

V1 Series Full Open Valves

- 7500 PSI, 200° F Temperature Rating
- Urethane elastomer provides excellent abrasion resistance and high solids performance.
- Top backing plate design increases valve/insert life, prevents separation.
- Replaceable Inserts
- Forged alloy construction, carburized and heat treated for long run life.
- High performance valve for most drilling applications up to 200F.



V1H Series Hi-Temp Full Open Valves

- 7500 PSI, 300° F Temperature Rating
- High performance valve for mud temps from 180F to 300F, and/or Brine based applications.
- Top backing plate design increases valve/insert life, prevents separation.
- Replaceable Inserts
- Forged alloy construction, carburized and heat treated for long run life.
- Excellent performance in higher temperature oil, synthetic and water based mud applications.



V2B & V2BH Series Bonded Full Open Valves

- 7500 PSI Pressure Rated
- Available in both Standard and Hi-Temp applications as above.
- Bonded design provides increased elastomer cycle life over V1 design.
- Top backing plate design increases valve life, prevents debonding or wash separation.
- Forged alloy construction, carburized and heat treated for long run life.



TS Series Full Open Seats

- Premium Performance Seat, forged alloy construction.
- Carburized for excellent durability - up to 20% harder than some other brands for extended run life, reducing pump operation costs.
- Precision machined and ground tapers ensuring consistent and proper seating.
- Large metal-to-metal bearing area extends both valve & seat life.



LLU Series Dual-Duro Pistons

- 7500 PSI, 225° F Temperature Rating
- Dual Durometer Polyurethane compound for excellent abrasion resistance and high solids.
- Long run life for most drilling applications up to 225F.
- Excellent resistance to abrasion, extrusion and tearing.
- Good chemical resistance.
- Very good all-around performance for oil based & synthetic based drilling muds.
- Made in the USA



HPW Series High Temp Pistons

- 7500 PSI, 300° F Temperature Rating
- High temp compound specially formulated for mud temps from 180F to 300F.
- For use in all Oil, Synthetic and Water based mud applications
- Very good resistance to tearing, extrusion and abrasion.
- Good chemical resistance.
- Excellent liner wear characteristics in both Zirconia & Chrome liners.
- Made in the USA



LL Series Pistons

- 7500 PSI, 225° F Temperature Rating
- Recommended for Brine and/or pure water based mud applications.
- Premium Nitrile compound provides good performance for temps up to 200F.
- Good resistance to tearing, extrusion and abrasion.
- Good chemical resistance.
- Made in the USA



General Guidelines/ Best Performance Recommendations

Piston compounds have to balance properties of abrasions resistance, extrusion/tearing and temperature. Typically increasing ability in one area reduces the capability in another. The following chart is a general guideline for best performance by application. All TSC Pistons are manufactured in the USA, and QA/QC batch serial numbered.

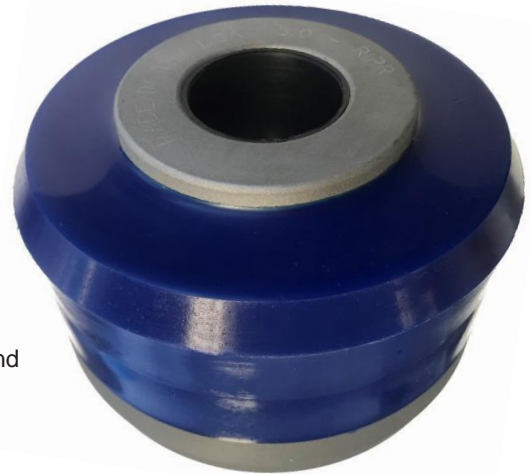
LLU Pistons / V1 Valves	HPW Pistons / V1H Valves	LL Pistons / V1H Valves
Oil/Synthetic Based Drilling Mud Can be used in water-based mud. Mud Temps less than 180F From low to high LGS/HGS Solids	Oil, Synthetic or Water Based Drilling Mud Some Brine applications Mud Temps more than 180F From low to moderate LGS/HGS Solids	Heavy Brine or Water Based Drilling Mud Straight water applications Mud Temps up to 220F From low to moderate LGS/HGS Solids

HTC Series Piston

CWi offers our HTC Bullnose piston for the harshest of Canadian drilling conditions. Based on the features and benefits of the bull nose Patriot HT™, our HTC piston is specifically designed to handle increased temperatures and pressures for use in Oil, Synthetic and Water based drilling mud. With a proprietary compound blend with lubrication additives, reduces surface friction and liner wash temperature loads – to increase both piston and liner life. Designed for use in both our Hi-Chrome and Zirconia liners.

Features:

- Extreme service, high performance bull nose piston.
- 7500 PSI, 325° F Temperature Rating
- Designed for Oil, Synthetic and Water based drilling muds.
- Resistant to high pressure, abrasion, heat and extrusion.
- Based on the successful Patriot HT™ with higher heat capacity, and a proprietary blend of lubricating agents for increased piston life.
- Made in the USA



Part Number	Size	Description
UB-44-3-HTC	4-1/2"	HTC 4-1/2" High Temp Urethane Piston
UB-50-3-HTC	5"	HTC 5" High Temp Urethane Piston
UB-54-3-HTC	5-1/2"	HTC 5-1/2" High Temp Urethane Piston
UB-60-3-HTC	6"	HTC 6" High Temp Urethane Piston
UB-64-3-HTC	6-1/2"	HTC 6-1/2" High Temp Urethane Piston
UB-70-3-HTC	7"	HTC 7" High Temp Urethane Piston

HP Hard Chrome

TSC Hard Chrome Liners are manufactured from forged housings, with hard chrome sleeves utilizing a "HP" lip design to prevent any movement or slipping. TSC utilizes molybdenum to increase the surface hardness depth, providing increased life and wear characteristics. Precision QA/QC machined and API certified, TSC Chrome mud pump liners provide unsurpassed value, quality and reliability. Locally supported and available in a wide range of sizes for most common pump models used today.

Features:

- Forged Body, Hard Chrome sleeve
- Molybdenum added to increase hardness depth.
- "HP" lip design to prevent inner sleeve movement or slippage.
- Surface hardness of 62-69 Rockwell
- Solid performance and reliability, TSC proven quality.



HP Zirconia Ceramic

TSC's Zirconia liners significantly longer service life and reduce total operational liner/piston costs with better performance over chrome liners, or other ceramic liners made of more commonly "alumina ceramic". TSC's zirconia liner is a proprietary Zirconium-based matrix that has significantly improved mechanical characteristics with increased wear and impact resistance properties. Providing reduced surface friction and significantly better heat dissipation, TSC Zirconia liners increase both piston and liner life, and are excellent suited for high temperature drilling mud applications.

Features:

- Forged Body, Zirconia sleeve.
- Honed finish to 4 RMS, Surface Hardness of 92-94 Rockwell.
- "HP" lip design to prevent inner sleeve movement or slippage.
- Increased wear and impact resistance, better heat dissipation
- Improved performance for high pressure and temperature applications.
- Extends both piston life and substantial longer liner life, reducing total consumable costs.



Replacement Shear Pins (for 2" & 3" American Block CPV or Advanced Rupture Disk)

PART #	PRESSURE (PSI)	COLOR
004895	1000	BRONZE
760756	1500	AQUA
393345	2000	LIGHT GREEN
813245	2500	GRAY
589412	3000	GOLD
635040	3500	BLACK
791664	3800	WHITE
122301	4000	DARK BLUE
272338	4500	ORANGE
425354	5000	DARK GREEN
523661	5500	YELLOW
261998	6000	RED
848612	6500	LIGHT BLUE
118400	7000	TAN
582953	7500	PINK
450182	8000	SILVER
111374	8500	FUCHSIA
584833	9000	BROWN
195800	9500	OLIVE
198533	10000	PURPLE



Field Repair Kits

For 3" Relief Valves (American Block or Rupture Pin)

Seal Kit (Orings & seals)

Items: 14,17,18,19,20,21,22,23

Part Number: 45013000

Major Repair Kit (includes above, plus piston & spool)

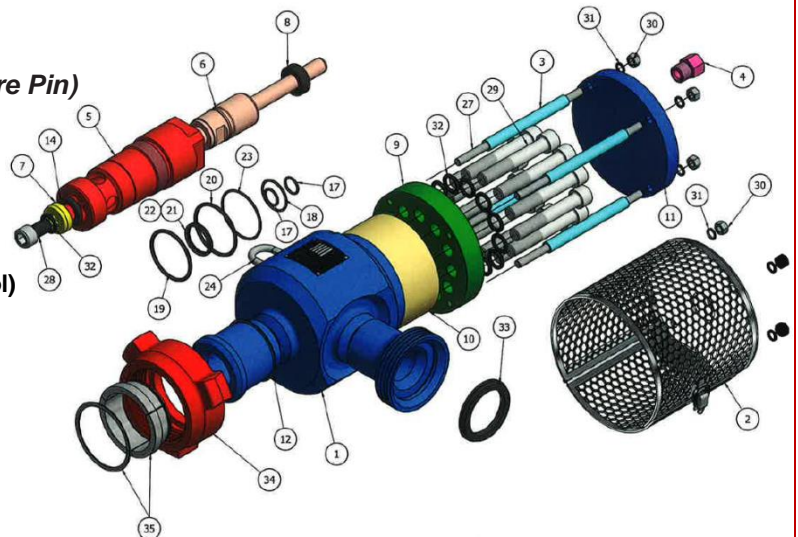
Items: 14,17,18,19,20,21,22,23 + 5,6,7,8

Part Number: 45013100

Piston Assembly Kit (Piston & Piston seals only)

