



MACROTECH POLYSEAL, INC.

*MPI
T-Seal*

*Industrial Series
100 - 400*

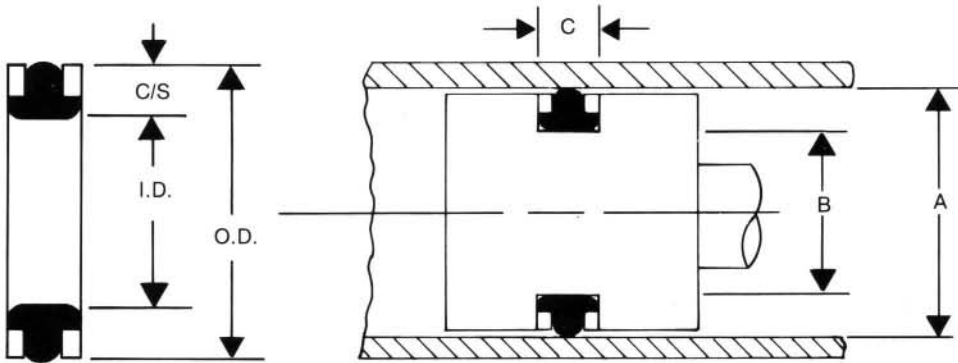


TSM-1000

Rev. #TSM1000-B

TSM-1000

TSP - Piston Seals



PISTON CLEARANCE LIMITS

Bore Size Range	Max. Dia. Clearance
.250" to .500"	.004"
.501" to 1.750"	.005"
1.751" to 4.875"	.007"
4.876" to 9.000"	.009"
9.001" — up	.010"

Piston Diameter is equal to bore diameter (A), minus (Max. Dia. Clearance) for specific bore size range.

