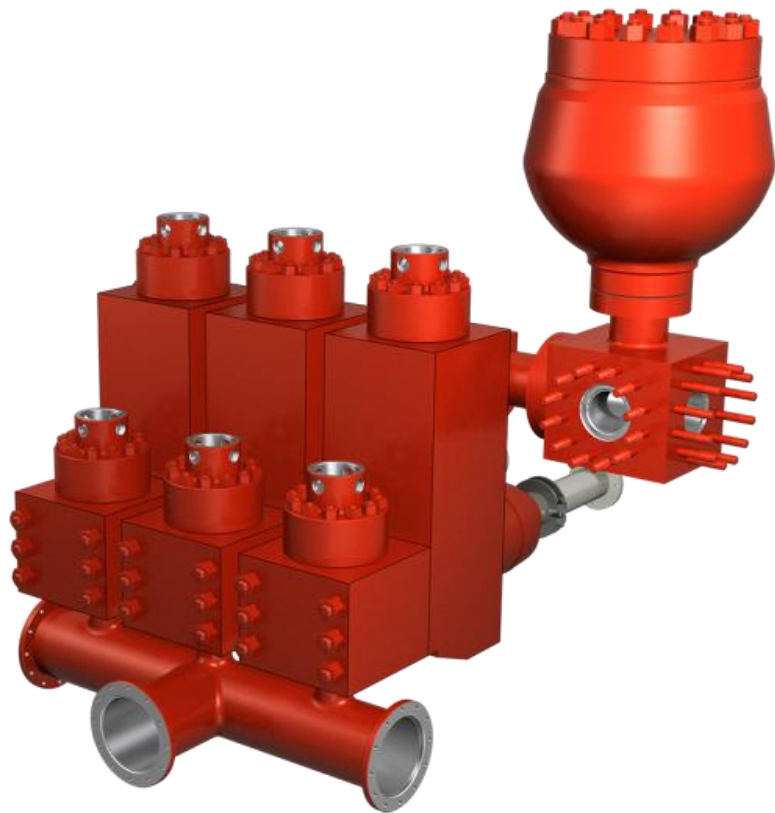
Module Alliance

Longchao Computer Network/Instant messaging

Longchao Distribution Network

Ultra Modern State of the Art Machining Centers

Warranty - Only 4 year warranty in the industry.



“L” Shape Module for 7500 PSI Purpose

The market demand for 7500 psi land drilling has continued to increase and forecasted to remain strong as drillers and operators seek to complete wells more faster and more efficiently. **Longchao** has the expertise and ability to convert existing 5000 psi pump systems with our 7500 psi fluid end upgrade. In addition to replacing the existing valve-over-valve module with our proven L-Shaped design, a typical conversion also includes an upgraded liner retainer system, discharge cross/strainer, high-pressure discharge manifold and 7500 psi pulsation dampener.

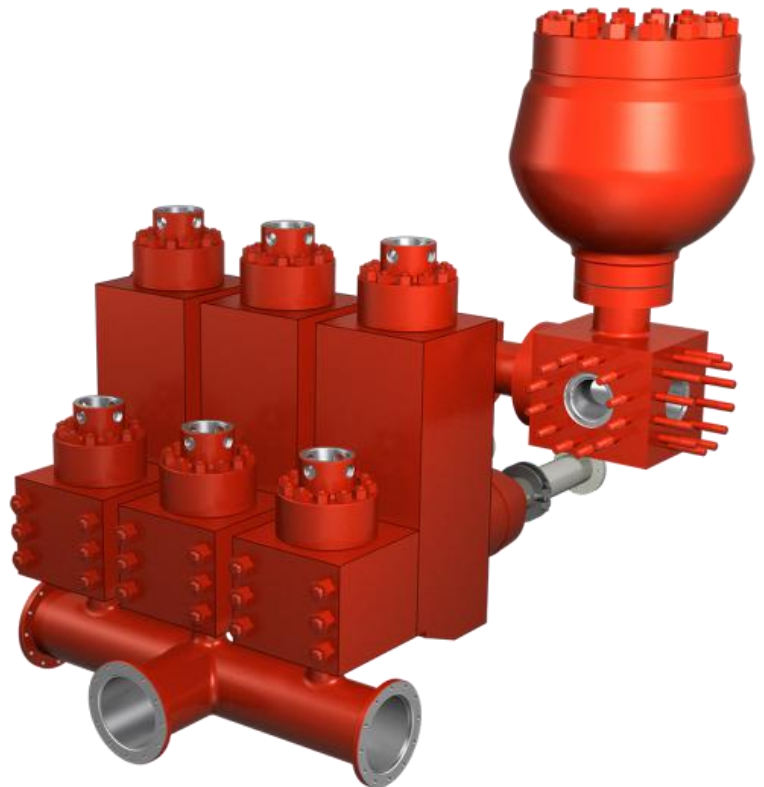
These modules create added value for contractors and operators by increasing the operating range of existing mud pump

Features/Benefits:

Maximum rated working pressure: 7500 psi
Individually forged, heat-treated alloy steel
Greater resistance to cracking, longer life
Hydro-statically tested and autofrettaged for material integrity
Direct replacement for the current 7500 psi wide body module (same outside dimensions and same external and internal components except valve cover, bore seal and Falcon spring retainer)

Available 7500 P.S.I. Models include:

- **BOMCO F1600**
- **EMSCO FB1600**
- **GARDNER DENVER PZ11**
- **HH F1600**
- **NATIONAL 12P160**
- **OILWELL A1700PT**
- **IDECO T1600**



Fluid End Components

All modules and fluid end components offered by Premium are of high-strength, premium alloy steel, heat treated for a long working life and machined to precise tolerances. Each product is rated for all drilling operations up to 7500 PSI.

Longchao's module accessories offer full lines of cylinder heads, valve lock covers, cylinder head threaded rings, cylinder head plugs, valve cover plugs, upper valve guides, lower valve guides, liner threaded rings, liner locks, wear plates and much more. The parts are precisely made to meet or exceed API-7K standards, and they are 100% exchangeable with OEM parts of all major pump models. Associated items include:

- Suction and Discharge modules
- Valve and Cylinder head plugs
- Valve and Cylinder head thread rings
- Valve and Cylinder head locks
- Valve guides
- Studs and nuts
- Strainers
- Rods: Piston, Extension, Sub
- Wear Plates
- Rod Clamps
- Gaskets
- Discharge Manifold
- Pulsation Dampener
- Safety/ Relief Valve
- Suction Manifold



Pulsation Dampeners & Stabilizers

Longchao is proud to offer a full-line of Pulsation Dampener Solutions. Our PD series dampeners are available in 5 ,10 & 20 gallon models and are rated for 5000 or 7500psi.

They are available in 1500 psi, 3000 psi, and 5000 psi ratings. Replacement diaphragms and parts are offered for 10 and 20 gallon, Matco and Hydril pulsation dampeners. Also available are stabilizers, bottom plate gaskets, charging valves, pressure gauges (0-6000 psi), plates, screws, and lock washers.

Features:

Single piece forged body (no circumferential welds), results in a stronger body and smoother inside surface

Inside surface machined to facilitate diaphragm movement

Field-replaceable top and bottom plates

Bottom plate connection to suit customer application

Diaphragms equipped with stabilizer plate to eliminate folding, trapping of fluids, resulting in enhanced life

Nitrile (NBR) and Hydrogenated Nitrile (HNBR) diaphragms standard

Diaphragms can be replaced without removing the unit from the Line

Performance:

Flaw detection: conform to API Spec 16A standard requirements

Pressure index: nominal working pressure of hydraulic pressure is 34.5 MPa(5000 PSI), highest

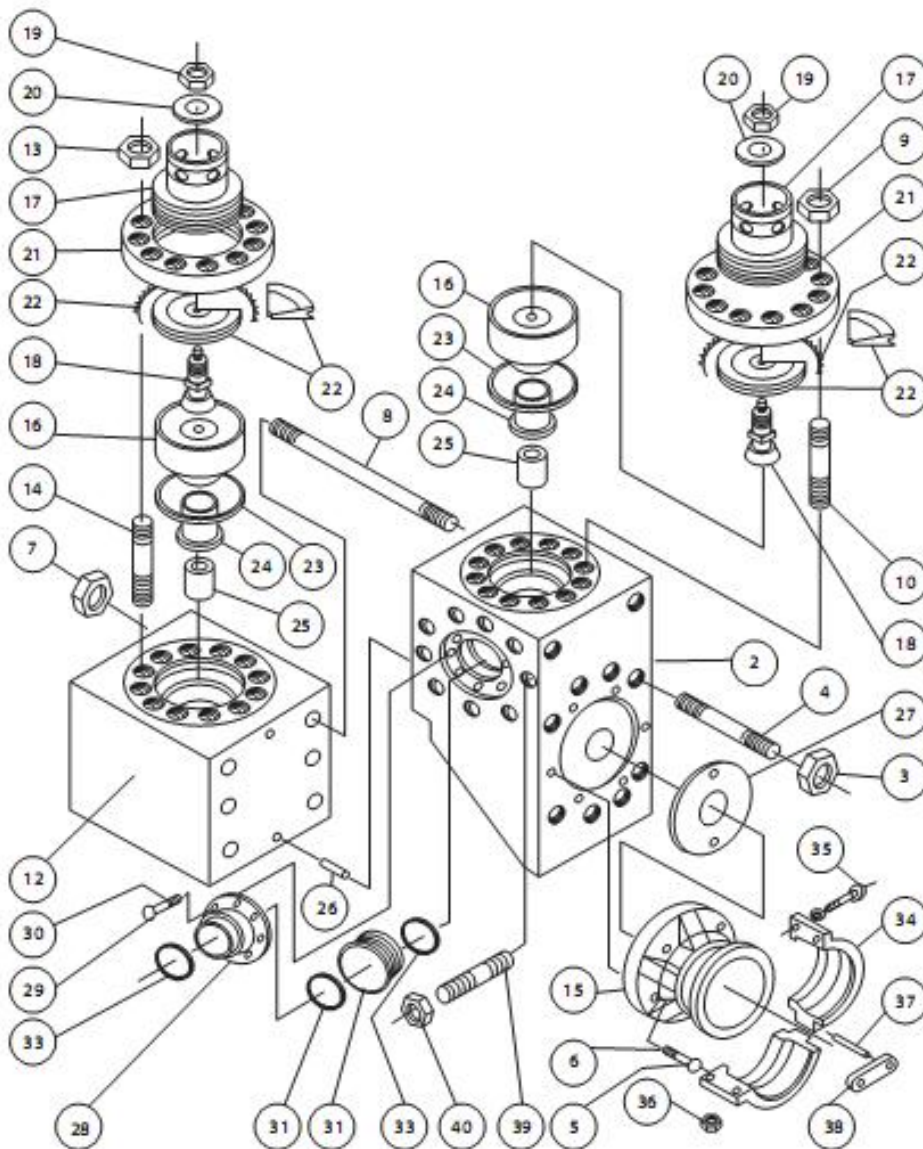
Test pressure: 51.7 MPa (7500 PSI); Nitrogen test pressure is 10.3 Mpa (1500 PSI)



