## INTRODUCTION

## PISTONS

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

- · Bonded urethane pistons.
- Bonded rubber pistons.
- Replaceable rubber pistons.
- Endurance Premium Bonded Piston.



### **BONDED URETHANE PISTON**

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

#### Features

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



11

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TSC Manufacturing and Supply LLC, 13788 West Road, Suite 100, Houston, Texas 77041, USA Tel: +1 832 456 3900 Fax: +1 832 456 3998 E-mail: sales@t-s-c.com

## INTRODUCTION

### **N'DURALL PREMIUM BONDED PISTON**

TSC's "N'durall" mud pump piston improves drilling contractor economics through advances in technology, improved process control and increased drilling penetration rates.

#### Chemistry

Manufactured from advanced polymer compounds, the advances in chemistry ultimately provide superior mechanical values and chemical resistance. The increased mechanical values provide resistance to reciprocating pump psitons biggest enemies listed below.

- Heat.
- Abrasion.
- Extrusion.

The advanced polymer compound provides strength to withstand chemical attack from additives used in today's oil, synthetic and water based drilling fluids. The compound also has improves abrasion resistance from drilling solids suspended in drilling muds and excels in high temperature performance capable of operating in fluid temperature up to 300°F.

#### **Improved Process Control**

The "N'durall" carries stamped batch numbers on the piston body for use in monitoring manufacturing dates and as an aid in rotating shelf stock.

#### Design

The single durometer design and open mold casting contribute to overall performance and improved economics.

#### Machining

CNC machining of steel piston heads yields close tolerances for improved performance.

#### Applications

- High Pressure Drilling.
- Elevated Mud Temperature.
- Synthetic Drilling Fluid.
- Ceramic and Zirconia Liners.
- Chrome Sleeved Liners.



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## INTRODUCTION

### **BONDED RUBBER PISTON**

TSC pistons are constructed of nitrile rubber bonded to a solid metal hub. The oil resistant rubber is designed to provide optimum performance in oil base or water base mud and high drilling pressures.

#### Features

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



## **REPLACEABLE RUBBER PISTON**

TSC 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 range from 3" through 7-1/2" and series are A, B, K and L.