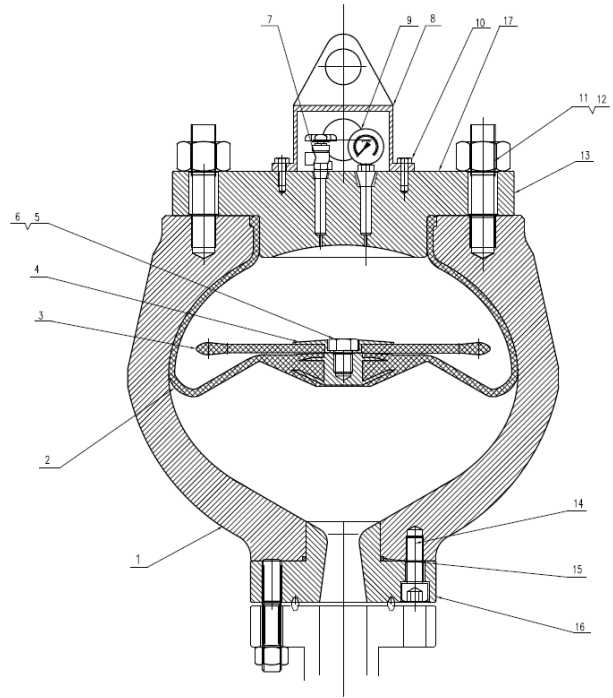
Items: 6,7,14,21,22

Part Number: 45013300



Common Replacement Parts

	For	Part #
Urethane Bladder	PD55	TS-6922-0003-00U
	K-20	TS-1005208-U
Nitrile Bladder	PD55	TS-6922-0003-00N
	K-20	TS-1005208-N
Stabilizer	K-20	1005213
Charge Valve	All 5000PSI	TS-1930914-01
	All 7500PSI	TS-1930914-02
Replacement Relief Plugs	5833PSI	P625-19N9H55
	8333PSI	P625-19N9H78



K20 Series Pulsation Dampener

Item #	Description	7500PSI	5000PSI
		Part Number	Part Number
1	Compelte Dampener	TS-K20-75	TS-K20-50
2a	Bladder, Urethane	TS-1005208-U	TS-1005208-U
2b	Bladder, Nitrile	TS-1005208-N	TS-1005208-N
3	Stabilizer	1005213	1005213
4	Stablizer Plate w/bolt & washer	0602-8111-0521-40	0602-8111-0521-40
5	Bolt	UBL1-316-008-0012	UBL1-316-008-0012
6	Washer	UWS2-116-AH3	UWS2-116-AH3
7	Charge Valve w/Relief Plug	TS-1930914-02	TS-1930914-01
7a	Relief Plug	P625-19N9H78	P625-19N9H55
8	Cover	ZD-HK20-006A	ZD-HK20-006A
9	Liquid Filled Gauge	5500048	5500048
10	Cover Bolt	UBL1-308-013-0012	UBL1-308-013-0012
11	Top Flange Nut	UNTC-130-308	XL-QD-10
12	Top Flange Stud	ZD-HK20-011A	XL-QD-011
13	Top Flange	ZD-HK20-005BA	XL-QD-002
14	Bottom Flange Bolt	UBL3-320-012-0020	ZL-QD-014
15	Flange Seal	5600071	5600071
16	Bottom Flange	ZD-HK20-004BA	XL-QD-003



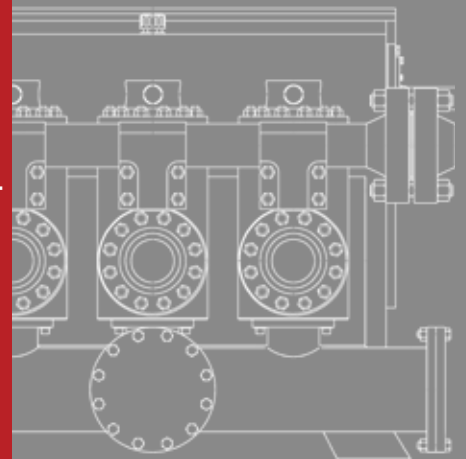
F-1600 SOUTHWEST 7500PSI TSC MUD PUMP EXPENDABLES

Consumables

Parts

Service Bulletins

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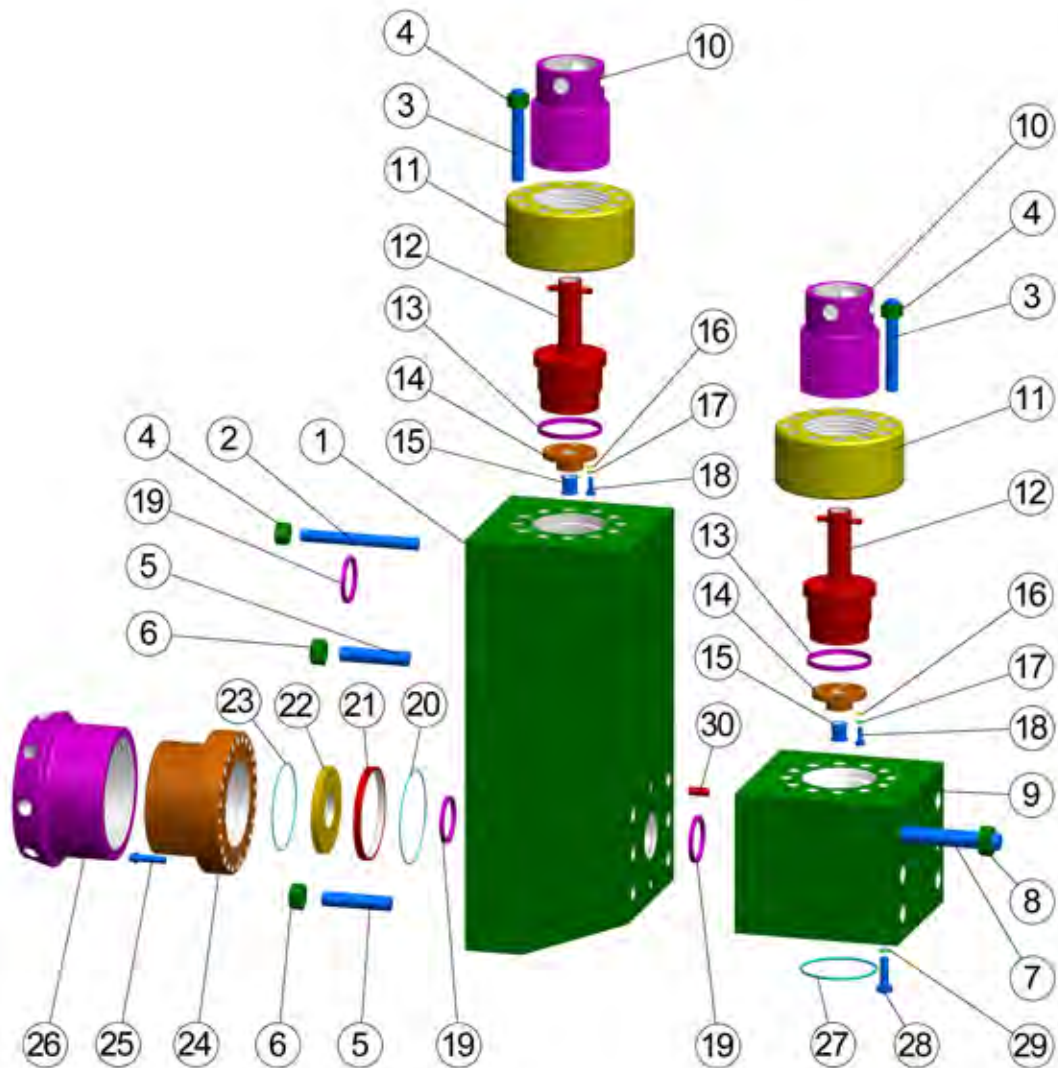
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FLUID END MODULE & ACCESSORIES

SOUTHWEST F-1600SW (7500 PSI) TSC Manufacturing and Supply, LLC.



USA: TSC Manufacturing and Supply LLC, Houston, Texas 77041, USA, PH+1 832 456 8900
 Canada: CW Industrial, 104-3921-81 Ave, Leduc, Alberta T9E 8S6 Canada PH +1 780 986 9695

FLUID END MODULE & ACCESSORIES

SOUTHWEST HHF-1600 (7500 PSI)

ITEM	PART NUMBER	DESCRIPTION	QTY/PUMP
	TS-8404-25A	FLUID END MODULE COMPLETE ASSEMBLY (INCLUDES ITEM 1-30)	3
1	TS-8404-27U	DISCHARGE MODULE ONLY	3
2	TS-4019-60	STUD, DISCHARGE MANIFOLD	18
3	TS-4015-2	STUD, THREADED RING	72
4	TS-50B36	NUT (FOR ABOVE)	90
5	TS-4017-33	STUD, FLUID CYLINDER TO FRAME	30
6	TS-7601-0630-17	NUT, FRAME STUD	30
7	TS-4019-61	STUD, DISCHARGE MODULE TO SUCTION MODULE	18
8	TS-6300281	NUT, DISCHARGE MODULE TO SUCTION MODULE STUD	18
9	TS-8404-26U	SUCTION MODULE ONLY	3
10	TS-4588-25	CAP, VALVE COVER(THREADED)	6
11	TS-4488-25	RING, THREADED	6
12	TS-4690-25	COVER, VALVE POT	6
13	P-115U	SEAL, VALVE POT COVER	6
14	TS-4788-25	VALVE GUIDE	6
15	TS-4700-I	BUSHING, GUIDE	6
16	600599-001064	WASHER, VALVE GUIDE	12
17	600599-000026	SPRING WASHER, VALVE GUIDE	12
18	TS-4016-99	SCREW, VALVE GUIDE	12
19	TS-2988U	SEAL, DISCHARGE MANIFOLD & DISCHARGE TO SUCTION MODULE & WEAR PLATE	9
20	PF-7496-272	O-RING, WEAR PLATE(OUTER)	3
21	TS-8727-53-BJO	WEAR PLATE(OUTER)	3
22	TS-8727-53-BJI	WEAR PLATE(INNER)	3
23	760101-000218	O-RING, WEAR PLATE(INNER)	3
24	TS-6490-25	LINER LOCK	3
25	TS-4019-51	FLANGE 12-POINT SCREWS, LINER LOCK	72
26	TS-6590-25	RING, LINER THREADED	3
27	TS-7602-1600-61	O-RING, SUCTION MANIFOLD	3
28	TS-700048511	SCREW, SUCTION MANIFOLD	18
29	600599-001007	SPRING WASHER, SUCTION MANIFOLD	18
30	TS-6511416	DOWEL PIN	6

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SOUTHWEST

HHF-1600 (7500 PSI)