National

12P160

NATIONAL 12-P-160



National

12P160 Mud Pump

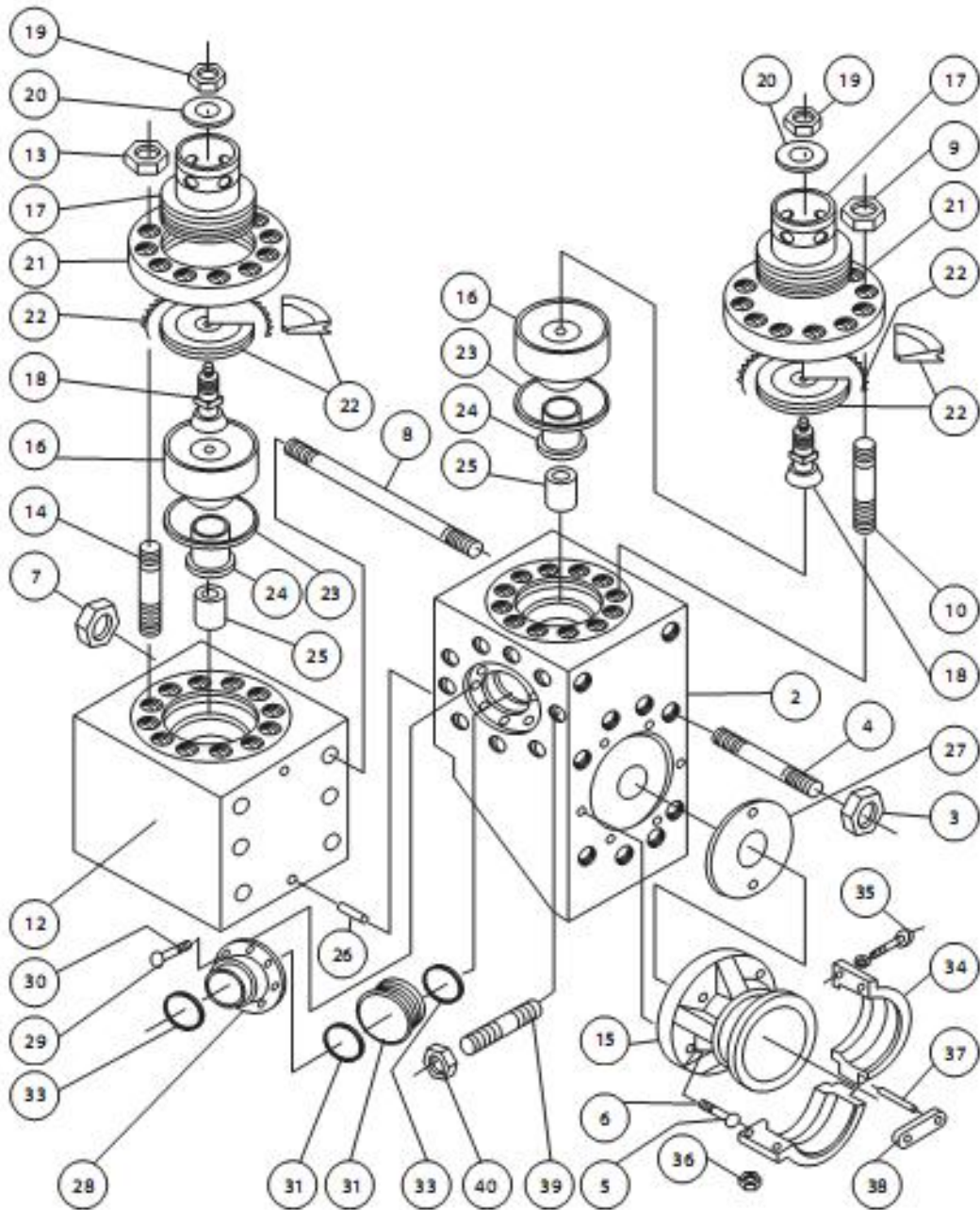
Item	P/N	Description	Qty.
1	0-1292240	Discharge Module Studded, (incl. Items 2-10)	3
2	0-1292241	Discharge Module, Only	3
3	0-6300220	Nut, 1 3/8" Hvy. Hex	24
4	0-2408029	Stud, 1 3/8" X 6 3/4", Discharge to Frame	24
5	0-6300180	Nut, 1 1/8" Hvy. Hex	18
6	0-2408028	Stud, 1 1/8" X 6 3/8", Discharge to Liner Bushing	18
7	0-6300281	Nut, 1 3/4" Hvy. Hex	18
8	0-2408033	Stud, 1 3/4" X 21 1/8", Discharge to Suction	18
9	0-6300240	Nut, 1 1/2" Hvy. Hex	36
10	0-2408027	Stud, 1 1/2" X 7 7/8" Top, Thread Ring	36
11	0-1292243	Suction Module Studded, (incl. Items 12-14)	3
12	0-1292244	Suction Module, Only	36
13	0-6300240	Nut, 1 1/2" Hvy. Hex	36
14	0-2408027	Stud, 1 1/2" X 7 7/8" Top, Thread Ring	3
15	0-1293165	Bushing, Liner	3
16	0-1292174	Seal Retainer	6
17	0-1292172	Valve Cover	6
18	0-1292178	Screw, Wedge Adjusting	6
19	0-6300182	Nut, Wedge Adjusting	6
20	0-1292171	Washer, Wedge Adjusting Screw	6
21	0-1292176	Ring, Threaded	6
22	0-G-1292268	Wedge Assembly	6
23	0-1540127	Gasket, Valve Cover	6
24	0-1292140	Holder, Valve Guide Insert	6
25	0-1292141	Insert, Valve Guide	6

26	0-6511416	Pin Dowell	6
27	0-1292266	Plate, Wear	3
28	0-1292252	Connector, Discharge	2
29	0-7000-305-11	Screw Hex Head	16
30	0-7619050	Washer, Lock	16
31	0-1292253	Adapter, Discharge Connector	2
32	0-2410031-43 3	Packing, Rectangular	2
33	0-2410031-43 7	Packing, Rectangular	4
34	0-1292167	Clamp, Liner	3
35	7000491-10	Screw 7/8 X 4 1/2" Hex Hd. w/ Lock Washer	6
36	0-6309140	Nut, 7/8" Lock Type	6
37	0-1292169	Pin, Liner Clamp	3
38	0-1292168	Connector, Liner Clamp	3
39	0-2408015	Stud 1 1/2" x 7 1/2"	16
40	0-6300240	Nut, 1 1/2" Hvy. Hex	16
41	5122-44	Liner 4-1/2"	3
42	5122-50	Liner 5"	3
43	5122-54	Liner 5-1/2"	3
44	5122-60	Liner 6"	3
45	5122-64	Liner 6-1/2"	3
46	5122-66	Liner 6-3/4"	3
	5122-70	Liner 7"	
47	012180196	Piston 4-1/2"	3
48	012180253	Piston 5"	3
49	012180337	Piston 5-1/2"	3
50	012180394	Piston 6"	3
51	012180535	Piston 6-1/2"	3
52		Piston 6-3/4"	3
	012180618	Piston 7"	3
53	1560985	Valve Full Open G2	6
54	1561440	Seat G2	6
55	1560557	Valve Insert	6
56	060155041	Valve Cross arms	6
57	061102505	Seat Cross arms	6
58	UDD7B	Valve Insert	6
59	1292147	Piston rod	3
60	1292085	Clamp	6
61	1602586	Pony rod	3
62	1290346	Sub rod	3

National

10P130

NATIONAL 10-P-130



National

10P130 Mud Pump

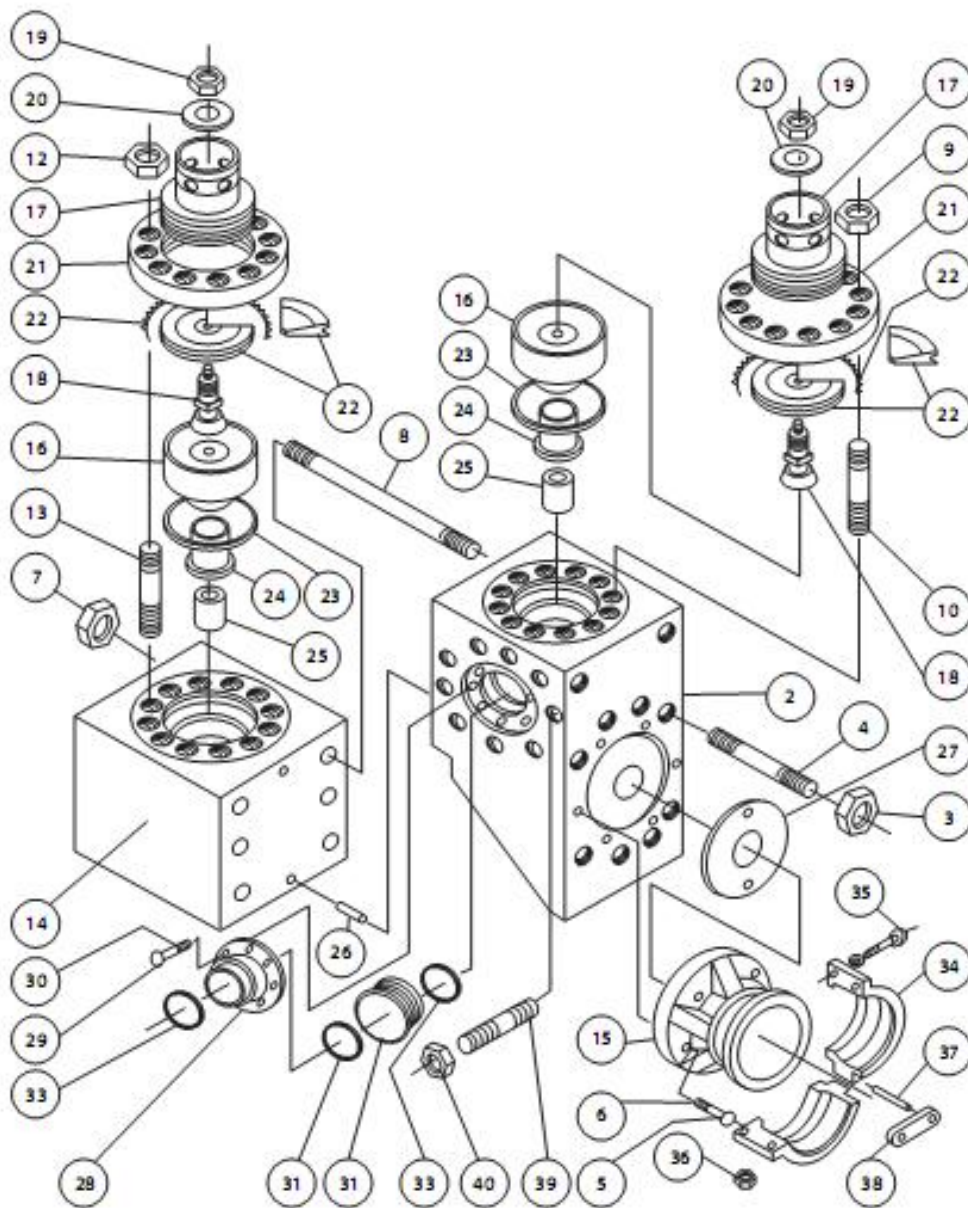
Item	P/N	Description	Qty.
1	0-1291280	Discharge Module Studded, (incl. Items 2-10)	3
2	0-1291281	Discharge Module, Only	3
3	0-6300180	Nut, 1 1/2" Hvy. Hex	24
4	0-2408026	Stud, 1 1/2" X 6 7/8", Discharge to Frame	24
5	0-6300120	Nut, 1" Hvy. Hex	18
6	0-2408025	Stud, 1" X 5 7/8", Discharge to Liner Bushing	18
7	0-63002641	Nut, 1 1/2 8UN-3A" Hvy. Hex	18
8	0-2408034	Stud, 1 1/2" X 19 1/8", Discharge to Suction	18
9	0-6300220	Nut, 1 3/8 Hvy. Hex	36
10	0-2408019	Stud, 1 3/8" X 7 1/4" Top, Thread Ring	36
11	0-1290338	Suction Module Studded, (incl. Items 12-14)	3
12	0-1290339	Suction Module, Only	36
13	0-2408019	Nut, 1 3/8 Hvy. Hex	36
14	0-1290339	Stud, 1 3/8" X 7 1/4" Top, Thread Ring	3
15	0-1293165	Bushing, Liner	3
16	0-1290174	Seal Retainer	6
17	0-1290307	Valve Cover	6
18	0-1290178	Screw, Wedge Adjusting	6
19	0-6300160	Nut, 1" Hvy. Hex	6
20	0-1290315	Washer, Wedge Adjusting Screw	6
21	0-1290308	Ring, Threaded	6
22	0-G-1290376	Wedge Assembly	6
23	0-1540126	Gasket, Valve Cover	6
24	0-1292140	Holder, Valve Guide Insert	6
25	0-1292141	Insert, Valve Guide	6

