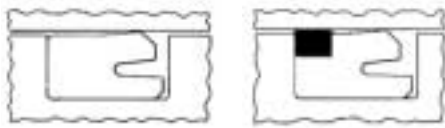


**GTU®-RING**

*Asymmetrical Urethane Seal*



The Greene, Tweed GTU® Ring is an advanced low-friction, extended-life seal designed for both rod and piston applications. Asymmetrical in design to accommodate the differences in sealing the static (gland) and dynamic (rod or bore) surfaces, it resists extrusion even at extreme pressure spikes while providing both “dry” rod and “no drift” piston sealing at temperatures to 225°F (spikes to 250°F). This, coupled with the GTU’s exceptional abrasion resistance and low compression set allow the designer full flexibility in optimizing cylinder design.



**Without Back-up      With Back-up**

The GTU Ring is available with a special mating anti-extrusion ring designed to accommodate even wider clearances and higher pressures than the standard seal (see Table 2 and Chart 1). The back-up ring is available in the wider standard gland lengths only specified in Table 3.

**SURFACE FINISHES**

The GTU® Ring is recommended for use against hardened and/or chrome-plated rods and bores to 16µ RMS max. The static surface should be finished to 32µ RMS max.

(Note: Finishes up to 32µ RMS on the dynamic surface and 64µ RMS on the static have proven acceptable, but with possible reduced performance levels.)

**TABLE 1 DIMENSIONAL DATA**

Nominal Seal Cross-Section	Piston Type			Rod Type		L Gland Length +.015 -.000	Size Code
	B Bore Dia.	E Gland Dia.	F Piston Lip Dia. +.000 -.010	A Rod Dia.	D Gland Dia.		
.125				.500	.750	.275 (.187)*	10
				.625	.875		12
				.687	.937		13
				.750	1.000		15
				.875 +.000	1.125 +.002		17
				1.000 -.002	1.250 -.000		19
				1.125	1.375		21
				1.250 +.002	1.500		23
				1.375 -.000	1.625		25
				1.500	1.750		28
.187				1.000	1.375	.344 (.280)*	19
				1.125	1.500		21
				1.250	1.625		23
				1.375	1.750		25
				1.500 +.000	1.875 +.002		28
				1.625 -.002	2.000 -.000		29
				1.750	2.125		30
				1.875 +.002	2.250		31
				2.000 -.000	2.375		32
				2.250	2.625		34
.250				2.500	2.625	.413 (.375)*	36
				2.750	2.656		38
				3.000	2.906		40
				1.500	2.000		28
				1.625	2.125		29
				1.750	2.250		30
				1.875	2.375		31
				2.000	2.500		32
				2.250	2.750		34
				2.500	3.000		36
.250				2.750	3.250	.413 (.375)*	38
				3.000 +.000	3.500 +.002		40
				3.250 -.002	3.750 -.000		42
				3.500	4.000		44
				3.750	4.250		46
				4.000	4.500		48
				4.250	4.750		50
				4.500	5.000		52
				4.750	5.250		54
				5.000	5.500		56

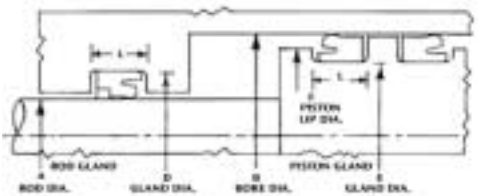
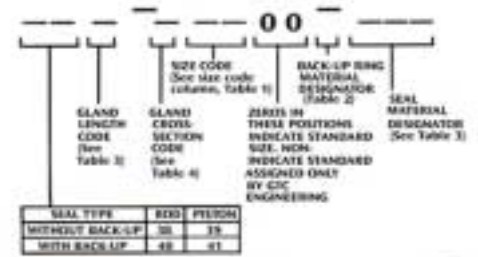
\*Recommended minimum gland length