7-1/2 x 12

LINERS		ZIRCONIA LINERS	LINER GASKETS	PISTONS				PISTON RUBBERS
SIZE	PART NUMBER	PART NUMBER	PART NUMBER	URETHANE BONDED	RUBBER BONDED	N'DURALL BONDED	REPLACEABLE RUBBER	PART NUMBER
4"	TS-0259-40HP	TS-07466400	G-265 *	LLU-40-K15	LL-40-K15	HPW-40-K15	I-40-K15	TM-40-KR
4 1/2"	TS-0259-44HP	TS-07466450	G-265 *	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR
5"	TS-0259-50HP	TS-07466500	G-265 *	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR
5 1/2"	TS-0259-54HP	TS-07466550	G-263 *	LLU-54-B15	LL-54-B15	HPW-54-B15	I-54-B15	TM-54-BR
5 3/4"	TS-0259-56HP	TS-07466575	-	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR
6"	TS-0259-60HP	TS-07466600	G-261 *	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR
6 1/4"	TS-0259-62HP	TS-07466625	G-283 *	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR
6 1/2"	TS-0259-64HP	TS-07466650	G-284 *	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
6 3/4"	TS-0259-66HP	TS-07466675	G-287 *	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR
7"	TS-0259-70HP	TS-07466700	G-285 *	LLU-70-L15	LL-70-L15	HPW-70-L15	I-70-L15	TM-70-LR
VALVES, SEATS, SPRINGS						GASKETS		
		FULL OPEN	FULL OPEN (BONDED)	4 WEB DESIGN				PART NUMBER
VALVE (High Performance)		TS-6-V1	TS-6-V2B	TS-6-EH		VALVE COVER GASKET		P-115U
VALVE (High Temperature)		TS-6-V1H	TS-6-V2BH	TS-6-EH-H		EXTENSION ROD SEAL		TS-7602-2132-76
						EXTENSION ROD BAFFLE		TS-6316-0093-00
SEAT		TS-6-S4	TS-6-S4	TS-6-ADDB4		WEAR PLATE GASKET		TS-2988U
SPRING		TS-5710-115	TS-5710-115	TS-5710-115		2PC WEAR PLATE (Inner)		TS-8727-53-BJI
INSERT (Urethane)		TS-6-FI	-	TS-6-WI		WEAR PLATE ORING(Inner)		760101-000-218
INSERT (Hi Temp)		TS-6-FIH	-			2PC WEAR PLATE (Outer)		TS-8727-53-BJO
PULLER HEAD		TS-RND6	TS-RND6	TS-HP1700-6		WEAR PLATE ORING(Outer)		PF-7496-272
PISTON ROD & EXTENSION ROD								
ROD CLAMP	PISTON NUT	PISTON SUB ROD FRONT	PISTON SUB ROD BACK	PISTON ROD STUD	PISTON ROD 1-PIECE	EXTENSION ROD		
TMFB6-03-08	TM-NUT	TS-6278-25	TS-6284-1	TS-1290-2	TM-2145	TMFB6-01-06		
FLUID END MODULE								
SUCTION MODULE STUDD	DISCHARGE MODULE STUDD		MODULE SEAL SET		STUDS & NUTS SET			
TS-8404-26	TS-8404-27		TMSWF16HP-SEALKIT		TMSWF16HP-STUDSETD TMSWF16HP-STUDSETS			

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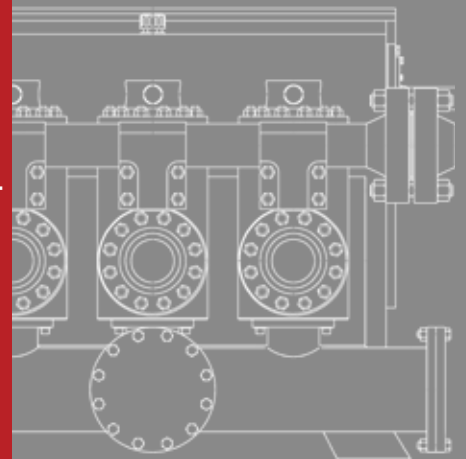
TSC MUD PUMP EXPENDABLES HH1600 w/OEM 7500PSI

Pump Consumables

Parts

Service Bulletins

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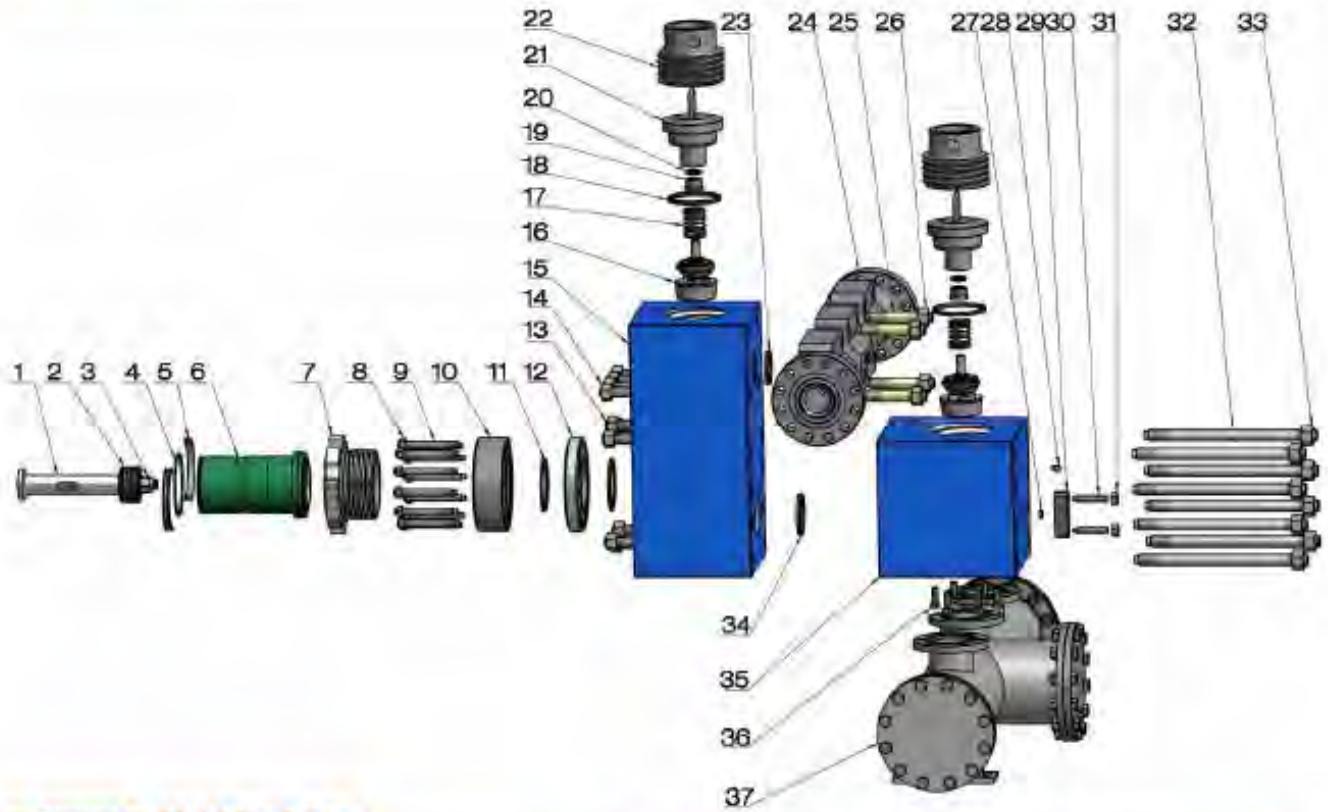
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FLUID END MODULE & ACCESSORIES

HHF-1600HL (7500 PSI) OEM FLUID END MODULE PARTS

Fluid End



F-1600HL Fluid End Assy



PUMP PARTS/CONSUMABLE REFERENCE - HHF1600HL OEM 7500PSI

Item#	Part Number #	Description	Qty
4	200*7.0G	O Ring	
5	11-3161-0520	Lock Ring	
7	TS-6316-0367-00	Liner Retainer/Lock Nut	
8	TS-7601-0610-18	Liner Flange Nut	
9	TS-7507-2013-00	Liner Flange Stud	
10	TS-6316-0366-00	Liner Retainer Flange	
12	TS-6316-0365-00	Wear Plate	
13	TS-7601-0630-17	Power End Nut	
14	TS-7507-2201-00	Power End Stud	
18	NB2200G.05.37 ORG	Valve Cover Gasket (Gen 1, Non-Locking)	
19	NB2200G.05.34	Valve Guide	
20	NB2200G-05.36	Cushion	
21	NB2200G-05.01.00	Valve Plug Assy	
22	NB2200G.05.03	Valve Cover (Gen 1, Non-Locking)	
23	NB2200G.05.04	Discharge Manifold Gasket	
24	NB1600M-01.02.00H	Discharge Manifold	
25	NB1600M-01.06.02H	Discharge Manifold Stud	
26	NB1600M-01.06.03H	Discharge Manifold Nut	
27	NB2200G-05.38.02	Pressure Plate Seal	
28	NB2200G-05.35	90Deg 3/8 Fitting	
29	NB2200G-05.38.03	Pressure Plate	
30	NB1600M.01.01.02H	Stud	
31	NB1600M.01.01.03H	Nut	
32	NB1600M-01.06.04	Suction Module Stud	
33	NB1600M-01.06.05	Suction Module Nut	
34	NB2200G.05.28	Module Seal/Gasket	
	190*7.0G	Suction Manifold O-Ring 190*7.0G	
Rods/Clamps			
	TMFB6-03-08	Rod Clamp	
3	TM-NUT	Piston Rod Nut	
1	TM-2145	Piston Rod	
	TMFB6-01-06	Pony/Extension Rod	
	TS-7602-2132-76	F1600 Pony Rod Seal	
Pistons			
	LLU-44-B15	Piston, 4-1/2" HP Urethane Bonded	
	LLU-50-B15	Piston, 5" HP Urethane Bonded	
	LLU-54-B15	Piston, 5-1/2" HP Urethane Bonded	
	LLU-60-B15	Piston, 6" HP Urethane Bonded	
	LLU-64-L15	Piston, 6-1/2" HP Urethane Bonded	
	LLU-70-L15	Piston, 7" HP Urethane Bonded	
	HPW-44-B15	Piston, 4-1/2" Endurance Bonded High Temp	
	HPW-50-B15	Piston, 5" Endurance Bonded High Temp	
	HPW-54-B15	Piston, 5-1/2" Endurance Bonded High Temp	
	HPW-60-B15	Piston, 6" Endurance Bonded High Temp	
	HPW-64-L15	Piston, 6-1/2" Endurance Bonded High Temp	
	HPW-70-L15	Piston, 7" Endurance Bonded High Temp	
Valves/Seats/Springs			
16	TS-7-S1	Seat, Valve API 7 RN Full Open	
17	TS-5710-115L	Spring, Valve #115 (White)	
23	TS-7-V1	Valve, API 7, HP Full Open	
	TS-7-V1-H	Valve, API 7, HP Full Open, High Temp	
	TS-7-V2B	Valve, API 7, Full Open, Bonded HP	
	TS-7-FI	Replacement Valve Insert, Standard HP	
	TS-7-FIH	Replacement Valve Insert, Hi-Temp	
Liners / Gaskets			
	TS-2145-44HP	Liner 7500PSI 4-1/2"	
	TS-2145-50HP	Liner 7500PSI 5"	
	TS-2145-54HP	Liner 7500PSI 5-1/2"	
	TS-2145-60HP	Liner 7500PSI 6"	
	TS-2145-64HP	Liner 7500PSI 6-1/2"	
	TS-2145-70HP	Liner 7500PSI 7"	
11	G-800U	Liner Gasket 4" to 7"	
Other/Notes			