26	0-6511416	Pin 7/8 X 2 Dowell	6
27	0-1290357	Plate, Wear	3
28	0-1290324	Connector, Discharge	2
29	0-7000305-11	Screw 1/2 X 1 1/2 Hex Head	16
30	0-7619050	Washer, Lock 1/2"	16
31	0-1290343	Adapter, Discharge Connector	2
32	0-2410031-348	Packing, Rectangular	2
33	0-2410031-427	Packing, Rectangular	4
34	0-1291166	Clamp, Liner	3
35	0-7000403-11	Screw 3/4 X 4 Hex Hd. W/ Lock Washer	6
36	0-6309100	Nut, 3/4" Lock Type	6
37	0-12911-69	Pin, Liner Clamp	3
38	0-12911-68	Connector, Liner Clamp	3
39	0-2402560	Stud 1 1/4" x 6 1/4"	16
40	0-6300200	Nut, 1 1/4" Hvy. Hex	16
41	5120-44	Liner 4-1/2"	3
42	5120-50	Liner 5"	3
43	5120-54	Liner 5-1/2"	3
44	5120-60	Liner 6"	3
45	5120-64	Liner 6-1/2"	3
46	5120-66	Liner 6-3/4"	3
47	012180196	Piston 4-1/2"	3
48	012180253	Piston 5"	3
49	012180337	Piston 5-1/2"	3
50	012180394	Piston 6"	3
51	012180535	Piston 6-1/2"	3
52	012180196	Piston 6-3/4"	3
53	1560995	Valve Full Open G2	6
54	1561450	Seat G2	6
55	1560587	Valve Insert	6
56	060152808	Valve Cross arms	6
57	061102604	Seat Cross arms 6ADDB4	6
58		Valve Insert	6
59	1290347	Piston rod	3
60	1290085	Clamp	6
61	1602560	Pony rod	3
62	1290346	Sub rod	3

National

9P100

NATIONAL 9-P-100



National

9P100 Mud Pump

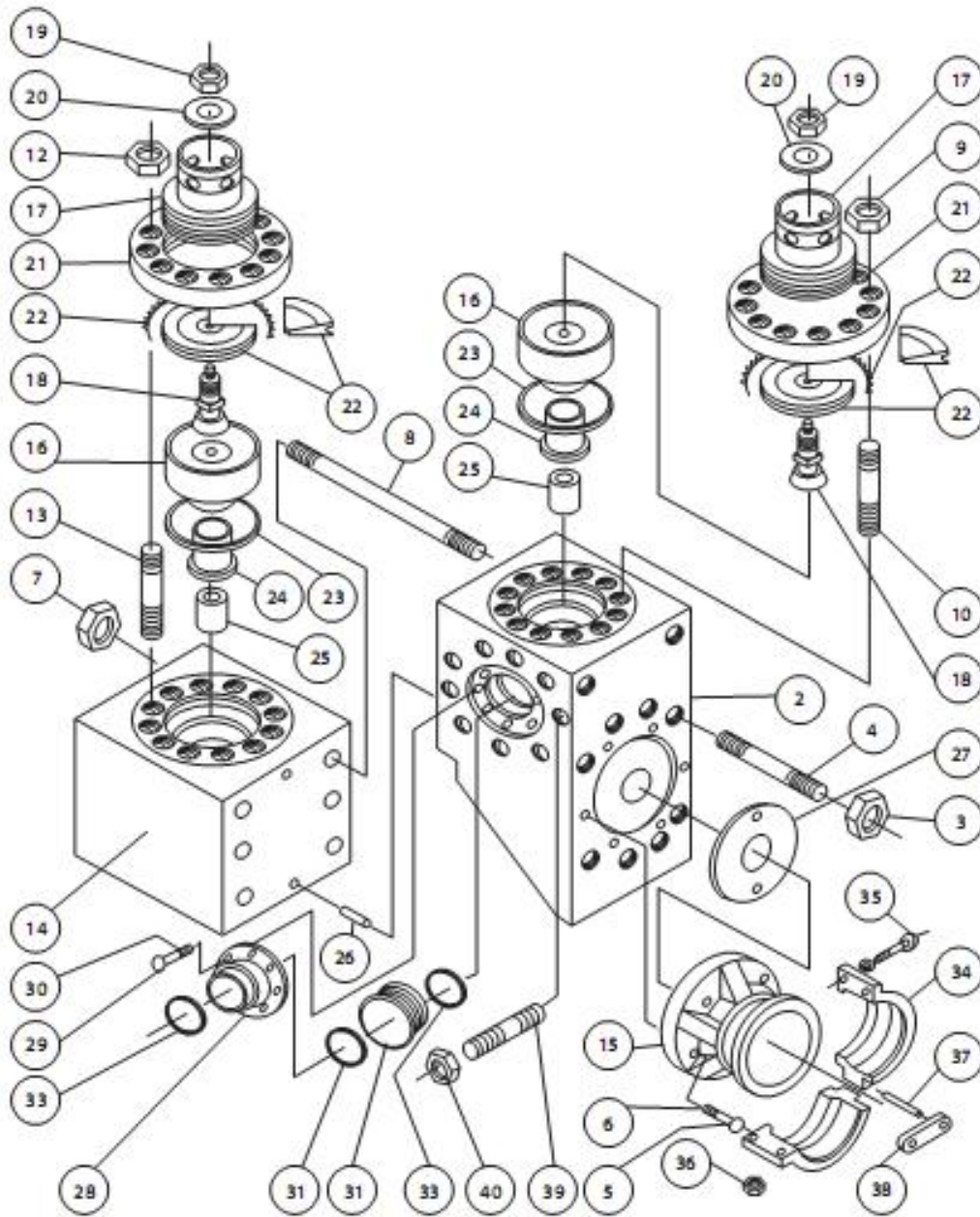
Item	P/N	Description	Qty.
1	0-1293240	Discharge Module Studded, (incl. Items 2-10)	3
2	0-1293241	Discharge Module, Only	3
3	0-6300200	Nut, 1 1/2" Hvy. Hex	24
4	0-2408030	Stud, 1 1/4" X 6", Discharge to Frame	24
5	0-6300160	Nut, 1" Hvy. Hex	18
6	0-2408018	Stud, 1" X 5 7/8", Discharge to Liner Bushing	18
7	0-6300241	Nut, 1 1/2 8UN-3A" Hvy. Hex	18
8	0-2408034	Stud, 1 1/2" X 19 1/8", Discharge to Suction	18
9	0-6300220	Nut, 1 3/8" Hvy. Hex	36
10	0-2408019	Stud, 1 3/8" X 7 1/4" Top, Thread Ring	36
11	0-1290338	Suction Module Studded, (incl. Items 12-14)	3
12	0-6300220	Nut, 1 3/8" Hvy. Hex	36
13	0-2408019	Stud, 1 3/8" X 7 1/4" Top, Thread Ring	36
14	0-1290339	Suction Module, Only	3
15	0-1293165	Bushing, Liner	3
16	0-1290174	Seal Retainer	6
17	0-1290307	Valve Cover	6
18	0-1290178	Screw, Wedge Adjusting	6
19	0-6300160	Nut, 1" Hvy. Hex	6
20	0-1290315	Washer, Wedge Adjusting Screw	6
21	0-1290308	Ring, Threaded	6
22	0-G-1290376	Wedge Assembly	6
23	0-1540126	Gasket, Valve Cover	6
24	0-1292140	Holder, Valve Guide Insert	6

25	0-1292141	Insert, Valve Guide	6
26	0-6511416	Pin 7/8 X 2 Dowell	6
27	0-1290357	Plate, Wear	3
28	0-1290342	Connector, Discharge	2
29	0-7000305-11	Screw 1/2 X 1 1/2 Hex Head	6
30	0-7619050	Washer, Lock 1/2"	6
31	0-1290343	Adapter, Discharge Connector	2
32	0-2410031-348	Packing, Rectangular	2
33	0-2410031-427	Packing, Rectangular	4
34	0-1293167	Clamp, Liner	3
35	0-7000448-11	Screw 3/4 X 4 Hex Hd. W/ Lock Washer	6
36	0-6309120	Nut, 3/4" Lock Type	6
37	0-1290169	Pin, Liner Clamp	3
38	0-1290168	Connector, Liner Clamp	3
39	0-2402560	Stud 1 1/4" x 6 1/4"	16
40	0-6300200	Nut, 1 1/4" Hvy. Hex	16
41	5120-44	Liner 4-1/2"	3
42	5120-50	Liner 5"	3
43	5120-54	Liner 5-1/2"	3
44	5120-60	Liner 6"	3
45	5120-64	Liner 6-1/2"	3
46	5120-66	Liner 6-3/4"	3
47	012180196	Piston 4-1/2"	3
48	012180253	Piston 5"	3
49	012180337	Piston 5-1/2"	3
50	012180394	Piston 6"	3
51	012180535	Piston 6-1/2"	3
52	012180196	Piston 6-3/4"	3
53	1560995	Valve Full Open G2	6
54	1561450	Seat G2	6
55	1560587	Valve Insert	6
56	060152808	Valve Cross arms	6
57	061102604	Seat Cross arms 6DDB4	6
58		Valve Insert	6
59	1292147	Piston rod	3
60	1292085	Clamp	6
61	1602586	Pony rod	3
62	1292146	Sub rod	3