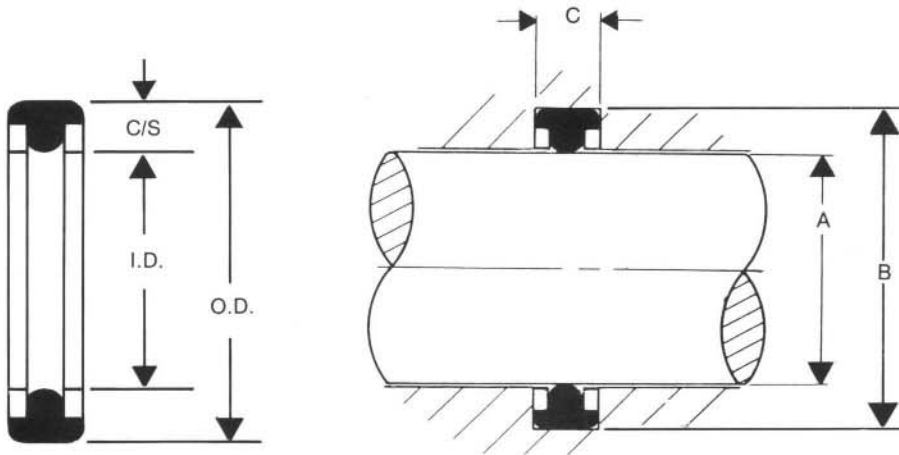
PART NO.	NOMINAL SEAL SIZE			Metal Dimensions		
	OD	ID	C / S	A Bore Diam.	B Groove Diam.	C Groove Length
	TOLERANCE			+ .001" - .001"	+ .002" - .000"	+ .010" - .000"
TSP-106	3/8	3/16	3/32	.375	.190	.150
TSP-108	7/16	1/4	3/32	.437	.252	.150
TSP-109	1/2	5/16	3/32	.500	.315	.150
TSP-203	9/16	5/16	1/8	.562	.317	.185
TSP-204	5/8	3/8	1/8	.625	.380	.185
TSP-205	11/16	7/16	1/8	.687	.442	.185
TSP-206	3/4	1/2	1/8	.750	.505	.185
TSP-207	13/16	9/16	1/8	.812	.567	.185
TSP-208	7/8	5/8	1/8	.875	.630	.185
TSP-209	15/16	11/16	1/8	.937	.692	.185
TSP-210	1	3/4	1/8	1.001	.756	.185
TSP-211	1-1/16	13/16	1/8	1.063	.818	.185
TSP-212	1-1/8	7/8	1/8	1.126	.881	.185
TSP-213	1-3/16	15/16	1/8	1.188	.943	.185
TSP-214	1-1/4	1	1/8	1.251	1.006	.185
TSP-215	1-5/16	1-1/16	1/8	1.313	1.068	.185
TSP-216	1-3/8	1-1/8	1/8	1.376	1.131	.185
TSP-217	1-7/16	1-3/16	1/8	1.438	1.193	.185
TSP-218	1-1/2	1-1/4	1/8	1.501	1.256	.185
TSP-219	1-9/16	1-5/16	1/8	1.563	1.318	.185
TSP-220	1-5/8	1-3/8	1/8	1.626	1.381	.185
TSP-221	1-11/16	1-7/16	1/8	1.688	1.442	.185
TSP-222	1-3/4	1-1/2	1/8	1.751	1.506	.185
TSP-325	1-7/8	1-1/2	3/16	1.876	1.502	.280
TSP-326	2	1-5/8	3/16	2.001	1.627	.280
TSP-327	2-1/8	1-3/4	3/16	2.126	1.752	.280
TSP-328	2-1/4	1-7/8	3/16	2.251	1.877	.280
TSP-329	2-3/8	2	3/16	2.376	2.002	.280
TSP-330	2-1/2	2-1/8	3/16	2.501	2.127	.280
TSP-331	2-5/8	2-1/4	3/16	2.626	2.252	.280
TOLERANCE				+ .002" - .002"	+ .003" - .001"	+ .010" - .000"
TSP-332	2-3/4	2-3/8	3/16	2.751	2.377	.280
TSP-333	2-7/8	2-1/2	3/16	2.876	2.502	.280
TSP-334	3	2-5/8	3/16	3.001	2.627	.280
TSP-335	3-1/8	2-3/4	3/16	3.126	2.752	.280
TSP-336	3-1/4	2-7/8	3/16	3.251	2.877	.280
TSP-337	3-3/8	3	3/16	3.377	3.003	.280
TSP-338	3-1/2	3-1/8	3/16	3.502	3.128	.280
TSP-339	3-5/8	3-1/4	3/16	3.627	3.253	.280
TSP-340	3-3/4	3-3/8	3/16	3.752	3.378	.280
TSP-341	3-7/8	3-1/2	3/16	3.877	3.503	.280
TSP-342	4	3-5/8	3/16	4.002	3.628	.280
TSP-343	4-1/8	3-3/4	3/16	4.127	3.753	.280
TSP-344	4-1/4	3-7/8	3/16	4.252	3.878	.280
TSP-345	4-3/8	4	3/16	4.377	4.003	.280
TSP-346	4-1/2	4-1/8	3/16	4.502	4.128	.280
TSP-347	4-5/8	4-1/4	3/16	4.627	4.253	.280
TSP-348	4-3/4	4-3/8	3/16	4.752	4.378	.280
TSP-349	4-7/8	4-1/2	3/16	4.877	4.503	.280
TSP-350	5	4-5/8	3/16	5.003	4.629	.280