#### Features

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





# **FLUID END EXPENDABLES**

## 12-P-160 FAST CHANGE

NATIONAL

### 7-1/2 x 12

69

**TÍSC** 

LINENS     GASKETS     PART NUMBER     GASKETS     RUBBER       SIZE     PART NUMBER     PART NUMBER     PART NUMBER     RUBDALL     RPLACEABLE     PART NUMBER       4"     TS $\supset Z \rightarrow U HP$ TS $O Z \rightarrow U HP$ <th colspan="9"></th>												
Size     PART NUMBER		LIN	ERS	-				PIST	TONS		PISTON RUBBERS	
1     N     <	SIZE	PART	UMBER	PART NUN	/IBER			-	-		PART NUMBER	
TS<0250 - 50.10     TS<0746 - 50.00     G.265 · 1LU-50-B15     LL-50-B15     LH-50-B15     HFW-50-B15     H50-B15     H60-B15     H6	4"	TS-025	59-40HP	TS-07466	6400	G-265 *	LLU-40-K15	LL-40-K15	HPW-40-K15	I-40-K15	TM-40-KR	
5 1/2     S 0.02 → 54H     S 0.04 → 554H     S 0.04 → 554H     S 0.04 → 554H     I.4.94 H	4 1/2"	TS-025	59-44HP	TS-07466	6450	G-265 *	LLU-44-B15	LL-44-B15	HPW-44-B15	I-44-B15	TM-44-BR	
5 34*     TS-025-56HP     TS-0746675     .     LLU-56-B15     LL-56-B15     HPW-56-B15     i-56-B15     i-56-B15     TM-56-B15       6"     TS-025-50HP     TS-0746670     G-261     LLU-60-B15     LL-60-B15     HPW-60-B15     i-50-B15     i-50-B15     TM-62-L       61/2"     TS-075-70HP     TS-076670     G-283     LLU-60-B15     LL-60-L15     HPW-60-B15     i-50-B15     TM-62-L       61/2"     TS-075-70HP     TS-076670     G-283     LLU-64-L15     LL-66-L15     HPW-60-B15     i-66-L15     TM-64-L15       61/2"     TS-074670     G-285     LU-06-L15     LL0-66-L15     HPW-70-L15     i-66-L15     HPM-70-L15     i-66-L15     HPM-70-L15     i-70-L15     TM-64-L       6'3/4"     TS-074670     G-285     LU-07-L15     LL0-66-L15     HPW-70-L15     i-70-L15     TM-64-L       7'3     TS-074670     TS-074670     G-2857     G-2857     GLU-07015     FULD07E1     HPW-70-L15     Participaa       6/14     TS-7747     TS-7747     TS-7747     TS-7747     TS-7747	5"	TS-025	59-50HP	TS-07466500		G-265 *	LLU-50-B15	LL-50-B15	HPW-50-B15	I-50-B15	TM-50-BR	
6"IS-02 → coldIS-0746 ← coldG-261 +LLU-60-B5LL-60-B5HPW-60-B5He0-B5He0-B5 </td <td>5 1/2"</td> <td colspan="2">TS-0259-54HP</td> <td colspan="2">TS-07466550</td> <td>G-263 *</td> <td>LLU-54-B15</td> <td>LL-54-B15</td> <td>HPW-54-B15</td> <td>I-54-B15</td> <td>TM-54-BR</td>	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	
6 1/4"TS-025+04HPTS-0746625G-283*LLU-62-L15HPW-62-L15HFW-62-L15He4-L15TM-62-L156 1/2"TS-025+04HPTS-0746605G-284*LLU-64-L15LL-64-L15HPW-64-L15He4-L15TM-64-L156 3/4"TS-025+04HPTS-0746607G-287*LLU-66-L15LL-66-L15HPW-66-L15He6-L15He6-L15TM-64-L157"TS-025+70HPTS-0746607G-285*LLU-70-L15LL-70-L15HPW-70-L15HPW-70-L15H70-105TM-70-L157"TS-025+70HPTS-0746607G-285*LLU-70-L15LL-70-L15HPW-70-	5 3/4"	TS-0259-56HP		TS-07466575		-	LLU-56-B15	LL-56-B15	HPW-56-B15	I-56-B15	TM-56-BR	
6 1/2"     TS-02 → CHP     TS-0746667     G-284*     LLU-64-L15     LL-64-L15     HPW-64-L15     He4-L15     He4-L15 <t< td=""><td>6"</td><td colspan="2">TS-0259-60HP</td><td colspan="2">TS-07466600</td><td>G-261 *</td><td>LLU-60-B15</td><td>LL-60-B15</td><td>HPW-60-B15</td><td>I-60-B15</td><td>TM-60-BR</td></t<>	6"	TS-0259-60HP		TS-07466600		G-261 *	LLU-60-B15	LL-60-B15	HPW-60-B15	I-60-B15	TM-60-BR	