National

8P80

NATIONAL 8-P-80



National

8P80 Mud Pump

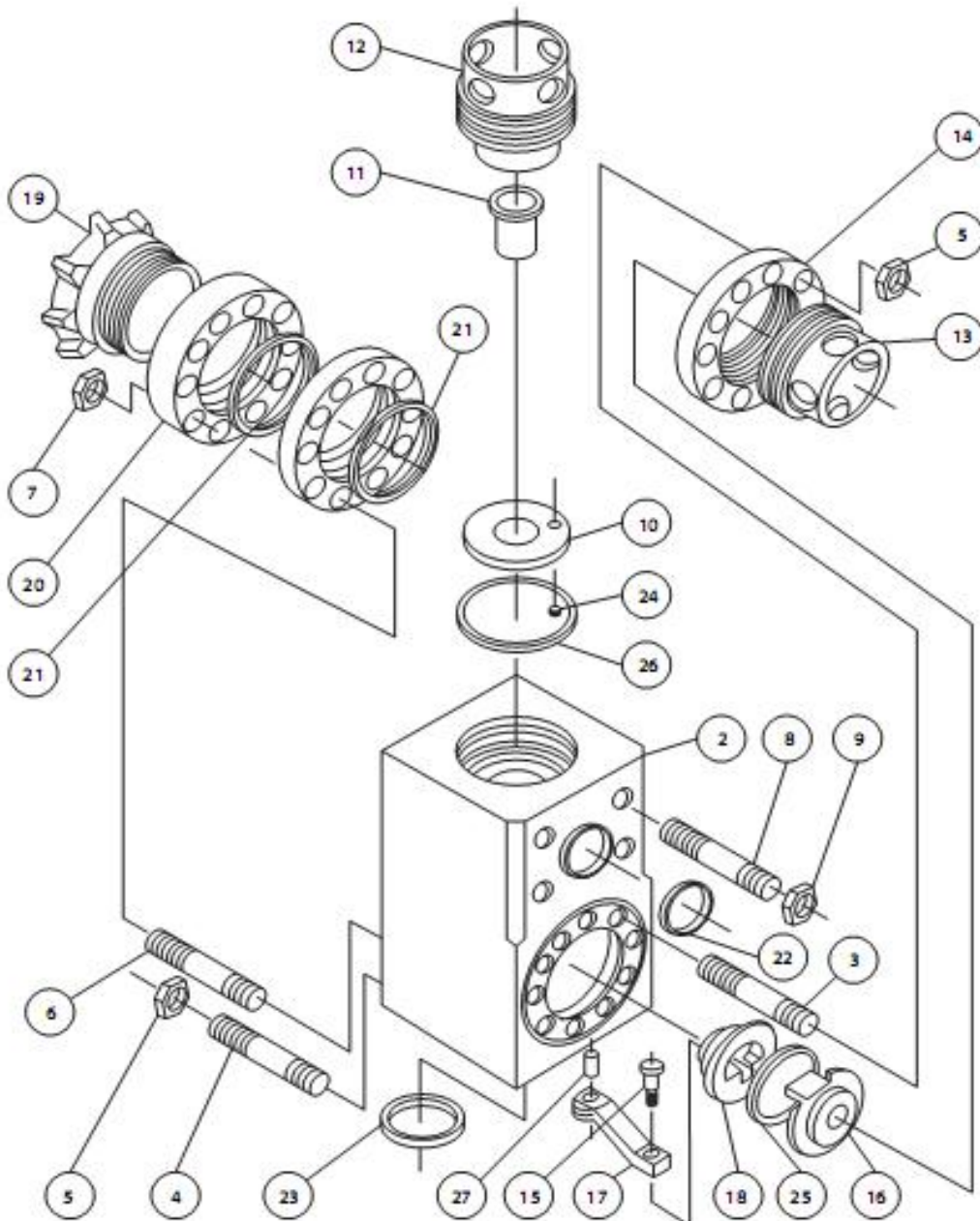
Item	P/N	Description	Qty.
1	0-1290335	Discharge Module Studded, (incl. Items 2-10)	3
2	0-1290336	Discharge Module, Only	3
3	0-6300240	Nut, 1 1/8" Hvy. Hex	24
4	0-2408020	Stud, 1 1/8" X 5 3/4", Discharge to Frame	24
5	0-6300160	Nut, 3/4" Hvy. Hex	18
6	0-2408018	Stud, 3/4" X 5", Discharge to Liner Bushing	18
7	0-6300241	Nut, 1 1/2 8UN-3A" Hvy. Hex	18
8	0-2408034	Stud, 1 1/2" X 19 1/8", Discharge to Suction	18
9	0-6300220	Nut, 1 3/8" Hvy. Hex	36
10	0-2408019	Stud, 1 3/8" X 7 1/4" Top, Thread Ring	36
11	0-1290338	Suction Module Studded, (incl. Items 12-14)	3
12	0-1290339	Nut, 1 3/8" Hvy. Hex	36
13	0-6300220	Stud, 1 3/8" X 7 1/4" Top, Thread Ring	36
14	0-1290339	Suction Module, Only	3
15	0-1291165	Bushing, Liner	3
16	0-1290174	Seal Retainer	6
17	0-1290307	Valve Cover	6
18	0-1290178	Screw, Wedge Adjusting	6
19	0-6300160	Nut, 1" Hvy. Hex	6
20	0-1290315	Washer, Wedge Adjusting Screw	6
21	0-1290308	Ring, Threaded	6
22	0-G-1290376	Wedge Assembly	6
23	0-1540126	Gasket, Valve Cover	6
24	0-1292140	Holder, Valve Guide Insert	6
25	0-1292141	Insert, Valve Guide	6
26	0-6511416	Pin 7/8 X 2 Dowell	6

27	0-1290357	Plate, Wear	3
28	0-1290342	Connector, Discharge	2
29	0-7000305-11	Screw 1/2 X 1 1/2 Hex Head	16
30	0-7619050	Washer, Lock 1/2"	16
31	0-1290343	Adapter, Discharge Connector	2
32	0-2410031-348	Packing, Rectangular	2
33	0-2410031-427	Packing, Rectangular	4
34	0-1293167	Clamp, Liner	3
35	0-7000448-11	Screw 5/8 X 3 1/2 Hex Hd. w/ Lock Washer	6
36	0-6309120	Nut, 5/8" Lock Type	6
37	0-1290169	Pin, Liner Clamp	3
38	0-1290168	Connector, Liner Clamp	3
39	0-2402560	Stud 1 1/4" x 6 1/4"	16
40	0-6300200	Nut, 1 1/4" Hvy. Hex	16
41	5121-44	Liner 4-1/2"	3
42	5121-50	Liner 5"	3
43	5121-54	Liner 5-1/2"	3
44	5121-60	Liner 6"	3
45	5121-64	Liner 6-1/2"	3
46	5121-66	Liner 6-3/4"	3
47	012180196	Piston 4-1/2"	3
48	012180253	Piston 5"	3
49	012180337	Piston 5-1/2"	3
50	012180394	Piston 6"	3
51	012180535	Piston 6-1/2"	3
52		Piston 6-3/4"	3
53	1560995	Valve Full Open G2	6
54	1561450	Seat G2	6
55	1560587	Valve Insert	6
56	060152808	Valve Cross arms	6
57	061102604	Seat Cross arms	6
58		Valve Insert	6
59	1291277	Piston rod	3
60	1291085	Clamp	6
61	1602594	Pony rod	3
62	1291276	Sub rod	3