PART NO.	NOMINAL SEAL SIZE			Metal Dimensions		
	OD	ID	C / S	A Bore Diam.	B Groove Diam.	C Groove Length
	TOLERANCE			+ .002" - .002"	+ .003" - .002"	+ .010" - .000"
TSP-426	5-1/8	4-5/8	1/4	5.128	4.649	.366
TSP-427	5-1/4	4-3/4	1/4	5.253	4.774	.366
TSP-428	5-3/8	4-7/8	1/4	5.378	4.899	.366
TSP-429	5-1/2	5	1/4	5.503	5.024	.366
TSP-430	5-5/8	5-1/8	1/4	5.628	5.149	.366
TSP-431	5-3/4	5-1/4	1/4	5.753	5.274	.366
TSP-432	5-7/8	5-3/8	1/4	5.878	5.399	.366
TSP-433	6	5-1/2	1/4	6.003	5.524	.366
TSP-434	6-1/8	5-3/8	1/4	6.128	5.649	.366
TSP-435	6-1/4	5-3/4	1/4	6.253	5.774	.366
TOLERANCE				+ .003" - .003"	+ .004" - .002"	+ .010" - .000"
TSP-436	6-3/8	5-7/8	1/4	6.378	5.899	.366
TSP-437	6-1/2	6	1/4	6.503	6.024	.366
TSP-438	6-3/4	6-1/4	1/4	6.628	6.149	.366
TSP-439	7	6-1/2	1/4	7.003	6.524	.366
TSP-440	7-1/4	6-3/4	1/4	7.253	6.774	.366
TSP-441	7-1/2	7	1/4	7.503	7.024	.366
TSP-442	7-3/4	7-1/4	1/4	7.753	7.274	.366
TSP-443	8	7-1/2	1/4	8.003	7.524	.366
TSP-444	8-1/4	7-3/4	1/4	8.253	7.774	.366
TSP-445	8-1/2	8	1/4	8.503	8.024	.366
TSP-446	9	8-1/2	1/4	9.003	8.524	.366
TSP-447	9-1/2	9	1/4	9.503	9.024	.366
TSP-448	10	9-1/2	1/4	10.003	9.524	.366
TSP-449	10-1/2	10	1/4	10.503	10.024	.366
TSP-450	11	10-1/2	1/4	11.003	10.524	.366
TSP-451	11-1/2	11	1/4	11.503	11.024	.366
TSP-452	12	11-1/2	1/4	12.003	11.524	.366
TSP-453	12-1/2	12	1/4	12.503	12.024	.366
TSP-454	13	12-1/2	1/4	13.003	12.524	.366
TSP-455	13-1/2	13	1/4	13.503	13.024	.366
TSP-456	14	13-1/2	1/4	14.003	13.524	.366
TSP-459	15-1/2	15	1/4	15.503	15.024	.366

For sizes not listed contact Macrotech/Polyseal for technical assistance.

Standard material consists of a 70 Shore A Nitrile Seal element and tough extrusion resistant nylon backup rings, designed specifically for hydraulic and pneumatic service. Other materials are available upon request.

TSR - Rod Seals



THROAT CLEARANCE LIMITS

Rod Size Range	Max. Dia. Clearance
.123" to .375"	.004"
.376" to 1.500"	.005"
1.501" to 4.500"	.007"
4.501" to 8.500"	.009"
8.501" — up	.010"

Throat diameter is equal to Rod diameter (A) plus (Max. Dia. Clearance) for specific rod size range.

PART NO.	NOMINAL SEAL SIZE			Metal Dimensions		
	ID	OD	C/S	A Rod Diam.	B Groove Diam.	C Groove Length
	TOLERANCE			+ .001" - .001"	+ .002" - .002"	+ .010" - .000"
TSR-106	3/16	3/8	3/32	.186	.370	.150
TSR-108	1/4	7/16	3/32	.248	.433	.150
TSR-109	5/16	1/2	3/32	.310	.495	.150
TSR-204	3/8	5/8	1/8	.373	.618	.185
TSR-205	7/16	11/16	1/8	.435	.680	.185
TSR-206	1/2	3/4	1/8	.498	.743	.185
TSR-207	9/16	13/16	1/8	.560	.805	.185
TSR-208	5/8	7/8	1/8	.623	.868	.185
TSR-209	11/16	15/16	1/8	.685	.930	.185
TSR-210	3/4	1	1/8	.747	.992	.185
TSR-211	13/16	1-1/16	1/8	.809	1.054	.185
TSR-212	7/8	1-1/8	1/8	.872	1.117	.185
TSR-213	15/16	1-3/16	1/8	.934	1.179	.185
TSR-214	1	1-1/4	1/8	.997	1.242	.185
TSR-215	1-1/16	1-5/16	1/8	1.059	1.304	.185
TSR-216	1-1/8	1-3/8	1/8	1.122	1.367	.185
TSR-217	1-3/16	1-7/16	1/8	1.184	1.429	.185
TSR-218	1-1/4	1-1/2	1/8	1.247	1.492	.185
TSR-219	1-5/16	1-9/16	1/8	1.309	1.554	.185
TSR-220	1-3/8	1-5/8	1/8	1.372	1.617	.185
TSR-221	1-7/16	1-11/16	1/8	1.434	1.679	.185
TSR-222	1-1/2	1-3/4	1/8	1.497	1.742	.185
TSR-325	1-1/2	1-7/8	3/16	1.497	1.871	.280
TSR-326	1-5/8	2	3/16	1.622	1.996	.280
TSR-327	1-3/4	2-1/8	3/16	1.747	2.121	.280
TSR-328	1-7/8	2-1/4	3/16	1.872	2.246	.280
TSR-329	2	2-3/8	3/16	1.997	2.371	.280
TSR-330	2-1/8	2-1/2	3/16	2.122	2.496	.280
TSR-331	2-1/4	2-5/8	3/16	2.247	2.613	.280
				+ .002" - .002"	+ .001" - .003"	+ .010" - .000"
TSR-332	2-3/8	2-3/4	3/16	2.372	2.746	.280
TSR-333	2-1/2	2-7/8	3/16	2.497	2.871	.280
TSR-334	2-5/8	3	3/16	2.622	2.996	.280
TSR-335	2-3/4	3-1/8	3/16	2.747	3.121	.280
TSR-336	2-7/8	3-1/4	3/16	2.872	3.246	.280
TSR-337	3	3-3/8	3/16	2.996	3.370	.280
TSR-338	3-1/8	3-1/2	3/16	3.121	3.495	.280
TSR-339	3-1/4	3-5/8	3/16	3.246	3.620	.280
TSR-340	3-3/8	3-3/4	3/16	3.371	3.745	.280
TSR-341	3-1/2	3-7/8	3/16	3.496	3.870	.280
TSR-342	3-5/8	4	3/16	3.621	3.995	.280
TSR-343	3-3/4	4-1/8	3/16	3.746	4.120	.280

