

# 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

TSC

WF2000 (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            | -                        | 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                                |                      |                          |
|                            | 4 WEB DESIGN    | 3 WEB DESIGN           | FULL OPEN ( 1 )          | FULL OPEN ( 2 )       |                      |                                        | PART NUMBER          |                          |
| VALVE                      | TS-7-EEF        | -                      | TS-0985M                 | TS-7-V1               | VALVE COVER GASKET   |                                        | P-129                |                          |
| SEAT                       | TS-7-DDB12      | -                      | TS-1440M                 | TS-7-S12              | CYLINDER HEAD GASKET |                                        | -                    |                          |
| SPRING                     | TS-5710-115     | -                      | -                        | TS-5710-115L          | WEAR PLATE GASKET    |                                        | TS-1290344           |                          |
| INSERT (Urethane)          | TS-7-WI         | -                      | TS-7-MI                  | TS-7-FI               | EXTENSION ROD SEAL   |                                        | TE02030601-03-11     |                          |
| INSERT (Rubber)            | TS-7-WR         | -                      | -                        | -                     | EXTENSION ROD BAFFLE |                                        | TE02030601-03-06-DAD |                          |
| 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 |
| TM12P-03-08                | N/A             | TM-NUT                 | N/A                      | TM-258-A              | TM-258-B             | N/A                                    |                      | TE02030601-03-05-DAD     |
| FLUID END MODULE           |                 |                        |                          |                       |                      |                                        |                      |                          |
| SUCTION MODULE STUDD       |                 | DISCHARGE MODULE STUDD |                          | MODULE SEAL SET       |                      | STUDS & NUTS SET                       |                      |                          |
| TS-80704001                |                 | TS-80704000            |                          | TM12PHPM-SEALKIT      |                      | TM12PHPM-STUDSETD<br>TM12PHPM-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.

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