EMSCO

FB1300/1600

EMSCO FB-1300 | FB-1600



EMSCO

FB1300/1600 Mud Pump

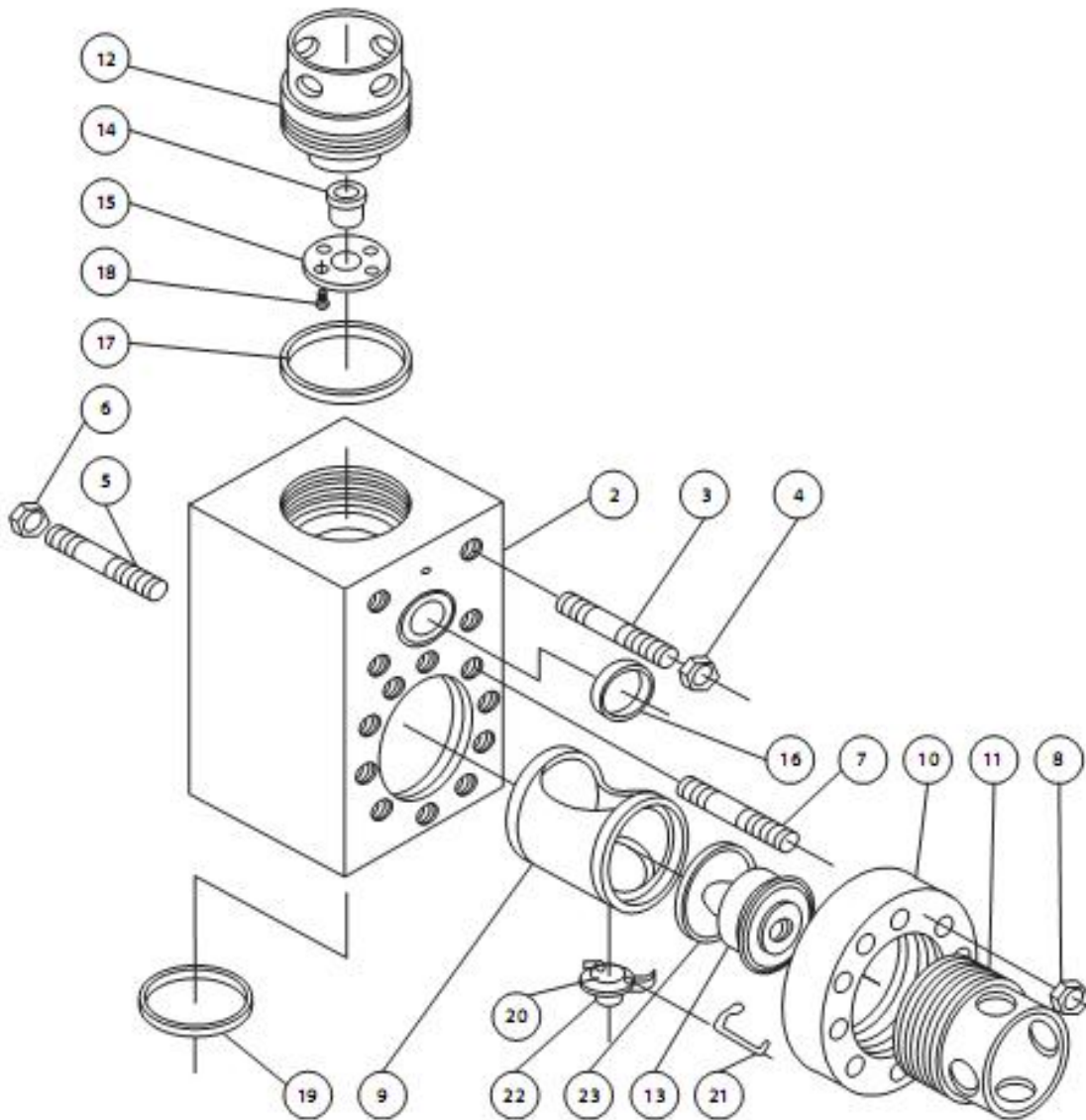
Item	P/N	Description	Qty.
1	0-6316-0357-00	Fluid Module Studded, (incl. Items 2-9)	3
2	0-6316-0356-00	Fluid Module, Only	3
3	0-7507-2210-00	Stud, 1 1/2 - 8 X 8 5/8	30
4	0-7507-2201-00	Stud, 1 1/2 - 8 X 6 7/8	18
5	0-7601-0630-17	Nut, 1 1/2 - 8 Hvy. Hex	48
6	0-7507-2013-00	Stud, 1 - 8 X 9	36
7	0-7601-0610-18	Nut 1 - 8 Stud. Hex	36
8	0-7507-2108-00	Stud, 1 1/4 - 8 x 9 1/2	12
9	0-7601-0630-24	Nut, 1 1/4 - 8 Hvy. Hex	12
10	0-6397-0603-00	Retainer, Valve Guide	3
11	0-6397-0575-00	Upper Valve Guide	3
12	0-6316-0039-00	Valve Cover	3
13	0-6316-0362-00	Cylinder Head	3
14	0-6316-0361-00	Cylinder Thread Ring	3
15	0-6316-0360-00	Lock Bolt, Valve Guide	3
16	0-6316-0364-00	Cylinder Head Plug	3
17	0-6316-0354-00	Low Valve Guide & Bushing	3
18	0-6316-0363-00	Alignment Ring	3
19	0-6316-0367-00	Liner Lock	3
20	0-6316-0366-00	Liner Thread Ring	3
21	0-6316-0373-00	Seal	3
22	0-7602-1600-25	Seal, Discharge Manifold	3

23	0-7602-1600-61	Seal, Suction Manifold	3
24	0-7501-0051-00	Retainer Screw	12
25	0-6316-0369-00	Head Seal	3
26	0-6316-0092-00	Seal, Valve Pot Cover	3
27	0-6316-0096-00	Valve Guide Bushing	3
28	0-6316-0365-00	Wear Plate	3
29	2130-44	Liner 4-1/2"	3
30	2130-50	Liner 5"	3
31	2130-54	Liner 5-1/2"	3
32	2130-60	Liner 6"	3
33	2130-64	Liner 6-1/2"	3
34	2130-66	Liner 6-3/4"	3
35	2130-70	Liner 7"	3
36	012180196	Piston 4-1/2"	3
37	012180253	Piston 5"	3
38	012180337	Piston 5-1/2"	3
39	012180394	Piston 6"	3
40	012180535	Piston 6-1/2"	3
41		Piston 6-3/4"	3
42	012180618	Piston 7"	3
43	9700250	Valve Full Open 7FO-V1	6
44	9702504	Seat 7S1	6
45	HD7I	Valve Insert	6
46	060155041	Valve Cross arms	6
47	061101507	Seat Cross arms 7DDB1	6
48	UDD7B	Valve Insert	6
49	1551703	Piston rod	3
50	PP601316	Clamp	3
51	07913077	Pony rod	3

EMSCO

F800/1000

EMSCO F-800 | F-1000



EMSCO

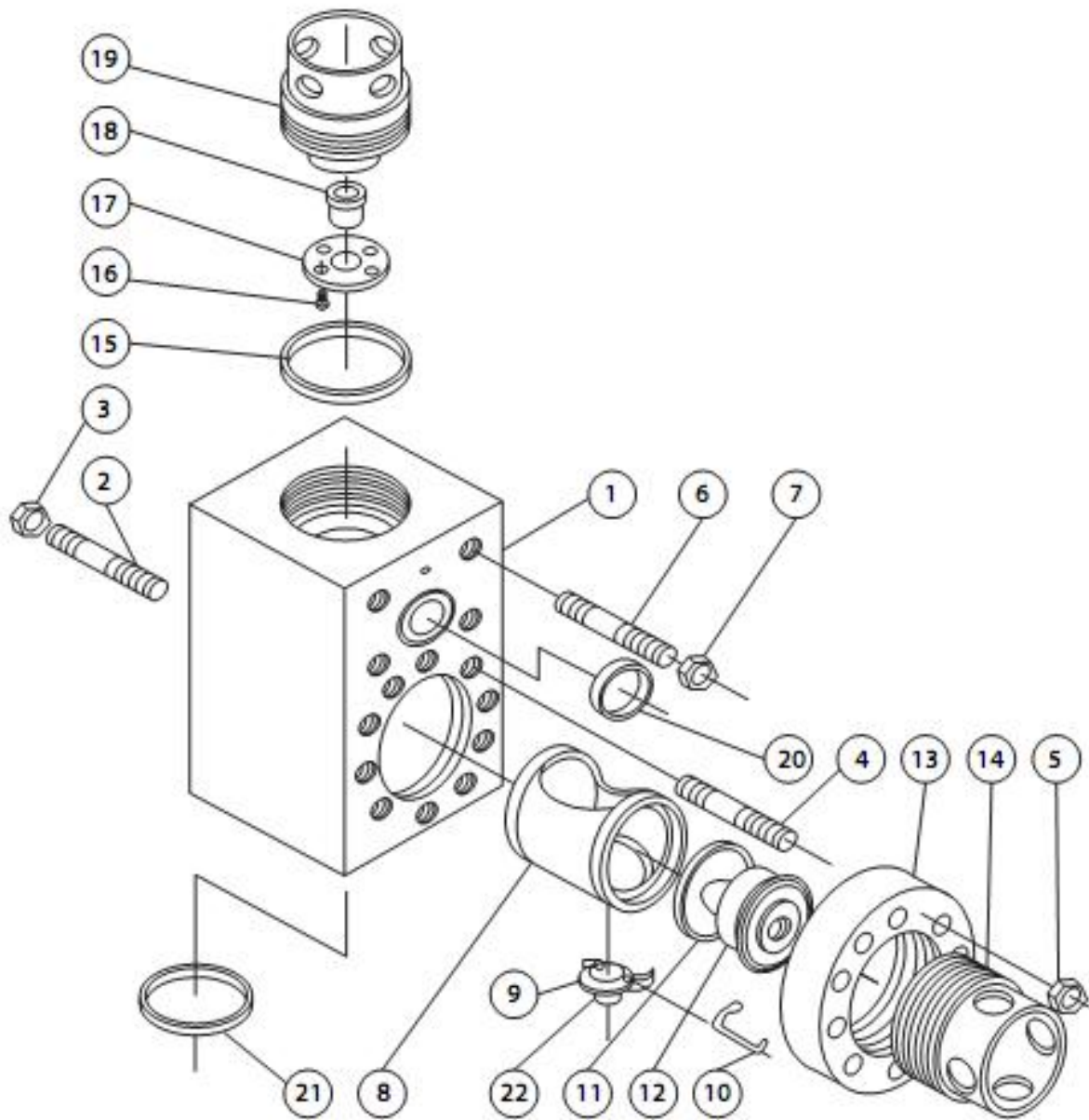
F800/1000 Mud Pump

Item	P/N	Description	Qty.
1	0-6999-0086-02	Fluid Module Studded, (incl. Items 2-8)	3
2	0-6999-0086-02	Fluid Module , Only	3
3	0-7507-2108-00	Stud, 1 1/4	12
4	0-7601-0630-24	Nut, 1 1/4 - 8 Hvy. Hex	12
5	0-7507-2205-00	Stud, 1 1/2	18
6	0-7601-0630-17	Nut, 1 1/2 - 8 Hvy. Hex	18
7	0-7507-2150-00	Stud, 1 3/8	30
8	0-7601-0630-26	Nut, 1 3/8 - 8 Hvy. Hex	30
9	0-6319-0026-00	Liner Cage	3
10	0-6999-0089-00	Thread Ring	3
11	0-6319-0031-00	Cylinder Head	3
12	0-6319-0027-00	Valve Cover	3
13	0-6319-0090-00	Cylinder Head Plug	3
14	0-6397-0575-00	Valve Guide, Upper	3
15	0-6397-0603-00	Retainer, Valve Guide	3
16	0-7602-1610-46	O-Ring, AN 6230-19	3
17	0-6319-0076-00	Seal, Valve Cover	3
18	0-7501-0051-00	Screw, Valve Guide Retainer	3
19	0-7602-1600-61	O-Ring, Suction Manifold	3

20	0-6319-0096-00	Bushing, Lower Valve Guide	3
21	0-6319-0089-00	Locking Clip, Lower Valve	3
22	0-6319-0087-00	Lower Valve Guide	3
23	0-7602-2200-32	Liner Seal	3
23	2122-44	Liner 4-1/2"	3
24	2122-50	Liner 5"	3
25	2122-54	Liner 5-1/2"	3
26	2122-60	Liner 6"	3
27	2122-64	Liner 6-1/2"	3
28	2122-66	Liner 6-3/4"	3
29	012180196	Piston 4-1/2"	3
30	012180253	Piston 5"	3
31	012180337	Piston 5-1/2"	3
32	012180394	Piston 6"	3
33	012180535	Piston 6-1/2"	3
34		Piston 6-3/4"	3
35	9700285	Valve Full Open 6FO-V1	6
36	9702547	Seat 6S6	6
37	HD6I	Valve Insert	6
38	060152808	Valve Cross arms	6
39	061102653	Seat Cross arms	6
40		Valve Insert	6
41	1551702	Piston rod	3
42	PP601000	Clamp	3
43	07913070	Pony rod	3