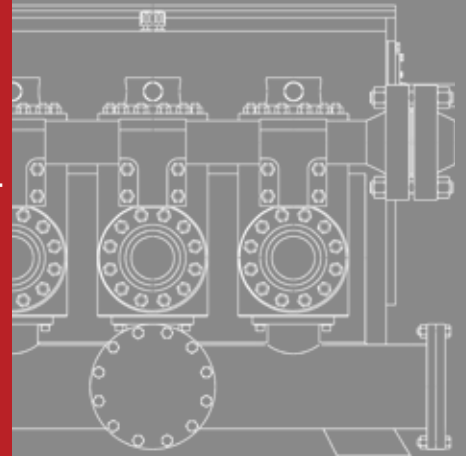
GD PZ-11 (PXL-HP) - 7500PSI MUD PUMP CONSUMABLES

Consumables

Parts

Service Bulletins

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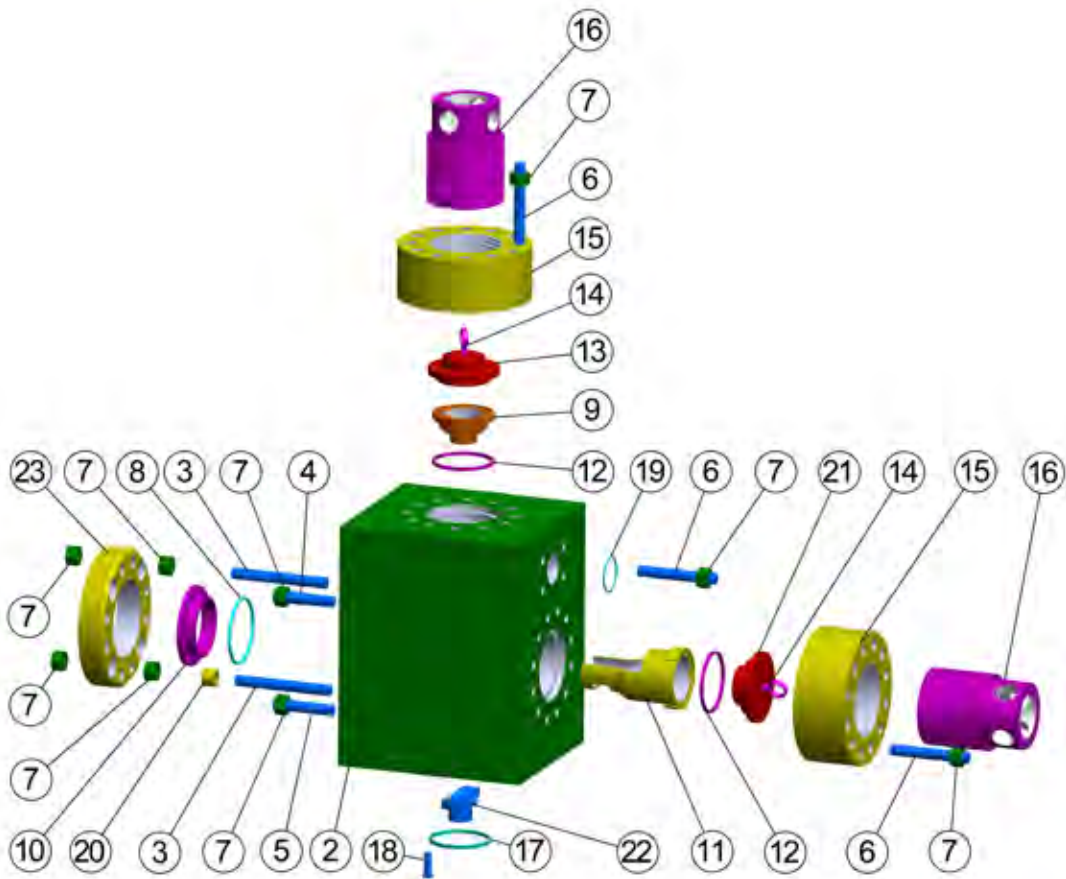
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FLUID END MODULE & ACCESSORIES

GARDNER DENVER PZ-11 HP (PZL) (7500PSI) TSC Manufacturing and Supply, LLC.



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FLUID END MODULE & ACCESSORIES

GARDNER DENVER PZ-11 HP (PZL) (7500PSI)

ITEM	PART NUMBER	DESCRIPTION	QTY/PUMP
	TS-FEMPZ101175CA	FLUID END MODULE COMPLETE ASSEMBLY (INCLUDES ITEM 2-23)	3
1	TS-300PZL2039	FLUID END MODULE STUDDED (INCLUDES ITEM 2-9)	3
2	TS-300PZL029	FLUID END MODULE ONLY	3
3	TS-302PZL110	STUD, LINER CLAMP	36
4	TS-300PZL110	STUD, FLUID CYLINDER TO FRAME ALIGNMENT(UPPER)	6
5	TS-303PZL110	STUD, FLUID CYLINDER TO FRAME (LOWER)	6
6	TS-301PZL110	STUD,THREADED RING & DISCHARGE MANIFOLD	84
7	TS-50B36	NUT (FOR ABOVE)	168
8	TS-303PZL316	SEAL, WEAR PLATE	3
9	TS-302PZL483	GUIDE, VALVE (UPPER)	3
10	TS-301PZL234	WEAR PLATE	3
11	TS-301PZL205	RETAINER, VALVE GUIDE	3
12	TS-309PZL316	SEAL, CYLINDER HEAD & VALVE COVER	6
13	TS-302PZL147	COVER, VALVE(UPPER)	3
14	TS-15P27	EYE BOLT	6
15	TS-300PZL387	RING, THREADED	6
16	TS-300PZL587	COVER LOCK	6
17	TS-25BE41	GASKET, SUCTION MANIFOLD	3
18	TS-655EG10N	SCREW, SUCTION MANIFOLD	24
19	TS-302PZL316	GASKET, DISCHARGE MANIFOLD	3
20	TS-300PZL229	BUSHING	12
21	TS-303PZL147	COVER, VALVE(LOWER)	3
22	TS-303PZL483	GUIDE, VALVE (LOWER)	3
23	TS-300PZL455	LINER CLAMP	3
24	TMPZ11HP-STUDSET	PZ-11 HP STUDS AND NUTS SET (INCLUDES 12 PCS TS-302PZL110, 2 PCS TS-300PZL110, 2 PCS TS-303PZL110, 56 PCS TS-50B36, 28 PCS TS-302PZL110)	3
25	TMPZ11HP-SEALKIT	PZ-11 HP MODULE SEAL KIT (INCLUDES TWO TS-309PZL316, ONE TS-303PZL316, ONE TS-25BE41, ONE TS-302PZL316)	3

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Any deviations from the OEM products should be verified as to compatibility.

Sales/Inquiries: USA

TSC Manufacturing and Supply LLC, 13788 West Road, Suite
100, Houston, Texas 77041, USA
Tel: +1 832 456 3900

Sales/Inquiries: Canada

CW Industrial, #104, 3921-81 Ave Leduc,
Alberta, T9E8S6, Canada
Tel: +1 780 986 9695 E-Mail: sales@cw-industrial.net

GARDNER DENVER

PZ -11 HP (PZL) (7500 PSI)

7 x 11

	LINERS	ZIRCONIA LINERS	LINER GASKETS	PISTONS				PISTON RUBBERS
SIZE	PART NUMBER	PART NUMBER	PART NUMBER	HP URETHANE BONDED	RUBBER BONDED	HI-TEMP BONDED	REPLACEABLE RUBBER	PART NUMBER
4 1/2"	TS-1197-44HP	TS-07561450	G-756	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR
5"	TS-1197-50HP	TS-07561500	G-756	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR
5 1/2"	TS-1197-54HP	TS-07561550	G-756	LLU-54-B15	LL-54-B15	HPW-54-B15	I-54-B15	TM-54-BR
5 3/4"	TS-1197-56HP	TS-07561575	G-756	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR
6"	TS-1197-60HP	TS-07561600	G-756	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR
6 1/4"	TS-1197-62HP	TS-07561625	G-757	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR
6 1/2"	TS-1197-64HP	TS-07561650	G-757	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
6 3/4"	TS-1197-66HP	TS-07561675	G-757	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR
7"	TS-1197-70HP	TS-07561700	G-757	LLU-70-L15	LL-70-L15	HPW-70-L15	I-70-L15	TM-70-LR
VALVES, SEATS, SPRINGS						GASKETS		
		FULL OPEN	FULL OPEN (BONDED)	4 WEB DESIGN				PART NUMBER
VALVE (High Performance)		TS-6-V1	TS-6-V2BH	TS-6-EH		VALVE COVER SEAL		TS-309PZL316
VALVE (High Temperature)		TS-6-V1H	TS-6-V2BP	-		WEAR PLATE GASKET		TS-303PZL316
SEAT		TS-6-S6	TS-6-S6	TS-6-ADDB6		STD PONY ROD SEAL (2 Seal)		TS-2011872-2
SPRING		TS-5710-115	TS-5710-115	TS-5710-115		UPGR PONY ROD SEAL (3 Seal)		TS-PRSK789
INSERT (Hi Temp)		TS-6-FIH	-			EXTENSION ROD BAFFLE		TS-720-8503
INSERT (HP Urethane)		TS-6-FI	-	TS-6-WI				
INSERT (Rubber)			-	TS-6-WR				
PULLER HEAD		TS-RND6	TS-RND6	TS-HP1700-6				
PISTON ROD & EXTENSION ROD								
ROD CLAMP	PISTON ROD STUD	PISTON NUT	THREADED TYPE PISTON ROD	SUB ROD	THREADED TYPE EXTENSION ROD	CLAMP TYPE EXTENSION ROD		
TMPZ11-03-08	TS-PP1005294	TM-NUT	TS-PP1005290	TS-PP1005292	-	-		
FLUID END MODULE								
FLUID END MODULE STUDED			MODULE SEAL SET		STUDS & NUTS SET			
TS-300PZL2039OE			TMPZ11HP-SEALKIT		TMPZ11HP-STUDSSET			