**TABLE 1 DIMENSIONAL DATA (CONTINUED)**

Nominal Seal Cross-Section	Piston Type			Rod Type		L Gland Length +.015 -.000	Size Code
	B Bore Dia.	E Gland Dia.	F Piston Lip Dia. +.000 -.010	A Rod Dia.	D Gland Dia.		
.250	5.250	4.750	5.125	5.250	5.750		58
	5.500	5.000	5.375				60
	5.750	5.250	5.625				62
.312				2.500	3.125		36
				2.750	3.375		38
				3.000	3.625		40
				3.250	3.875		42
				3.500	4.125		44
				3.750	4.375		46
	4.000+.002	3.375+.000	3.844	4.000+.000	4.625+.002	.550	48
	4.250-.000	3.625-.002	4.094	4.250-.002	4.875-.000	(.470)*	50
	4.500	3.875	4.344	4.500	5.125		52
	4.750	4.125	4.594	4.750	5.375		54
	5.000	4.375	4.844	5.000	5.625		56
	5.250+.003	4.625+.000	5.094	5.250	5.875		58
5.500-.000	4.875-.003	5.344				60	
5.750	5.125	5.594				62	
6.000	5.375	5.844				64	
.375				4.250	5.000		50
				4.500	5.250		52
				4.750	5.500		54
	5.000	4.250	4.813	5.000	5.750		56
	5.250	4.500	5.063	5.250	6.000		58
	5.500	4.750	5.313	5.500	6.250		60
	5.750	5.000	5.563	5.750+.000	6.500+.003	.688	62
	6.000+.003	5.250+.000	5.813	6.000-.003	6.750-.000	(.560)*	64
	6.250-.000	5.500-.003	6.063	6.250	7.000		65
	6.500	5.750	6.313	6.500	7.250		66
	6.750	6.000	6.563	6.750	7.500		67
	7.000	6.250	6.913	7.000	7.750		68
	7.500	6.750	7.313	7.500	8.250		70
	8.000	7.250	7.913	8.000	8.750		72
	8.500	7.750	8.313				73
.500				7.000	8.000		68
				7.500	8.500		70
	8.000	7.000	7.750	8.000	9.000	.825	72
	8.500	7.500	8.250	8.500+.000	9.500+.004	(.750)*	73
	9.000+.004	8.000+.000	8.750	9.000-.004	10.000-.000		74
	9.500-.000	8.500-.004	9.250	9.500	10.500		75
	10.000	9.000	9.750	10.000	11.000		76
10.500	9.500	10.250				77	
11.000	10.000	10.750				78	

\*Recommended minimum gland length

### PART NUMBERING SYSTEM



### INSTALLATION

The GTU Ring can be installed by hand into most grooves. However, where heavy cross-sections and small diameters combine to reduce the seal's flexibility, a special tool is required. Illustrated in the pictures below, the tool is used to "Marcel" the seal, permitting easy installation.



Fig. 1. Seal on flat surface, lips down.



Fig. 2. Bring handles together smoothly.



Fig. 3. Carefully center seal, open handles smoothly.



Fig. 4. Insure that seal is evenly sealed.

Note that on pistons, open-ended glands with followers are recommended. The tools are available from Greene, Tweed or your Greene, Tweed distributor. (Please contact Greene, Tweed Engineering for specific information on installing the GTU-Ring in your application.)

**TABLE 2 BACK-UP RING MATERIAL SELECTOR**

SERVICE CONDITIONS	BACK-UP RING	
	MATERIAL	DESIGNATOR
Standard system pressures and clearances (see TABLE 1)	NONE	- (Dash)
High system pressures and/or wide clearances (see CHART 1) in standard petroleum base fluids	NWR (Wear Resistant Nylon)	A

NOTE: To specify back-up rings only, use "000" as the seal material designator (the last digits) in the part number.

**TABLE 3 GLAND LENGTH CODE**

NOMINAL CROSS SECTION	.125	.187	.250	.312	.375	.500	GLAND LENGTH CODE
STAN. GLAND LENGTH	.275	.344	.413	.550	.688	.825	3
ALT. GLAND LENGTH	.187	.280	.375	.470	.560	.750	1

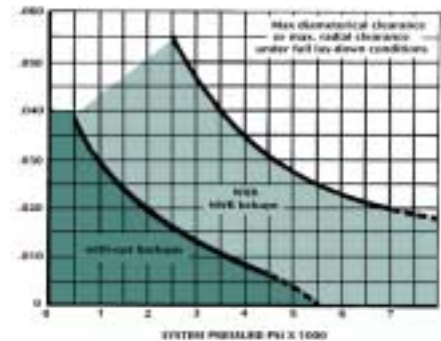
**TABLE 5 TYPICAL PHYSICAL PROPERTIES**

PROPERTY	COMPOUND	
	320	369
Hardness, Shore A	94	90
Shore D	-	43
Tensile Strength (MPa)	37.2	31.5
Ultimate Elongation (%)	475	175
Modulus @ 100% (MPa)	16.6	19.1
Brittle Point (ASTM D-746) (°C)	< -40	< -60
Resilience-Bayshore (%) (ASTM D-2632)	35.7	34
Compression Set-Method B (%) (ASTM D-395)		
22 hours/70°C	22	9
70 hours/70°C	23.2	11

**TABLE 4 GLAND CROSS SECTION CODE**

Cross-Section	Code
Below .125"	1
.125"	2
.187"	3
.250"	4
.312"	5
.375"	6
.500"	8
Above .500"	9

**CHART 1 PRESSURE/CLEARANCE LIMITS**



When pressure and clearance coordinates fall in unshaded areas of the above chart, please contact Greene, Tweed Engineering for a specific recommendation.

[www.gtweed.com](http://www.gtweed.com)

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