EMSCO F500

EMSCO F-350 | F-500 | F-650



EMSCO

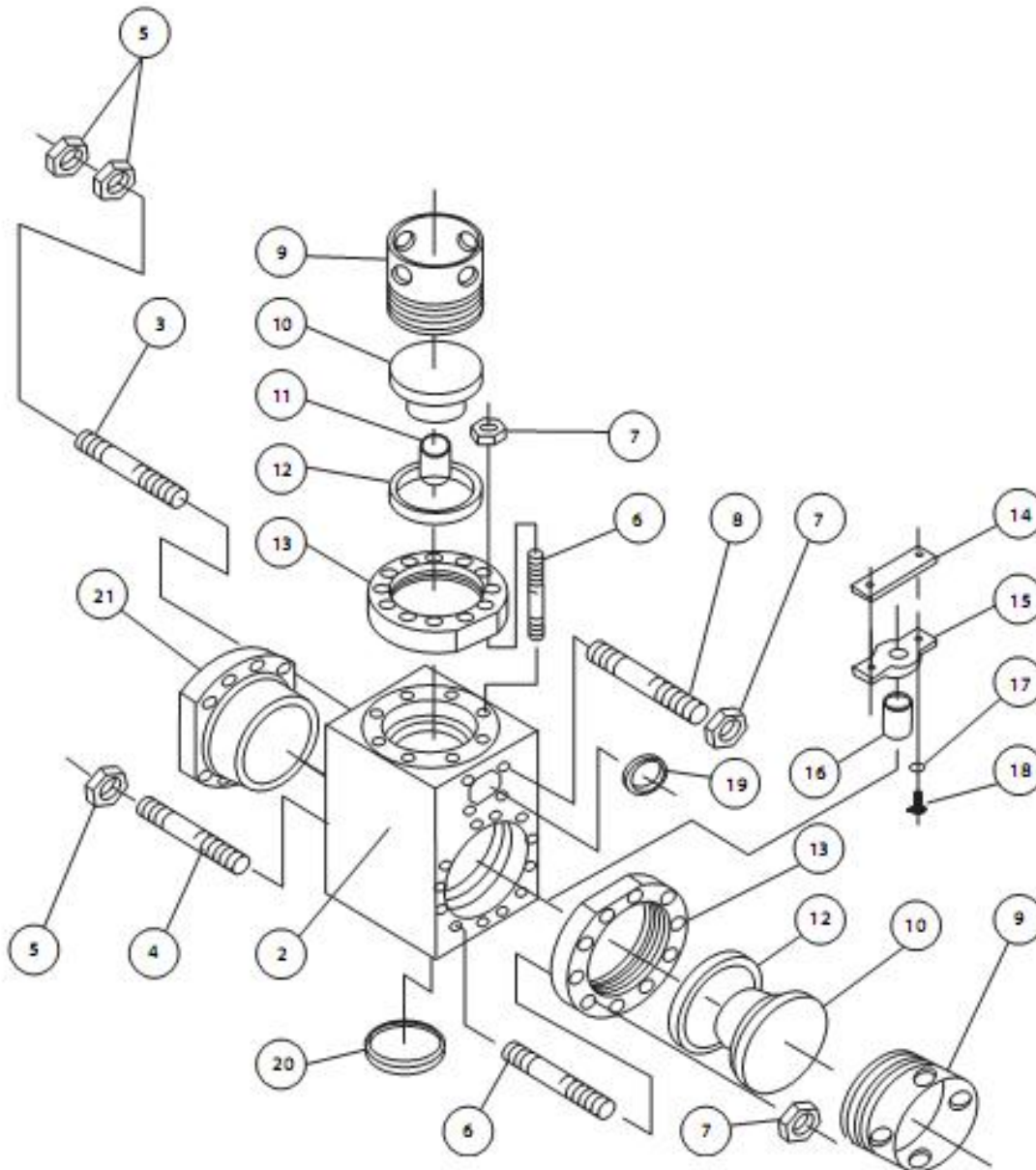
F500 Mud Pump

Item	OEM P/N	Description	Qty.
1	0-6318-0150-00	Fluid Module Studded	3
2	0-7507-2205-00	Stud, Frame	18
3	0-7601-0630-17	Nut Stud Frame	18
4	0-7507-3402-00	Stud, Threaded Ring	30
5	0-7601-0630-26	Nut Threaded Ring	30
6	0-7507-3407-00	Stud, Discharge Manifold	12
7	0-7601-0630-26	Nut Discharge Manifold	12
8	0-6318-0148-00	Liner Cage	3
9	0-6318-0177-00	Guide, Lower Valve (with Bushing)	3
10	0-6318-0153-00	Clip, Locking (for Lower valve Guide)	3
11	0-7602-2200-34	Gasket, Liner	6
12	0-6318-0158-00	Cylinder Head Plug	3
13	0-6318-0130-00	Ring, Threaded Cylinder Head	3
14	0-6318-0157-00	Cap, Threaded Cylinder Head	3
15	0-6310-0084-00	Gasket, Valve Cover	3
16	0-7501-0057-00	Screw, Retainer (Upper)	12

17	0-6310-0133-00	Retainer Plate (Upper)	3
18	0-6397-0602-00	Guide, Upper Valve	3
19	0-6310-0016-01	Cover, Valve Pot	3
20	0-7602-1600-23	Gasket, Discharge Manifold	3
21	0-7602-1600-33	Gasket, Suction Manifold	3
22	0-6318-0155-00	Bushing, Lower Valve Guide	3
23	2121-44	Liner 4-1/2"	3
24	2121-50	Liner 5"	3
25	2121-54	Liner 5-1/2"	3
26	2121-60	Liner 6"	3
27	2121-64	Liner 6-1/2"	3
29	012180196	Piston 4-1/2"	3
30	012180253	Piston 5"	3
31	012180337	Piston 5-1/2"	3
32	012180394	Piston 6"	3
33	012180535	Piston 6-1/2"	3
35	5FO-V1	Valve Full Open 5FO-V1	6
36	5FO-S1	Seat	6
37		Valve Insert	6
38		Valve Cross arms	6
39		Seat Cross arms	6
40		Valve Insert	6
41		Piston rod	3
42		Clamp	3
43		Pony rod	3

GARDNER DENVER

GARDNER DENVER PZ-10 | PZ-11



PZ10/11

GARDNER DENVER

PZ10/11 Mud Pump

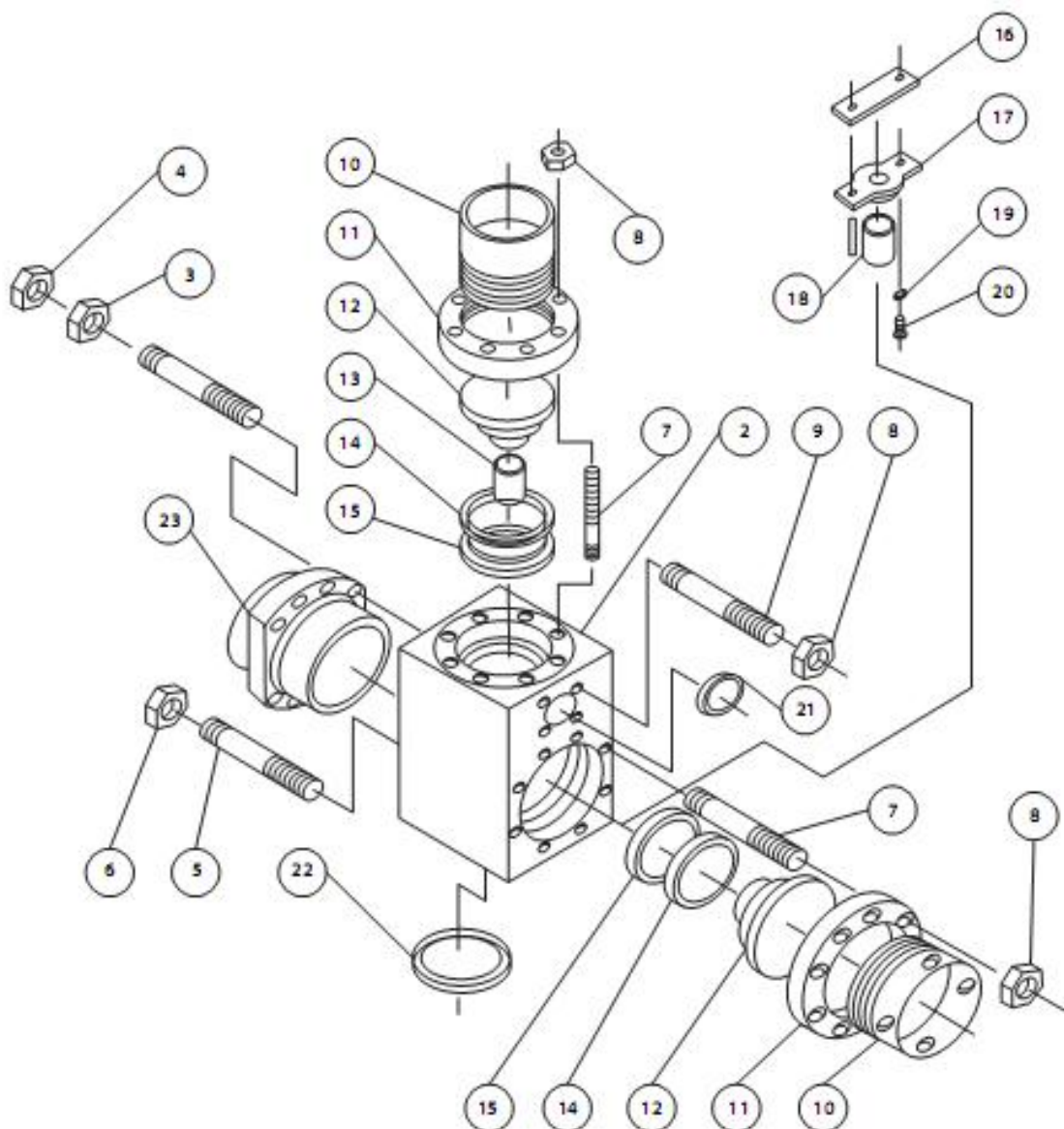
Item	P/N	Description	Qty.
1	0202PZL029B	Fluid Module Studded, (incl. Items 2-9)	3
2		Fluid Module, Only	3
3	201PZL110	Stud, Long, Moudle to Frame	24
4	205PZL110	Stud, Short, Moudle to Frame	24
5	50B36	Nut, Module to Frame & Liner Clamp	60
6	204PZL110	Stud, Valve Cover to Moudle	72
7	50B34	Nut, Valve Cover to Moudle & Module to Discharge	84
8	202PZL110	Stud, Module to Discharge Manifold	12
9	200PZL587	Cap, Valve Lock	6
10	200PZL147	Cover, Valve	6
11	2007674	Bushing, Valve Guide,Discharge	3
12	204PZL715	Gasket, Valve Cover	6
13	200PZL387	Thread Ring	6
	200PZL483A	Valve Guide Assembly (incl.Items 16-20)	3
14	2011701	Plate, Retainer	1
15	2011700	Valve Guide, Suction	1