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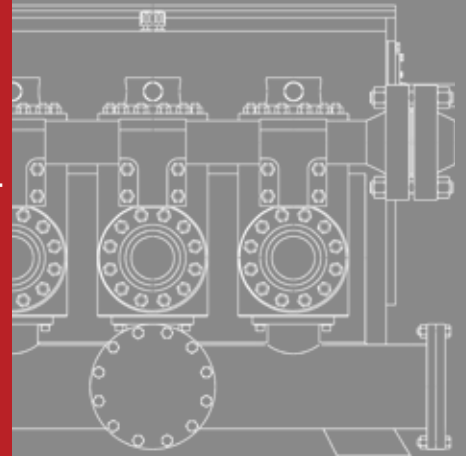




TSC WF1600LH - 7500PSI MUD PUMP CONSUMABLES

Consumables
Parts
Service Bulletins

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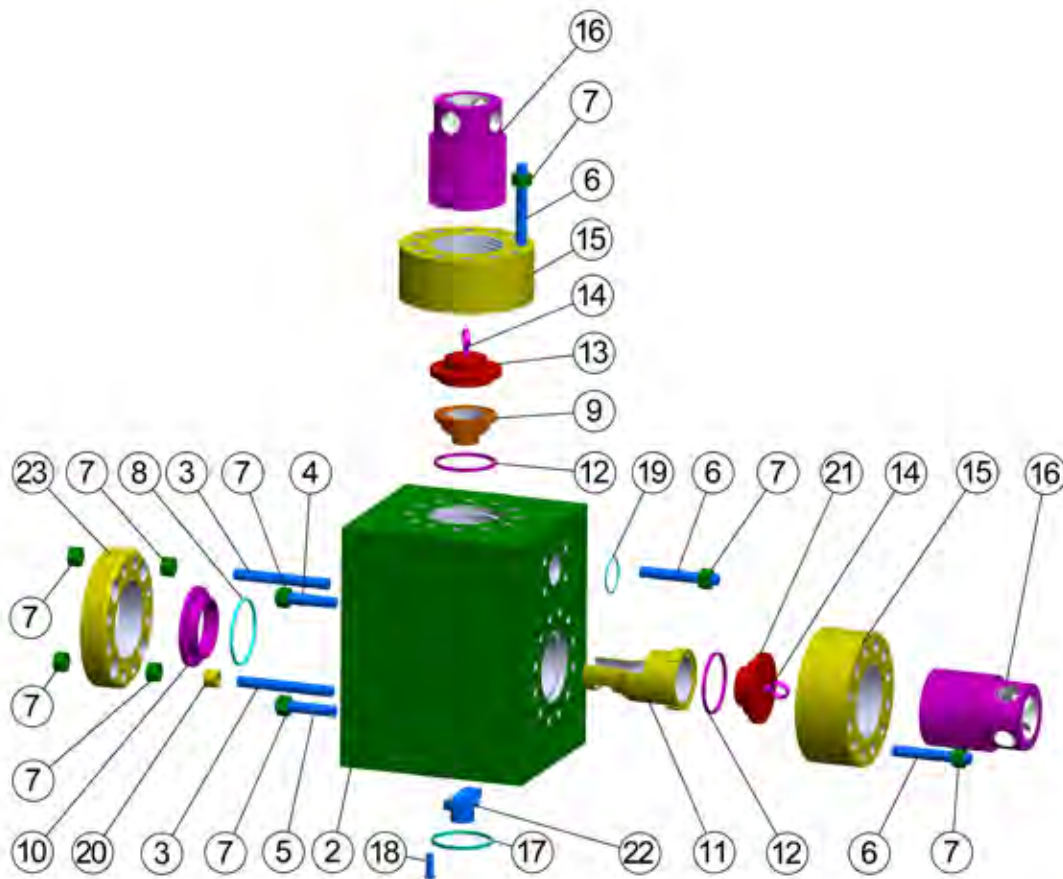
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TSC Manufacturing and Supply

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FLUID END MODULE & ACCESSORIES

TSC WF1600LH (7500 PSI) TSC Manufacturing and Supply, LLC.



USA: TSC Manufacturing and Supply LLC, Houston, Texas 77041, USA, PH+1 832 456 8900
Canada: CW Industrial, 104-3921-81 Ave, Leduc, Alberta T9E 8S6 Canada PH +1 780 986 9695



FLUID END MODULE & ACCESSORIES**TSC WF1600LH (7500 PSI)**

ITEM	PART NUMBER	DESCRIPTION	QTY/PUMP
		FLUID END MODULE COMPLETE ASSEMBLY (INCLUDES ITEM 2-23)	3
1	TS-300PZL2039OE	FLUID END MODULE STUDED (INCLUDES ITEM 2-7)	3
2	TS-300PZL029	FLUID END MODULE ONLY	3
3	TS-302PZL110OE	STUD, LINER CLAMP & DISCHARGE MANIFOLD	48
4	TS-300PZL110OE	STUD, FLUID CYLINDER TO FRAME ALIGNMENT(UPPER)	6
5	TS-303PZL110OE	STUD, FLUID CYLINDER TO FRAME (LOWER)	6
6	TS-301PZL110OE	STUD,THREADED RING	72
7	TS-50B36	NUT (FOR ABOVE)	168
8	TS-316PZL316	SEAL, WEAR PLATE	3
9	TS-302PZL483	GUIDE,VALVE (UPPER)	3
10	TS-301PZL234	WEAR PLATE	3
11	TS-301PZL205	RETAINER, VALVE GUIDE	3
12	TS-309PZL316	SEAL, CYLINDER HEAD & VALVE COVER	6
13	TS-302PZL147	COVER, VALVE(UPPER)	3
14	TS-15P27	EYE BOLT	6
15	TS-300PZL387	RING, THREADED	6
16	TS-300PZL587	COVER LOCK	6
17	TS-25G41	GASKET, SUCTION MANIFOLD	3
18	TS-UBL1-312-010-0018	SCREW, SUCTION MANIFOLD	24
19	TS-56000375	GASKET,DISCHARGE MANIFOLD	3
20	TS-300PZL229	BUSHING	12
21	TS-303PZL147	COVER, VALVE(LOWER)	3
22	TS-303PZL483	GUIDE,VALVE (LOWER)	3
23	TS-300PZL455	LINER CLAMP	3
24	TMWF1600LH-STUDSSET	PZ-11 HP STUDS AND NUTS SET (INCLUDES 12 PCS TS-302PZL110OE, 2 PCS TS-300PZL110OE, 2 PCS TS-303PZL110OE, 56 PCS TS-50B36, 28 PCS TS- 302PZL110OE)	3
25	TMWF1600LH-SEALKIT	PZ-11 HP MODULE SEAL KIT (INCLUDES TWO TS-309PZL316, ONE TS-303PZL316, ONE TS- 25G41, ONE TS56000375)	3

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TSC

WF1600LH (7500 PSI)

7 x 11

	LINERS	ZIRCONIA LINERS	LINER GASKETS	PISTONS				PISTON RUBBERS
SIZE	PART NUMBER	PART NUMBER	PART NUMBER	HP URETHANE BONDED	RUBBER BONDED	HI-TEMP BONDED	REPLACEABLE RUBBER	PART NUMBER
4 1/2"	TS-1197-44HP	TS-07561450	G-756	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR
5"	TS-1197-50HP	TS-07561500	G-756	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR
5 1/2"	TS-1197-54HP	TS-07561550	G-756	LLU-54-B15	LL-54-B15	HPW-54-B15	I-54-B15	TM-54-BR
5 3/4"	TS-1197-56HP	TS-07561575	G-756	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR
6"	TS-1197-60HP	TS-07561600	G-756	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR
6 1/4"	TS-1197-62HP	TS-07561625	G-757	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR
6 1/2"	TS-1197-64HP	TS-07561650	G-757	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
6 3/4"	TS-1197-66HP	TS-07561675	G-757	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR
7"	TS-1197-70HP	TS-07561700	G-757	LLU-70-L15	LL-70-L15	HPW-70-L15	I-70-L15	TM-70-LR
VALVES, SEATS, SPRINGS						GASKETS		
		FULL OPEN	FULL OPEN (BONDED)	4 WEB DESIGN				PART NUMBER
VALVE (High Performance)		TS-6-V1	TS-6-V2BH	TS-6-EH		VALVE COVER SEAL		TS-309PZL316
VALVE (High Temperature)		TS-6-V1H	TS-6-V2BP	-		WEAR PLATE GASKET		TS-303PZL316
SEAT		TS-6-S6	TS-6-S6	TS-6-ADDB6		STD PONY ROD SEAL (2 Seal)		TS-2011872-2
SPRING		TS-5710-115	TS-5710-115	TS-5710-115		UPGR PONY ROD SEAL (3 Seal)		TS-PRSK789
INSERT (Hi Temp)		TS-6-FIH	-			EXTENSION ROD BAFFLE		TS-720-8503
INSERT (HP Urethane)		TS-6-FI	-	TS-6-WI				
INSERT (Rubber)			-	TS-6-WR				
PULLER HEAD		TS-RND6	TS-RND6	TS-HP1700-6				
PISTON ROD & EXTENSION ROD								
ROD CLAMP	PISTON ROD STUD	PISTON NUT	THREADED TYPE PISTON ROD	SUB ROD	THREADED TYPE EXTENSION ROD	CLAMP TYPE EXTENSION ROD		
TMPZ11-03-08	TS-PP1005294	TM-NUT	TS-PP1005290	TS-PP1005292	-	-		
FLUID END MODULE								
FLUID END MODULE STUDED			MODULE SEAL SET		STUDS & NUTS SET			
TS-300PZL2039OE			TMPZ11HP-SEALKIT		TMPZ11HP-STUDSSET			