6 3/4"     TS-0259-66HP     TS-07466675     G-287*     LLU-66-L15     LL-66-L15     HPW-66-L15     I-66-L15     TM-66-L       7"     TS-0259-70HP     TS-07466700     G-285*     LLU-70-L15     LL-70-L15     HPW-70-L15     I-70-L15     TM-70-L15       7"     TS-0259-70HP     TS-07466700     G-285*     LLU-70-L15     LL-70-L15     HPW-70-L15     I-70-L15     TM-70-L15       Valve     Valves     SEATS     SPRING     GASKETS     PART       Valve     TS-7-EEF     J WEB     J WEB     Full OPEN     Full OPEN     Cylinder Kasket     GASKETS       Valve     TS-7-EEF     J S-7-W     TS-7-W     Valve Cover GASKET     G-767       SEAT     TS-7-DB12     -     TS-7002M     TS-7510     Valve Cover GASKET     G-767       INSERT     TS-7-WI     -     TS-7-MI     TS-710     Valve Cover GASKET     G-767 M       INSERT     TS-7-WI     -     TS-7002M     TS-710115L     WEAR PLATE GASKET     TS-12921       INSERT     TS-7-WR     -     -	6 1/4"	TS-025	59-62HP	TS-07466	625	G-283 *	LLU-62-L15	LL-62-L15	HPW-62-L15	I-62-L15	TM-62-LR	
7"     TS-0259-70HP     TS-0746700     G-285 +     LLU-70-L15     LHPW-70-L15     HPW-70-L15     I-70-L15     TM-70-L15       VALVES, SEATS, SPRINGS     GASKETS       VALVES, SEATS, SPRINGS     GASKETS       VALVES, SEATS, SPRINGS     GASKETS       VALVES, SEATS, SPRINGS     GASKETS       VALVE, VEB, SEAT, SPRINGS     FULL OPEN (2)     PART       VALVE     SAWEB     SUB COLSPAN     PART       VALVE     SAWEB     SUB ROD     TS-7-VI     PART       VALVE     TS-7-VE     TS-0985M     TS-7-VI     VALVE COVER GASKET     GASKET       SPRIMG     TS-7-VE     TS-7-VE     TS-7-VE     TS-7-VE       INSERT     TS-7-VI     TS-7-VE     TS-7-VE     TS-7-VE       INSERT     TS-7-VE     TS-7-VE     TS-7-VE <th colsp<="" td=""><td>6 1/2"</td><td>TS-02</td><td>59-64HP</td><td>TS-07466</td><td>650</td><td>G-284 *</td><td>LLU-64-L15</td><td>LL-64-L15</td><td>HPW-64-L15</td><td>I-64-L15</td><td>TM-64-LR</td></th>	<td>6 1/2"</td> <td>TS-02</td> <td>59-64HP</td> <td>TS-07466</td> <td>650</td> <td>G-284 *</td> <td>LLU-64-L15</td> <td>LL-64-L15</td> <td>HPW-64-L15</td> <td>I-64-L15</td> <td>TM-64-LR</td>	6 1/2"	TS-02	59-64HP	TS-07466	650	G-284 *	LLU-64-L15	LL-64-L15	HPW-64-L15	I-64-L15	TM-64-LR
VALVES, SEATS, SPRINGS     GASKETS       4 WEB DESIGN     3 WEB DESIGN     FULL OPEN (1)     FULL OPEN (2)     PART NUMBE       VALVE     TS-7-EEF     -     TS-0985M     TS-7-V1     VALVE COVER GASKET     G-787       SEAT     TS-7-DDB12     -     TS-1440M     TS-7-S12     CYLINDER HEAD GASKET     -       SPRING     TS-5710-115     -     TS-0702M     TS-5710-115L     WEAR PLATE GASKET     TS-12922       INSERT (Urethane)     TS-7-WI     -     TS-7-MI     TS-7-FI     EXTENSION ROD SEAL     TS-12921       INSERT (Rubber)     TS-7-WR     -     -     EXTENSION ROD BAFFLE     TS-12921       INSERT (Rubber)     TS-7-WR     -     -     EXTENSION ROD BAFFLE     TS-12921       INSERT (Rubber)     TS-7-WR     -     -     EXTENSION ROD     TS-12921       ROD CLAMP     PISTON STUD     THREADED TYPE INTON ROD     CLAMP TYPE PISTON ROD     SUB ROD     THREADED TYPE EXTENSION ROD     CLAMP TYPE EXTENSION ROD     CLAMP TYPE	6 3/4"	TS-025	59-66HP	TS-07466	675	G-287 *	LLU-66-L15	LL-66-L15	HPW-66-L15	I-66-L15	TM-66-LR	
Normalization     Normalization       4     WEB     3     WEB     FULL OPEN     FULL OPEN     FULL OPEN     PART       VALVE     TS-TEF     TS     TS     TS     VALVE     VALVE COVER GASKET     G-787       SEAT     TS-TUB12     Income     TS-0985M     TS-7V1     VALVE COVER GASKET     G-787       SEAT     TS-7DB12     Income     TS-1440M     TS-7S12     CYLINDER HEAD GASKET     G-787       SPRING     TS-7V-115     Income     TS-0702M     TS-7512     CYLINDER HEAD GASKET     TS-12922       INSERT (Urethane)     TS-7WI     Income     TS-7FII     EXTENSION ROD SEAL     TS-12921       INSERT (Rubber)     TS-7WR     Income     Income     Income     Income     Income       ROD CLAMP     PISTON     PISTON ROD     CLAMP TYPE     SUB ROD     THREADED TYPE     CLAMP TYPE	7"	TS-025	59-70HP	TS-07466	6700	G-285 *	LLU-70-L15	LL-70-L15	HPW-70-L15	I-70-L15	TM-70-LR	