16	2007674	Bushing, Valve Guide,Suction	1
17	95W2	Lock Washer,Valve Guide	2
18	655EE06S	Screw, Valve Guide	2
19	25A135	Gasket, Discharge Manifold to Module	3
20	25G41	Gasket, Suction Manifold to Moudule	3
21	200PZL455	Liner Clamp	3
23	3127-44	Liner 4-1/2"	3
24	3127-50	Liner 5"	3
25	3127-54	Liner 5-1/2"	3
26	3127-60	Liner 6"	3
27	3127-64	Liner 6-1/2"	3
28	3127-66	Liner 6-3/4"	3
	3127-70	Liner 7"	3
29	012180196	Piston 4-1/2"	3
30	012180253	Piston 5"	3
31	012180337	Piston 5-1/2"	3
32	012180394	Piston 6"	3
33	012180535	Piston 6-1/2"	3
34		Piston 6-3/4"	3
	012180618	Piston 7"	3
35	9700250	Valve Full Open 7FO-V1	6
36	9702504	Seat 7S1	6
37	HD7I	Valve Insert	6
38	060155041	Valve Cross arms	6
39	061101507	Seat Cross arms	6
40	UDD7B	Valve Insert	6
41		Piston rod	3
42		Clamp	3
43		Pony rod	3

GARDNER DENVER

PZ7/8/9

GARDNER DENVER PZ-7 | PZ-8 | PZ-9



GARDNER DENVER

PZ7/8/9 Mud Pump

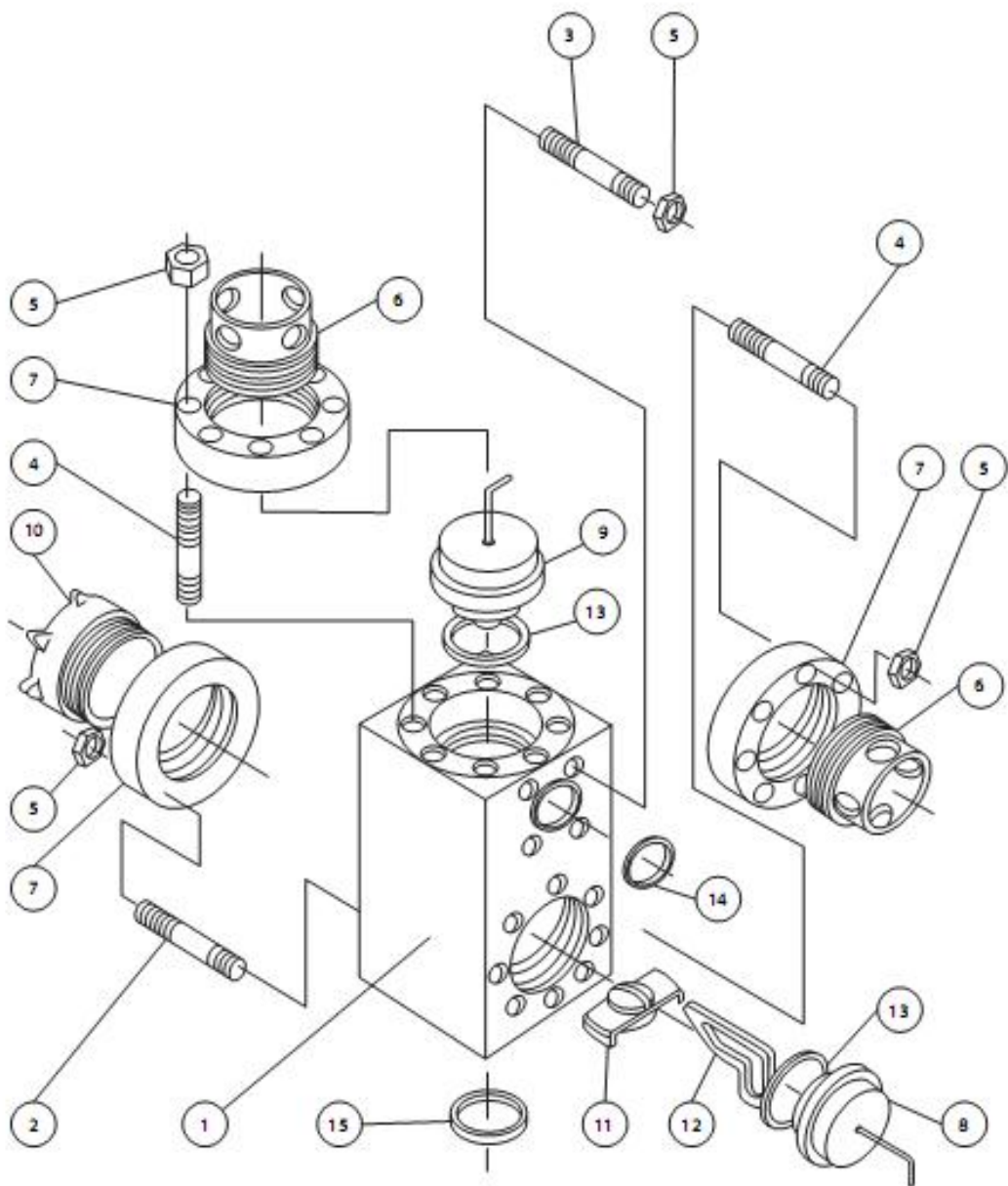
Item	P/N	Description	Qty.
1	205PZL029D	Fluid Module Studded, (incl. Items 2-9)	3
2		Fluid Module, Only	3
3	79L188	Stud, Moudle to Frame & Liner Clamp	24
4	750B38	Nut, Module to Frame & Liner Clamp	48
5	79L73	Stud, Moudle to Frame	12
6	750AQ30	Nut, Moudle to Frame	12
7	79AL6	Stud, Valve Cover to Moudle	48
8	50B34	Nut, Valve Cover to Moudle & Module to Discharge	60
9	202PZL110	Stud, Module to Discharge Manifold	12
10	2011857	Cap, Valve Lock	6
11	2011699	Thread Ring	6
12	2011860	Cover, Valve	6
13	2007674	Bushing, Valve Guide,Discharge	3
14	2011862	Gasket, Valve Cover	6
15	2011861	Ring, Retaining	6
	2011706	Valve Guide Assembly (incl.Items 16-20)	3
16	2011701	Plate, Retainer	1
17	2011700	Valve Guide, Suction	1
18	2007674	Bushing, Valve Guide,Suction	1

19	95W2	Lock Washer, Valve Guide	2
20	655EE06S	Screw, Valve Guide	2
21	25A135	Gasket, Discharge Manifold to Module	3
22	25G41	Gasket, Suction Manifold to Moudule	3
23	IPV14	Liner Clamp	3
24	3130-44	Liner 4-1/2"	3
25	3130-50	Liner 5"	3
26	3130-54	Liner 5-1/2"	3
27	3130-60	Liner 6"	3
28	3130-64	Liner 6-1/2"	3
29	3130-66	Liner 6-3/4"	3
30	3130-70	Liner 7"	3
31	012180196	Piston 4-1/2"	3
32	012180253	Piston 5"	3
33	012180337	Piston 5-1/2"	3
34	012180394	Piston 6"	3
35	012180535	Piston 6-1/2"	3
36		Piston 6-3/4"	3
37	012180618	Piston 7"	3
38	9700250	Valve Full Open 7FO-V1	6
39	9702504	Seat 7S1	6
40	HD7I	Valve Insert	6
41	060155041	Valve Cross arms	6
42	061101507	Seat Cross arms	6
43	UDD7B	Valve Insert	6
44		Piston rod	3
45		Clamp	3
46		Pony rod	3

IDECO

T1300/1600

IDECO T-1300 | T-1600



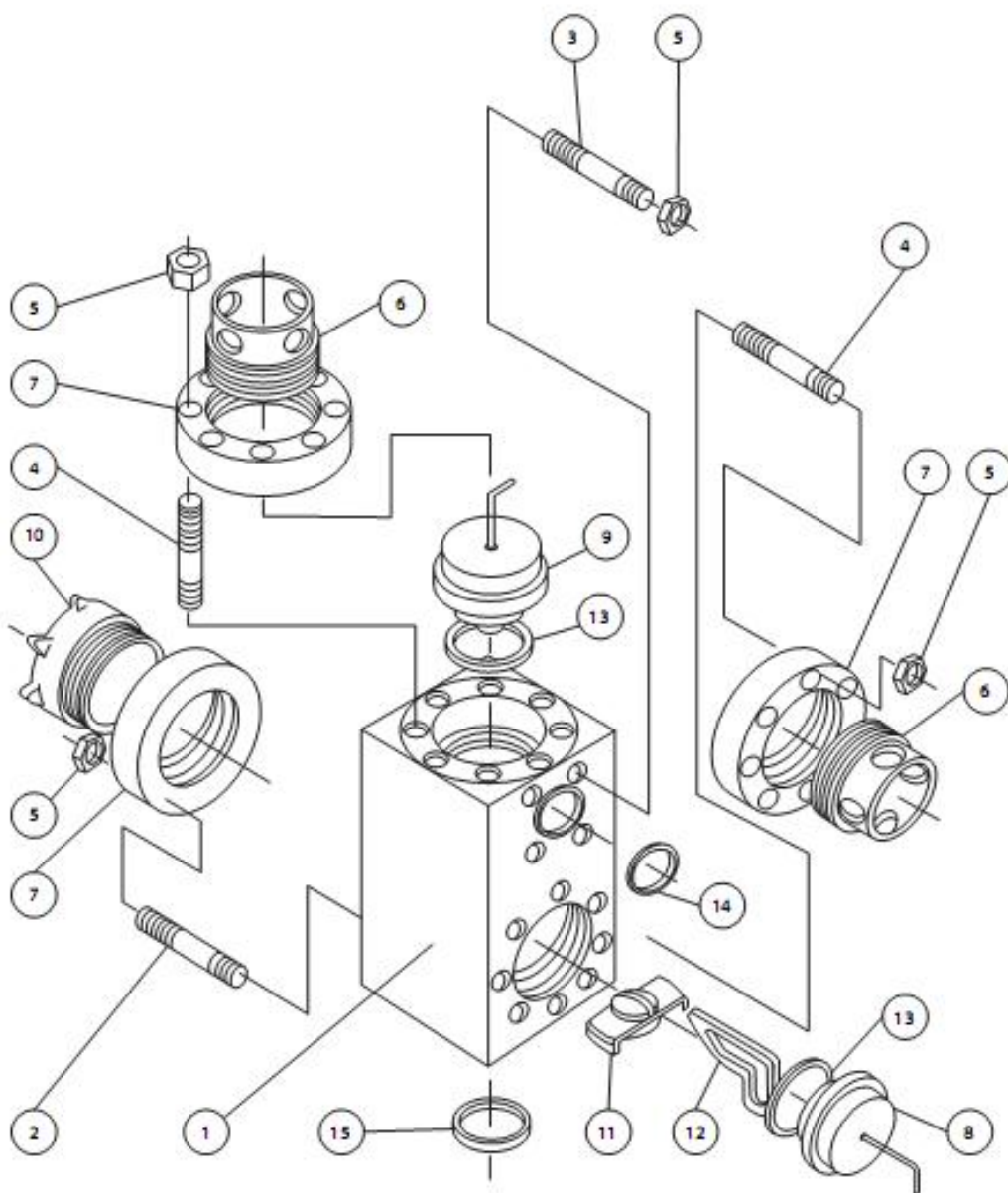
Jinan Longchao Petroleum Machinery Co.,Ltd