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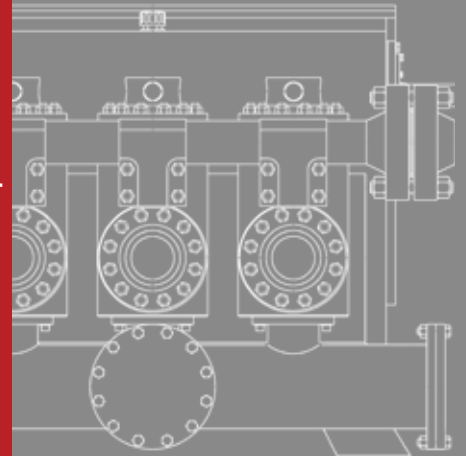




TSC WF1300/1500BH - 7500PSI MUD PUMP CONSUMABLES

Consumables
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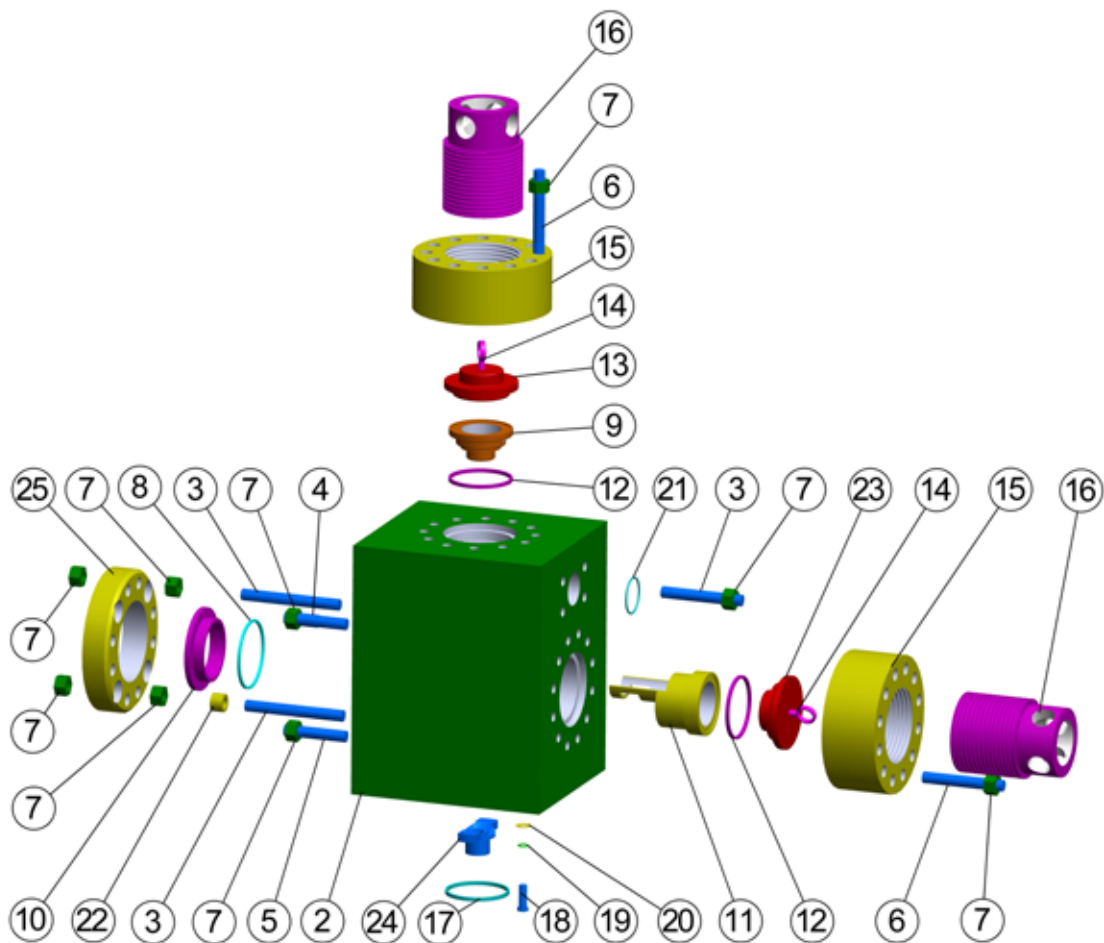
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QUICK REFERENCE FLUID END MODULE & ACCESSORIES

TSC WF1300/1500BH (7500 PSI)
TSC Manufacturing and Supply, LLC.



USA: TSC Manufacturing and Supply LLC, Houston, Texas 77041, USA, PH+1 832 456 8900
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QUICK REFERENCE FLUID END MODULE & ACCESSORIES

TSC WF1300/1500BH (7500 PSI)

ITEM	PART NUMBER	DESCRIPTION	QTY/PUMP
	TS-FEMWF1300BH75CA	FLUID END MODULE COMPLETE ASSEMBLY	3
1	030406-105-0200AS	FLUID END MODULE STUDDED	3
2	030406-105-0200A	FLUID END MODULE ONLY	3
3	TS-302PZL110	STUD, LINER CLAMP & DISCHARGE MANIFOLD	48
4	030405-105-0800A	STUD, FLUID CYLINDER TO FRAME (UPPER)	6
5	030405-105-0900A	STUD, FLUID CYLINDER TO FRAME (LOWER)	6
6	TS-301PZL110	STUD, VALVE COVER	72
7	TS-50B36	NUT	168
8	TS-303PZL316	SEAL, WEAR PLATE	3
9	TS-302PZL483	GUIDE, VALVE (UPPER)	3
10	TS-301PZL234	WEAR PLATE	3
11	030405-105-0500A	RETAINER, VALVE GUIDE	3
12	TS-309PZL316	SEAL, CYLINDER HEAD & VALVE COVER	6
13	TS-302PZL147	COVER, VALVE (UPPER)	3
14	TS-15P27	EYE BOLT	6
15	TS-300PZL387	RING, THREADED	6
16	TS-300PZL587	COVER LOCK	6
17	TS-25G41	GASKET, SUCTION MANIFOLD	3
18	UBL1-312-010-0018	BOLT, SUCTION MANIFOLD	24
19	UWS2-112-AH3	LOCK WASHER, SUCTION MANIFOLD	24
20	UWS1-112-AH3	WASHER, SUCTION MANIFOLD	24
21	56000375	O-RING, DISCHARGE MANIFOLD	3
22	TS-300PZL229	BUSHING	12
23	TS-303PZL147	COVER, VALVE (LOWER)	3
24	030406-105-0500A	GUIDE, VALVE (LOWER)	3
25	TS-300PZL455	LINER CLAMP	3

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Canada: CW Industrial, 104-3921-81 Ave, Leduc, Alberta T9E 8S6 Canada PH +1 780 986 9695



TSC

WF1300/1500BH

7 x 11

SIZE	LINERS	ZIRCONIA LINERS	LINER GASKETS	PISTONS				PISTON RUBBERS
	PART NUMBER	PART NUMBER	PART NUMBER	URETHANE BONDED	RUBBER BONDED	N'DURALL BONDED	REPLACEABLE RUBBER	PART NUMBER
4 1/2"	TS-1197-44HP	TS-07561450	G-756	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR
5"	TS-1197-50HP	TS-07561500	G-756	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR
5 1/2"	TS-1197-54HP	TS-07561550	G-756	LLU-54-B15	LL-54-B15	HPW-54-B15	I-54-B15	TM-54-BR
5 3/4"	TS-1197-56HP	TS-07561575	G-756	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR
6"	TS-1197-60HP	TS-07561600	G-756	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR
6 1/4"	TS-1197-62HP	TS-07561625	G-757	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR
6 1/2"	TS-1197-64HP	TS-07561650	G-757	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
6 3/4"	TS-1197-66HP	TS-07561675	G-757	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR
7"	TS-1197-70HP	TS-07561700	G-757	LLU-70-L15	LL-70-L15	HPW-70-L15	I-70-L15	TM-70-LR
VALVES, SEATS, SPRINGS						GASKETS		
		FULL OPEN	FULL OPEN (BONDED)	4 WEB DESIGN				PART NUMBER
	VALVE (High Performance)	TS-6-V1	TS-6-V2BH	TS-6-EH			VALVE COVER GASKET	TS-309PZL316
	VALVE (High Temperature)	TS-6-V1H	TS-6-V2BP	-			CYLINDER HEAD GASKET	TS-303PZL316
							WEAR PLATE GASKET	G-756U
	SEAT	TS-6-S6	TS-6-S6	TS-6-ADDB6			STD PONY ROD SEAL	WF-2011872-2
	SPRING	TS-5710-115	TS-5710-115	TS-5710-115			EXTENSION ROD BAFFLE	TS-720-8503
	INSERT (Urethane)	TS-6-FI	-	TS-6-WI			UPGRADE PONY ROD SEAL	PRSK-789HTS
	INSERT (Hi Temp)	TS-6-FIH	-	TS-6-WR				
	PULLER HEAD	TS-RND6	TS-RND6	TS-HP1700-6				
PISTON ROD & EXTENSION ROD								
	ROD CLAMP	PISTON ROD STUD	PISTON NUT	THREADED TYPE PISTON ROD	SUB ROD		THREADED TYPE EXTENSION ROD	CLAMP TYPE EXTENSION ROD
	TMPZ11-03-08	TS-PP1005294	TM-NUT	TS-PP1005290	TS-PP1005292		-	TMPZ11-01-06C
FLUID END MODULE								
	FLUID END MODULE STUDED			MODULE SEAL SET		STUDS & NUTS SET		
	030406-105-0200AS			TMWF1300BH-SEALKIT		TMWF1300BH-STUDSSET		

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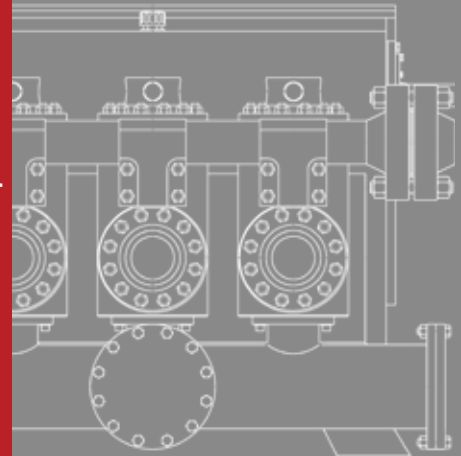
F-1600 w/ KANDLE 7500PSI MUD PUMP CONSUMABLES