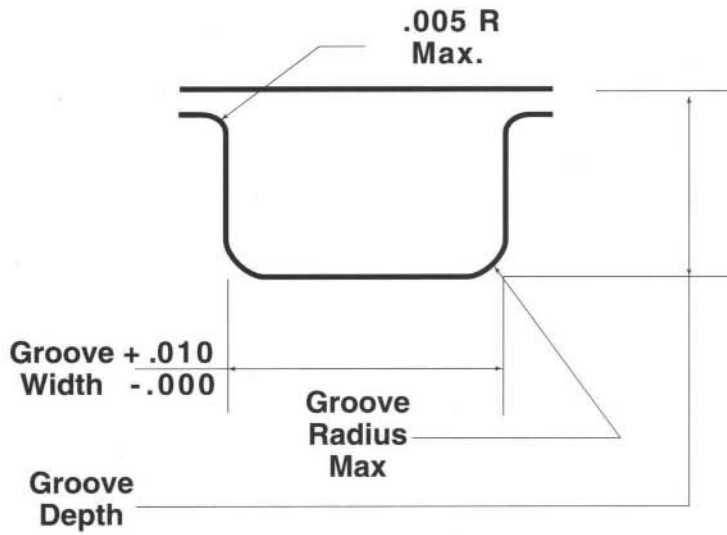
PART NO.	NOMINAL SEAL SIZE			Metal Dimensions		
	ID	OD	C/S	A Rod Diam.	B Groove Diam.	C Groove Length
	TOLERANCE			+ .002" - .002"	+ .001" - .003"	+ .010" - .000"
TSR-344	3-7/8	4-1/4	3/16	3.871	4.245	.280
TSR-345	4	4-3/8	3/16	3.996	4.370	.280
TSR-346	4-1/8	4-1/2	3/16	4.121	4.495	.280
TSR-347	4-1/4	4-5/8	3/16	4.246	4.620	.280
TSR-348	4-3/8	4-3/4	3/16	4.371	4.745	.280
TSR-349	4-1/2	4-7/8	3/16	4.496	4.870	.280
TSR-429	5	5-1/2	1/4	4.996	5.475	.366
TSR-431	5-1/4	5-3/4	1/4	5.246	5.725	.366
TSR-433	5-1/2	6	1/4	5.496	5.975	.366
TSR-434	5-5/8	6-1/8	1/4	5.621	6.100	.366
				+ .003" - .003"	+ .002 - .004"	+ .010" - .000"
TSR-436	5-7/8	6-3/8	1/4	5.872	6.350	.366
TSR-437	6	6-1/2	1/4	5.996	6.475	.366
TSR-438	6-1/4	6-3/4	1/4	6.246	6.725	.366
TSR-439	6-1/2	7	1/4	6.496	6.975	.366
TSR-440	6-3/4	7-1/4	1/4	6.746	7.225	.366
TSR-441	7	7-1/2	1/4	6.996	7.475	.366
TSR-442	7-1/4	7-3/4	1/4	7.246	7.725	.366
TSR-443	7-1/2	8	1/4	7.500	7.984	.366
TSR-444	7-3/4	8-1/4	1/4	7.746	8.225	.366
TSR-445	8	8-1/2	1/4	7.996	8.475	.366
TSR-446	8-1/2	9	1/4	8.500	8.984	.366
TSR-447	9	9-1/2	1/4	8.996	9.475	.366
TSR-448	9-1/2	10	1/4	9.496	9.975	.366
TSR-449	10	10-1/2	1/4	9.996	10.475	.366
TSR-450	10-1/2	11	1/4	10.496	10.975	.366
TSR-451	11	11-1/2	1/4	10.996	11.475	.366
TSR-452	11-1/2	12	1/4	11.496	11.975	.366

