

# INTRODUCTION

## ZIRCONIA CERAMIC LINER

TSC's zirconia liners offer lifetime cost savings, significantly longer service, better performance and safer operation than those made of more commonly used alumina ceramic.

In addition, TSC'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, the zirconia liners provide a surface finish that is 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 reduces significantly the costs of replacing broken liners in the field. The surface finish improvements, meanwhile, have an indirect effect. The finer surface finish means less friction with the elastomer-and-metal pump pistons, which in turn extends piston life and reduces pump-cooling requirements.

- Reduced liner and piston wear.
- Increased impact characteristics.
- Lower thermal load on the liner wash system.
- Higher thermal ratings.
- HP design with shoulder-on-hull to prevent sleeve slippage.
- ID tolerances of  $+.010"/-.000"$ .
- Surface finish of 4-8 RMS.
- Hardness is HV 0.3 kg/mm – 1100/1200 ( 92-94 Rc).
- Improved performance for high temperature applications.
- Liner sizes are available from 4"-8" for all popular mud pumps.



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## FLUID END EXPENDABLES

NATIONAL

10-P-130

6-3/4 x 10

	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-0255-40HP	TS-07465400	G-274 *	LLU-40-K15	LL-40-K15	HPW-40-K15	I-40-K15	TM-40-KR
4 1/2"	TS-0255-44HP	TS-07465450	G-274 *	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR
5"	TS-0255-50HP	TS-07465500	G-265 *	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR
5 1/2"	TS-0255-54HP	TS-07465550	G-263 *	LLU-54-B15	LL-54-B15	HPW-54-B15	I-54-B15	TM-54-BR
5 3/4"	TS-0255-56HP	TS-07465575	-	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR
6"	TS-0255-60HP	TS-07465600	G-261 *	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR
6 1/4"	TS-0255-62HP	TS-07465625	G-283 *	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR
6 1/2"	TS-0255-64HP	TS-07465650	G-768 *	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
6 3/4"	TS-0255-66HP	TS-07465675	-	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR
VALVES, SEATS, SPRINGS						GASKETS		
	4 WEB DESIGN		3 WEB DESIGN	FULL OPEN ( 1 )	FULL OPEN ( 2 )			PART NUMBER
VALVE	TS-6-EH		-	TS-0995M	TS-6-V1	VALVE COVER GASKET		G-768 *
SEAT	TS-6-ADDB4		-	TS-1450M	TS-6-S4	CYLINDER HEAD GASKET		-
SPRING	TS-5710-115		-	TS-0701M	TS-5710-115	WEAR PLATE GASKET		TS-1290344
INSERT (Urethane)	TS-6-WI		-	TS-6-MI	TS-6-FI	EXTENSION ROD SEAL		TS-1283089
INSERT (Rubber)	TS-6-WR		-	-	TS-6-FR	EXTENSION ROD BAFFLE		TS-1290194
PISTON ROD & EXTENSION ROD								
ROD CLAMP	PISTON ROD STUD	PISTON NUT	THREADED TYPE PISTON ROD	CLAMP TYPE PISTON ROD	SUB ROD	THREADED TYPE EXTENSION ROD		CLAMP TYPE EXTENSION ROD
TM10P-03-08	N/A	TM-NUT	N/A	TM-256-A	TM-256-B	N/A		TM10P-01-06
FLUID END MODULE								
SUCTION MODULE STUDDER		DISCHARGE MODULE STUDDER		MODULE SEAL SET		STUDS & NUTS SET		
TS-1290338		TS-1290335		TM10P-SEALKIT		TM10P-STUDSETD TM10P-STUDSETS		

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.