Item	OEM P/N	Description	Qty.
1	551-458	Fluid Mouldle Only	3
2	551-410-01	Stud	24
3	551-410-02	Stud	12
4	551-410-03	Stud	48
5	IN-416	Nut	84
6	551-405-04	Threaded Plug Retainer	6
7	551-405-03	Threaded Ring	9
8	551-422-02	Cylinder Head Plug	3
9	551-422-03	Cylinder Head Plug (Top)	3
10	551-405-05	Threaded Liner Retainer	3
11	551-405-07	Lower Valve Cover	3
12	551-422-04	Lower Valve Guide Retainer	3
13	BMT-1669-63-09	Plug & Liner Seal	9
14	IO-548	Seal, Discharge	3
15	IO-521	Seal, Suction	3
16	4110-44	Liner 4-1/2"	3
17	4110-50	Liner 5"	3
18	4110-54	Liner 5-1/2"	3
19	4110-60	Liner 6"	3
20	4110-64	Liner 6-1/2"	3
21	4110-70	Liner 7"	3
22	012180196	Piston 4-1/2"	3
23	012180253	Piston 5"	3
24	012180337	Piston 5-1/2"	3
25	012180394	Piston 6"	3
26	012180535	Piston 6-1/2"	3
27	012180618	Piston 7"	
28	9700250	Valve Full Open 7FO-V1	6
29	9702504	Seat 7S1	6
30	HD7I	Valve Insert	6
31	060155041	Valve Cross arms	6
32	061101507	Seat Cross arms	6
33	UDD7B	Valve Insert	6
34	1551715	Piston rod	3
35	PPT604130	Clamp	3
36	07913081	Pony rod	3

IDECO

T800/1000

IDECO T-500 | T-800 | T-1000



Jinan Longchao Petroleum Machinery Co.,Ltd

Item	OEM P/N	Description	Qty.
1	551-458	Fluid Module Only	3
2	551-410-01	Stud	24
3	551-410-02	Stud	12
4	551-410-03	Stud	48
5	IN-416	Nut	84
6	551-405-04	Threaded Plug Retainer	6
7	551-405-03	Threaded Ring	9
8	551-422-02	Cylinder Head Plug	3
9	551-422-03	Cylinder Head Plug (Top)	3
10	551-405-05	Threaded Liner Retainer	3
11	551-405-07	Lower Valve Cover	3
12	551-422-04	Lower Valve Guide Retainer	3
13	BMT-1669-63-09	Plug & Liner Seal	9
14	IO-548	Seal, Discharge	3
15	IO-521	Seal, Suction	3
16	4111-44	Liner 4-1/2"	3
17	4111-50	Liner 5"	3
18	4111-54	Liner 5-1/2"	3
19	4111-60	Liner 6"	3
20	4111-64	Liner 6-1/2"	3
21	4111-66	Liner 7"	3
22	012180196	Piston 4-1/2"	3
23	012180253	Piston 5"	3
24	012180337	Piston 5-1/2"	3
25	012180394	Piston 6"	3
26	012180535	Piston 6-1/2"	3
27	012180618	Piston 7"	3
28	9700285	Valve Full Open 6FO-V1	6
29	9702547	Seat 6S6	6
30	HD6I	Valve Insert	6
31	060152808	Valve Cross arms	6
32	061102653	Seat Cross arms	6
33	9700285	Valve Insert	6
34		Piston rod	3
35		Clamp	3
36		Pony rod	3

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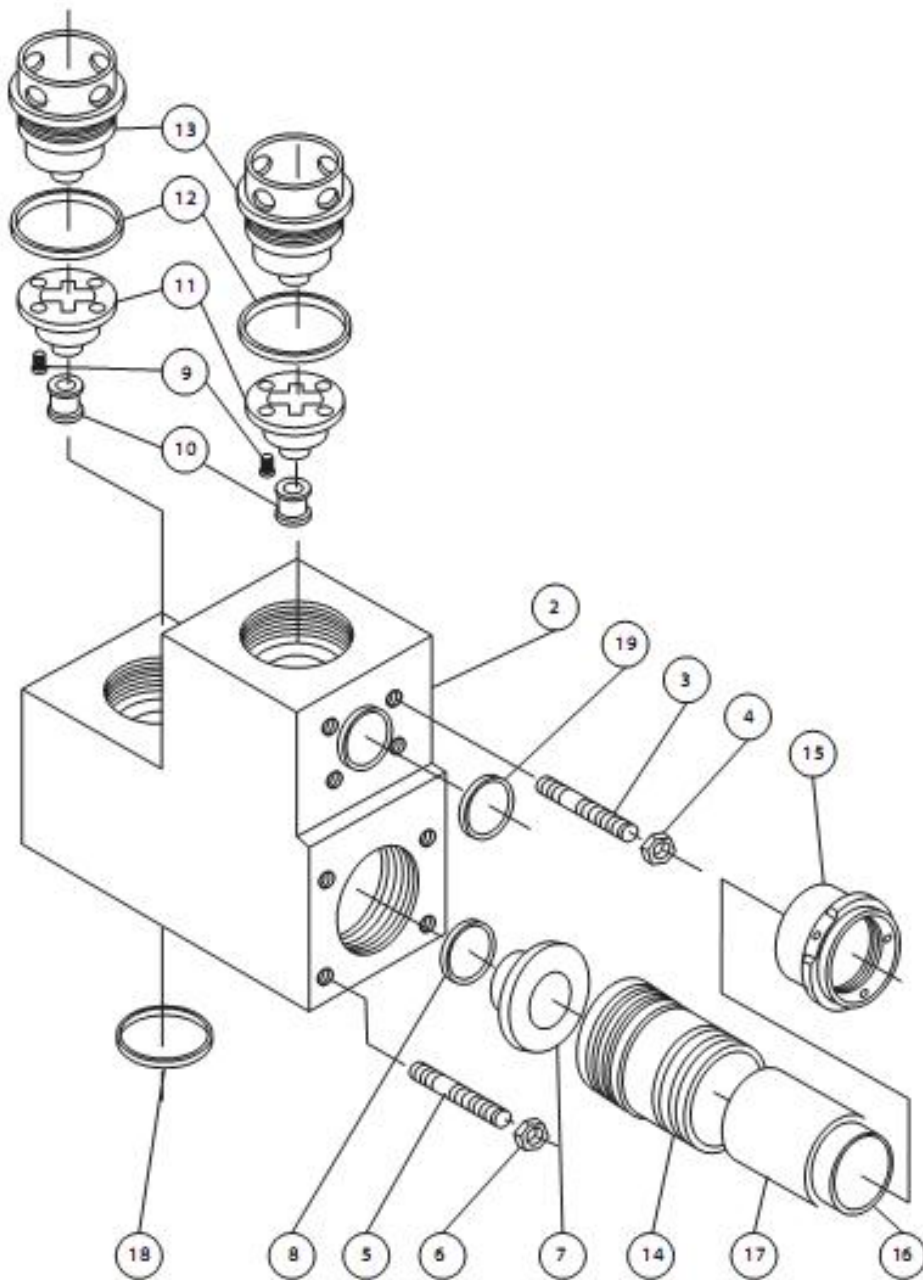
Email: mudpumpparts@outlook.com

www.lcrigparts.com

OILWELL

A850/1100/1400/1700PT

OILWELL A-850-PT | A-1100-PT | A-1400-PT | A-1700-PT



OILWELL

A850/1100/1400/1700PT

Item	P/N	Description	Qty.
1	0-10-300-181	Discharge Module Studded, (incl. Items 2-6)	3
2		Discharge Module, Only	3
3	0-49-001-292	Stud, 1 3/8 - 8 X 4 1/2	12
4	0-75-511-754	Nut, Hvy. Hex 1 3/8 - 8	12
5	0-49-002-837	Stud, 1 3/4 - 8 X 7 1/2	12
6	0-75-510-126	Nut, 1 3/4 - 8 Hvy. Hex	12
7	0-10-300-184	Wear Plate, Liner	6
8	0-20-100-008	Gasket, Liner Wear Plate	6
9	0-75-632-234	Cap Screw, Self Locking	24
10	0-20-200-004	Bushing, Valve Guide	6
11	0-10-300-004	Valve Guide	6
12	0-10-300-011	Gasket, Valve Cover	6
13	0-10-300-005	Valve Cover	6
14	0-10-300-183	Liner Adapter	3
15	0-10-303-092	Nut, Liner Adapter (A850-PT, A1100-PT only)	3
	0-10-300-182	Nut, Liner Adapter (A1400-PT, A1700-PT only)	3
16	0-10-300-185	Spacer Ring, Liner	3
17	0-10-303-091*	*Centering Sleeve, Liner (A850-PT, A1100-PT only)	3
	0-10-300-186**	*Centering Sleeve, Liner (A1400-PT, A1700-PT only)	3
18	0-10-300-201	Seal, Suction Manifold	3

19	0-99-609-345	Seal,Discharge Manifold	3
		A850/1100PT	
20	6127-50	Liner 5"	3
21	6127-54	Liner 5-1/2"	3
22	6127-60	Liner 6"	3
23	6127-64	Liner 6-1/2"	3
24	6127-66	Liner 6-3/4"	3
		A1400/1700PT	
20	6132-50	Liner 5"	3
21	6132-54	Liner 5-1/2"	3
22	6132-60	Liner 6"	3
23	6132-64	Liner 6-1/2"	3
24	6132-66	Liner 6-3/4"	3
	6132-70	Liner 7"	3
25	012180196	Piston 4-1/2"	3
26	012180253	Piston 5"	3
27	012180337	Piston 5-1/2"	3
28	012180394	Piston 6"	3
29	012180535	Piston 6-1/2"	3
30		Piston 6-3/4"	3
	012180618	Piston 7"	
31	9700250	Valve Full Open 7FO-V1	6
32	9702504	Seat 7S1	6
33	HD7I	Valve Insert	6
34	060155041	Valve Cross arms	6
35	061101507	Seat Cross arms	6
36	UDD7B	Valve Insert	6
37	20150123	Piston rod	3
38	PP601020	Clamp	3
39	10300142	Pony rod	3
40	20150125	Sub Rod	3

Note: All Piston rubbers and Valve inserts quoted are high quality items.