Some sizes shown may require a non-recurring set-up charge.

TSP and TSR seals have radial cross section dimensions equal to AS-568A O-rings, and are also available for grooves designed for an O-ring with one backup (-1), and for O-rings with two backups (-2). For specific information on individual applications, contact Macrotech/Polyseal.

T Seal Standard Materials

	Material	Application Recommendation
Seal Materials	Nitriles (NBR)	
	Nitrile 70A, A-8501	Standard Nitrile for most fluids. Temperature range from -35°F to 265°F.
	Nitrile 70A, A-8504	Low Temperature Nitrile for most fluids. Temperature range from -65°F to 240°F.
	Carboxylated Nitrile 70A, C-7001	Carboxylated Nitrile for most fluids. Improved wear properties. Temperature range from 0°F to 275°F.
	HNBR 75A, C-7021	Hydrogenated Nitrile for extreme wear and better fluid resistance. Temperature range from -50°F to 320°F
	Fluorocarbon (FKM)	
	Poly VI 70A, V-7501	Fluorocarbon rubber for applications requiring improved fluid resistance. Temperature range from -20°F to 400°F.
	Poly VI 70A, V7510	Fluorocarbon rubber for applications requiring improved fluid resistance. Peroxide cured TerPolymer for the most severe fluids. Temperature range from -20°F to 400°F.
	Ethylene Propylene (EPR)	
	EPR 70A, E-8001	EPR/EPDM rubber for phosphate ester and water/water glycol fluids. Temperature range from -65°F to 300°F. Not recommended for applications where mineral oils may be present.
Backup Ring Materials	Nylon, P-2505 or #707	Nylon for most standard fluid power applications. Temperature range from -65°F to 300°F Not recommended for applications where water may be present.
	PTFE, #700	PTFE for low pressure applications, where low friction is required, or Nylon can not be used.
	PEEK, #745	PEEK for extreme high pressure/high temperature applications.



T Seal part numbering system

TSP-325-2

Seal Style
TSP - Piston T Seal
TSR - Rod T SEal

O-Ring dash number

Groove Width

- No Backups O-Ring groove
- 1 One Backup o-Ring groove
- 2 Two Backup o-Ring groove

T Seal Groove Dimensions					
O-Ring Series	Groove Depth	Groove Width		Groove Radius	
		-1	-2		
-100	.093 ref.	.150	.183	.245	.015
-200	.122 ref.	.185	.235	.304	.032
-300	.187 ref.	.280	.334	.424	.032
-400	.240 ref.	.366	.475	.579	.032

TSP-302500

Seal Style
TSP - Piston T Seal
Series

- 3 - 3/16" Cross Section
- 4 - 1/4" Cross Section
- 6 - 3/8" Cross Section
- 8 - 1/2" Cross Section

Bore Diameter (inches)

T Seal Groove Dimensions			
Heavy Duty Series	Groove Depth	Groove Width	Groove Radius
3	.187 ref.	.424	.032
4	.240 ref.	.579	.032
6	.365 ref.	.750	.032
8	.470 ref.	.750	.032

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