Consumables

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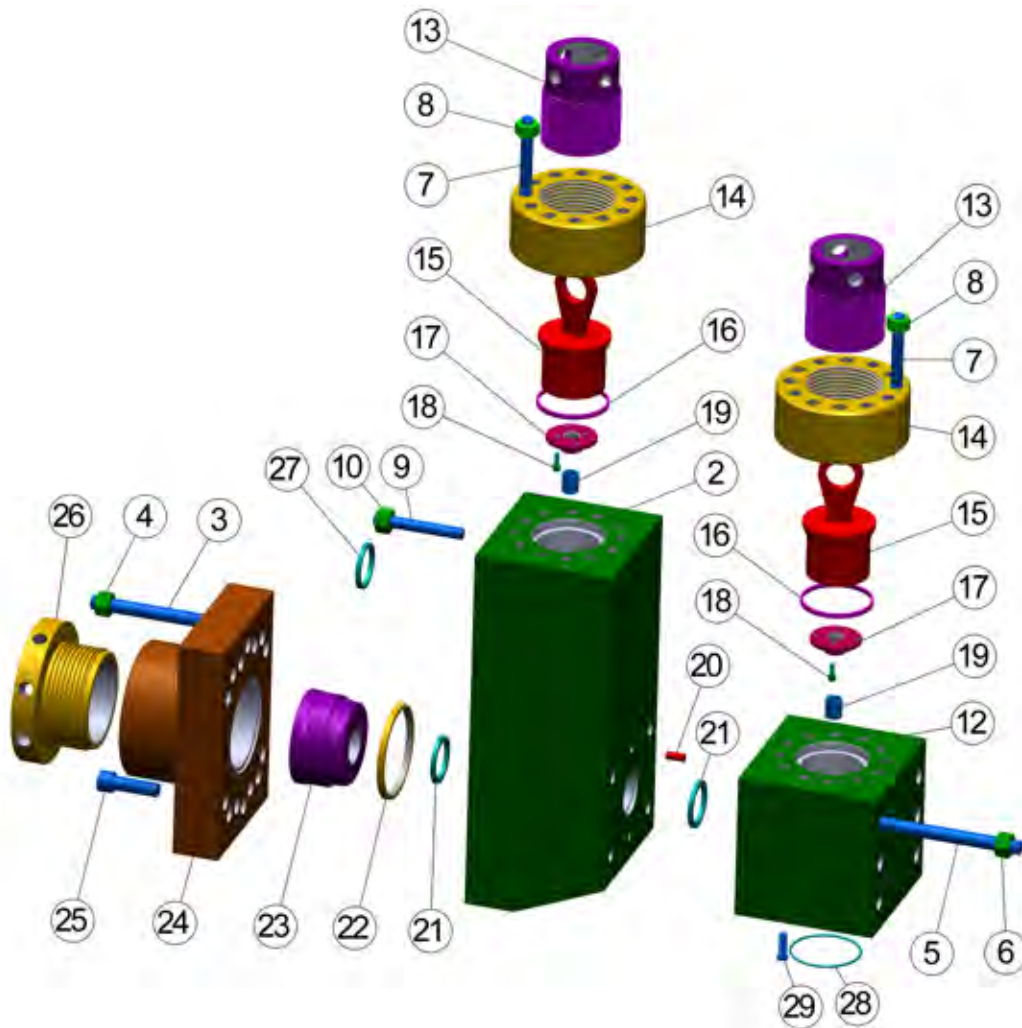
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FLUID END MODULE & ACCESSORIES

**KANDLE FOR EMSCO F-1600
TSC Manufacturing and Supply, LLC.**



TSC Manufacturing and Supply LLC, 13788 West Road, Suite 100, Houston, Texas 77041, USA!



FLUID END MODULE & ACCESSORIES

KANDLE FOR EMSCO FB-1600

ITEM	PART NUMBER	DESCRIPTION	QTY/PUMP
	TS-8490-2A-KND	FLUID END MODULE COMPLETE ASSEMBLY (INCLUDES ITEM 1-27)	3
1	TS-8490-10-75	MODULE, STUDED DISCHARGE (INCLUDES ITEMS 2-10)	3
2	TS-8490-10-75B	DISCHARGE MODULE ONLY	3
3	TS-4016-9	STUD, POWER FRAME	18
4	TS-7601-0630-17	NUT, POWER FRAME STUD	18
5	TS-4016-97-75	STUD, DISCHARGE MODULE TO SUCTION MODULE	18
6	TS-7601-0630-17	NUT, DISCHARGE TO SUCTION MODULE STUD	18
7	TS-4015-2	STUD, THREADED RING	72
8	TS-6300200	NUT, THREADED RING STUD	72
9	TS-4017-46	STUD, DISCHARGE MANIFOLD	12
10	TS-7601-0630-24	NUT, DISCHARGE MANIFOLD STUD	12
11	TS-8490-2S-75	MODULE, STUDED SUCTION (INCLUDES ITEMS 12, 7, 8)	3
12	TS-8490-2S-75B	SUCTION MODULE ONLY	3
13	TS-4571	CAP, VALVE COVER (THREADED)	6
14	TS-4472	RING, THREADED	6
15	TS-4673-2A	PLUG, VALVE COVER (ASSEMBLY)	6
16	TS-P-115	GASKET, VALVE COVER	6
17	TS-4760-75	GUIDE, VALVE (INCLUDES ITEM 19)	6
18	TS-4016-99	VALVE GUIDE SCREW	12
19	TS-4700-I	BUSHING, VALVE GUIDE	6
20	TS-8488-5	PIN, DOWELL	6
21	TS-2988	SEAL, SUC TO DISCH MOD & WEAR PLATE	6
22	TS-8422-3	RING, LINER RETAINER PILOT	3
23	TS-8490-3	PLATE, LINER WEAR	3
24	TS-6490-3	FLANGE, LINER RETAINER	3
25	TS-4017-36	CAPSCREW, LINER RETAINER FLANGE (SOCKET HEAD)	24
26	TS-6590-1	NUT, LINER LOCK	3
27	TS-7602-1600-25	GASKET, DISCHARGE MANIFOLD	3
28	TS-7602-1600-61	GASKET, SUCTION MANIFOLD	3
29	TS-4018-9	CAPSCREW, SUCTION MANIFOLD	18

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TSC Manufacturing and Supply LLC, 13788 West Road, Suite 100, Houston, Texas 77041, USA!

KANDLE

FB-1600

7 x 12

	LINERS	ZIRCONIA LINERS	LINER GASKETS	PISTONS				PISTON RUBBER
SIZE	PART NUMBER	PART NUMBER	PART NUMBER	HP URETHANE BONDED	RUBBER BONDED	HI-TEMP BONDED	REPLACEABLE RUBBER	PART NUMBER
4"	TS-2145-40HP	TS-07499400	G-800 *	LLU-40-K15	LL-40-K15	HPW-40-K15	I-40-K15	TM-40-KR
4 1/2"	TS-2145-44HP	TS-07499450	G-800 *	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR
5"	TS-2145-50HP	TS-07499500	G-800 *	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR
5 1/2"	TS-2145-54HP	TS-07499550	G-800 *	LLU-54-B15	LL-54-B15	HPW-54-B15	I-54-B15	TM-54-BR
5 3/4"	TS-2145-56HP	TS-07499575	G-800 *	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR
6"	TS-2145-60HP	TS-07499600	G-800 *	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR
6 1/4"	TS-2145-62HP	TS-07499625	G-800 *	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR
6 1/2"	TS-2145-64HP	TS-07499650	G-800 *	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
6 3/4"	TS-2145-66HP	TS-07499675	G-800 *	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR
7"	TS-2145-70HP	TS-07499700	G-800 *	LLU-70-L15	LL-70-L15	HPW-70-L15	I-70-L15	TM-70-LR
VALVES, SEATS, SPRINGS						GASKETS		
		FULL OPEN	FULL OPEN (BONDED)	4 WEB DESIGN				PART NUMBER
VALVE		TS-6-V1	TS-6-V2BH	TS-6-EH		VALVE COVER GASKET		TS-P-115
VALVE (High Temperature)		TS-6-V1H	TS-6-V2BP	TS-6-EH-H		WEAR PLATE GASKET		TS-2988
						MODULE - MODULE GASKET		TS-2988
SEAT		TS-6-S6	TS-6-S6	TS-6-ADDB6		DISCHARGE GASKET		TS-7602-1600-25
SPRING		TS-5710-115	TS-5710-115	TS-5710-115		SUCTION GASKET		TS-7602-1600-61
INSERT (Standard HP)		TS-6-FI	-	TS-6-WI		EXTENSION ROD SEAL		TS-7602-2132-76
INSERT (Hi-Temp)		TS-6-FIH	-	TS-6-WR		EXTENSION ROD BAFFLE		TS-6316-0093-00
PULLER HEAD		TS-RND6	TS-RND6	TS-HP1700-6				
PISTON ROD & EXTENSION ROD								
ROD CLAMP	PISTON ROD STUD	PISTON NUT	THREADED TYPE PISTON ROD	REAR SUB ROD				CLAMP TYPE EXTENSION ROD
TMFB6-03-08	TS-1290-2	TM-NUT	TS-6278-25	TS-6284-1				TMFB6-01-06
FLUID END MODULE								
SUCTION MODULE STUDD			MODULE SEAL SET			STUDS & NUTS SET		
TS-8490-2S-75			TMFBKND-SEALKIT			TMFBKND-STUDSET		

TSC does not warrant or represent that any of such information is accurate, or that any products listed are compatible with each other. Any deviations from the OEM products should be verified as to compatibility.

