

## 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.



## 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 pistons 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 improved 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

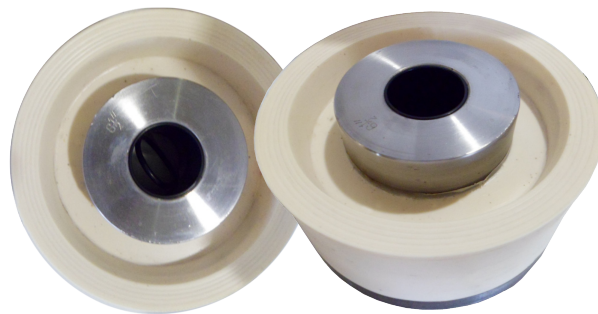
The single durometer design and open mold casting contribute to overall performance and improved economics.

#### 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.



## 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.

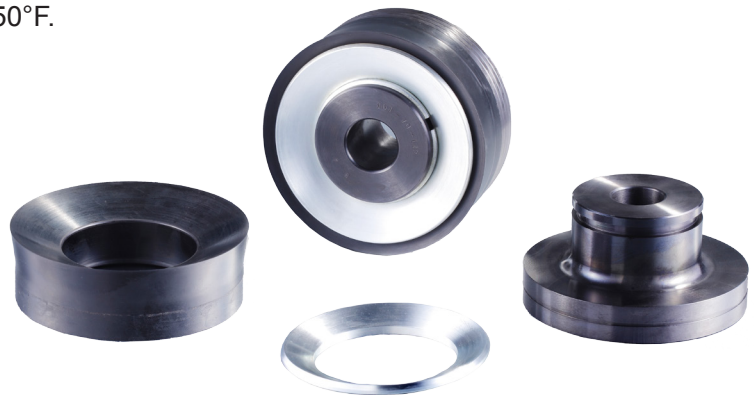


### REPLACEABLE RUBBER PISTON

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

**GARDNER DENVER**
**TEE-5**
**4-1/2 × 4-7/8**

	LINERS		LINER GASKETS	PISTONS			PISTON RUBBER
SIZE	PART NUMBER	PART NUMBER	URETHANE BONDED	RUBBER BONDED	N'DURALL BONDED	REPLACEABLE RUBBER	PART NUMBER
3"	TS-1190-30HP	G-691 *	-	-	-	I-30-A10	TM-30-AR
3-1/2"	TS-1190-34HP	G-691 *	-	-	-	I-34-K10	TM-34-KR
4"	TS-1190-40HP	G-691 *	LLU-40-K10	LL-40-K10	HPW-40-K10	I-40-K10	TM-40-KR
4-1/2"	TS-1190-44Cr	G-691 *	LLU-44-B10	LL-44-B10	HPW-44-B10	I-44-B10	TM-44-BR
VALVES, SEATS, SPRINGS					GASKETS		
	4 WEB DESIGN	3 WEB DESIGN	FULL OPEN (1)	FULL OPEN (2)		PART NUMBER	
VALVE	-	-	-	TS-2-V3	VALVE COVER GASKET	TS-25AL20	
SEAT	-	-	-	TS-2-S9	CYLINDER HEAD GASKET	-	
SPRING	-	-	-	TS-5710-03	WEAR PLATE GASKET	-	
INSERT (Urethane)	-	-	-	TS-2-FIA	EXTENSION ROD SEAL	TS-60DD99	
CAGE	-	-	-	TS-2-C1	EXTENSION ROD BAFFLE	-	
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
TMTEE-03-08	-	TM-NUT1	-	TM-TEE5	-	-	TMTEE-01-06
FLUID END MODULE							
FLUID END MODULE STUDDED			MODULE SEAL SET		STUDS & NUTS SET		
-			-		-		

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.