DESIGNDESIGNDESIGN(1)(2)NUMBERVALVETS-7-EEF-TS-0985MTS-7-V1VALVE COVER GASKETG-787SEATTS-7-DB12-TS-1440MTS-7-S12CYLINDER HEAD GASKET-SPRINGTS-7-DB12-TS-0702MTS-5710-115WEAR PLATE GASKETTS-12922INSERT (Urethane)TS-7-VI-TS-0702MTS-5710-115LWEAR PLATE GASKETTS-12922INSERT (Urethane)TS-7-VI-TS-7-MITS-7-FIEXTENSION ROD SEALTS-12922INSERT (Rubber)TS-7-WREXTENSION ROD BAFFLETS-12922INSERT (Rubber)TS-7-WRPISTON SUDTS-7-WRROD CLAMP SUDPISTON NUTTHREADED TYPE PISTON RODSUB RODTHREADED TYPE EXTENSION RODCLAMP TYPE EXTENSION RODCLAMP TYPE EXTENSION ROD	VALVES, SEATS, SPRINGS GASKETS											
SEATTS- $$ DB12Independence INSERT (Urethane)TS- $$ DB12TS- $$ DB						• • • • •					PART NUMBER	
SPRINGTS-5710-115TS-0702MTS-5710-115WEAR PLATE GASKETTS-12927INSERT (Urethane)TS-7WITS-7MITS-7FIEXTENSION ROD SEALTS-12921INSERT (Rubber)TS-7WRAAASEXTENSION ROD BAFFLETS-12921INSERT (Rubber)TS-7WRAAASEXTENSION ROD BAFFLETS-12921INSERT (Rubber)TS-7WRAAASEXTENSION ROD BAFFLETS-12921INSERT (Rubber)TS-7WRAAASEXTENSION ROD BAFFLETS-12921INSERT (Rubber)TS-7WRCLAMP TYPE PISTON RODSUB RODTHREADED TYPE EXTENSION RODCLAMP TYPE EXTENSION RODCLAMP TYPE EXTENSION RODSUB RODTHREADED TYPE EXTENSION RODCLAMP TYPE EXTENSION RODCLAMP TYPE EXTENSION ROD	VALVE		TS-7-EEF			-	TS-0985M	TS-7-V1	VALVE COVER GASKET		G-787 *	
INSERT (Urethane) $TS - WI$ $I$ $I$ $TS - FI$ EXTENSION ROD SEAL $TS - 12921$ INSERT (Rubber) $TS - WR$ $I$ $I$ $I$ $I$ $I$ $IS - 12921$ INSERT (Rubber) $TS - WR$ $I$ $I$ $I$ $I$ $I$ $IS - 12921$ INSERT (Rubber) $TS - WR$ $I$ $I$ $I$ $I$ $I$ $IS - 12921$ INSERT (Rubber) $TS - WR$ $I$ $I$ $I$ $I$ $I$ $I$ $I$ INSERT (Rubber) $IS - WR$ $I$ $I$ $I$ $I$ $I$ $I$ $I$ $I$ $I$ INSERT (Rubber)PISTON RUDPISTON RODPISTON RODPISTON RODSub RODPIHREADED TYPE EXTENSION RODCLAMP TYPE EXTENSION ROD $I$ <t< td=""><td colspan="2">SEAT</td><td colspan="2">TS-7-DDB12</td><td></td><td>-</td><td>TS-1440M</td><td>TS-7-S12</td><td colspan="2">CYLINDER HEAD GASKET</td><td>-</td></t<>	SEAT		TS-7-DDB12			-	TS-1440M	TS-7-S12	CYLINDER HEAD GASKET		-	
(Urethane)   1S-7-WI   IS-7-MI   IS-7-MI   IS-7-FI   EXTENSION ROD SEAL   IS-12921     INSERT (Rubber)   TS-7-WR   -   -   EXTENSION ROD BAFFLE   TS-12921     INSERT (Rubber)   TS-7-WR   -   -   -   EXTENSION ROD BAFFLE   TS-12921     ROD CLAMP   PISTON STUD   PISTON NUT   THREADED TYPE PISTON ROD   CLAMP TYPE PISTON ROD   SUB ROD   THREADED TYPE EXTENSION ROD   CLAMP TYPE ROD	SPRING		TS-5710-115			-	TS-0702M	TS-5710-115L	WEAR PLATE GASKET		TS-1292257	
(Rubber) TS-7-WR Image: Constraint of the second s	-		TS-7-WI			-	TS-7-MI	TS-7-FI	EXTENSION ROD SEAL		TS-1292182	
ROD CLAMP PISTON ROD STUD PISTON NUT THREADED TYPE PISTON ROD CLAMP TYPE PISTON ROD SUB ROD THREADED TYPE EXTENSION ROD CLAMP TY EXTENSION ROD			TS-7-WR			-	-	-	EXTENSION ROD BAFFLE		TS-1292194	
ROD CLAMP ROD STUD PISTON IHREADED TYPE PISTON ROD CLAMP TYPE PISTON ROD SUB ROD THREADED TYPE EXTENSION ROD EXTENSION	PISTON ROD & EXTENSION ROD											
TM12P-03-08     N/A     TM-NUT     N/A     TM-258-A     TM-258-B     N/A     TM12P-01	ROD C	CLAMP	ROD					SUB ROD			CLAMP TYPE EXTENSION ROD	
	TM12F	<b>-</b> 03-08	N/A	TM-NUT		N/A	TM-258-A	TM-258-B	N	I/A	TM12P-01-06	
FLUID END MODULE												

SUCTION MODULE STUDDED	DISCHARGE MODULE STUDDED	MODULE SEAL SET	STUDS & NUTS SET
TS-1292362	TS-1292361	TM12P-SEALKIT	TM12PQ-STUDSETD TM12PQ-STUDSETS

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TSC Manufacturing and Supply LLC, 13788 West Road, Suite 100, Houston, Texas 77041, USA Tel: +1 832 456 3900 Fax: +1 832 456 3998 E-mail: sales@t-s-c.com