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TSC EXPENDABLES APPLICATION RECOMENDATIONS

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PISTON				VALVE			
	TSC LLU BONDED URETHANE	TSC HPW 'NDURANCE PREMIUM BONDED	TSC LL NITRILE BONDED RUBBER		HI PERFORMANCE URETHANE	HIGH TEMPERATURE URETHANE VALVE	HIGH TEMP BONDED URETHANE VALVE
EXCELLENT	EXC			EXCELLENT	EXC		
VERY GOOD	VG			VERY GOOD	VG		
GOOD	G			GOOD	G		
NOT RECOMMENDED	NR			NOT RECOMMENDED	NR		
Abrasion Resistant	EXC	EXC	VG	Abrasion Resistant	EXC	EXC	EXC
Tear Resistant	EXC	VG	VG	Tear Resistant	EXC	VG	VG
Oil Resistant	EXC	EXC	G	Oil Resistant	EXC	EXC	EXC
Chemical Resistant	G	G	G	Chemical Resistant	G	G	G
Synthetic Oil Resistance	EXC	EXC	G	Synthetic Oil Resistance	EXC	EXC	EXC
Temperature Resistant	VG	EXC	EXC	Temperature Resistant	G	EXC	EXC
Extrusion Resistant	EXC	EXC	G	Extrusion Resistant	EXC	EXC	EXC
Use in Oil Base Mud	EXC	EXC	NR	Use in Oil Base Mud	EXC	EXC	EXC
Use in Synthetic Base Mud	EXC	EXC	G	Use in Synthetic Base Mud	EXC	EXC	EXC
Use in Water Base Mud T≤122°F	G	G	VG	Use in Water Base Mud T≤122°F	EXC	G	G
Use in Water Base Mud 122°F<T≤180°F	NR	NR	VG	Use in Water Base Mud 122°F<T≤180°F	G	G	G
Use in Water Base Mud T>180°F	NR	VG	G	Use in Water Base Mud T>180°F	NR	EXC	EXC
Use in Fresh Water	NR	NR	G	Use in Fresh Water	NR	G	G
Use in Brine	NR	G	G	Use in Brine	NR	G	G
Use in Mud with Low Solids	EXC	EXC	VG	Use in Mud with Low Solids	EXC	EXC	EXC
Use in Mud with Moderate Solids	EXC	VG	G	Use in Mud with Moderate Solids	EXC	EXC	EXC
Use in Mud with High Solids	VG	G	NR	Use in Mud with High Solids	VG	G	G
Use with Ceramic or Zirconia Liners	VG	VG	VG	Use with Ceramic or Zirconia Liners	EXC	EXC	EXC
Maximum Operating Temperature	220	300	225	Maximum Operating Temperature	220	300	300
Maximum Operating Pressure	7500 psi	7500 psi	7500 psi	Maximum Operating Pressure	7500 psi	7500 psi	7500 psi

INFORMATION

OVERVIEW: PRODUCT RECOMENDATION

FITTMENT: FLUID ENDS 5000/7500PSI – ALL MODELS

SUBJECT: WBM BRINE BASED DRILLING MUD, EFFECTS/RECOMENDATIONS

OVERVIEW: This bulletin is to provide further insight and recommendations to minimize consumable consumption and operating costs when using brine based drilling mud.

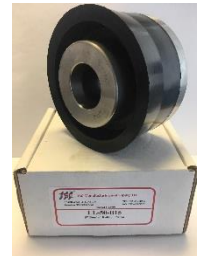
Brine can be reactive with Urethane products, dramatically reducing its intended lifespan. The corrosiveness of brine solutions, typically increases with temperature. We recommend to monitor PH levels, adjusting to levels to prevent premature pitting, ionization corrosion of the fluid ends and other components on the mud system.

1). PISTONS

There are two piston designs we recommend based on drilling mud temperatures.

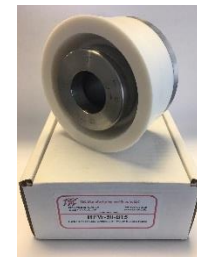
Premium Nitrile Bonded Pistons (LL Series)

- These pistons have a good resistance to chemical breakdown and are primarily for use in WBM applications, being non-reactive to brine based mud. Offers good abrasion and tear resistance w/low to moderate solids. Recommended for moderate mud temps of 180F/82C or less.



HPW Endurance Pistons (HPW Series)

- These pistons provide improved resistance to chemical breakdown, and are designed for high temp applications. HPW Pistons have very good abrasion and tear resistance with low/moderate solids. Recommended in use for high mud temps exceeding 180F/82C



2). Valves

We recommend the use of the following valves for use in Brine applications.

HT Valves (V2H Series)

- These valves provide far better life than urethane valves under WBM/Brine applications and perform very well under most all mud applications (OBM/WBM, high/moderate solids, chemical resistance) - including high temperature mud greater than 180C/82C.)



BULLETIN # SB18-002

PRODUCT UPDATE INFORMATION

PRODUCT: 7500PSI TSC / GARDNER DENVER STYLE VALVE OVER VALVE MODULES

FITMENT: 7500PSI - TSC WF1300, WF1500, GD PZ10, GD PZ11

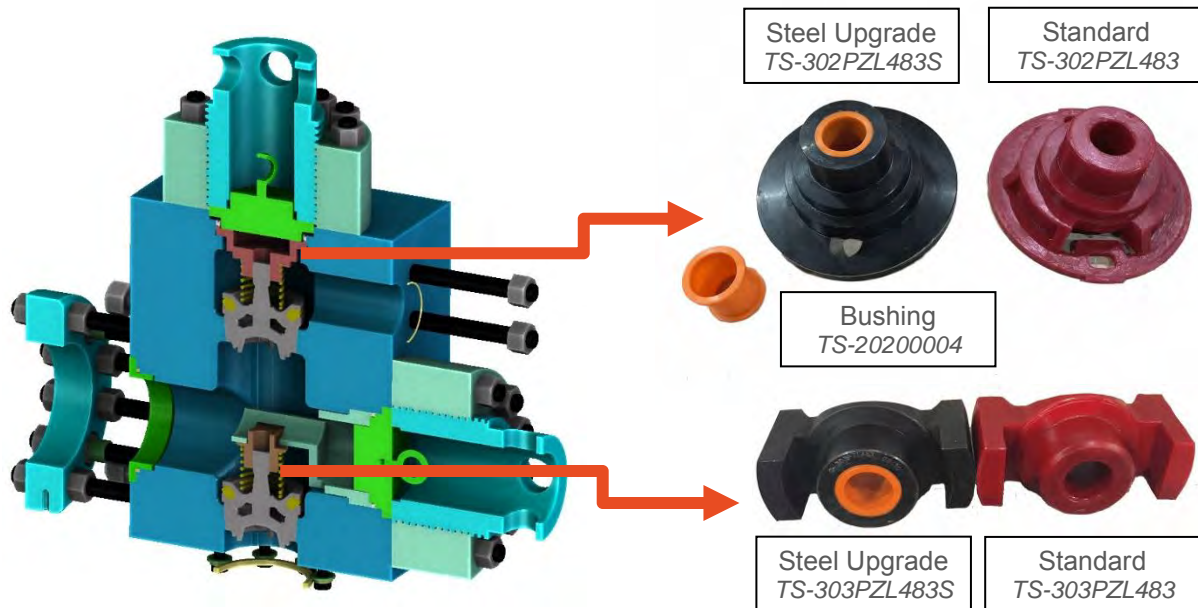
SUBJECT: OPTIONAL VALVE GUIDES (Upper/Lower)

OVERVIEW: OE Replacement “Steel” Valve Guides, with replaceable inserts.

With high mud temperatures, as well as using WBM (Brine) applications vs OBM – can reduce the lifespan of the standard OEM TSC or GD valve guides. These parts are one-piece Urethane, and in some cases can deform or swell in the presence of the above – affecting valve/seat performance and increase consumable replacement and operating costs.

We have come up with steel OE replacement valve guides, that utilize a common industry standard valve guide bushing. The steel bodies will not deform in brine or heat, and utilize an inexpensive bushing to change and replace vs. the entire assembly. We provide this optional upgrade to address these applications and reduce consumable costs. The cost of the steel upgrade assemblies are negligible over the existing urethane one-piece guides, with the consumable replacement bushing only a 1/10th of the cost. See below for ordering information:

Description/Location (WF1315BH/PZ11HP)	Standard Part Number	Steel Upgrade Replacement	Replacement Bushing
Upper Valve Guide	TS-302PZL483	TS-302PZL483S	TS-20200004
Lower Valve Guide	TS-303PZL483	TS-303PZL483S	TS-20200004



If you should require any further information, please do not hesitate to contact us.

BULLETIN # PB18-001

INFORMATION

PRODUCT: 7500PSI GARDNER DENVER STYLE VALVE OVER VALVE MODULES

FITMENT: 7500PSI - TSC WF1300, WF1500, GD PZ10, GD PZ11

SUBJECT: VALVE CAP & VALVE CAP GASKET INSTALLATION

OVERVIEW: Field reports of cap gaskets leaking. This bulletin is to provide further detail on the proper installation of components to ensure correct operation.

1). VALVE CAP LOCATIONS

There are two valve caps, an upper and lower which are not interchangeable in position. The upper valve cap has a STEPPED top, and a single step lip internal to module. The step is for the energized seal, and the face holds the upper valve guide retainer in position once installed.

The lower (suction) valve cap has a FLUSH top, as well as three internal steps. The innermost step fits inside the lower valve retainer to stabilize and hold in position, and the second step is for the energized seal. There is no seal or gasket on the first step.



2). VALVE CAP GASKET INSTALLATION

The Valve Cap gaskets are energized seals, which seal on the ID and OD – not the face. The flat face goes toward the outer valve cap, with the slotted ridges facing internal to the valve guide retainer.

Install the cap gasket into the module first, then install the valve caps – will prevent potential tearing of the outside sealing lip. Gasket can leak if installed backwards, and or if outside sealing lip face damaged upon installation.



If you should require any further information, please do not hesitate to contact us.

BULLETIN # SB17-001



CW INDUSTRIAL, a division of CW Manufacturing, is our industrial equipment supply division dedicated to providing its customers with exceptional service and value in the industry. With an experienced and knowledgeable team proudly representing top tier manufacturers, we provide quality products & solutions for our Oil & Gas, Energy and Industrial Customers. Combined with our CW Manufacturing location, we provide complete turn key systems and packages, with full in-house design, engineering, fabrication, assembly and testing capabilities.



Triplex Mud Pumps



Fluid End Modules & Parts



7500PSI Upgrade Kits



Centrifugal Pumps



AC/DC Motors & Drives



Wireline Sheaves



Well Control Products



Power Transmission Products



Bearings, Seals, Repair Kits



System Packages